THE UNIVERSITY OF HULL

Towards a Framework for Multiparadigm Multimethodologies in Systems Thinking and Practice

being a Thesis submitted for the Degree of
Ph.D. in Systems & Management Studies

The Centre for Systems Studies,
Hull University Business School

by

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March, 2012
Acknowledgements

I would thank my mother and father for loving and believing in me and cosigning student loans. I would thank the brilliant Len Troncale, my mentor, who told me that “Complex systems are just a special case of general systems;” to which I said, “What?” and then the world got bigger. I would thank Dorothy Fleck (retired) from the Cal-Poly Honors Program who said “You are going to grad school!” I believed her. I would thank Jennifer Wilby for finishing her PhD so I could attend the party thrown for her at the ISSS Tokyo and circulate amongst the guests for advice on where to do my PhD in Systems. My response was “England? … Me?” And I would thank Jennifer again for… everything!

All the simple problems have been solved. Now, for the rest …
Abstract

Burrell and Morgan (2000) claimed that knowledge is paradigmatic, encompassing a distinct worldview and rationality governing research strategies and methods for which they identified four sociological paradigms to locate them based on “metatheoretical assumptions about the nature of reality, knowledge, and human behavior” (Cunliffe, 2010). They regard the competing theories developed from different paradigms as incommensurable—those working in one paradigm are not understood by those committed to another. Moreover, “there can be no measure, outside of the paradigms, which can be used as a basis for comparing and adjudicating between the claims to knowledge of theories produced from within different paradigms” (Jackson, 2000).

This new theory states that because the problem of paradigm incommensurability begins at the level of ontology the solution lies there as well. Rather than supporting just one or a few paradigms, a different type of ontology is needed to explain ontological variety. It is argued that we can only perceive reality as meaningful paradigmatically, just as in the metaphor of the blind men and the elephant (Saxe, ca. 1850) where each comes upon a different part of an elephant and
generalises that the whole is like their one piece. Furthermore, they cannot understand what they have found by comparing experiences.

Solving the incommensurability issue is the theoretical key needed to properly underpin pluralist approaches to systems theory, design and intervention. But to do so, this new ontology is placed so that it operates within a suitable and otherwise complete theoretical framework which does not circumscribe, subsume, or in any way alter existing approaches, paradigms and theories—it purpose is only to sanction their use in a pluralist systemic approach. Such a framework, called \textit{P–S Multiparadigm Perspectivity} is described in this thesis.

Ten interviews with systemists were conducted with mixed results. The tests mistakenly assumed that systemists were generally aware of paradigms and incommensurability—instead, an aversion to theory was discovered. Surprisingly, though, two methods to address the issue were also found in the data. One of the interviewees teaches theory through storytelling; another demonstrates methods first, to pique the learner’s interest and evoke their questions. It was learned that the adoption of this theory depends upon an improved awareness of the concepts of critical systems paradigms within the systemist community.
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List of publications and presentations from this research project


Abstract, peer review, presentation.


Conference poster, peer review, poster session.


A peer reviewed journal article.


A working paper, peer reviewed, published internally.


Abstract, paper, peer review, presentation.

Award: Sir Geoffrey Vickers Award for best student paper, award presentation to the whole Society, Quicktime movie.

A peer reviewed journal article.
Chapter 1. Introduction

I have been inspired and encouraged by a quote from Whitehead, that “the proper test of theory is not that of finality, but of progress” (1929). This research project is an attempt to make some progress [TB].

1.1. Summary of the dissertation

This research concerns contemporary issues in critical systems thinking. One has to do with the past and our present trajectory in terms of theory and the community of systemist researchers, designers and practitioners. Another is one which has impeded the advancement of systemic practice.

- The radical evolutionary process of progress: developments, improvements and advancements of all sorts, some even breaking through into whole new worlds of thought. Great achievements, yes, but this has also meant a widening of the differences between us as systemists. We welcome diversity, but have been pushed far apart by divergence. We have seen the fracturing of the systems community into specialties and the decline of the generalist.

- There has been an increasing awareness of the need for transdisciplinary approaches to complex systems. In terms of critical systems thinking, that requires the employment of
a multiparadigm multimethodological, or pluralist, approach. *There is a need for integrative frameworks for multimethodologies within which systems theories are organised, practitioners co-operate, and where generalists are instead pluralists.*

Empirically, the fracturing of the systems community of theorists, researchers and practitioners is concomitant with the evolutionary progress, diversification and specialisation of systems theories and methodologies. The growing ‘family tree’ of systems philosophy is in a sense Darwinian—the evolution of species in an environment (here, different problem contexts) wherein new methodologies are likely to continue to adapt, evolve and mutate to fill every niche; where the introduction of a radically new systems theory opens up an entirely new environment of opportunity to fill, and the cycle continues.

The systems community was once a small, cohesive group of systems thinkers. The *Society for General Systems Research* (est. 1954) grew and evolved into the International Society for the Systems Sciences (ISSS). Around the world there are many intellectually-affiliated societies and spin-offs such as the United Kingdom Systems Society (UKSS), the International Federation for Systems Research (IFSR), the Cybernetics Society, etc. Some of the Society’s members have complained the growth process has not been orderly or well man-
aged. Members have dispersed, others have broken away to form more exclusive and specialised associations, some even disavow their obvious intellectual associations with systems thinking. A few of us ask what can be done to reverse or at least slow this unhappy trend?

In the modern practice of systemic intervention, multiparadigm multimethodology, or pluralism, is becoming recognised as having an increasingly powerful potential to supply the ‘requisite variety’ (à la Ashby, 1956) for applicability and effectiveness as opposed to any single methodology in complex situations. In other words, the potential power of pluralism is positively correlated with systemic complexity.

However, pluralism suffers the problem of theoretical (i.e. paradigm) incommensurability. Paradigms (and therefore approaches that employ multiple paradigms) are said to be incommensurable because their underlying assumptions are believed to be irreconcilable (Burrell and Morgan, 1979). There are other ways of looking at theories as we shall see, but if we accept the idea of incommensurable paradigms it follows that there is no internally consistent, coherent, legitimate and inclusive theory to guide the systemist in the theoretically well-informed employment of multiple (across paradigm) methodologies. That is to say, if we think about theories in such terms and do not
deny them or ignore them, then a theory which incorporates incom-mensurable paradigms by involving methodologies from across those paradigms is either logically inconsistent or relativistic. It follows, too, that there is no theoretically-legitimate way in which methods can be derived from them for use within the same study, design or interven-tion.

In the face of the long term intractability of this paradox there is one alternative that is growing in popular support—pragmatism\(^1\), i.e. acting without recourse to theory. However, this thesis generally es-chews pragmatism except, as I have learned in this research project, as a method for demonstration.\(^2\) In general, I believe that responsible systemic practice must be based in theory and that a better way forward is with a process of continuous improvement. With respect to our multiparadigm multimethodologies, we must address (rather than ignore or deny) the issue of paradigm incommensurability.

This research project began with a review of the literature on theory and paradigms and their components and a search of the theories of

\(^1\) That is, atheoretical pragmatism. See pragmatism, §3.5.

\(^2\) Except when used as a method within a theoretically-informed strategy as a preliminary aid to learning, e.g. in storytelling. (See Chapter 8 where I discovered that taking a pragmatic approach as a first step in teaching a systems concept by demonstration or through storytelling was both effec-tive and enjoyable.)
systems thinking to identify scholarly works which are directly related to the theoretical issues of multimethodology, multiple paradigms and theoretical pluralism. That literature is covered in Chapters 3 and 4, with specific system theories evaluated with respect to the problem of paradigm incommensurability in Chapter 5. Analysis was done to position these theories in relation to each other in terms of provenance and philosophical alignment. Supporting philosophies were given attribution if they could be identified and four maps were produced to indicate these relationships and associated information (see Figures 10–13), beginning in 1984 with Jackson and Keys’ _A System of Systems Methodologies_ (Jackson and Keys, 1984) and ending with the theory proposed in this dissertation, first published in 2008 (Bowers, 2008a, b, 2009a, b, 2010a, b, 2011a, b, 2012).

This dissertation then puts forward a proposal that might rectify both of the issues mentioned at the beginning of this section. First, it looks at the issue of paradigm incommensurability and why it may be approached as a problem based at the level of deep ontology. To overcome paradigm incommensurability, this dissertation produces a new ontology for systems theory that is based on systems principles, the duality of process and structure, and isomorphisms between object and subject. Then, with the addition of a new epistemology and
methodology, the product of this dissertation becomes a purpose-built theoretical framework for the practicing systemist in a critical pluralist approach.

An experiment involving ten systemists was designed to test basic assumptions of the new approach and was conducted to reinforce some measure of its validity and utility. The experiment requires that the interviewees consider a complex problem scenario. The International Society for the Systems Sciences (ISSS) organisation was chosen as convenient, contemporary issue and one with which they are all familiar. The experiment was not concerned with the ISSS, only in the ability of the systemist to shift paradigms. Data was collected and analysed to locate wherever successful shifts in paradigmatic point of view could be noted and to identify whether or not any new aspects of the problem scenario were reported. Qualitative and quantitative data analysis and triangulation yielded mixed results. A critical look at the results was made and a reflective discussion as to what they might mean, was also written. I reflected as well on my own performance in conducting the interviews, and incorporated lessons learned.

In the Conclusions chapter I took a step back from the review of how well the experiment was constructed and conducted and made a re-
flexive (self-reflective) critique of the conceptual structure of experiment itself. That lead to the discovery of my network of assumptions and biases that motivated the flawed design of the experiment and formed my unrealistic expectations of the interviewees. That is, I became aware that the basics of contemporary critical systems thinking is not knowledge that is widespread in the systems community, as I had expected.

The dissertation finishes with a discussion of the research project as a learning journey. It was not just about the production of new theory; it became a journey of self discovery, as well. Finally, the external impact of this research project is considered and its contributions to the body of knowledge are reexamined. It goes back to the need to educate the systems community in the basics of critical systems thinking.

1.2. Aims, objectives, the research question and contributions to knowledge

This research addresses the question,

*Is it possible to create a theoretical framework for systems thinking and practice which resolves the long standing problem of paradigm incommensurability and enables a new, coherently-informed multiparadigm multimethodo-*
logical approach to systemic research, design and intervention?

The objectives of this research are:

- To conduct research to develop a historical perspective specifically of those theories which address multiparadigmatic and multimethodological approaches to systems thinking and practice and then to create a map which indicates their relationships and supporting philosophies.

- To explain the problem of paradigm incommensurability and how it relates to theoretical support of any cross-paradigm multimethodological approach.

- To propose a new ontology that reconciles the problem of paradigm incommensurability and an epistemology and methodology to make it a functional as a theoretical framework for systemic research, design and practice.

- To test the new theory in such a way as to demonstrate whether or not its basic assumptions are satisfied—that systemists can take a serially multiparadigmatic look at a highly complex system of concern, and find value in doing so.

The aims of this research in order to reach those objectives are:

- To explore the development and divergence of the methodologies of systems thinking in terms of their grounding philosophies and to chart a paradigmatic taxonomy.
Towards a Framework for Multiparadigm Multimethodologies

- To focus this research on the multiparadigm, multimethodological branch of critical systems thinking and the philosophical attempts within it to resolve the problem of paradigm incommensurability.

- To explore and develop new ideas from the concept of an a-paradigmatic reality; and, with the specialised needs of the systems community in mind, propose a simple, inclusive ontology which intrinsically supports it.

- To produce a new epistemology and methodology and then to make a new model for a systemic approach based on the new ontology which specifically supports cross-paradigm multimethodologies and their engagement in systemic practice.

- To design and run an experiment to test the theory’s basic assumptions and as a critique and validation exercise, to reflect on the findings and adjust and improve the theory from what was learned.

Its contributions to the body of knowledge are:

- A map of the development of pluralist systems with supporting philosophies and citations.

- A new ontology, P–S ontology and the critical moment of becoming, as a resolution to paradigm incommensurability with respect to the systemist.

- A usable understanding of the mind-brain's production of paradigmatic observations pulled as emergent properties of an a-paradigmatic reality we cannot know.
• A new framework, P–S multiparadigm perspectivity, to support pluralist approaches to systemic research, design and practice.

• An awareness of the need to increase systemists' knowledge and understanding of the paradigms of systemic practice and of multiparadigm multimethodological approaches.

The preceding components of the research project and their relationships with one another are graphically illustrated in the following figure:
Is it possible to create a theoretical framework for systems thinking and practice which resolves the long standing problem of paradigm incommensurability and enables a new, coherently-informed multiparadigm multimethodological approach to systemic research, design and intervention?

**Research Question**

**Objectives**

- **Explain the problem of paradigm incommensurability** and how it relates to theoretical support of any cross-paradigm multimethodological approach.

- **To conduct research to develop a historical perspective specifically of those theories which address multiparadigmatic and multimethodological approaches to systems thinking and practice and then to create a map which indicates their relationships and supporting philosophies.**

- **To propose a new ontology that reconciles the problem of paradigm incommensurability and an epistemology and methodology to make it a functional as a theoretical framework for systemic research, design and practice.**

- **To test the new theory in such a way as to demonstrate whether or not its basic assumptions are satisfied—that systemists can take a serially multiparadigmatic look at a highly complex system of concern and find value in doing so.**

**Aims**

- **To explore the development and divergence of the methodologies of systems thinking in terms of their grounding philosophies and to chart a paradigmatic taxonomy.**

- **To focus this research on the multiparadigm, multimethodological branch of critical systems thinking and the philosophical attempts within it to resolve the problem of paradigm incommensurability.**

- **To explore and develop new ideas from the concept of an a-paradigmatic reality; and, with the specialised needs of the systems community in mind, propose a simple, inclusive ontology which intrinsically supports it.**

- **To produce a new epistemology and methodology and then to make a new model for a systemic approach based on the new ontology which specifically supports cross-paradigm multimethodologies and their engagement in systemic practice.**

- **To test the theory’s basic assumptions as a critique and validation exercise; to reflect on the findings and adjust and improve the theory from what was learned.**

**Contributions to knowledge**

- A map of the development of pluralist systems theories with supporting philosophies and citations.

- A new ontology, P–S ontology and the critical moment of becoming, as a resolution to paradigm incommensurability with respect to the systemist.

- A usable understanding of the mind-brain’s production of paradigmatic observations pulled as emergent properties of an a-paradigmatic reality we cannot know.

- A new framework, P–S multiparadigm perspective, to support pluralist approaches to systemic research, design and practice.

- An awareness of the need to increase systemists’ knowledge and understanding of the paradigms of systemic practice and of multiparadigm multimethodological approaches.

**Figure 1. The research question, objectives, aims and contributions to knowledge.**
1.3. The researcher’s background and perspective

The aim of this research is to augment the body of knowledge where I have seen there is a need, and where I believe I might contribute in a way that makes a difference. I hope this work will stimulate some fresh conversations around the general topics of multiparadigm multimethodological practices. It was a great personal challenge to tackle the wide scope and rich depth of scholarly work necessary to acquire the knowledge requisite to an informed attempt at such an important task. I have had to become familiar with the works of systems thinking: its history, theories and methodologies; of general and theoretical philosophy and works of early and modern social theory. Stimulating my desire was my sense I was fortunate to have been afforded the opportunity at a time when there is still a need for some fundamental critical systems theory. From ideas that began merely as intuition, my thinking has continually formed, reformed and matured throughout the learning journey which is this project. I habitually reflect upon these ideas and continue to incorporate results from feedback and critique which I actively seek from others, including experts, academic colleagues and supervisors.

What is written here is a considered and well studied subjective work. As such it should be read with a critical eye. No credible researcher
today can claim to have a ‘God’s eye view’ of the world nor legiti-
mately assume such a stance. My intent is to honestly and transpar-
etly disclose what is my best understanding of these difficult sub-
jects, to admit to having biases and not to claim infallibility. I have
tried to avoid taking an imperialist, dogmatic or pedagogic tone, but I
admit to having strong feelings about this work and at times the tone
of my writing comes across as forceful. I have not intentionally mis-
represented the words of others.

I acquired my irresistible curiosity for everything about ‘systems’ as a
first year undergraduate student of computer science at the California
State Polytechnic University in Pomona, California; I therefore at-
tached myself to Dr. Len Troncale and his Institute for Advanced Sys-
tems Studies. I proceeded to take full advantage of his love and life’s
work in systems science. (He once said a teacher waits years for a
pupil such as me to come along!) Several other students were some-
how recruited and we were off, investigating general system theory
and its history; researching and writing papers, pooling our discover-
ies in the weekly roundtable discussions. It was a heady, stimulating
environment. Our domain was the whole of what I later learned was
called ‘hard’ systems science. I had the opportunity to accompany Dr.
Troncale and present my work at three annual meetings of the Inter-
national Society for the Systems Sciences. It was there I made contacts with Dr. Wilby and others from the University of Hull that would eventually attract me to the Centre for Systems Studies at the Hull University Business School.

At the time I was intrigued with what are called complex systems and I thought I would go on to do agent-based (or actor-based) computer modelling, combining systems thinking with my background and studies in systems analysis and computer programming. Before I could make that mistake, though, I learned that the most complex systems are human systems—individuals, organisations and societies—for which descriptive models are best. Humans, being creative, evolving and adaptive, etc. are non-deterministic. In fact their behaviour is so complex that they break those computer models; systems calls them ‘brittle’.

Doctoral studies at Hull University opened my world to the qualitative (the so-called ‘soft’, interpretive, subjective) realm of human-based systems and to critical systems thinking, design and intervention. Once again, I took full advantage of the resources available to me, taking advanced courses in qualitative as well as quantitative research methods and philosophy, modern social theory and organisational learning and decision making. I have had access to an unbe-
lievable library; sought engagement and support from the local and global systems community, and the world-class faculty. I have developed my awareness of the milieu of systems thinking including the critical–emancipatory and postmodern approaches for which the field is highly indebted to scholars from the Hull University Business School and its antecedents.

Sadly though, for the field of systems thinking, such radical advancements have led to divergence and the field continues to fragment (Jackson, 1994) owing to its widening areas of applicability and to the increase in specialisation. I have a special desire to see the field and the community of researchers and practitioners united and thriving as it should be, especially considering the unfathomable potential benefits to mankind and the planet. I feel strongly that we systemists must educate ourselves about the other ‘worlds’, or paradigms of contemporary systems thinking and familiarise ourselves with at least one methodology from each paradigm. To remain ignorant certainly has many consequences. I like to say that all the easy problems have been solved. Right now, though, systemic practice has seemingly outgrown its family tree, and systems theory must catch up and provide the new branches of support, especially for pluralism.
There are two central subjects of this research project, the theoretical paradigms of critical systems thinking and the problem of paradigm incommensurability which acts as a conceptual barrier between them.

The main topics of discussion in the thesis are:

- The development and divergence of systems theory. That is, where we are and how we got here.
- The classification of theory by systems paradigm. This is the structure that distinguishes the philosophy of critical systems thinking from other onto-epistemologies and it is the line of thinking which assumes that there are multiple, valid systems of thought, or ‘worldviews’.
- The problem of paradigm incommensurability. As was stressed by the foundational theorists Burrell and Morgan (1979), and Morgan and Smircich (1980); paradigms are incommensurable owing to differences in their constituent ontologies (different concepts for the constituents of ‘the world’), epistemologies (different value systems, definitions, distinctions and modes of thought), and methodologies (different ways of working with ‘the world’).
- A new ontology and a new model for pluralism. This is new thinking about how different ‘worlds’ could come from the same potential reality space, and how this can inform our approach as systemists to systemic research, design and intervention.
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- Testing the framework with real systemists and interpreting the results. This is a test of the feasibility of these new ideas. From these tests we learn and adjust to the implications.

- Incorporating what was learned from the experiment and adapting the theory and approach to a new way of thinking about systemic theory and practice. The results give context to the impact of the experiment and serve to reframe the project from the point of view of the participants.
Chapter 2. The research project

Paradigms simplify the bewildering variety of theories and methodologies. They organise theories into paradigmatic groups, or worldviews and give onto-epistemological context to methodologies [TB].

2.1. Introduction

I suppose the appeal that paradigms have for me as a critical systems pluralist is the elegant way in which they simplify the universe of theories. They collapse into just a few discrete worldviews. The idea of paradigms and the problem of paradigm incommensurability is a central concern of this dissertation.

The matter, as well as some contrary views, are presented in the research materials reviewed in Chapter 3. After defining our terms, evidence that the problem per se has not yet been resolved is cited. It is suggested, however, that the product of this research may serve to point the way forward—not by abandoning or ignoring the problem or by redefining or reframing it as some would do—but by proposing new theory that accepts the problem and sees it as providing a diversity of ‘perspectivity’.
It proposes a new systems ontology and a framework for practice including an alternative epistemology and methodology designed specifically to support the systemist in multiparadigm multimethodological engagements with complex systems in terms of research, design and intervention. The following diagram illustrates the structure of the process in the type of engagements proposed.

![Diagram](image)

**Figure 2. Structural components of a new critical systemic pluralism.**

The diagram shows a new theoretical ontology interfacing with a new process called the critical moment.\(^3\) In the critical moment, any one

\(^3\) See the critical moment of becoming, Chapter 6.
of the onto-epistemological theoretical paradigms of critical systems thinking⁴ may be creatively deployed for an engagement with the problem situation from within that paradigm. In practice, the system-ist does this again and again, and uses each paradigm to explore the problem situation from multiple perspectives.⁵

2.2. The researcher’s approach to this research

2.2.1. Epistemological and ontological stance

Epistemology and ontology are structural components of philosophy, both of which are carefully explained in this research project. In a way that relates to the ontology of this research, you could say that ontology supports epistemology and as such can be thought of as the structure or environment within which epistemological processes take place⁶. Bhaskar also demonstrates an understanding of the ‘form and function’ dependency, says Craib (1992):

A comparatively recent development most generally known as [Critical] Realism, particularly as developed in the work of Roy Bhaskar... Bhaskar is concerned to dem-

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⁴ See paradigms of critical systems thinking, Chapter 4.
⁵ See the methodology, Chapter 7.
⁶ Note: the terms ‘structure’ and ‘process’ are important later.
onstrate that ontological and epistemological questions are interrelated in the sense that the way we gain knowledge about the world, what comprises an adequate explanation, depends on the sort of beings that exist in the world. To put in another way, the object we are studying determines the knowledge we can have of it.

This research puts forth and develops a philosophy wherein I assert that reality has a doubly dual nature at the level of ontology and with respect to the systemist observer (see later chapters). I argue that there is an objective existence, a reality independent from the observer. However, what a human observer knows of objective reality at the ontological level is indirect and limited, dependent upon and arising from the functioning brain. I assert that reality with respect to the systemist observer is, therefore, constructed; i.e. subjective, interpreted, contextual, complex, emotional, biased—necessarily incomplete and imperfect at best, flawed and biased otherwise. This way of thinking is a form of constructivism (see §3.3.2.4). That which is known as reality from the standpoint of the systemist includes synthesised abstractions which are herein afforded transitory, localised (as opposed to universal) ontological status. Our thoughts are real to us and we say that there are things called thoughts.
What is problematic is that we are evolved (i.e. there is a physical mechanism) to match phenomena from objective reality with continuous adjustments to our subjective reality. We are not normally aware of this process. We do not normally think in the abstract about ourselves in the act of thinking, and say, for example, “What I think comes from me, thinking”. What we do normally do is simply, and by virtue of the evolution of our species, identify our subjective experiences as the reality.

This view of reality allows me, as a critical systems pluralist, to utilise the paradigms of critical systems thinking to come to know complex systems through entirely different worldviews, and to approach them with a diverse array of theoretical and methodological tools.

2.2.2. Axiological, ethical and praxiological stance

Heron (1996) argues that our values are the guiding reason for all human action. Axiology is a branch of philosophy that studies how judgments about value are made. Ethics (as it concerns this research project) is the study of actions based on those values. Praxiology is concerned with “how we should act in an informed and reflective manner.” It is “primarily concerned with intervention and action.” It can be subdivided, say Mingers and Brocklesby (1997) drawing on
Habermas (1993), into three aspects: “Effectiveness—questions about the extent to which desired ends are achieved; ethics—questions about the value and desirability of courses of action for individuals and communities; and morals—questions about the effects of an individual’s actions on other people” (Mingers and Brocklesby, 1997).

Researchers demonstrate axiological skill by being able to articulate their values as a basis for making ethical judgements about what research they are conducting and how they go about it. Saunders, Lewis et al. (2007) suggest that research should include a statement of values by the researcher, and I have done what amounts to the same (refer back to §1.3, The researcher’s perspective, and ahead to the remainder of this section). The tradition of phenomenology agrees; one of its tenets is that researcher values determine what are recognised as facts and interpretations (Powell, 1999).

This ties in with the ideology and methodologies of Critical Systems Thinking which emphasise reflexivity (self-reflection) of a special kind—critical reflexivity (ideological self-critique)—and transparency (conscious self-revealing in the telling). Transparency is recommended as well to document the reflexivity and to counter any pretence of absolutes: objectivity, certainty, understanding (Etherington,
2004; Cunliffe, 2008a). This research project is a product of critical reflexivity. It aims to be as transparent as possible, especially axiologically, and relies upon a commitment to reflection and reflexivity in the tradition of critical systems thinking. These values are also aligned with my own morals.

2.2.3. Ethics and HUBS ethical procedures

This research project is conducted with reference to and compliance with the ethics procedures of Hull University Business School. These regulations and procedures are available for download from http://hull.ac.uk/hubs/downloads/students/ethical_procedures_research_teaching.pdf. Conducting this research will not place any person in a position of personal risk, whether physical or psychological. None of the data gathered is confidential, nor will its use cause personal harm to the authors of the material. The thesis cites its sources and properly credits all materials.

2.2.4. Scope and purpose of this research

By *theoretical support* I mean that we need one solution that answers the question, “By what most basic underlying mechanism or environment (that nature provides) do these methodologies, based as
they are on incommensurable paradigms, nevertheless work in practice when used pragmatically; that is, a-theoretically?”

2.2.5. A way forward

One simple step of logical induction has lead me to the realisation that there must be an ontological component operating which allows for and supports each systems paradigm and the incommensurability between them. The solution, as I see it, lies at the level of ontology. Rather than supporting just one paradigm, I feel that a single, underlying ontology is needed to explain the existence of the variety of paradigms. Why I see one ontology, which I call the P–S ontology, underlying others is explained in Chapter 6, along with a defence against charges of relativism. The proposed ontology, like all other ontologies, starts with a few assumptions; one is that the ontologies of the paradigms of critical systems thinking are each partial views of a much larger, infinitely multidimensional, a-paradigmatic ontology. “All paradigms constrain the way in which we can ’see’ situations” (Yolles, 1996), like the learned blind men in the story of the blind men and the elephant:

It was six men of Hindustan
To learning much inclined,
Who went to see the Elephant

26
(Though all of them were blind)
That each by observation
Might satisfy the mind.

The first approached the Elephant
And happening to fall
Against his broad and sturdy side
At once began to bawl:
"Bless me, it seems the Elephant
Is very like a wall".

The second, feeling of his tusk,
Cried, "Ho! What have we here
So very round and smooth and sharp?
To me 'tis mighty clear
This wonder of an Elephant
Is very like a spear".

The third approached the animal,
And happening to take
The squirming trunk within his hands,
Then boldly up and spake:
"I see," quoth he, "the Elephant
Is very like a snake."

The Fourth reached out an eager hand,
And felt about the knee.
"What most this wondrous beast is like
Is mighty plain," quoth he;
"'Tis clear enough the Elephant
Is very like a tree!"

The Fifth, who chanced to touch the ear,
Said: "E'en the blindest man
Can tell what this resembles most;
Deny the fact who can,
This marvel of an Elephant
Is very like a fan!"

The Sixth no sooner had begun
About the beast to grope,
Than, seizing on the swinging tail
That fell within his scope,
"I see," quoth he, "the Elephant
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Is very like a rope!"

And so these men of Hindustan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong,
Though each was partly in the right
And all were in the wrong.

So oft in theologic wars,
The disputants, I ween,
Rail on in utter ignorance
Of what each other mean,
And prate about an Elephant
Not one of them has seen! (Saxe, ca. 1850)

In the end each learned man, having only his own frame of reference, cannot begin to understand the others’ reports as those reports come from worldviews which are completely incommensurable with his own. Comparisons of one account against another are baseless; that is, there is no system of reference which includes both and could provide a basis for comparison. Differences between them are, likewise, not possible. Nor can they be integrated; the combinations are all nonsensical.
2.3. Research objectives

This research seeks to map the divergence of theories of systems thinking and juxtapose a new vision for theoretical and methodological pluralism in systems thinking and practice. It needs to explain two difficult issues in contemporary systems thinking and the importance of the need to resolve them, and to catalog recent attempts and propose a new framework as a way forward. The primary problem is that of divergent philosophical theories; the second (due to the first) is the need for theoretical support for cross-paradigm multimethodologies.

2.3.1. Paradigm incommensurability and a possible reconciliation

The thesis seeks to explain paradigm incommensurability and why it is the root cause of theoretical divergence in systems thinking, and to show the need for theoretical support for multiparadigm multimethodologies. It continues by arguing that the key to the solution lies at the level of ontology and then proposes and tests an alternative framework.
2.3.2. A new ontology and theoretical framework

As previously stated, this thesis produces and defends a new ontology and explains why it represents a new resolution of the issues surrounding paradigm incommensurability and how it then grounds the multiparadigm multimethodologies. Originally, it was thought that the new ontology, alone, would be the major contribution of this research project, but I found that explaining an ontology means having an epistemological conversation. I found that neither ontology or epistemology can stand alone. Ontology supports and enables epistemology, and epistemology explains and gives meaning to ontology. So, it was decided that the new ontology would have to be accompanied by a new epistemology. Subsequently, I found that explaining what the new onto-epistemology does and how it could be used by the systemist to inform multiparadigmatic multimethodological endeavours was actually a conversation about methodology or approaches to methodology. So what had originally seemed to be a rather ambitious but manageable research project quite ‘naturally’ expanded to become a very ambitious project for the creation of an entire theoretical framework. Recognising that the goals were much too big and the time allotted far too short to properly complete such a framework, the research project was changed, along with the title, to *Towards a*
Framework for Multiparadigm Multimethodologies. I have done my best to keep the scope of the materials presented in this dissertation to that which is manageable within these unavoidable constraints.

2.3.3. Experimental validation of assumptions

The research project takes a step toward validation with an experiment designed to demonstrate one way in which the framework could be used, but more importantly, to check some basic assumptions it makes about systemists and their ability and willingness to engage in a multiparadigmatic approach to systemic intervention. I used the framework to inform the construction of semistructured interviews in which I walk each of them through each paradigm in a general way. Then, in each paradigm, I encourage them to investigate the problem scenario and to report what they see. I hoped to find out that systemists could engage with their problem scenario in this serially-multiparadigmatic approach; and that in so doing, might also discover significant new aspects of the problem scenario which might even transform their conception of it. Otherwise, I hoped that I would discover what were the most significant flaws in my process and assumptions. Afterwards, I would ask each participant whether or not the experience had been of any value to them. Only if they did find it
valuable to take a multiparadigmatic approach to their problem scenario would they accept and use my new ideas.

2.3.4. Gaps and contributions to the body of knowledge

A review of the literature points out several instances where contemporary theorists note gaps in the body of knowledge in systems theory related to our two problems: paradigm incommensurability and the need for theoretical support for cross-paradigm multimethodologies. Some simply say that more work needs to be done and leave it at that. Others have come up with ideas that point the way toward likely solutions. Still others, like Midgley (2000) and Jackson (2000), say that the problem of paradigm incommensurability remains to be solved.

[We] must accept that the paradigms are incompatible and cannot be integrated... There is a need, of course, for further research on how conversations between paradigms can best be orchestrated. (Jackson, 2000)

Each has since produced work which has made significant progress. Several systems theorists have produced materials that advance our understanding and approaches to the problem, but I assert that none
has so far managed to completely close the loop on the incommensurability issue in its own terms (cf. Burrell and Morgan, 1979).

Jackson’s (2000) latest approach, Critical Systems Thinking and Practice (CST–P) and the suite of systems paradigms he names (functionalist, interpretivist, critical-emancipatory and postmodern) forms the basis for this research project; what I have considered to be ‘standard’ critical systems thinking. In CST–P, Jackson says that the discovery and critical decision making processes take place ‘above’ the paradigms, yet this is not explained. He seems to contradict himself when he says that this place is not some new paradigm. A gap in the body of knowledge is indicated by his call for further research.

Midgley, too, admits there is no satisfactory theory yet “to account for the subjective (mental) existence of multiple incommensurable paradigms” (Midgley, 2000). In his latest work on the subject is the idea that the solution will have to involve the creation of a new, critical systems paradigm. This idea, he says, seems to offer the only avenue that has not been proven fruitless. Ion Georgiou (2007) agrees.

That our second problem is dependent upon the first is because a cross-paradigm multimethodological approach to systems practice implies an application of some form of methodological pluralism. But the idea of pluralism amongst theoretically incommensurable meth-
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Methodologies is an obvious oxymoron. Midgley (2000), Jackson (2000) and others have either explicitly or tacitly acknowledged this deficit in systems theory.

Sixteen systems theories involved with the thesis problems are discussed (Chapter 5):

- A System of Systems Methodologies (SoSM)
- Interpretive Systemology
- Critical Systems Thinking
- Creative Methodology Design
- Liberating Systems Theory
- Total System Intervention
- Ontological Complexity
- Critical Appreciation, Discordant Pluralism
- Diversity Management (Triple Loop Learning)
- Pragmatic Pluralism
- Critical Pluralism, Multi-paradigm Multimethodology
- Creative Design of Methods
- Systemic Intervention
- Coherent Pluralism, Critical Systems Practice
- Critical Multimethodology
- Georgiou’s Systems Epistemology
2.3.4.1. Regarding the development and divergence of systems thinking

The thesis explores the historical development of systems thinking in an endeavour to uncover the grounding philosophies of the methodologies of its specific concern, and then to chart a ‘family tree’ of systems theories relating to these issues, grouping them them into the four critical systems paradigms defined in this thesis. See Chapter 4, Systems thinking, critical systems thinking, paradigms of critical systems thinking.

2.3.4.2. Regarding paradigm incommensurability and attempts to resolve the problem

This research is specifically concerned with the multiparadigm and multimethodological varieties of systems thinking and with the philosophical attempts to resolve the central problem of paradigm incommensurability. Each theory is examined in the context of the concerns of this research and situated historically in that context. Strengths and weaknesses are explored with the intent that theoretical progress can be leveraged with such knowledge. See Chapter 5, Multiparadigm, multimethodological systems theories.

7 It is an unsettled matter, so I have chosen to define them for the purposes of this research.
2.3.4.3. Regarding the proposal of a simple ontology which supports an underlying *a-paradigmatic* reality

Building on the leading edge of critical systems theories, the thesis explores and develops new ideas involving the concept of reality as being *a-paradigmatic*, and *with the specialised needs of the systems community in mind*, proposes a simple ontology that intrinsically supports reality as such. Theoretical support is drawn from Maturana’s Ontology of Observing (Maturana and Varela, 1980, 1987; Maturana, 1988a; Bunnell, 2004a, b), Bhaskar’s Critical Realism (Bhaskar, 1989; Collier, 1994) and a new and specific, moderate form of pluralism (see Margolis, 1986; Pojman, 1995; Baghramian, 2004; Mosteller, 2008). See also Chapter 6 “Process–Structure ontology, relativism, pluralism, the critical moment of becoming”.

2.3.4.4. Regarding the idea that reality presents itself to the systemist as a paradigmatic experience

The idea is to support the new ontology with evidence that explains how such an *a-paradigmatic* reality might naturally translate by the mind–brain (from what contemporary Critical Systems Thinking considers a *multi*-paradigmatic reality) into a specifically-paradigmatic, constructed experience. See §6.11, The critical moment of becoming.
2.3.4.5. To demonstrate how and why the P–S ontology works

To show how, for the systems practitioner, such an ontology facilitates a rich understanding of extant systems in problem contexts and theoretically legitimises a multiparadigmatic, pluralistic approach to methodology, method making and practice. See Chapter 7, The framework to support multiparadigm multimethodologies.

2.3.4.6. The cataloguing of previous efforts regarding multiparadigm multimethodological theory

To demonstrate that past attempts—multi-meta-, complementary bridging and pragmatic multiparadigmatic theories—have all failed to produce satisfactory bases for mixed-paradigm multimethodologies and that the calls for the creation of a new theoretical framework may be the way forward.

2.3.4.7. The proposal for a new approach to critical systems thinking and practice

To put forth my own model based on the process–structure ontology that specifically supports cross-paradigm multimethodologies by grounding the deployment of each systems paradigm.

2.3.4.8. Experimental validation

An attempt to validate this new framework and assess its usefulness to the systemist requires a suitable complex problem situation as a
case study. An organisation thought of by its member stakeholders as ‘at risk’ in terms of its future viability would be a suitable ‘problem situation’. The member stakeholders should be willing to be participate and be prepared to take action with the intent to improve it. One of the principle stakeholders in the forty year old International Society of Systems Scientists (ISSS) who is familiar with my research suggested that I use the ISSS as the problematic scenario. It is a widely-held view within the Society that the ISSS is not growing in active membership and, unless corrective action is taken, many believe that it is then at risk of a serious decline. Difficult questions are on the minds and tongues of its members such as: What are the causes of this apparent decline? What will be the cost if we cannot or will not effectively address its causes and change this trajectory? What is the risk to the very identity of the Society? What, essentially, is its role?

It was assumed that a sample of ISSS members would be willing to participate in fairly brief, semi-structured interviews whilst we were otherwise together participating in the annual convention. Most who were asked to participate agreed and were even pleased to be asked to help with my research project, and each had a sense that they might be able to contribute something of value to benefit the ISSS. It
seemed to be a “win-win” situation. The experiment was designed to demonstrate the feasibility of such a multiparadigmatic approach to systemic research and intervention and to collect data from interviews with ten systems practitioners. See Chapter 8, Testing the idea of multi-paradigm deployment.

2.4. Research design, approach, objectives and methods

2.4.1. Introduction

The point is to craft a structured plan for rigorous research which will best address the research questions and lead to relevant outcomes. The theoretical framework from within which the research will be conducted, tested and reported is described in this section. An examination of each component and arguments supporting the choice of each component are included, as well.

All there is to know about systems theory is huge. The thesis represents an investigation into the development of the body of systems theory focusing on the lines of thinking that specifically address multimethodological or multiparadigmatic systemic approaches. It then attempts to develop and test new theory. To do so necessitated knowledge about the philosophy of theory and about the philosophical
concerns of theories of theories. Knowledge about the studies of ontology and epistemology was also required.

Of special significance is the issue of relativism, but there is some new material available which provides theoretical support for “a moderate form of pluralism” (Baghramian, 2004). See §6.10.

I begin the introduction of background materials with a discussion of systems of logical thought (§2.5.1) and modes of approach to research (§2.5.2), and discuss which are appropriate for this research project. Reflection and the learning process is the subject of §2.5.3. Reflexivity and radical reflexivity are covered in §2.5.4. Critical systems thinking is discussed throughout this dissertation and is the subject of §2.5.5.

The discussion moves on to the methodology and specific methods used for the design of the new ontology (§2.6). Section 2.7 examines theories about the researching of theory, about the development of new theory, and how to test, validate and evaluate theory. Sections 2.8, 2.9 and 2.10 respectively address rigour and relevance, validity and reliability, replicability and generalisability.
2.5. General research methodologies

2.5.1. Systems of logical thought

Deduction, induction and abduction (methods of logical reasoning); analogy and metaphor (methods of inference); and teleology (a method of explanation through purpose) are terms which describe some of the various ways we can come to learn about the world and come to say that we ‘know’ something. This research uses each of them in operationalising the research plan and for communicating the ongoing processes of development to the reader.

*Deduction* is a method of reasoning that begins with a postulation and proceeds with rigorously testing its validity. In this way it is a linear process. It is typical of the traditional scientific method where laws present the basis of explanation, allow the anticipation of phenomena, predict their occurrences and therefore permit them to be controlled (Collis and Hussey, 2003). Deduction allows deriving \( b \) as a consequence of \( a \). In other words, *deduction is the process of deriving the consequences of what is assumed*. Given the truth of the assumptions, a valid deduction guarantees the truth of the conclusion.

Saunders, Lewis et al. (2007) list several characteristics typical of research done in the deductive mode. Deductive research emphasises:
• scientific principles
• moving from theory to data
• the need to explain causal relationships between variables
• the collection of quantitative data
• the application of controls to ensure validity of data
• the operationalisation of concepts to ensure clarity of definition
• a highly structured approach
• researcher independence of what is being researched
• the necessity to select samples of sufficient size in order to generalise conclusions

*Induction* is a method of reasoning typically used to build theory from an examination of the information collected for the study. The qualities typical of research done in the inductive mode are those that emphasise:

• gaining an understanding of the meanings humans attach to events
• a close understanding of the research context
• the collection of qualitative data
• a more flexible structure to permit changes of research emphasis as the research progresses
• a realisation that the researcher is part of the research process
“I see chicken eggs. There must be a chicken somewhere” is a simple example of induction. In terms of logic, induction allows inferring \( a \) from multiple instantiations of \( b \) when \( a \) entails \( b \). *Induction is the process of inferring probable antecedents as a result of observing multiple consequents.* Note that an inductive also statement requires perception (of the consequents) for it to be true. For example, the statement “it is snowing outside” is invalid until one looks or goes outside to see whether it is true or not (Edwards, 1967).

*Abduction*, or inference to the best explanation, is a method of reasoning in which one chooses the theory that would, if true, best explain the relevant evidence. “I see eggs. There must be a chicken somewhere” is abductive. Abductive reasoning starts from a set of accepted facts and infers their most likely, or best, explanations (ibid.). *Abduction allows inferring \( a \) as an explanation of \( b \).* Because of this, abduction allows the precondition \( a \) to be inferred from the consequence, \( b \). Deduction and abduction thus differ in the direction in which a rule like “\( a \) entails \( b \)” is used for inference. *Abduction is vulnerable to a logical error when there are multiple possible explanations for \( b \).* Unlike deduction and in some sense induction, abduction can produce results that are incorrect within its formal system.
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However, it can still be useful as a heuristic, especially when something is known about the likelihood of different causes for $b$. In the example, chickens are not the only source of eggs. However, the likelihood that the egg is from a chicken would be quite high if you were on a chicken farm. Still, there is the possibility of error.

Analogy and metaphor, and other figures of speech, for example, synonym, antonym and simile, invite the listener to infer something from another thing. For example, “A peach is like an apple” is an analogy. These techniques are an important way in which we learn new concepts by employing the qualities of other, known things. In this research, the methodology used in the experiment relies on the use of such techniques to describe what the interviewees were asked to do.

Teleology is the study of design and purpose in the material world. It is a way of explaining phenomena by the purpose they serve, rather than by postulated causes (NOAD, 2010). In the context of systemic thinking, teleological thinking is not deprecated; it is considered a tool we all use in practical, everyday reasoning. To understand something new or novel we might just ask, “What is it for?”, “What does it do?” and the answer satisfies. For instance, we may not know how a computer works. To most of us the computer is a ‘black box’ and it is
enough to know what it does. A computer has a keyboard and a mouse so you can type and point and click, and a screen so we can see what it is doing (cf. e.g. Rosenblueth, Wiener, et al., 1943).

The logic of this research project is in the largest sense inductive. That is, I wish to develop theory to explain our observations of multiple, co-located ontological phenomena. It is also needed, for example, to explain the production of epistemological phenomena emergent from the level of ontology. Abduction is employed when alternative speculations about the source or cause of a phenomenon are considered, as in the development of ontological theory where there are valid alternative arguments. Deduction is used commonly and wherever it is appropriate, such as in the analysis of the experimental results. Teleological constructs are generally supplied to add context and catalyse associations.

2.5.2. Quantitative and qualitative modes of research

Quantitative research involves the collection of data that is analysed numerically or quantitatively as opposed to qualitative research which involves a descriptive or qualitative analysis of the information. This study takes a qualitative approach, rather than a quantitative one as the information gathered and analysed in this project is textual and
descriptive of theory and practice. Qualitative evidence, being less
definitive than hard qualitative results, bears a stronger burden of
proof. Typically (and as in this case where I use ten systemists) the
researcher will present more than one account as compelling evi-
dence which, when compared with alternatives, is persuasive. In one
step, a quantitative method is used to produce simple statistics to as-
sist the qualitative approach.

Throughout this research, which is qualitative research, the reasoning
logic of deduction, induction and abduction are used for purpose and
the explanatory power available through the use of both the descript-
tive tools of analogy and metaphor is employed as well within the
various formal methodologies operating in the stepwise process de-
scribed in the research plan which is itself given structure by the con-
ceptual (theoretical) framework.

2.5.3. Reflection and learning

A method for ‘looking back’ or reexamination and reevaluation stage
in the process of learning and inquiry, reflection is necessary in the
learning process. It provides the mechanism of re-evaluation of pre-
viously learned concepts in light of new ones.
It is the process by which we improve our understanding and clarify our reasoning (Kolb, 1973a, b, 1976, 1984). According to Wilby there are three questions that underpin the process of reflection:

‘What’ should I reflect on?, ‘Why’ is reflection necessary? and ‘How’ can I as an individual reflect on my actions and their implications? (Wilby, 2007)

The what will be looking back to assess ‘Have I done well?’ The why is about my commitment to the process, and the how is about being thorough and reviewing my previous decisions. These questions are based on the twin standpoints of the effectiveness of the intervention and the moral responsibility of the facilitator. These questions are addressed in the content of this chapter; that is, the contributions to knowledge, the findings with regard to each of the contributing disciplines, the recommendations to be made, and issues that should be
addressed in further research. The third question: *How can I as an individual reflect on my actions and their implications?* (Brown and Wilby, 1996) is addressed by working through each section of this dissertation with the objective of being self-reflective alongside the practical reporting of the outcomes of this research.

Here, rather than assuming an imperialist or authoritative tone, the technique of reflection is also meant to be used *critically*\(^8\). Schön (1983) cautions the researcher not to assume an expert or authoritative stance, but to maintain a reflective practice, open to learning instead. He talks about the issue of framing and says that how we frame a situation determines how we will approach it. In this research project *critical reflection* is an important tool, vital to our ability to search for and consider alternatives. The theory it produces, too, asks the practitioner to reflect critically. Critical reflection should prompt the reader to come to his or her own understanding of the thoughts and ideas presented in this dissertation, and help the practitioner to develop an improved approach to research, design and intervention.

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\(^8\) and self-critically as well, see the next section.
2.5.4. Reflexivity, critical reflexivity

*Reflexivity* as it is used here is method for a specialised form of reflection which simply means reflection upon oneself. It is reflection abstracted to a higher level; a method for thinking about one’s own way of thinking. Where in reflection we might ask, “What did I do?” we ask ourselves reflexively, “What was I thinking? *Critical reflexivity* entails looking critically at our practice to expose our ideological assumptions that we can find reflected in what we do; and more importantly, to challenge those assumptions. It is, as Jackson says, asking ourselves “Are we doing the right things?” I would add: “What did I miss?” “What are my assumptions, biases, pre-judgements?” This radical form of reflexivity, according to Cunliffe (Cunliffe, 2008b), supplies a variant to the practice of reflexivity which liberates it from recursive “naval gazing,” a paradox built into the original theory. In practice, the intent is to “dramatize the intersubjective, continually deferred construction of meaning and create spaces for further responsive understandings.”

2.5.5. Critical systems thinking

Critical systems thinking relies on critical reflexivity, above.
Refer ahead to critical systems thinking (§4.4). A larger discussion about critical systems thinking occurs throughout the dissertation.

It is appropriate to note that I am a critical systems academic and practitioner and it is my natural tendency to approach any complex system with a critical systemic perspective. I think of this research project and dissertation as a complex ‘problem scenario’ and have taken a critical systems approach to ‘resolve’ it. To achieve the aims and objectives of the research project with respect to the development of new critical systems theory requires a critical analysis of critical systems theory, itself. That is, theory has been rightly called upon to improve itself.

2.6. Methodology and methods for the design of the new ontology and its theoretical framework

The aim is to build a framework for the constituent components of this research project. First and foremost, it is not the aim of this research to develop a case study using existing theory and testable hypotheses as one might expect of the typical Ph.D. dissertation. Rather it is to build a new model of thought, a new framework for practice. It is informed, first of all, from a critical study made of existing theories.
in order to establish the relevance of this project and to anchor its new theory on the leading edge.

2.6.1. Researching and developing theory

The word *philosophy* comes from the ancient Greek for *love of knowledge* or *love of wisdom*. It connotes the scholarly study of general matters such as the nature of existence, the meaning of the word *truth*, how one can know beauty and art, why it is that things are as they are, etc. We appeal to philosophy when we seek rational answers to our deepest general questions as opposed to the less- or irrational ways of mysticism, mythology or dogmatic prescriptions because philosophy is based on logical argumentation and...

...*rationally critical thinking of a more or less systematic kind about the general nature of the world (metaphysics or theory of existence), the justification of belief (epistemology or theory of knowledge), and the conduct of life (ethics or theory of value)*. (Quinn, 1995)

Philosophy functions, therefore, to promote the most general systematisation of civilised thought. By providing the generic notions, philosophy should make it easier to conceive of “the variety of specific instances which rest unrealised in the womb of nature” (Sherburne, 1966). Its importance lies in its sustained effort to make such
schemes explicit, and thereby capable of criticism and improvement (Whitehead, 1929).

Metaphysics is, to many, an emotionally-loaded word owing to its mischaracterisation by detractors as pseudo-science, myth or mysticism. In *Process and Reality* (1929), Alfred North Whitehead defines it simply as **speculative philosophy**, the technical language of which represents “attempts to obtain explicit expression of general ideas presupposed by the facts of experience” (Sherburne, 1966). Such a philosophy is necessarily inadequate or incomplete unless its scope includes whatever is found ‘in practice.’ Indeed, metaphysics is nothing but the description of the generalities which apply to all the details of practice (ibid.).

Methodologically, metaphysics (i.e., speculative philosophy) is

...the endeavor to frame a coherent, logical, necessary system of general ideas in terms of which every element of our experience can be interpreted. By this notion of ‘interpretation’ I meant that everything of which we are conscious, as enjoyed, perceived, willed, or thought, shall have the character of a particular instance of the general scheme. *(Whitehead, 1929)*

Bohm suggests that metaphysics is fundamental to every branch of science. Although it is not a ‘well-defined study, on top of which we
erect a towering structure of physics, chemistry, biology, sociology, and so on,’ it is nevertheless ‘something that pervades every field,’ and ‘conditions each person’s thinking in varied and subtle ways’ (Bohm, 1970). To contrast the two, metaphysics may be thought of as being less rigorous in its formulation and of a broader or less-specific domain and scope than the more logically derived and more specific varieties of philosophy. Certainly, though, the processes of testing the match between theory and experience and of continuous improvement are integral to the practice of them both. In either case, the proper test, says Whitehead, is not that of finality, but of progress (Sherburne, 1966).

I begin with a cursory, bottom-up exposition of the foundational components of philosophy employed both in the research into existing theory and the creation of new theory: logic, methodology, epistemology, axiology and ontology. This bottom-up, specific-to-general view of the research-philosophic terrain is a more in keeping with the way of systems thinking.

2.6.2. Multimethodology

A methodology is a template for a plan of action and, as such, provides theoretical guidance to the practice of research methods; a sys-
tematic, descriptive, procedural template for action; a guide or a generic set of rules to process what you have in order to produce some desired effect or outcome (Midgley, 2000). Philosophically, methodology is general in the sense that it is meant to be applied on different occasions to the specific instance or ‘problem context’ at hand (Checkland, 1981). In terms of process and structure, methodology identifies the structure and features of the generic target for which it is designed, defines the processes that are to be performed on them and describes the intended affects. A method is that which is actually done; methods are derived from the methodology in the specific case. For example, one method of interpretivism is participants discussing their concerns amongst themselves.

A multimethodological approach to this research is required; that is, more than one methodology will be used in this research project and dissertation. The contributions are twofold—results from research into systems theories connected with multi-paradigm practice; and the development of a new framework of ontology, epistemology and methodology to support multiparadigm multimethodological approaches to systemic practice. Testing, too, requires multiple methodologies and methods—semistructured interviews are analysed with critical hermeneutics, simple statistics are compiled, qualitative and
quantitative results are triangulated, reflection and reflexivity are employed in critical manner to correct and improve.

The methodologies used in this research project are listed and explained in the following sections.

2.6.3. Literature search

The research begins by examining secondary sources—the relevant literature in the field. A thorough search for literature was an active part of the research process. Materials are retrieved from several sources: information based on prior knowledge from past course work and research projects, advice elicited from personal contacts, queries of various online databases, library catalogs, search engines, journal sites and encyclopaedic materials: books, papers, collections, journal articles and reviews. Especially rich and helpful resources were made available from the Brynmor Jones library at Hull University.

2.6.4. Vertical and horizontal research

Citations and references within the text of the documents examined led to additional sources, authors and topics supplying breadth and background for interesting and tangentially-related materials. The authors determined to have made contributions significant to this
study became subjects themselves, and searches into their bodies of work were conducted to pursue materials which could provide a deeper understanding of their thoughts and to follow the evolution of those thoughts longitudinally over time. Critiques and supporting works written by others were drawn in as well to provide balance, add dimension, and place each work within the larger context of the systems movement.

2.7. Methodology and methods for testing the new framework

2.7.1. Textual analysis

The processes of understanding text and acquiring knowledge are complex, embedded situational experiences. Once written, texts are stand-alone artefacts, disassociated from whatever the author’s original understanding and intent might have been by factors such as the nature and constraints of communication and writing and other factors such as culture and time. Consequently the researcher must be able to place the source material itself within a larger context of breadth, depth, alternative voices and a before and after historical context. These essential accompaniments support the interpretive actions and validity claims of any critical evaluation. These three requi-
sites were not, however, fully present prior to this project’s literature review, but formed as a consequence of it. It was therefore necessary to review each document at least twice. First, to become familiar with the material and subsequently to reinterpret it within the ‘rich picture’.

2.7.2. Phenomenological hermeneutics

The textual review process is guided by the methodologies of modern and critical hermeneutics (see §2.7.3) (Gadamer, 1970; Foucault, 1972; Bleicher, 1980; Ricoeur and Thompson, 1981; Thompson, 1981; Oouthwaite, 1987; Tilley, 1990; Gasparski, 1991; Huspek, 1991; Kneer and Nassehi, 1991; Locke, 1991; Ford, 2006). The modern form of hermeneutics was broadly described as one of the three categories of knowledge by the German philosopher and sociologist Jürgen Habermas (1970). Given the wide range of philosophic influences on hermeneutics there is no single approach to its practice. It generally refers to “research that actively engages in the interpretation of texts” (Fischer, 1994).
Critical to this study is that “in its very roots... hermeneutics recognises the tricky nature of interpretation—as constituted of multiple and conflicting rather than of simple, uniform meanings” (Gadamer, 1960). The hermeneutic approach “denies both that there is a single objective true interpretation transcending all viewpoints and that we are forever confined within our own viewpoint. Interpretation is rather something to be arrived at by a gradual interplay between the subject-matter and the interpreter's initial position” (Lacey, 1986). To practice hermeneutics requires the researcher to establish a close relationship with the text in order to more closely identify with its richer meaning.

Importantly, “since detachment [as in positivism] from the text is not favored,... the suggested approach is a dialogue or conversation between text and interpreter as a method of achieving both textual and self-understanding” (Gadamer, 1960). In Gadamer’s view, “the hermeneutic conversation between an interpreter and a text is a dialogue in which the interpreter puts questions to the text, and the text in return questions the interpreter” (Prasad, 2002). “The term dia-
logue here is obviously used in a metaphorical sense and conveys notions of ‘listening’ to texts and allowing them to ‘speak’ to us” (Frascina, 1994). “In this process, the interpreter is able to reach some awareness of her or his presuppositions and can reinterpret the text with a new set of more meaningful questions. Like the hermeneutic circle, the dialogue with the text is (theoretically) an endless iterative process” (Prasad, 2005). In practice, the iterations are done only until some satisfactory level of understanding is achieved.

2.7.3. Critical hermeneutics

Hermeneutics began as the theory of textual interpretation, particularly mythical and sacred texts. Its practitioners struggled with the problem of characterising how people find meaning in texts which exist over many centuries and are understood differently in different epochs (Winograd and Flores, 1986). In more recent years, the philosophical study of the act of interpretation led to critical theory and the more fundamental questions such as, “What is it that we bring to bear on the act?” and “From where does what we bring to bear come?”

*Heidegger (1962) rejects both the simple objective stance (the objective physical world is the primary reality) and the simple subjective stance (my*
thoughts and feelings are the primary reality), arguing instead that it is impossible for one to exist without the other. The interpreted and the interpreter do not exist independently: existence is interpretation, and interpretation is existence. Prejudice is not a condition in which the subject is led to interpret the world falsely, but is the necessary condition of having a background for interpretation (hence Being) (Winograd and Flores, 1986).

Gadamer, following on Heidegger’s work, said,

It is not so much our judgments as it is our prejudices that constitute our being... the historicity of our existence entails that prejudices, in the literal sense of the word, constitute the initial directedness of our whole ability to experience. Prejudices are biases of our openness to the world. They are simply conditions whereby we experience something—whereby what we encounter says something to us. (Gadamer and Linge, 1976, 2008)

John B. Thompson first proposed ‘critical hermeneutics’ in his doctoral thesis, then developed his ideas into a book, Critical Hermeneutics: A study in the thought of Paul Ricoeur and Jürgen Habermas (Thompson, 1991). His theory combines and improves upon ‘ordinary language philosophy’ from linguistics, ‘critical theory’ from Habermas
(who was influenced by Heidegger), and ‘hermeneutic phenomenology’ from Ricoeur. He describes it as: “a reformulation of the methodology of depth interpretation, as a critical theory for the interpretation of human action,” and used “to clarify the conditions under which a statement can be considered to be true” (ibid.); which are in turn based on his underlying theories of human action, interpretation, and truth.

Here, critical hermeneutics is a principal methodology employed for analysis of the research data: documents, interviews and other artefacts considered in this study. Because of this tradition, the interpretive approach to the literature review is informed, reflexive, and theoretically well grounded.

That critical hermeneutics was used as a methodology for this study comes from a careful consideration of alternative methodologies for textual analysis. My requirement that each investigated theory be done from within its own world-view (with respect to the problem of paradigm incommensurability), requires a methodology that is as inclusive as possible of alternate ways of seeing the ‘world’. Critical hermeneutics is such a methodology. It avoids the “well-known shortcomings” of other social theories yet “does not grind to a paradoxical halt as still others do” (Thompson, 1991).
Thompson’s development of critical hermeneutics begins with Heidegger who, being key to the development of existentialism, hermeneutics, deconstruction, postmodernism, and continental philosophy in general, had a great influence on Paul Ricoeur who called him “one of the outstanding contemporary representatives of hermeneutic phenomenology.” It was Ricoeur who then developed a theory of text, of human action (the Philosophy of Will), and from them, modern hermeneutics. Jürgen Habermas provides critical social theory, from which Thompson uses the ideas of human and societal struggle, action and the logic of discourse, and other ideas such as that of approaching interpretive truth through the force of better argument alone. “[Thompson’s] analysis of Habermas’ work is much more penetrating than most others,” says Giddens:

*Thompson’s Critical Hermeneutics is, then, a modern social theory and methodology specifically for qualitative, depth interpretation of text or other meaning-laden verbal or behavioural activities. It incorporates Ludwig Wittgenstein’s Ordinary Language Philosophy, Paul Ricoeur’s Hermeneutic Phenomenology, Jürgen Habermas’ Critical Social Theory and addresses and improves on the shortcomings of each of them.* (Giddens, 1981)

From a study done in 2007, I wrote about Thompson’s critical hermeneutics that...
The methodology is useful for a researcher faced with the task of deep qualitative analysis of complex, dense, technical or otherwise difficult text and the search for meaning and enlightenment. It cannot yield hard answers or reveal an absolute truth. Its strengths are in its firm philosophical grounding and sound conceptual framework. And by virtue of its pedigreed inheritance from the brightest minds in recent times and in its historical evolution (successive passes to incorporate improvements), it is said that “it wears designer genes.” And therein lies its greatest weakness—youth. As a new theory, it has not been subjected to many trials. In fact, I could find no references. Another is its demand on the researcher. As a recursive process, you decide to stop only when your analysis is sufficient; there is no avoiding the intellectual demands of the reflection process. (Bowers, 2007)

2.7.4. Semi-structured interviews and thought experiments

Regardless of their intended goal, all thought experiments display a patterned way of thinking that is designed to allow us to explain, predict and control events in a better and more productive way. (Ackermann, 1992)

Any theory must survive many tests in real-world practice to be able to make a true claim of validity (or to have any chance of wide accep-
tance), but time constraints on this project would not permit any such careful study.

A thought trial is an imaginative substitute for physical trial and error. Instead of testing a hypothesis by acting it out in real life, you test it ‘in thought’ by relying on your beliefs about what is possible. Here, you trade reliability for speed. However, any trial-and-error process—even one performed in thought—takes a long time when there are lots of alternatives. To cope, we complicate the hypothetical act so that it can rule out a whole class of possibilities. Complexity is also prompted by our frequent failure to have any direct intuition about whether a hypothesis fails; for we can respond to the gap by building a link to another, apparently irrelevant intuition. Once the supposition attains a degree of complexity, it qualifies as a thought experiment. (Sorensen, 1992)

The intention for combining interviews and thought experiments is to add support for claims of validity, repeatability and generalisability already gained through rigorous use of the other methods, the structure of the conceptual framework, and the research procedure. In this case I am attempting to exercise the new theory. At the same time I am looking for data which suggests that certain assumptions made by the new theory may be valid—I am not testing hypotheses as such in
the deductive, positivist sense. Although each component employed in this multimethodological qualitative approach “is individually susceptible to abuse, fallacy, and error… collectively, they provide a network of cross-checks that make for impressive reliability” (Sorensen, 1992).

Our thought experiments begin first by stipulating a plausible scenario and some context for it, then walking the reader through the intervention using the proposed theory. It is a type of storytelling, first ‘talking through’ the problematic scenario. The goal being to exercise the framework comprehensively, asking them about how they see the problem scenario and how they might initially approach it; what sort of investigation they would undertake, and to get them to describe what would be their own approach to the intervention, what actions they would take, and why.

A weakness of the thought experiment interview as a methodology is due to the imaginary nature of the hypothetical situation considered by the interviewee, rather than the practical realism that could be afforded by an actual application of it by a systemist engaged in a systemic intervention. Hypotheticals are by their nature simplistic when compared to the infinite complexity of real-world scenarios. No pretense will be made that our thought experiments prove anything.
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They are, however, a practical compromise for time, and more useful at this preliminary stage of theory development than when we are further along. It affords the opportunity to learn from mistakes improve, and as we shall see, the unexpected can occur with this method, as well.

2.8. Regarding rigour and relevance

Every effort has been made to ensure that this research is conducted transparently, is demonstrably rigorous in purpose, scope, breadth and depth, does not overreach and that it is executed with technical competence. A continuous engagement with the learning process throughout the research project was put in place to build improvement into the research experience. Resources for such include Hull University Business School’s postgraduate training—a series of formal postgraduate courses on research theory, methods, practice, writing and ethics. It is understood that qualitative research is not used to ‘prove’ theories, but to enrich the body of knowledge in aspects that cannot be produced using traditional quantitative or reductionist methodologies.

*Rigor and Relevance in Management Research* was the topic of a lecture by a visiting expert, Dr. Luiz Moutinho, the Foundation chair of
Marketing at the University of Glasgow. To paraphrase, he essentially said “Today’s research is so boring! It’s written in turgid, difficult language just to impress other academics... We tend to take safe, little baby steps, which may be very rigorous, but that have the effect of minimising relevance... Where are the bold ideas?” His point was that it is quite possible to conduct and publish interpretive research that is both rigorous and relevant.

This study aims towards relevance to academics and systems theorists as it hopes to add significantly to the body of systems theory, and to practitioners to the extent that completeness and clarity informs and enables increased competence. Possibly the greatest benefit to the systems community may come through the influence that coherent theory should have on reversing the forces trending towards divergence or atheoretical pragmatism and to become a force, instead, towards convergence.

2.9. Regarding validity and reliability

The development of the research project and its execution rely on the tools of reflexive critique, dialectical critique, and a plural structure.

The key epistemological question is, "Can the approach to the study of the social world, including that of manage-
Validity and reliability of the research is addressed by making explicit the premises and assumptions of the research and the researcher, the objectives and motivation as well as the need for this research, by the development of a research procedure within a complete and proper theoretical framework, by employing several accepted strategies for data collection and methodologies for its interpretation and support for its logical argumentation (triangulation), and by the design and rigorous use of testing procedures.

Adherence to the scientific method is the typical yardstick for measuring the success or failure of a research project vis a vis the stated research questions, but a qualitative approach cannot match with the classical epistemology and its experimental method and refutability (Simon, 1996). The application of the scientific method (which assumes positivism and prescribes reductionism) to the research of systems theory and practice is not feasible for several reasons, among them:
• Theory (particularly at the level of ontology) is not generally reducible to axiomatic statements. At some level, a stipulation must be made which is not provable by formal logic (and is not stated as being so).

• Theory, by definition is highly generalised. Richness is otherwise sacrificed for precision.

• Subjective and interpretive thoughts resist quantifiability.

• The functionalist–objectivist paradigm in which reductionism and the scientific method have validity is but one paradigm among many. The validity of research findings apply only within paradigms supporting the methods by which they are produced (Burrell and Morgan, 1979).

2.9.1. Internal validity

Has a reasonable argument been developed in support of the hypotheses?

Does cause precede effect?

Can cause and effect be demonstrated to be necessary and sufficient? (Atkinson and Shaffir, 1998)

As this research aims to add to the body of theory pertaining to critical systems thinking and practice, the required input data is to be found in the body of published literature. The methods used to locate, to collect and to evaluate this data as previously elaborated include vertical and horizontal literature searches, textual (interpretive) analysis, modern and critical hermeneutics. Reflection and reflexivity
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(reflection upon oneself) are employed in the written style within an overall critical approach.

Internal validity is also a function of the content of the dissertation and of the qualities of design and execution of the research itself.

2.9.2. External validity

Is evidence preserved? (Atkinson and Shaffir, 1998)

This is qualitative research of an essentially speculative nature. The philosophies studied and produced herein refer to concepts that are infinitely complex in terms of dimensions, attributes or variables, are necessarily based ultimately on some logically supported assumption. Researcher bias is admittedly inescapable; instead, it is transparently disclosed. No pretence of objectivity or absolute truths is or could be assumed in this case. The subjects of this research are, instead, considered interpretively and approached critically using accepted, qualitative research methodologies. The goal is to make progress in the field of critical systems theory, adding to the body of knowledge with respect to what is known about the problems considered and with credible proposals to resolve them.
As this research project is not the traditional type of objective experiment where an independent variable can be manipulated to show correlation with a dependent variable while other factors are held constant, nor is it possible to perform repeated testing due to time and word count constraints, a weaker form of internal and external validity is appropriate. Internal validity in this sense will depend on to what extent the theory created is sufficiently supported by the evidence and the logical progression of developments. Argumentative conclusions should be held up against and prevail over plausible alternatives.

_The proper test is not that of finality, but of progress._
—Whitehead. (Sherburne, 1966)

2.10. Regarding replicability and generalisability

This is not designed to be a replicable project. Others with access to the same materials would interpret them in distinct ways and there would necessarily be different outcomes. With continued examination of these and additional materials as they come to light this research, its thesis, products and conclusions has become a continually reflective and reflexive pursuit of learning and improvement. Although there is much more to be learned from existing literature, the time
constraint forced an end to the literature review. Even so, it continues to evolve within me. It has become a learning journey.

Generalisability does apply to the conclusions and proposed theories of this research project inasmuch as the project yields ideas which are useful to the reader, researcher or systemist in the application of these ideas to their own specific situations. Sherburne (1966) reminds us that the ultimate proof of any philosophy is that it continues to explain what is observed in reality. Consequently, a new phenomenon that cannot be explained by existing theory signals a shortcoming and foreshadows a new, better one (Kuhn, 1962, 1996). This is roughly isomorphic to Darwin’s explanation for the evolution of living species, an analogy first mentioned in the Introduction and one that we will return to again, in §6.2.
Chapter
3. Paradigms and incommensurability

3.1. Introduction

The reader will find in this chapter definitions of many of the terms used in this dissertation, including: ontology, epistemology, paradigm, multiparadigm, paradigm incommensurability, systems thinking, critical systems thinking, reflection, and reflexivity. (Refer back to §2.6.2, Multimethodology, for definitions of methodology, multimethodology and method.)

In this chapter, the thesis reviews issues surrounding incommensurable paradigms and focuses on existing theories which nevertheless support research, design and engagement with systems multiparadigmatically. Beginning with A System of Systems Methodologies (Jackson and Keys, 1984), the origins, development and evolution of these theories is mapped in Figures 10–13 which help to illuminate the progression and increasing sophistication of each school of thought and to establish, at the bottom-present, the contemporary state of the multiparadigmatic multimethodological critical systems theories. The theory developed in this research project appears as well, to indicate its theoretical lineage and locate it within the evolving tradition of systems thinking.
3.2. Paradigms, ill-fitting theories and incommensurability

Burrell and Morgan’s paradigms have been debated and criticised (Midgley, 2011) but systemists who are familiar with the branch of systems thinking called critical systems thinking, mainly the Europeans, find the idea of systemic paradigms especially useful. In the study by Jackson and Keys (1984) the dozens of systems methodologies known to them at the time were examined to determine their underlying assumptions about the nature of the world in which each were designed to operate. They were ‘assigned’ to a particular group, or ‘worldview’, making those implicit assumptions explicit.

A year later, Jackson’s Critical Systems Thinking (1985a,b) took its supporting philosophy from Burrell and Morgan’s groundbreaking Sociological Paradigms and Organisational Analysis (1979)—the concept of ‘paradigms’ as groups of theoretical approaches having similar onto-epistemological foundations.9 Where, using the terminology customary at the time, systems and systemic approaches were either ‘hard’ or ‘soft’, Critical Systems Thinking (CST) favoured instead a more precise understanding based on onto-epistemologies. These became what are called in this paper the positivist/structural-functionalist (often shortened to either ‘positivist’ or ‘functionalist’)

9 See ontologies, §3.3.1; and epistemologies, §3.3.2.
and the *interpretivist* paradigms.\textsuperscript{10} Assumptions about the nature of the world are known as onto-epistemological assumptions, or *paradigms* in critical systems thinking.

Today there are many more methodologies than there were in 1984 and those us in the field of critical systems thinking commonly refer to them as ‘belonging’ to this or that paradigm because the concept of paradigm provides context. The set of all methodologies is much more easily understood and more readily accessible when grouped by ‘worldview’. New methodologies become easier to learn and to teach, and therefore to be used. In this way, the paradigms support and facilitate theoretical and methodological pluralism.

Not *all* systems theories fit neatly into just one or another of these paradigms, however. *Multimethodologies* (which call for the use of more than one methodology in the same project) are theories which cannot be ‘adopted’ by or assigned to a single paradigm if those methodologies are ‘from’ different paradigms (that is, if they have radically different onto-epistemological foundations). And there are complex systems theories such as CST, Second Order Cybernetics and a variety of pluralistic theories\textsuperscript{11} which are ‘larger’ than any one

\textsuperscript{10} See critical systems paradigms, §4.5.

\textsuperscript{11} See the subsections of §5.4.
of our paradigms. The most widely referenced of these in the field from which it takes its name is Critical Systems Thinking (Mingers, 1980; Jackson, 1985; Spear, 1987; Jackson, 1989, 1991c). As this research shows, CST has been improved over time and has been the inspiration for several other theories. Jackson calls his latest version Critical Systems Thinking and Practice (Jackson, 1993, 2001). All such theories and practices which do not fit neatly into one paradigm have been criticised by theorists for what is known as paradigm in-commensurability (see §3.2.1).

This research project represents another attempt to move critical systems thinking forward in spite of the incommensurability issue. Its ultimate objective is to advance new theory leading in a practical way to improved outcomes for systemic interventions in complex contexts. Systemic thinking acknowledges the complexity, turbulence and diversity of organisational contexts and requires theory which can properly ground naturally multiparadigmatic, multimethodological approaches and praxis. Without such theory the real-world implications are:

- Constraints upon the grasp the practitioner may have of significant aspects of the problem situation and its context, especially with respect to the variety of those which can only present themselves in alternative paradigmatic contexts.
• Limitations in the variety of methods which may be deployed to affect an ongoing intervention, especially with respect to methodologies aligned with alternative paradigms.

• Effectiveness which suffers a lack of informed guidance from proper theory and coherent multimethodological approaches to naturally multiparadigmatic problem situations.

Critical systems thinking has liberated us from the one-size-fits-all, ‘hard’, positivist approach to everything for all occasions (Flood, 1990), or what from a larger perspective has been called imperialist or isolationist practices (Midgley, 1992a). In fact, the word ‘critical’ itself signifies an ethical commitment to critical reflexivity; that is, to self-reflection and ideological critique (Gregory, 1992). And unlike atheoretical pragmatism, critical systems thinking is built upon a solid foundation of theory.¹²

This dissertation describes four, generally accepted conceptual paradigms which were adapted from and developed alongside developments in modern social theory (most importantly Burrell and Morgan’s social paradigms (1979), updated by Morgan and Smircich (1980)) which are herein named positivist/structural-functionalist, interpretivist, critical-emancipatory and postmodernist-poststructuralist

¹² See pragmatism, §3.5.
systems paradigms (Jackson, 1987a, 1989; Flood and Jackson, 1991a, b, c; Jackson, 1991a, b, c; Jackson, 2000).

Paradigms are simply groupings of like onto-epistemological approaches or traditions in research and practice. Each one is described in those terms, ahead. Each advantages a unique world outlook and assumes distinctive approaches to shared universal concepts. Within each paradigm are compatible points of view about the world’s constitution and its structure; its values, concerns, conventions and assumptions; its ‘truths’ and the traditional ways of working in the world. What is nice is that each paradigmatic view is known to be valid and each offers a world of rich insights unavailable from the others. Very briefly:

The positivist/structural-functionalist (or simply ‘functionalist’) systems paradigm is the world of modern science and social science; the world of logical proofs and deductions, verifiable facts and hypothe-
ses, exact measurements, objective observation, unbiased certainty and universal truths. Its so-called ‘hard’ problems tend to be precisely definable, stable, operational, and technical (Tsoukas and Papoulias, 1996).

The interpretivist systems paradigm takes care to point out that each of us sees the world subjectively and understands it in a unique way. It is concerned with reconciling issues of individuality and personal differences, with the social world and aesthetics. It accepts that we disagree and are unpredictable. Reasoning is more often inductive and situated. The so-called ‘soft’ problems tend to be broad, volatile and ambiguous (ibid.).

The postmodernist-poststructuralist (or simply ‘postmodern’) systems paradigm is known to be ill defined, which presents an opportunity to the Systems community to take from the various opinions out there just what it finds useful and to set aside solipsistic controversies. In the version I advocate, this paradigm holds to an acute appreciation of the limitations of human understanding. It appreciates a world of unfathomable depth and interactive dimensionality, a world of events which are sometimes fleetingly transient or spontaneous. Its nature thwarts our attempts to ‘know’ it through the use of language. Reliant upon language, our biases are unavoidable and we must reflexively
question the very bases of our assumptions. This exposes us to our limitations and should engender transparency, humility and open-mindedness.

The critical-emancipatory (or simply ‘critical’) systems paradigm can be characterised by its three commitments, or themes for debate\textsuperscript{13}—to critical reflection, pluralism, and emancipation or ‘improvement’ (Flood and Romm, 1996). As it is the paradigm which is central to the thinking in this research project and the theory that is developed in the dissertation, it is explored ahead in great detail.

3.2.1. Why are paradigms incommensurable?

If we cannot agree what the problem is because we cannot agree what reality is, then there is no hope for a solution. Richard Rorty gives an example where adherents of different paradigms come to loggerheads when they try to work together, unable to agree on the nature of the problem due to their fundamentally different (realist vs. constructivist) views of the underlying nature of the problem.

\textit{A realist... would say that one of these [views] is misled, that one group perceives correctly, and the other perceives incorrectly. Strict constructivists will complain that}

\textsuperscript{13} Suggested by Midgley (1996, 2000) to avoid connotations of uncritical acceptance.
there is no way to confirm one way or another, since the goal of inquiry (Reality) must be assumed to be understood at the outset. [In their view,] the Realist hope... is simply to arbitrarily freeze the infinite circularity that plagues human reasoning which vainly hopes to validate itself with a secure foundation. (Rorty, 1982)

The social scientists Burrell and Morgan (1979) coined the modern use of the word paradigm and famously described four basic paradigms of social science (Figure 6).

Burrell and Morgan observed that research is expected to be conducted within a single paradigm and researchers are required to align themselves with one of them because, as a ‘worldview’, each of the paradigms can only be understood from ‘within’ that worldview. They
emphasise “the separateness of [the] four paradigms” due to their underlying differences in ontology and epistemology “and the development of theory and research in isolation” (Mingers, 1997a).

The central disadvantage of having these different paradigms is that each represents a self-contained, internally defined worldview. Each is a complete worldview in (and of) itself, exclusive of the others and ‘inwardly focused’. More precisely:

- The basic construction and internal concepts of each paradigm are so different that they cannot be directly combined without corrupting one or both. One cannot be well understood from the point of view of another.
- There is no common basis for the critique or evaluation of one paradigm from within another, so there is no valid way to connect them indirectly. Each is valid in itself and only well understood from ‘within’ it.
- There is no neutral or extra-paradigmatic platform on which to stand for any comparison, translation or arbitration between them—any such point of view would necessarily be paradigmatic.
- Any meta-paradigmatic or meta-theoretical approach from ‘above’ which ‘includes’ them necessarily corrupts our view of them.
Altogether, this is why the paradigms are said to be valid, but *incommensurable*.

The paradigm incommensurability thesis asserts that because paradigms differ in terms of the fundamental assumptions that they bring to organizational inquiry, researchers must choose the rules under which they do research from among the alternatives on offer. They must then commit themselves to a single paradigm, although sequential movement over time is permissible. Multi-paradigm research is proscribed [(ruled out)] for a number of reasons, the most notable of which is the supposed irreconcilable objectivist–subjectivist ontological and epistemological dichotomies that exist between the empirical-analytic and interpretive paradigms respectively. However, as Burrell and Morgan (1979) and Astley and van der Ven (1983) have shown, there are other related dichotomies such as structure versus agency, determinism versus voluntarism, causation versus meaning, and object versus subject. The opposing positions is each dichotomy represent alternative competing ‘truths’ about the world, and, as such, they resist reconciliation or synthesis. (Mingers and Gill, 1997)

Jackson (Norman, *not* Michael) & Carter (1991) say that

*Burrell and Morgan were quite specific that a synthesis between paradigms cannot be achieved, that they must remain discrete and develop independently—*
words, that the paradigms are incommensurable. This incommensurability stems from the commitment to opposing beliefs in the nature of the foundational assumptions... Incommensurability could be explained by the argument that each paradigm has a discrete language of its own—although they may, and probably do, share common signifiers, the signifieds entailed are radically different. ... [And] although addressing ostensibly the same phenomena, they are based upon fundamentally different hypotheses about the nature of the world, the role of science and the problematics to be resolved.

Paradigm incommensurability should not be considered a liability, in fact, say (Norman) Jackson and Carter,

...the effect of paradigm incommensurability is to establish the integrity of each paradigm, obviating the necessity for interminable justifications of different ontological, epistemological and methodological approaches to the subject area, different beliefs about human nature and whether organization studies is primarily prescriptive or descriptive. What it implies is that each paradigm must, logically, develop separately, pursuing its own problematic and ignoring those of other paradigms as paradigmatically invalid, and that different claims about organizations would, in an ideal world, be resolved in the light of their implications for social praxis. (Jackson and Carter, 1991).
They summarize it this way...

*Incommensurability is not negotiable, it is a characteristic of the [B&M onto-epistemological] model — without it, paradigms are an unnecessary elaboration of what is already elaborate and complex [ibid.].*

In critical systems thinking, paradigm incommensurability occurs between the four paradigms: positivist/structural–functionalist, interpretivist, critical-emancipatory and postmodernist-poststructuralist.

*Typically, reference is made to three different paradigms that can be crudely characterized as hard (positivist), treating the organizational world as objective, essentially the same as the natural world; soft (interpretivist), treating human organizations as fundamentally different, based on subjective meaning and interpretation; and critical, accepting the place of both hard and soft but emphasizing the oppressing and inequitable nature of social systems. These paradigms, and the methodologies that embody them, are often said to be incommensurable because their underlying assumptions are believed to be irreconcilable. (Mingers and Gill, 1997)*

The postmodernist-poststructuralist paradigm is involved in incommensurability as well, because of its very different tenet that the true nature of reality is multidimensional, situational, infinitely complex and ultimately unknowable. It asserts that paradigms are simplistic,
their world views are narrow and prejudicial, they make too many assumptions; and worse, each pretends to have an exclusive claim on the truth.

*There are some paradigms, traditions, perspectives, value systems, or cultures that are so antagonistic to one another that there is no position from which they can be reconciled. (Gregory, 1996a)*

### 3.2.2. Why do we need different paradigms?

*All paradigms constrain the way in which we can ‘see’ situations. (Yolles, 1996)*

Paradigms may be ‘incommensurable’, but nevertheless, they represent valid and consistent worldviews. And if, as says Yolles, each has its own constraints, their variety suggests to this researcher, and to the critical systems thinker in general, that the employment of multiple paradigmatic views affords the practitioner a deeper appreciation of what is ostensibly the same phenomena than could any one of them, alone.

And, importantly, as each theoretical perspective brings with it its own packaged set of practical methodologies, this widening ‘perspectivity’ widens the variety of methods which may be brought to bear in complex situations. As Mingers and Gill (1997) explain, a methodol-
ogy is “a structured set of guidelines for activities to undertake to improve the effectiveness of an intervention. Such methodologies are based, implicitly or explicitly, on particular philosophical assumptions concerning the nature... and the particular view of the world that is sometimes called a paradigm”.

To summarise and oversimplify my claim: the functionalist paradigm has proven itself indispensable and it grounds most of the field of systems thinking. Interpretivism adds concern for personalities and works with human-to-human concerns. Critical-emancipatory systems thinking tells us to be aware as well of the dimension of political power and coercion, and reminds us to reflect, critically, upon ourselves as well, and to utilise other worldviews. And postmodernism asks us to consider our human condition, to allow for ambiguity, and to question our terms. As systemists, I believe we need them all and we need to use them as well as tools for enquiry, understanding, and for acting.

3.2.3. ‘Virtual’, or ‘micro-’ paradigms

Whereas a paradigm is a general, onto-epistemological worldview that is widely accepted and adopted, an individual operates with a personal Weltanschauung—"a comprehensive conception or appre-
hension of the world especially from a specific standpoint” (Merriam-Webster, 1997), or worldview (Yolles, 1996) that is sometimes called a ‘virtual’ paradigm, or a ‘micro-’ paradigm. It is similar to speak of one’s network, or framework, of assumptions. In the experiment (Chapter 8) ten interviews are conducted. At the beginning of each interview, the interviewee is asked to tell a story which is intended to reveal their own micro-paradigm, which I then refer to as their ‘natural’ paradigm. It is important to note that our micro-paradigm is not enduring and stable, rather it is socially constructed (§3.3.2.3) and evolves with experience (discussed throughout Chapter 6).

3.3. Ontology, epistemology, onto-epistemology

There is much confusion between ontology and epistemology, even, as it turns out, by theorists and philosophers. Although their definitions seem straightforward—ontology is the study of what exists and about categorisation of those things; and epistemology is the study of knowledge and knowledge making, about how logic is applied and used, and about the validity of statements expressing knowledge claims, truth or fact. Ontology is about being-ness; epistemology is about knowing-ness.
3.3.1. Ontologies

Ontology is traditionally defined as the science of being *qua* being, or *being* in terms of *Being*. Ontic inquiry is concerned with the things or entities of the world. It is not concerned with the nature of particular beings but with the nature of *Being* as such (Heidegger, 1962). It involves inquiries into the fundamental basis of existence, or the grounding for what ‘is’. Ontology is an *a priori* science, inquiring into the pure possibilities applicable to any domain (Georgiou, 2007). Another way of expressing that is to say that ontological existence is granted to the *stuff* that makes up the things which *are*.

Pure ontological reality has been called ‘reality-as-it-is-in-itself’. I prefer this concept (which precludes us) rather than the term ‘objective’ (which moves us). I use the term reality as-it-is-in-itself to speak of a purity of non-interpretation and to refer to existence which is *not in any way* the product of the mind. Conversely, the concept of an *objective existence* requires logical interpretation and the concept of truth, as it holds that it can truly be said that there are objects or things which have particular intrinsic characteristics.

Among the many other ways to understand this, to philosophers like Heidegger (1962) ontological inquiry is concerned with “what it means to Be; with the Being of things or entities.” Researchers attend
to what can be studied and to that which is the nature of their research. Classically, there are two basic views: 1) that the world is objective and external to the researcher, and 2) that the world can be understood only by examining the perceptions of the human actors. In the first view, there is one reality and in the second view realities are multiple, as seen by the observers (Craib, 1992).

The ontological assumptions of most systems theories are not made explicitly and must be inferred from their epistemological concerns (see Epistemologies, §3.3.2). Those which do address ontology specifically—works by Bertalanffy, Laszlo, Mingers and Gill, Flood, Jackson, Midgley, Fuenmayor and Georgiou are covered ahead in the discussions of those theories.

3.3.1.1. Objectivism

Objectivism is a view about the nature of reality that holds that reality is something that exists ‘out there’, independent of the human mind or perception. Objects or things that exist are instantiations with intrinsic qualities. Critiques of the objectivist ontology centre on limitations with respect to the human observer and the boundary between the extrinsic object and the intrinsic subject (see subject-object dualism in §6.4). There are several epistemologies based on the objectivist ontology, each with its own qualifications allowing for
varying kinds of uncertainties, particularly when it comes to human and social aspects.

Saunders, Lewis et al. (2007) explain one such objectivist sociological position, which holds that:

*Social entities exist in reality external to social actors. An example of this type of entity is management. That management in a particular organisation has a reality that is separate from the managers that inhabit that reality.*

For example, he says, a researcher may adopt an objectivist position for a study having to do with management practice because even through a complete change in management personnel the management process is essentially unchanged. This assumes that management is a role independent of the manager as a person. Other social entities are things such as cultural norms and so-called institutions such as marriage (ibid.). The idea that social entities have real existence is aligned with structural functionalism, included in the positivist/structural-functionalist paradigm. Refer ahead to §4.5.2.

Objectivists view the culture of an organisation as something that an organisation has, rather than taking the subjectivist view that the organisation is a culture as a result of a process of “continuing social enactment” (Smircich, 1983). Management theory and practice, says
Smircich, prefers the objectivist orientation to culture, seeing it (culture) as a variable, something that can be manipulated in order to produce the sort of state desired by managers. It is just this sort of manipulation that is the greatest danger of the objectivist way of thinking, says critical social theory which is embraced by the critical-emancipatory paradigm, discussed ahead in §4.5.4.

3.3.1.2. System as ontology

Bertalanffy described the basic parameters of what we can call a systemic ontology, which he called “finding out the nature of the beast” and “how systems are realized at the various levels of the world of observation.” This simple statement turns out to be far more complex than it appears at first. Bertalanffy begins clearly enough. First, ‘real’ systems are to be afforded ontological status.

What is to be defined and described as system is not a question with an obvious or trivial answer. It will be readily agreed that a galaxy, a dog, a cell and an atom are real systems; that is, entities perceived in or inferred from observation, and existing independently of an observer. (Bertalanffy, 1968)

In other words he agrees with objectivism. But then he gets on the slippery slope:
On the other hand, there are conceptual systems such as logic, mathematics (but e.g. also including music) which essentially are symbolic constructs; with abstracted systems (science) as a subclass of the latter, i.e. conceptual systems corresponding with reality. However, the distinction is by no means as sharp and clear as it would appear. (ibid.)

He seems to be more willing to grant ontological status to abstracted “conceptual systems corresponding with reality” than to purely abstract conceptual systems that are “essentially symbolic”. He tries to clarify, but is in the end unable to find a line of demarcation between what is ‘real enough’ and what is not.

An ecosystem or social system is “real” enough, as we uncomfortably experience when, for example, the ecosystem is disturbed by pollution, or society presents us with so many unsolved problems. But these are not objects of perception or direct observation; they are conceptual constructs. The same is true even of the objects of our everyday world which by no means are simply “given” as sense data or simple perceptions, but actually are construed by an enormity of “mental” factors ranging from gestalt dynamics and learning processes to linguistic and cultural factors largely determining what we actually “see” or perceive. Thus the distinction between “real” objects and systems as given in observation and “conceptual” constructs and systems cannot be drawn in any
commonsense way. These are deep problems which can only be indicated in this context. (ibid.)

He essentially tries to divide what is merely perceived to be “in correspondence with reality” from what is “construed” through the use of higher abilities. The decision, then, as to what is real and what is not real on this basis simply cannot be made. Bertalanffy does not discriminate. Later, in the ontology of process, we will see that critics say that it is common for positivists to fall into the trap of reification, wherein they see ‘things’ which are merely construed.

General System thinkers may have generally agreed at the time with Ervin Laszlo who, in 1971, was to my knowledge the next to publish on the subject of systems ontology. To Laszlo, a systems ontology is simply “the general theory of system qua system” (1971, 1973). His system in the ontological sense is defined as having two basic varieties: mental and physical, or mind and matter. He, too, mounts the slippery slope. But rather than just admitting that his argument is unraveling as does Bertalanffy, Laszlo continues to take himself seriously (my remarks added in brackets):

...it is entirely consistent to assert that human conscious purposes could cause systems of this [tangible] kind to form. They would then be called “artificial” as contrasted
with “natural” systems. ... Classical conceptions of real things, as naturally originating solid particulars, must be surrendered as inconsistent when the more fertile perspective of organizational invariance is adopted as the criterion of real entities. And when we do adopt organizational invariance as the [ontic] criterion [!!!] then relative persistence, origin, substance, level of integration, manifest functions and properties, are so many specifications of characteristics of systems, and not touchstones of their reality. According to the here advanced theory, any organization of events that satisfies the state and function postulates of systems is real (concrete, veridical), and all such actualities are biperspectival, analyzable to physical as well as to mental sets of events. The consequent proposition, that transient social organizations, as well as artificially created machines, have mental events, must be accepted [!!!]: using the differentiation and functional level of integration of subsystems as the criterion of the mentality [nay, complexity] of the systems, we do not attribute anything like human minds to less organised systems. And if each of us has mind-events and is systematically organised, then other systemic organizations have mind-events in the analogously oriented introspective analysis. When organization is the criterion of existence, then it is also the criterion of mentality: the alternates are either an arbitrary cut-off point for mind, or the logically consistent but unfruitful tenet of solipsism\textsuperscript{14}.

\textsuperscript{14} Solipsism asserts that reality is only mental. See §6.4.
Essentially, Laszlo settles the ontological argument by granting ontological status to everything. The argument will be made later in this thesis that this concept of system as ontology does not serve the practitioner nor is it philosophically sound.

Laszlo’s was the last system-as-ontology to gain acceptance in the systems community. Others, generally based on pick-your-favorite isomorphy: hierarchy, emergence, holon, autopoiesis, dynamic equilibrium... have been suggested but none stands up to scrutiny for the same reasons. That there could be a systems ontology is an idea that was finally laid to rest with the coming acceptance of the interpretivist theories and those that followed (e.g. critical-emancipatory and postmodernist-poststructuralist) with their own, incommensurable paradigms.

3.3.1.3. Subjectivism

Subjective means dependent on the mind or an individual’s perception for its existence (Audi, 1999). Extreme subjectivism questions “whether there exists an external world worthy of study” [emphasis added] (Burrell and Morgan, 1979), but does not deny the existence of an external world. Subjectivism accepts the concept that ‘reality’ is created from the perceptions and consequent actions of social actors, and that these then have an external existence that can be objec-
tively studied. It also holds that social phenomena are created subjectively which, through the process of social interaction, these social phenomena are in a constant state of revision. To study the details of a situation, the researcher “must understand the reality or perhaps a reality working behind them” by exploring the subjective meanings motivating the actions of social actors in order to be able to understand those actions (Remenyi, 1998). To illustrate, says Remenyi, the position “that customer service in an organisation has a reality that is separate from the customers that receive that reality” is an objectivist view. The subjectivist view is that...

*customer service is produced through the social interaction between service providers and customers and is continually being revised as a result of this. In other words, at no time is there a definitive entity called ‘customer service’. It is constantly changing.* (ibid.)

Smircich noted that objectivists would say that culture is something that an organisation ‘has’, but that subjectivists would:

*...reject this as too simplistic and argue that culture is something that is created and re-created through a complex array of phenomena which includes social interactions, physical factors such as office layout to which individuals attach certain meanings, rituals and myths. ... It is the meanings that are attached to these phenomena by*
social actors within the organisation that need to be understood in order for the culture to be understood.... [but] because of the continual creation and re-creation of an organisation’s culture it is difficult for it to be isolated, understood and manipulated (Smircich, 1983).

3.3.1.4. Monism, dualism, ontological pluralism

The terms monism and dualism are needed to put ontological pluralism in the proper context. Monism is the belief that all that exists is made up of just one basic, or ontic type. One monist position is that all that exists is matter, accessible to us empirically; another is that all that exists is of the mind, of our own creation. Dualism admits to the existence of both mind and matter, what philosophers call ‘subject’ and ‘object’, respectively. Midgley (2000) says that objectivism relies on the concept of subject/object dualism, which in its naive form requires the real existence of boundaries. Subject/object dualism, he says, is a view of the world which holds that there are independent objects which are observed by subjects who observe from the outside, without influencing the objects. With respect to what is observed, the observer is on the outside and the boundary between them is a real one.

The concept of ontological pluralism is the general belief that reality has many different origins and takes many different forms, such as
mind, matter, “other” (Lacey, 1986) or “many temporal and eternal kinds” (Whitehead, 1929). In this research project ontological pluralism is an central concept. I explore the notion that there are many valid ontologies and seek to provide a contrast with other theories which specifically limit the domain of ontic types.

3.3.1.5. Language as ontology
According to cognitive theories such as reflexivity and phenomenology (discussed later), language in the broadest sense is the stuff of reality. Radical reflexivity is one form which focuses on discourse, or the use of language. Cunliffe (2008b) says that “language constitutes thought” and that “reality is constructed in the process of discourse.” The postmodernist-poststructuralist paradigm sees language at the ontological level and considers it a constraint which limits our ability to ‘know’ anything with certainty. See §4.5.5, ahead.

3.3.1.6. Process ontology, emergence, or becoming
The postmodern traditions have the latitude such that many ontologies are admissible because of its central theme that “there is no single reality to be described” (Craib, 1992). Because reality is infinitely complex, say others, it is ultimately unknowable (Taket and White, 1996). One such ontology directly related to this research project is that of process, emergence, or becoming. With this ontology, accord-
ing to Chia, organisation studies takes on a new and radically different dimension.

Instead of thinking about organizational analysis as concerning the analysis of organizations or the analyses of theories of organization, it can be more fruitfully conceived as a critical intellectual practice of deconstructing or dismantling the logical and rhetorical structures of language. This is the intellectual orientation adopted by a postmodernist reading of organization. It is one inspired by an ontology of becoming (Chia, 1996).

Wood (2005), whose research centres on the cutting edge of organisation and management theory, identifies reification (giving a concept the status of existence) as a crutch used by objectivists who see ‘things’ but which are actually only emergent properties of underlying processes. Reification is also a central theme for Chia, but where Wood sees emergence, Chia sees becoming.

Adopting an emergent and processual approach in social analysis enables us to avoid the problems of reification of social entities such as ‘individuals’ and ‘organizations’ and, instead, directs our attention to the underlying organizing processes which create these effects that are then subsequently taken to be concrete existing entities in their own right. ...the process of reification or objectification is [mistakenly] effectively ‘forgotten’ in the recon-
struction of events thereby enabling the observer/theorist to believe in the prior existence of social entities such as organizations. Once the existence of such entities is accepted, it is not difficult to see how the modernist/representationalist discourse can be legitimated and sustained. To break this theoretical closure in modernist thinking, postmodern writers insist upon the necessity to explain how modern knowledge, in particular the organizational codes they implicitly rely upon, structures our thinking processes enabling us to thereby generate these social effects. Thus, postmodern thinking enables us to see that theories of organization, as institutionalized modes of thought, are themselves outcomes of primary organizing processes. What all these imply is that we need to begin to think of ‘organizations’ not as ‘things’ whose properties such as unity, identity, permanence and structure can be explored and described, but rather as loosely emergent sets of organizing rules which orient interactional behavior in particular ways within a social collectivity. In short, the study of organization should involve the study of the emergence of organization rather than the relatively static features displayed of this constitutive process. It is this ‘upstream’ attitude towards organizational inquiry which is adopted here. (Chia, 1996)

3.3.2. Epistemologies

One of the three roots of philosophy (the other two being ontology and ethics), epistemology concerns what constitutes acceptable
knowledge in a field of study (Saunders, Lewis, et al., 2007) and is concerned with issues such as: truth, answers, description, theory, method, justification, dialectic, investigation, thinking, the human perspective, the focus on relationships between variables and even time. Epistemology investigates the nature of knowledge, its possibility, its scope and limits and the processes of acquiring and possessing it. Related to the acquisition of knowledge, epistemology also concerns itself with issues such as: perception, memory, proof, evidence, belief and certainty (Georgiou, 2007).

Epistemologies are concerned with what constitutes acceptable knowledge in a field of study. Across epistemologies, the most important distinction is what the researcher considers important in what they study (Saunders, Lewis, et al., 2007).

Of the three main components of theory (ontology, epistemology, methodology), epistemology is the one most concerned with consciousness. In fact, consciousness can be defined in terms of epistemology. Consciousness is, says Georgiou,

...that phenomenon which enables the human being to epistemologically engage with other phenomena. Instead of being a purely instinctual or reactive phenomenon, consciousness actively enables knowledge and its manipulation and so, at root, consciousness is epistemologi-
Epistemologies are not stand alone and self contained. They are one part of a greater philosophical-theoretical-practical spectrum constituting a framework of ideas. An imaginative way of expressing that is to say that an epistemology ‘exists’ between an ontology (which provides and supports the world which the epistemology seeks to understand and evaluate) and methodologies (which prescribe ways of working in the world with that understanding). Methods are then actions guided by methodological concepts to intervene in some specific ‘situation of concern’.

As with ontologies, this thesis is concerned with only a few of the many published epistemologies—those related to this study in systems thinking. The reader is directed ahead to a more thorough discussion in the context of the paradigm.

- modernism (§3.3.2.1)
- anti-realism (§3.3.2.2)
- positivism (§4.5.2.1 and Figure 8)
- structural functionalism (§4.5.2.3)
- interpretivism (§4.5.3)
- social constructionism (§3.3.2.3)
• critical social theory (emancipatory) (§4.5.4)
• critical systems thinking (§3.3.2.5)
• realism, critical realism (§3.3.2.6)
• postmodernism (§4.5.5)

3.3.2.1. Modernism

The traditional epistemology of the scientific method, modernism insists upon investigation and reliable proofs, rejecting older traditions such as rote and repetition and dogma which, due to its successes, it has almost completely displaced. Its acceptance since the late 19th Century has continued to spread. Some call it the first epistemology. Other epistemologies have since emerged but they are lesser known by far. To most, modernism is considered the only acceptable epistemology and is often resolutely defended as such. Glasersfeld, the famous constructivist once complained that “a vociferous faction led by the Académie des Sciences de Paris would like to chain epistemology to the Newtonian model of the universe” (Glasersfeld, 1999).

Reductionism is a more specific type of modernism that follows the logic that a thing can be understood in terms of its parts. Jackson (1997) explains that because of its reliance on reductionism, modernism is the wrong way to deal with systemically complex problems. In
fact, this was the impetus for the creation of systems thinking as a discipline.

*Complex problems involve richly interconnected sets of ‘parts’ and the relationships between the parts can be more important than the nature of the parts themselves. New properties, ‘emergent’ properties, arise from the way the parts are organized. Even if the parts constituting a complex situation can be identified and separated out, therefore, this may be of little help because the most significant features, the emergent properties, then get lost. Further, although in the natural sciences it is often possible to test ... Finally, in seeking to understand and intervene in social systems, people are inevitably at the center of the stage. It is necessary to take into account different beliefs and purposes, different evaluations of the situation, the danger of self-fulfilling prophecies, and the sheer bloody-minded capacity of individuals to falsify any prediction made about them.* (Jackson, 1997)

3.3.2.2. Anti-realism

Anti-realism is a category of philosophy begun as a rejection of classical realists’ assertions. It includes the philosophical tradition of idealism, which asserts that all that exists is some variation of mind or spirit. There is also a very new line of thinking called *correlationism*, which is "the idea according to which we only ever have access to the correlation between thinking and being, and never to either term"
considered apart from the other” (Meillassoux, 2008). This is a line of reasoning which seems to be in alignment with Maturana’s work (see especially §6.8).

3.3.2.3. Social constructionism

Social constructionism views reality as being socially constructed and is focused on ‘reality’ in its internal existence. Giambattista Vico’s famous maxim is that humans can know only what they themselves have constructed (Vico, 1708). Human actors seek to make sense of their world

... through their interpretation of events and the meanings that they draw from these events. In turn their own actions may be seen by others as being meaningful in the context of these socially constructed interpretations and meanings. (Smircich, 1983)

Social actors may place many different interpretations on the situations in which they find themselves as a consequence of their own view of the world, or micro-paradigm (§3.2.3). These different interpretations are likely to affect their actions and the nature of their social interaction with others. In effect, what happens externally is consequential. Social constructionists see everything as, in some way, a social construction. This is not to say that they see the world as ontologically unreal. Rather, they propose that the notions of real and un-
real are themselves social constructs, so that the question of whether anything is real is just a matter of social convention (ibid.).

Since its conception in Berger and Luckman’s *Social Construction of Reality* (1966), social constructionism has proved its usefulness and affinity in interpretive social and systems studies. Reflexivity, increasingly considered essential to qualitative investigation, is one of its derivatives. Other methodologies such as conversation analysis, coding and content analysis, discourse analysis, autoethnography, narrative analysis, semiotics and social poetics owe to it their existence. “I know the world as socially constructed,” says Etherington. “Social constructionism has challenged modernist notions of truth and reality, and invited us to explore how meanings and identity are created through language, stories and behaviour, and to think about how we know what we know” (Etherington, 2004).

However, I believe the strict-constructionist’s view that ‘reality’ depends on social convention is a form of relativism which must be rejected on logical grounds because it does not acknowledge any form of objective existence. The objective existence of so-called ‘real’ things must be granted because their existence can be proved by their affects. (Try doing without ‘real’ air for a few minutes, for example.) The ontological stance of relativism taken by strict-social-
constructionism regarding objective reality is therefore flawed, but perhaps it is merely incomplete (see Chapter 6: subject-object dualism, the P–S ontology).

3.3.2.4. Constructivism

Constructivism is a theory describing how learning happens. “Social constructivism views each (personal) learner as a unique individual with unique needs and backgrounds. The learner is also seen as complex and multidimensional. Social constructivism not only acknowledges the uniqueness and complexity of the learner, but actually encourages, utilizes and rewards it as an integral part of the learning process” (Wertsch 1997).

“The theory of constructivism is generally attributed to Jean Piaget, [and importantly to cybernetics, von Glasersfeld (1989)] who articulated mechanisms by which knowledge is internalized by learners. He suggested that through processes of accommodation and assimilation, individuals construct new knowledge from their experiences. When individuals assimilate, they incorporate the new experience into an already existing framework without changing that framework. This may occur when individuals’ experiences are aligned with their internal representations of the world, but may also occur as a failure to change a faulty understanding; for example, they may not notice events, may misunderstand input from others,
or may decide that an event is a fluke and is therefore unimportant as information about the world. In contrast, when individuals' experiences contradict their internal representations, they may change their perceptions of the experiences to fit their internal representations. According to the theory, accommodation is the process of reframing one's mental representation of the external world to fit new experiences. Accommodation can be understood as the mechanism by which failure leads to learning: when we act on the expectation that the world operates in one way and it violates our expectations, we often fail, but by accommodating this new experience and reframing our model of the way the world works, we learn from the experience of failure, or others' failure.” (ibid.)

3.3.2.5. Critical systems thinking

Epistemology is reflection on the gaining and disseminating of knowledge and on the validity of that knowledge... [But reflection] tells us absolutely nothing about how to deal with our inescapable lack of comprehensive knowledge and understanding... Critical, or self-reflective, ideas amount to an adequate epistemological ideal for social inquiry in terms of systems rationality, sociological epistemology, and of course systems practice. (Flood and Ulrich, 1990)

The critical systems epistemology is an approach to systems practice that is closely associated with the theory called 'critical systems
thinking’, the subject of §4.4, where the epistemology is explained within the larger theory. Please also refer ahead to the critical-emancipatory paradigm, §4.5.4.

3.3.2.6. Realism, critical realism

Based on objectivist ontology, realist epistemology therefore sees meaning ’out there’ and available to us, awaiting its discovery. There are several different ‘flavours’ of realism each with its own qualifications allowing for varying kinds of uncertainties, particularly when it comes to the human involvement in that reality ‘out there.’ Social realists (e.g. structural functionalists, §4.5.2.3) perceive social reality as having a hard, objective existence, external to the individual (Jackson, 1999). Direct realists, on the right, so to speak, say simply that what you see is what you get: what we experience through our senses portrays the world accurately. Whereas, to the left, the critical realist understands that complete reliance upon our senses can be misleading. Critical realists assume that...

There are sensory illusions and things aren’t always what they seem to be. First, there is the thing itself and the sensations it conveys. Then, there is mental processing that goes on sometime after that sensation meets our senses... As researchers we will only be able to understand what is going on... if we understand the... structures that have given rise to the phenomena that we are trying
to understand. What we see is only part of the bigger picture. We can identify what we don’t see through practical and theoretical processes of the... sciences. (Bhaskar, 1989)

Critical realists argue that what we experience are sensations, the images of the things in the real world, not the things directly. Critical realists point out how often our senses deceive us. What we really see are representations of what is real. (Saunders, Lewis, et al., 2007)

Critical realism, according to Saunders, Lewis et al. (2007), is the norm today for approaching problems in business and management:

We would argue that the critical realist’s position that the social world is constantly changing is much more in line with the purpose of business and management research which is often to understand the reason for phenomena as a precursor to recommending change.

3.4. Approaches to the problem of paradigm incommensurability

Although it has long been the goal of critical systems theorists to reconcile this issue and, as we shall see, many attempts have been made, there is currently no proper unifying theory which completely supports, explains and operates in a world in which multiple para-
digms coexist and co-operate or coordinate between and amongst themselves; no theory from which informed methodological pluralism emerges naturally allowing us to draw upon the great diversity of existing theories and methodologies. That is, none which are:

- explicitly multiparadigmatic (using Burrell, Morgan and Smircich’s concept of paradigms as onto-epistemological groups of theories)
- explicitly multimethodological (calling upon the use of existing methodologies which may be from different paradigms as needed in the same project)
- theoretically coherent and consistent (not suffering incommensurability, not suffering epistemological relativism)

It has been said that paradigm incommensurability must be acknowledged and that “we must learn to accept a degree of incommensurability” (Jackson, 1997). “Unless we abandon the idea of paradigm altogether” says Zhu (2009), “it [incommensurability] will not go away and it cannot just be ignored.”

The premise of the thesis is that if a suitable multiparadigmatic theory could be developed to support the positivist/structural-functionalist, interpretivist, critical-emancipatory and postmodernist-poststructuralist paradigms (without changing or subsuming them), it would be possible to build a proper theoretical framework around it.
(i.e. ontology, epistemology, and methodology) where the methodology is a multiparadigm multimethodology such as those which already exist but suffer from incommensurability and relativism issues.

Most anomalies are resolved by normal means; most proposals for new theories do prove to be wrong. If all members of a community responded to each anomaly as a source of crisis or embraced each new theory advanced by a colleague, science would cease. If, on the other hand, no one reacted to anomalies or to brand-new theories in high-risk ways, there would be few or no revolutions. (Kuhn, 1962, 1996)

There are four known approaches to the problem of paradigm incommensurability:

- atheoretical pragmatism
- complementarism / bridging
- metaparadigmatic / subsumption
- creation of a new paradigm

Each of these approaches has been proposed and are critically reviewed in the sections to follow. All except the last have proven flaws. The last approach, that systems theorists should lay claim to a new paradigm is the jumping off point that inspires the solutions that are
the main products of this research project—a theoretical framework for a different approach to systemic practice which includes a new ontology, epistemology and methodology.

Of course, there are other ways to classify theories besides their onto-epistemological assumptions. If paradigm incommensurability is such a problem say some, why not just abandon the idea of ‘paradigm’ as we know it (Zhu, 2010)? The basic message of the pragmatists is that there are problems or difficulties with using any theory. Each situation is unique, they say, so why be tied to any theoretical approach? Pragmatism is the subject of the next section. Others may call for other ways to classify methods that avoid the concerns of ontology and epistemology, but every philosophical or theoretical approach (including this research) does make implicit if not explicit assumptions about the problem situation itself and its environment (ontological assumptions); and it has some rational way to express its concepts of the situation, what it is that is of concern (epistemological assumptions).

Given this, I suggest we educate ourselves and leverage those assumptions to our advantage, rather than minimise their importance. Participant 2 says in her interview (ahead) that “to the man who has a hammer, everything is a nail; but what if all you have is a ham-
mer?” Look for other tools! The tool you use must be the proper tool for the job that needs done or you end up with a mess. I believe systems will continue to evolve by adding to and improving the paradigms as we improve our understanding of problems and opportunities and gain new abilities to engage with them more effectively.

Midgley, et al. (2007), for example, have a new framework for evaluating systemic participative methods which takes account of a wide range of other considerations which are relevant to the evaluation and use of different methods, considerations which are matters of concern to all four paradigms.

3.5. Pragmatism

In discussing pragmatism I will use the definition of pragmatism given by Jackson (1987b), more correctly referred to as atheoretical pragmatism and not to be confused with other forms such as Ulrich’s ‘critical pragmatism’ (2007), or American pragmatism which is the basis for Churchman’s social systems design (1968, 1979). American pragmatism is actually “one of the philosophical traditions that has informed the development of critical systems thinking (and from which as Brauer (1995) notes, we still have much to learn” (Midgley, 1997b).
Despite the ‘direct connection’ some say that a pragmatic approach affords them, Flood and Romm point out out the dangers atheoretical pragmatism which could make for irresponsible practice:

No apparent reference is made to inferable underlying theory or methodological rules. There is no reflection about which theory or methodology is relevant, when, or why. Practitioners have some command over the tools that they use and find out about, more or less, by trial and error. It is a rather weak heuristic approach. This may lead to unfortunate social consequences through heuristic in vivo experimentation on social situations, running the risk of unnecessary levels of damage and distress. Furthermore, a preconceived, pre-structured appreciation of the situation is likely to prevail giving rise (effectively) to predetermined solutions. In this way a pragmatic approach is likely to maintain or even increase the power of elites... Pragmatism accepts a form of non-reflective eclecticism. (Flood and Romm, 1995a)

Pragmatism is an alternative approach to practice which de-emphasises the role of theory, focusing instead on what has been shown to produce practical results in the past or upon the reasoned skills of an expert practitioner. Pragmatists may settle for a form of pragmatism kept up-to-date with contemporary scholarly thought (Ruwhiu and Cone, 2010), but even this pseudo-critical pragmatism
can degrade into *ad hoc* tactics which are hit-or-miss, trial-and-error, or inspired by the call to “let’s just do what worked the last time.” I believe that systemic interventions enacted without the grounding and guidance from theory are not suitable for complex situations—when the risks are high, the costs of failure too dear, especially when other people’s lives are affected. As opposed to merely rationalising past performances retrospectively,

> The practical importance of theory is that it can transform practice... by exposing and correcting cognitive errors implicit in that practice. (Collier, 1994)

And, because it is explicit, a theory can be transformed so that it always informs and remains relevant. “The proper test of theory,” said Whitehead (1929), “is not that of finality, but of progress.”

Pragmatists are concerned with developing a flexible and responsive practice to systemic intervention, says Jackson (1987b), “by bringing together the best elements of what may appear to be opposing strands [of management and systems thought] on the criterion of what ‘works’ in practice.” That in and of itself is not a bad thing, but the central problem is that because they are “distrustful of theory,” the pragmatic approach lacks credible theoretical support. Instead, “proven techniques... are employed together in the course of
problem-solving if the situation warrants it” (ibid.). Flood (1989) explains why this is problematic in an allegory:

*The craftsmen [of old] were able to build complex structures using their own tool kit but had no idea why the thing stood up, why a beam fixed one way cracked but fixed another way did not. They only knew how to do it from the practice of trial and error.*

Refer ahead to the interview with Participant 9 where this fundamental failing of pragmatism arises in the context of the classroom.

A pragmatist might try to justify pragmatism because of the difficult problems that philosophy sometimes presents. An example is the problem of paradigm incommensurability which I claim has been unresolved since Burrell and Morgan. To the pragmatist, it seems the theorists are relativists, anyway:

"Why, it is simply not logical," the pragmatist would say, "that one could accept one ontology (which by definition defines the stuff of reality and denies the existence of all else) one moment, then simply throw it out and accept another. Only a supreme being could possibly recreate reality to suit a (somehow) preexisting situation. And you and I would not survive to tell of it!” Flood (1989)
Implicitly acknowledging such paradoxes, pragmatists adopt the philosophy that philosophy (all but theirs) does not matter so much and should be de-emphasised (Midgley, 1989a; Taket and White, 1996).

Wendy Gregory (1996a) describes pragmatism thus:

According to Jackson [1987b], a pragmatist will use whichever “tool” appears suitable for tackling the particular situation s/he has been made aware of. Here, choice of methodology will be based purely on personal experience rather than theory (Flood, 1989). Since any systems practitioner is able to choose which methodology to employ (the argument runs), s/he is obviously able to “jump” between paradigms depending on the problem situation being faced, and the chosen methodology. However, such movements between paradigms are never made explicitly, and could not be communicated in a rigorous, theoretical way to other practitioners (Midgley, 1989a). ... Pragmatists do not undertake reflexive inquiry, preferring instead to simply use whatever works in practice. They rely on “trial and error” learning to guide their usage. (Flood, 1989)

Perhaps, though, pragmatism may become the default method for investigation in the case of a totally novel situation, when a bizarre situation is initially approached with reasoned hypotheses, by probing and trial-and-error tests. Solutions are not too infrequently reverse
engineered, after all. Also, in the experiment (Chapter 8) I was very surprised to learn of another case for pragmatism: giving a demonstration is an effective, pragmatic way of introducing a theory by showing its method to be effective first, before explaining the theory. Another attraction, as postmodernists are wont to tout, is that it can be fun. We should, they say, look for opportunities to have fun with what we so seriously call our ‘problems of concern’ (Taket and White, 1996). Pragmatism is discussed again in the next chapter and in §4.5.5, the section on the postmodern-poststructural paradigm of critical systems thinking.
Chapter
4. Systems thinking, critical systems thinking, paradigms of critical systems thinking

4.1.1. Introduction

The pioneers of system theory had grand visions, among them the unification of the sciences with a common language for solving problems of all kinds in even the most complex cases. In General System Theory (GST), systems are said to exist as components in interaction within some environment. Various aspects or qualities of systems are identified: holism and the idea of emergent properties, isomorphism, open systems in dynamic equilibrium, networks, cycles and flows, hierarchy, synergy, resilience, etc. Yet, more than seventy years later, the systems community remains relatively small and our field is not generally known to the public. What has frustrated our grand dreams? What is causing the ever-increasing divergence of our once-unified field of theories and methods? Why do we hear one systems practitioner say to another “What you do has absolutely nothing to do with what I do”; or worse, “The way you think makes no sense to me”? If you were to ask nine systems practitioners “What do you mean by ‘system’ and ‘systems thinking’” you likely to get nine different answers. Using metaphor as a conceptual tool, Jackson
(2003a, b) has said that one might rightly say that systems are like machines, or that systems are like organisms or they are like brains, or teams, or all flux and transformation; or systems are cultures, systems are political, systems are psychic prisons, instruments of domination, or even that they are like carnivals! It is clear that ‘systems’ and ‘systems thinking’ no longer fits inside its original home of general system theory. The variety of what we call ‘systems’ is great, as are the many ways to approach them with ‘systems thinking’.

In the past, when the methods available at the time were found to be inadequate or even inappropriate when applied to a particular class of problem context (that is, when practice overstepped the boundary of its successful applicability), an entirely radical, new way of looking at and dealing with the problem would eventually emerge and obsolete the contemporary milieu. For example, scientific enquiry replaced widely believed myths; germ theory replaced what was thought to be miasma or ‘bad air’, biological reproduction displaced spontaneous generation. Kuhn (1962) gave us the term paradigm to describe these milieus or worldviews. In terms of advancing science, eventually the old paradigm was overthrown and the new paradigm took its place. He called each of these transitional periods an epistemological crisis.
Burrell and Morgan (1979) translated (i.e. moved) this concept as a way to view different approaches to organisational analysis and defined four sociological paradigms. Importantly, although they break with each other epistemologically, these sociological paradigms do not replace their antecedents, but are considered to remain valid, concurrently. That is, they are all valid but different onto-epistemologically. The use of the term ‘paradigm’ throughout this dissertation is not meant in the Kuhnian sense, but from Burrell and Morgan.

4.2. General system theory

The following quote, wherein Ludwig von Bertalanffy introduces his General System Theory (GST), is especially relevant. Although some of the concepts he speaks of are understood today in different terms, they are nonetheless fundamental to this research.

> Entities of an essentially new sort are entering the sphere of scientific thought. Classical science in its diverse disciplines, be it chemistry, biology, psychology or the social sciences, tried to isolate the elements of the observed universe—chemical compounds and enzymes, cells, elementary sensations, freely competing individuals, what not—expecting that, by putting them together again, conceptually or experimentally, the whole or system—cell, mind, society—would result and be intelligible. Now we
have learned that for an understanding not only the elements but their interrelations as well are required: say, the interplay of enzymes in a cell, of many mental processes conscious and unconscious, the structure and dynamics of social systems and the like. This requires exploration of the many systems in our observed universe in their own right and specificities. Furthermore, it turns out that there are general aspects, correspondences and isomorphisms common to ‘systems.’ This is the domain of general system theory; indeed, such parallelisms or isomorphies appear—sometimes surprisingly—in otherwise totally different ‘systems’. (Bertalanffy, 1968)

As I see it, Bertalanffy defined general system theory as having ‘systems with isomorphies between them’ as its ontology. ‘System-ness’ then could be said to exist in and between things and that is what was to be studied, epistemologically. Fuenmayor and López-Garay (1991) said of it:

The onto-epistemological claim for ‘wholeness’ is immediately found in its core. The ontological statement, ‘Things (phenomena) are wholes which transcend the mere collection of their parts,’ is logically followed by the epistemological claim stated as ‘Things (phenomena) should be studied as wholes and not as mere aggregates of parts.’
The systems onto-epistemological claim is that phenomena cannot simply be reduced to their physical abstraction and then be analysed (decomposed in parts). That would imply losing their ‘emergent property’ or holistic sense.

It is worth interjecting here that general system theory (GST), as I have already said, aspired to be accepted amongst the other sciences. It gives away its objectivist ontology and positivist epistemology (see §3.3.1.1) in phrases like ‘quantifiable measurements’, ‘models of reality’, ‘mathematical descriptions’, and in studies of GST by its own proponents, as in this one by Laszlo which implies a reliance on a knowable, objective and law-like ‘scientific’ universe.

Consider, then, the here advanced hypothesis as a conceptual model, of the systems theoretical species, mapping into potentially quantifiable constructs certain recurrent general features of the scientifically observable universe. ... General systems synthesis, I suggest, is the building of models of models. (Laszlo, 1975)

4.3. Divergence as diversity – a system of systems methodologies

Critical systems thinking as a category of theory had its origin in the article Towards a System of Systems Methodologies (Jackson and
Keys, 1984); its raison d'être being to organise the dozens of systems methodologies by their ‘affinity’ or effective appropriateness to particular categories of problem situations and to guide the practitioner to their more appropriate selection. In A System of Systems Methodologies (SoSM), Jackson & Keys classified problem contexts by each of two aspects: the systems type: mechanical or systemic; and the participants’ relationship to it: unitary or pluralist, referring to whether or not there is consensus on the problem as it is understood. The coercive relationship (whether or not there are issues of power and control, or coercion,) was added soon thereafter (Jackson, 1987a). Other methods of classifying systems also existed at the time; for example, Bánáthy’s (1987) five major types of systems: rigidly-controlled, deterministic, purposive, heuristic, and purpose-seeking (Oliga, 1988) was also intended to help the systemist choose an approach. In an attempt to match Bánáthy’s scheme with Jackson’s system, I have merged them in the following table:
<table>
<thead>
<tr>
<th>Participants' relationship</th>
<th>System: Mechanical</th>
<th>System: Systemic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unitary</td>
<td>Mechanical-unitary (Rigidly Controlled, Deterministic): Classical OR, Systems Engineering, Systems Analysis, (Living systems process analysis, Management cybernetics)</td>
<td>Systemic-unitary (Purpose): Organizational cybernetics, Socio-technical systems thinking, General systems theory, Modern contingency theory, (Living systems process analysis, Systems design)</td>
</tr>
<tr>
<td>Pluralist</td>
<td>Mechanical-Pluralist (Heuristic): Dialectical inquiring systems, e.g. SAST; (Double-loop organizational learning)</td>
<td>Systemic-pluralist (Purpose Seeking): Interactive planning, SoSM.</td>
</tr>
<tr>
<td>Coercive</td>
<td>Mechanical-Coercive: methodologies yet to emerge</td>
<td>Systemic-Coercive: methodologies yet to emerge</td>
</tr>
</tbody>
</table>

Table 1. A System of Systems Methodologies (Flood and Jackson, 1991b), plus Choosing Design Methods (Bánáthy, 1987) in parentheses.

Regarding its adoption, Jackson identifies and acknowledges some difficulties with SoSM in identifying the problem context. The wider the system’s boundaries are drawn, for example, the more likely is the problem context to become systemic-pluralist (i.e. more systemically complex and less-well agreed by the principals). Also, the way
any problem context is perceived is going to depend very much on the individual who is observing it—on the available information and on their unconscious Weltanschauung, or worldview.

Jackson and Keys’ framework was the first to focus on and classify the variety of problem situations and to match those types with an appropriately categorised group of systems methodologies according to the assumptions they each made about the problem scenario. It imagined the whole set of systems methodologies as individually complementary across the spectrum of systemic scenarios. Although not thought of in those terms at the time, in retrospect we can see that it was implicitly multiparadigmatic. These paradigms were unitary-pluralist-coercive/mechanical-systemic, not yet onto-epistemological worldviews. And ‘A System of Systems Methodologies’ was not yet a multimethodology. Nevertheless it catalysed several successive generations of of improvements—all from its then-radical idea that systemists could leverage philosophical divergence by re-imagining methodological diversity as complementarism by considering the relative merits of each approach with respect to the presenting situation.

The theory is critically reviewed ahead in §5.4.3.
4.4. Critical systems thinking

In 1985, Jackson introduced critical systems thinking, an evolutionary step forward in categorising the methodologies of systems thinking in deeper terms; ontology—the constitution of the world in which a theory assumes it operates, and epistemology—the world's values and the knowledge we can have of it. Four groups of these onto-epistemological assumptions form the 'paradigms' of critical systems thinking. They are discussed in the sections just ahead. The theory itself is reviewed in §5.4.5.

In his book, *Systems Approaches to Management*, Jackson (2000) distills the essence of what it means to operate in each one of the paradigms of critical systems thinking. With each of his ‘generic’ methodologies he takes a bottom up approach, explaining each of their philosophies in four easily digested packages. The book presents them as though they are general "constitutive rules." Their *application* may be to methodology, but they are, themselves, epistemological. I use them as the basis for the definitions of the paradigms because they are given in terms that are accessible to the systems practitioner. See the following sections.
4.5. Paradigms of critical systems thinking

4.5.1. Historical development

One would surely construct a modern taxonomic ‘family tree’ of systems philosophy beginning with Bertalanffy’s General System Theory (1950) as the trunk. The remaining parts of the tree, its various branches and leaves, could be constructed to illustrate any one of a number of different perspectives on systems thinking. Flood and Gregory (1989) identified these four approaches to writing a history:

1. Linear, chronologically sequential.
2. Structuralist, branched by structural developments. This model is scientific.
3. A world-view, or cognitive, psychological model. By ‘gestalt’, or ‘epistemological break’.
4. Genealogical; networks cutting across discourse; dynamic, power-relations focused. Seeking “to reveal history in all its nuances, subtleties and violence.”

To construct a tree to illustrate a paradigmatic classification of theories and methods as put forth in this dissertation, method three applies. According to this view there are four primary branches—the paradigmatic ‘worldviews’ of critical systems theory: functionalist-structuralist, interpretivist, critical-emancipatory, and postmodern-
poststructural. These paradigmatic branches in turn support and organise each specific system theory by its date of introduction. Branches of the tree fork when an old theory is improved or a new theory introduced. Altogether, the variety suggests incremental and evolutionary advancement in each specific area of systemic understanding. We can imagine twigs to represent each methodology of any particular theory, and leaves for the various methods employed, or actions taken in real situations. The following diagram illustrates one such view.

Figure 7. Branching structure of systems theories by paradigm.
Before the concept of paradigm was established, other worldviews and ways of organising systems thinking had been devised. Most sought to ‘systematise’ the world specifically in one, two or three dimensions; for example: Boulding’s (1956) nine categories of systems complexity, Beer’s (1967) systems classes according to their susceptibility to control, Checkland’s (1971) systems map of the universe in five classes, Jordan’s (1981) taxonomy of eight cells from three dimensions, and Deetz’s (1996) four dimensions of discourse (Mingers, 2001, p.249). In a System of Systems Methodologies, Jackson and Keys (1984) used two dimensions: systems in the world were seen as

1. either **unitary** or **pluralist**, i.e. whether or not those involved agreed as to the nature of the system being considered; and

2. systems were either **simple** or **complex**. (*Coercive* was added to this dimension less than a year later (Jackson, 1985).)

The first publication I could find which classified systems theories in terms of ‘ontology’ and ‘epistemology’ and which spoke of ‘paradigms’ is Fuenmayor’s (1985) thesis wherein he identified positivism and interpretivism.

“*What is the relation between wholeness and Being?*, "*Is it possible to have holistic knowledge?*, "*If so, how should we search for it?*” …
Towards a Framework for Multiparadigm Multimethodologies

“The discussion about the ill-definedness, the lack of theoretical rootedness, and the non-critical character of a systems approach becomes much clearer if we bear in mind the difference between those two meanings/intentions stemming from the notion of wholeness.”

If a systems approach is to be liberated to the cogitative realms of free inquiry and scientific endeavour, it would need a systems theory upon which to be formally based. Obviously, a systems theory founded on the idea of wholeness should conceptually develop the “central intuition” of “wholeness.” This means that a systems theory requires a systems philosophy comprised of both ontological and epistemological aspects. A systems ontology would present an answer to the question: “What is it that makes the whole more than the sum of its parts?” That is, “What is this central intuition of wholeness?” A systems epistemology would treat the possibility and boundaries of knowledge with regard to wholeness, as well as how that knowledge can be methodically sought. (Fuenmayor, 1985)

Fuenmayor’s theory, interpretive systemology, is the subject of §5.4.4.

Total Systems Intervention, or TSI, was the first to call itself a multi-paradigmatic systems theory. As originally conceived it was called a 'meta-theory’ encapsulating and directing the use of the others: the
functionalist and interpretivist paradigms, and the newly-named ‘emancipatory’ paradigm. TSI called for a ‘critical’, or self-reflective (i.e. reflexive) approach to systems intervention, thereby co-opting the term ‘critical’ from the social sciences... to which it gave instead the term ‘emancipatory’ (see Jackson, 1989). The radical ‘postmodern’ or ‘post-structural’ paradigm was subsequently advocated for by systems thinkers, for example Taket and White (1993); and the meta-paradigm, ‘critical systems thinking’ was merged with the emancipatory paradigm to become the ‘critical-emancipatory’ paradigm (see Fuenmayor, 1991).

The theories which make up a paradigm have essentially like-constructed realities—common underlying or compatible ontologies and epistemologies—plus their own member methodologies. Each paradigm is therefore associated with a set, or family, of methodologies. The ‘perspectivity’ afforded by a particular paradigmatic view is therefore shaped and constrained ontologically and epistemologically. Ontologically we ask, “What is the nature and makeup of the world?” and epistemologically we ask, “What are the various approaches to knowing and understanding the world, our values and beliefs?” The consequent methodologies express guidelines for ways in which we would interact with the world and which, when operationalised, be-
come actionable methods (Burrell and Morgan, 1979; Flood and Jackson, 1991a; Midgley, 2000). The systemist benefits a great deal from the concept of paradigms. Rather than having to deal with a different understanding of reality for each theory, the paradigm delimits the general worldview for all its associated theories.

The remainder of this chapter sets out the theoretical landscape for the current practice of critical systems thinking in terms of the paradigms broadly accepted by its academics and adopted by its practitioners. Beginning with positivism/structural-functionalism and ending with postmodernism-poststructuralism, I approach them in a natural (historic) order because it is this perspective which seems to best convey their reason for being. Each new paradigm can be seen as a response to a crisis built up from the various anomalies, failings and dilemmas encountered by practitioners operating within the theoretical framework(s) of their day. As first understood by Kuhn (1962, 1996),

*Each new paradigm is preceded by such a period of crisis which catalyses a relatively chaotic interregnum when various diverse, pragmatic, and trial-and-error attempts are made to synthesize methods which, as witnessed by their success, demonstrate a more comprehensive understanding of the then-problematic situation.*
An ‘epistemological break’ occurs when a new theory is accepted and supplants the dominance of the old. Kuhn said that the new epistemology effectively destroys the status quo. Burrell and Morgan’s (1979) work, later updated by Morgan and Smircich (1980) established the contemporary understanding of paradigms as coexisting social paradigms whereby each one has validity and utility within its own conceptual domain.

The first epistemological break in systems theory was from positivism and structural functionalism to interpretivism, marked by Checkland’s (1981) Soft Systems Methodology (SSM), which called for:

*...moving away from instrumental control of positivist approaches towards a mutual understanding through interpretivist systems thinking...* (Flood and Ulrich, 1990)

Other interpretivist approaches followed, include cognitive mapping (Eden and Ackermann, 2001), and strategic choice approach (Friend, 2001). See the list in §4.5.3.

The paradigms that followed positivist/structural-functionalist are social (people-centric) paradigms. What Craib says about social paradigms is worth remembering. “A value judgement [epistemology] about the ideal society underlies *any* social theory” (Craib, 1992).
4.5.2. Positivist/structural-functionalist

General System Theory (GST), established in the post-World War II era as a radical new way of understanding complexity, was designed as a new field of scientific inquiry by its founders. Nevertheless, GST was established on the *de facto* platform of scientific principles—those regarding the nature of logical inquiry and for making proof-of-validity (truth) claims. As such, systems thinking began as an ontologically objectivistic and epistemologically positivistic school of thought. In these days before the emergence of any alternative paradigms, to be ‘unscientific’ was simply unthinkable. Oliga explains the mindset in terms of an unquestioned ontology:

*In the scientific method (however defined) an ontological unity was assumed in the sense that all objects in the universe, regardless of whether these were inert, living, conscious, or rational beings, were taken to be of fundamentally and qualitatively the same kind. Thus the only meaningful questions of scientific inquiry centred on epistemology and methodology. (Oliga, 1988)*

Per Gregory (1992), what were for a time called ‘hard’ systems theories include:

- Bertalanffy’s essentially biological philosophy of General Systems (1950a.b)
• Wiener’s 1948 and Ashby’s 1956 related work on cybernetics and “leaning/thinking” machines
• Shannon and Weaver’s 1949 information and communication theories (related to cybernetics)
• Operations research Hall (1962); Rivett & Ackoff (1963); Churchman, Ackoff & Arnoff (1975), von Neumann & Morgernstern’s games theory (1953); others
• System dynamics Forrester (1961, 1969, 1971) for modelling social & global processes

These theories purport to deal with

...hard, tangible data (‘facts’) relating to situations in which the goals and means can readily be identified. Additionally, they all rely on quantitative methods for resolving the problems as stated, and take for granted the possibility of maximising or optimising some entity related to the problem. More recently (Dando & Bennett, 1981; Jackson, 1991a) they have been described as being underpinned by either a functionalist or structuralist [structural functionalist] social theory. (Gregory, 1992)

4.5.2.1. Positivism

Positivism aims to provide an accurate description of the laws and mechanisms that operate in the context. It reflects the philosophy of traditional science and is adopted by the typical scientist, engineer,
mechanic, pilot, builder, etc. It is based on a world that is fact-based and measurable. Ontologically objectivist, positivists assume that there is a stable, law-like external reality. A characteristic is the existence of objective, absolute and unconditional truths. Epistemologically, this reality is knowable, so disputes over the true nature of a thing (the truth) can be resolved through additional inquiry. Of highest regard is replication. Only phenomena that can be observed will lead to the production of credible data. The observer is detached axiologically and believes that observations can and should be objectively experienced and value free. The assumption is that “the researcher is independent of and neither affects nor is affected by the subject of the research” (Craib, 1992). Methodologically, positivism advocates the use of highly structured methodologies in order to facilitate replication (Gill and Johnson, 2002). Emphasis is placed on quantifiable data that lend themselves to statistical analysis; however, ‘it is perfectly possible to adopt some of the characteristics of positivism in ... research, for example, hypothesis testing, and use largely qualitative methods’ (Saunders, Lewis, et al., 2007). Positivism is attributable to the Renaissance and the Machine Age, to the processes of analysis, reductionism, cause & effect, and determinism (Flood and Jackson, 1991a; Craib, 1992).
Jackson (2000) tells us how to spot positivism:

If a theory is underpinned by objective assumptions, it will have certain distinguishing characteristics. Social reality will be perceived as having a hard, objective existence, external to the individual (i.e., the theory adheres to a realist ontology). The theory will seek to establish the existence of regularities and causal relationships in the social world (positivist epistemology).

And Saunders and Lewis, et al. (2007) describe the work and rationality of the stereotypical positivist researcher:

Only phenomena that you can observe will lead to the production of credible data. You are likely to use existing theory to develop hypotheses. These hypotheses will be tested and confirmed in whole or part, or refuted, leading
to the further development of theory which may then be tested by further research.

The research is undertaken, as far as possible, in a value-free way. This assumes that ‘the researcher is independent of and neither affects or is affected by the subject of the research’ (Remenyi, 1998).

The positivist researcher will be likely to use a highly structured methodology in order to facilitate replication (Gill and Johnson, 2002). Furthermore, the emphasis will be on quantifiable observations that lend themselves to statistical analysis.

Following that logic, here Laszlo reveals the philosophical heritage of systems thinking:

...that the data of systems synthesis are theories—“first-order” models of the experienced world—and not experiences themselves. Its basic conceptual assumption is that the first-order models refer to some common underlying core termed “reality,” and that this core is generally ordered. Thus the special orders elucidated by the many empirical-level models serving as its data can be integrated into a second-order model exhibiting a species of general order. In view of the fitness of systems concepts to remain invariant when passing from one first-order model to another, thereby permitting the translation of terms and concepts as particular transformations of the invariance stated in the systems language, the second-
order model constitutes a general systems theory. It integrates the findings of the many specialized first-order sciences in an optimally consistent framework, thus serves as the foundation upon which we can build the here advocated structure of systems philosophy. (Laszlo, 1973)

4.5.2.2. Critique of positivism

It seems only natural to me that, because it was the first modern paradigm – the last to completely eclipse prior understanding – that positivism has, in the past, claimed an exclusive on the truth. In onto-epistemological detail, Harre (1961) helps to explain:

The criteria for existence, then, are as follows: An object, \( O \), exists if and only if a unique individual can be found which fulfils a description of \( O \), sufficiently detailed to enable it to be discriminated from other members of its domain. For example, provided there are heavenly bodies, ... the earth’s one natural satellite exists. According to this criterion, which includes the unique individual criterion above, objects exist only in domains [e.g., heavenly bodies]. Once a domain is accepted then one can ask whether or not such-and-such [e.g., the moon] exists. Here we get our first characterisation of positivism:

Positivism is a doctrine according to which there is only one acceptable domain.
Of course, as there are different choices of unique domain, so there are different varieties of positivism. Prescriptive metaphysics is concerned with the advocacy or condemnation of domains.

An exclusivity to ‘the truth’ cannot be claimed by the proponents of functionalist approaches in light of the legitimacy of the other systems paradigms which have since proven themselves valid and useful and have shown that the original paradigm is but one generalised Weltanschauung, or worldview.

Bunning (1992) relates the thinking and motives of the day:

"... a strong conviction that empirical science was not merely a form of knowledge but was, in fact, the only source of positive knowledge of the physical world."

"... the desire to cleanse people’s minds of mysticism, superstition and all other forms of pseudo-science."

"... a belief in the necessity of a programme for extending scientific knowledge and technical control to human society and to make technology primarily a political and moral force in that society."
In their research on the differences between the paradigms, Flood and Ulrich (1990) criticised the use of ‘non-reflective’ positivism in social contexts:

1. it does not lead to objectivity;
2. it is expert driven;
3. the systems epistemological ideal will always be ignored;
4. what is claimed is epistemologically untenable;
5. what is said is ideologically conservative; and
6. therefore what would be achieved is maintenance or strengthening of power relations.

And conclude that...

... there is only one way in which we can claim "objectivity"—in the general sense of freedom from hidden presuppositions—for our empirical basis of rational discourse: namely, by acknowledging, in each case, the knowledge-constitutive interests on which the validity and meaning of "facts" depend. To claim objectivity for one’s knowledge by referring to the objectivity of one’s empirical basis is an impossible undertaking; but to pursue the ideal of objectivity in the sense of emancipating oneself and others from the objectivist illusion is an indispensable idea. (ibid.)
My thinking is that in Flood and Ulrich’s critique, although it does have the redeeming quality of requiring transparent critical reflexivity, fails to acknowledge that there are simply times when ‘the illusion of objective reality’ is adequate for the micro-purpose at hand (sufficiently simple and tightly bounded), such as when some attribute of the larger system must be measured and monitored to provide feedback. That is, intervention sometimes calls for one or more methods based in whole or part on positivistic thinking. The directness of approach and the efficiency and effectiveness of positivist methods are undeniably some of the reasons the positivists have been so successful. Unfortunately it seems as though we practice combining multiple methods across paradigms illegitimately until the problem of paradigm incommensurability is resolved. Until then in such cases it seems the informed practitioner is forced into elaborate apologies for the use of positivistic methods for the otherwise implied appearance of objectivity.

Perhaps the most pernicious problem with positivism-functionalism is that there is no acknowledgement of any limits on its remit. It incorporates a belief that it always applies in all situations and that the truth can always be found; that is, unless we are dealing with unobservable phenomena where truth is elusive—these phenomena are
excluded from legitimate inquiry. But our knowledge will continue to grow and in that way everything is possible, they say. Any other way of thinking is not scientific and should be dismissed for not being properly logical. The positivist-functionalist asks, “Are we doing it right?” “Is there a better way this can be done?” Many positivist methodologies are focused solely on efficiency—being cheaper, faster, leaner. There is no moral imperative or ethical critique in positivist-functionalist philosophy. Nothing requires the practitioner to do ‘good’ or ‘no harm’ or ‘what is right’: We can deplete the commons, pollute the environment, exploit the workers, race to the bottom. We can build the world’s most efficient gas chamber. “Results are all that matter.” “Do unto others before they do unto you.” “Whatever it takes.” “What’s the bottom line?” Before the establishment of the critical-emancipatory paradigm in the 1980s systems science deserved the bad reputation it got in the 1960s.

4.5.2.3. Structural functionalism

“Jackson [1987a] has come up with the useful label ‘structuralist’ to describe the group of systems approaches that include cybernetics, General Systems Theory, and sociotechnical design” (Schecter, 1991). According to Jackson, structuralism “looks for underlying social structures which underpin the observed phenomena. These are not distin-
guished in Burrell and Morgan, and we don’t have a radical structuralist paradigm in critical systems thinking” (Jackson, 2000).

Structural functionalism, or ‘functionalism’ as it most often called, is the social analog of scientific positivism. Social scientists who take this stance are “those who prefer working with an observable social reality and for the end products of their research to be law-like generalisations similar to those produced by the physical and natural scientists” (Remenyi, 1998:23).

Functionalism focuses on the structure and workings of society. Structural functionalists see society as made up of inter-dependent sections which work together to fulfil the functions necessary for the survival of society as a whole. People are socialised into roles and behaviours which fulfil the needs of society. Structural functionalists believe that behaviour in society is structural. They believe that rules and regulations help organise relationships between members of society. Values provide general guidelines for behaviour in terms of roles and norms. These institutions of society such as the family, the economy, the educational and political systems, are major aspects of the social structure. Institutions are made up of interconnected roles or interrelated norms. For example, inter-connected roles in the insti-
tution of the family are of wife, mother, husband, father, son and daughter (Holmwood, 2005).

The theory is based around a number of key concepts. First, society is viewed as a system – a collection of interdependent parts, with a tendency toward equilibrium. Second, there are functional requirements that must be met in a society for its survival (such as reproduction of the population). Third, phenomena are seen to exist because they serve a function (ibid.).

Structural functionalists believe that one can compare society to a living organism, in that both a society and an organism are made up of interdependent working parts (organs) and systems that must function together in order for the greater body to function. An example of this can be found in the theory of Emergence. Structural functionalist sociologists say that the different parts of society e.g. the family, education, religion, law and order, media etc. have to be seen in terms of the contribution that they make to the functioning of the whole of society. This ‘organic analogy’ sees the different parts of society working together to form a social system in the same way that the different parts of an organism form a cohesive functioning entity (ibid.).
Regarding the systemic analysis of human-centred systems, systems theory, following Talcott Parsons (1949, 1951), began as a structural functionalist, or ‘functionalist’, theory—a form of objectivism. Its name reflects the fact that social structures are emphasised and placed at the centre of analysis, and social functions are deduced from these structures. According to this theory, society is like an organism. It evolves and adapts in order to survive.

Society is seen as being in a natural state of equilibrium or balance. According to the equilibrium model, as change occurs in one part of society there must be adjustments in other parts. If this does not take place, the society’s equilibrium will be threatened and strains in the social order will occur (ibid.). Parsons posited that society changes in four distinct and inevitable processes. These are:

1. “Differentiation - refers to the increase in complexity of social organisations

2. Adaptive Upgrading - whereby social institutions become more specialised in their processes

3. Inclusion - this occurs where groups previously excluded from society because of such factors as race, gender, social class etc. are now accepted
4. Value Generalisation - this is the development of new values that tolerate and legitimate a greater range of activities” (ibid.).

Not surprisingly, a similar theory swaps cause and effect: ‘functional–structuralism’ which is not generally associated with systems thinking takes social functions as real and says that social structures result as affects (Craib, 1992).

Laszlo (1973) commented early on about the rationale for structural functionalism:

[A] good part of our present trouble results from the encapsulation of modern man in different, water-tight compartments–man as an anthropological, psychological, economic unit while forgetting “man” as living and experiencing whole–such new conception, synthesizing different aspects and perspectives in terms common to all of them... [The structural functionalist approach] may well contribute toward the resolution of contemporary problems whose “bracketing out” [has] led to the sterility of conventional analytic philosophy.

...Such models can be built by using at least two basic methods. One takes the world as we find it and examines the various systems that occur in it (physical, biological, sociological, etc.) and then draws up statements about
the observed regularities. The second method goes to the other extreme, and considers the set of all conceivable systems and then reduces the set to a more reasonable size. Ashby identifies the former as the empirical method of von Bertalanffy and his collaborators, and the latter as the axiomatic method which he himself has recently followed.

...Empirical observation is meaningless without the imaginative envisagement of various abstract possibilities which are then seen either to be, or to fail to be, exemplified in the content of observation.

Note: The modern practice of grouping systems into ontological epistemological paradigms brought with it changes in terminology. ‘Soft’ systems are now called ‘interpretive’ systems (Jackson, 1982; Fuenmayor, 1985). ‘Hard’ systems are now called ‘functionalist’ systems (Fuenmayor, 1990), referring to positivism plus structural functionalism.

4.5.2.4. Critique of structural functionalism

Poststructuralism is a philosophy which rejects the deterministic connection between objective ‘signifier’ and subjective ‘signified’. Poststructuralism is contained within the fourth critical systems paradigm which shares its name—the postmodern-poststructural paradigm. See the section on poststructuralism, §4.5.5.2.
Within the critical systems thinking literature, says Schecter (1991), critiques of the structuralist approach have mainly addressed Stafford Beer’s management cybernetics (c.f. Ulrich, 1981; Jackson, 1988a), focusing on its weaknesses in dealing with human subjectivity and with power relations.

Ulrich (1981) argues that cybernetics is ill-suited to work with social systems because it stresses intrinsic control rather than intrinsic motivation, the syntactic level of communication rather than the semantic-pragmatic level, purposiveness rather than purposefulness, and tool design rather than social systems design (Schecter, 1991).

Jackson (1988a) argues that Beer’s Viable System Model (VSM) over-emphasises the importance of structural design and underemphasises the importance of culture, that it ignores self-consciousness of human subjects, and that it is of limited use in facilitating discussion of purposes. He also argues that the VSM has the potential of autocratic misuse, despite Beer’s intentions. He notes that there is little in Beer’s work about how inequalities of power arise, or how they can be reduced. Finally, he observes that the VSM “provides no mechanisms either for the democratic determination of purposes or for facilitating debate about the nature of the purposes served” (ibid.).
Oliga argues that the structuralist approach is based on the ideology of sociological unitarianism, including a consensus view of organisations and a positive or neutral view of power (Oliga, 1989a, b). Yet few organisations are characterised by true (uncoerced) consensus, and power can clearly be used for negative ends (Schecter, 1991) (see Poststructuralism, §4.5.5.2).

4.5.2.5. A generic positivist-functionalist systems methodology

Jackson (2000) created a ‘generic’ methodology to serve as a model for each of the systems paradigms. Here is the first one, using his terminology:

A functionalist systems methodology is a structured way of thinking, with an attachment to the functionalist theoretical rationale, that is focused on improving real-world problem situations.

1. A functionalist methodology uses systems ideas as the basis for its intervention strategy and will frequently employ methods, models, tools and techniques which also draw upon systems ideas.

2. The claim to have used a systems methodology according to the functionalist rationale must be justified according to the following guidelines:
a. an assumption is made that the real-world is systemic;
b. analysis of the problem situation is conducted in systems terms;
c. models aiming to capture the nature of the situation are constructed enabling us to gain knowledge of the real-world;
d. models are used to learn how best to improve the real-world and for the purposes of design;
e. quantitative analysis is presumed to be useful since systems obey mathematical laws;
f. the process of intervention is systematic and is aimed at discovering the best way to achieve a goal;
g. the intervention is conducted on the basis of expert knowledge;
h. solutions are tested primarily in terms of their efficiency (do the means use minimum resources?) and efficacy (do the means work?)

3. Since a functionalist systems methodology can be used in different ways in different situations, and interpreted differently by different users, each use should exhibit conscious thought about how to adapt to the particular circumstances.

4. Each use of a functionalist systems methodology should yield research findings as well as changing the real-world problem situation. These research findings may relate to the theoretical rationale underlying the methodology itself and
how to use it, to the methods, models, tools and techniques employed, to the real-world problem situation investigated, or to all of these. (Jackson, 2000)

4.5.3. Interpretivist

The term ‘interpretive sociological paradigm’ was coined by Burrell and Morgan (1979), acknowledging a growing awareness that the social world is qualitatively different from the natural world. We know that no two humans (the basic units of the social world) are quite alike. Not even ‘identical’ twins. (If you doubt this, ask them.) Worse still, no human, let alone the social world, even remains unchanged from one moment to the next. This means that, in systems terms, the interpretive systems are truly complex systems because, among many other things, they are composed of people: conscious, language-based, self-aware; they have memories and stories and instincts, emotions, and art. They interact and learn and adapt multidimensionally, in a continuous manner. Social systems can be seen as an emergent property resulting from the behaviour and interaction of human beings. Compared with the more ‘mechanical’ types of systems that were the domain of the positivists, Sir Geoffrey Vickers put it simply – ‘Human systems are different’ (Vickers, 1983).
What we now call the ontological change from realism to nominalism is illustrated in this quote by Checkland of the need...

...to remind ourselves that we have no access to what the world is, to ontology, only to descriptions of the world [after Wittgenstein], ... that is to say, to epistemology... Thus, systems thinking is only an epistemology, a particular way of describing the world. It does not tell us what the world is. Hence, strictly speaking, we should never say of something in the world: 'It is a system,’ only: ‘It may be described as a system.’ The important feature of paradigm II [interpretivist] as compared with paradigm I [positivist-functionalist] is that it transfers systemicity from the world to the process of enquiry into the world. (Checkland, 1981, p.671)

And so Checkland translated (shifted) the concept of ‘system’ from ontology to epistemology, as a tool for understanding.

Interpretivist methodologies include:  

- Warfield’s Interactive Management
- Warfield’s Nominal Group Technique (NGT)
- Warfield’s Interpretive Structural Modelling (ISM, 1976) *
- Ackoff’s Interactive Planning (IP, 1974, 1976)*
- Churchman’s Social Systems Design

15 Items marked * added by the author; others from Jackson (2000).

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- Mason & Mitroff’s Strategic Assumption Surfacing & Testing (SAST)
- Ackoff’s Social Systems Sciences (S3)
- Checkland’s Soft Systems Methodology (SSM, 1981)
- Senge’s Soft Systems Thinking
- Soft Operational Research, Soft System Dynamics, Soft Cybernetics

Fuenmayor (1990), while agreeing with Jackson that soft systems thinking has been regulative in character, argues that this is not due to a basic flaw in the interpretivist paradigm upon which the soft approach is based, but rather to the lack of interpretive systems theory and to the instrumental and regulative intent of soft systems practice. (Schecter, 1991)

4.5.3.1. Critique of interpretivism

Oliga argues that the soft systems approach has made an ontological break with empiricism but not an epistemological break (Oliga, 1988, 1989a, b). While the soft systems approach rejects the “objective world” of empiricism, and advocates an ongoing process of dialogue and learning, it assumes that the possibility of the practitioner attaining “objective” knowledge of the world approach overemphasises the role of worldviews, thereby neglecting the competing influences of social structural factors and the influence of these factors on the formation and maintenance of worldviews.
Perhaps the first widely read critique of the soft systems approach from the critical systems perspective was Jackson’s (1982) path-breaking paper on the work of Churchman, Ackoff and Checkland.

*Jackson maintains that soft systems thinking is an advance over hard systems thinking because it recognises the importance of subjectivity. However, he argues that the soft approach is unable to deal with issues of power and social change. While soft systems thinking is able to explore the world views of different actors, it has little to say about how these views are formed and maintained, or why some dominate over others. Soft systems thinking assumes the existence of a free, open and democratic debate among all stakeholders. Yet few such situations exist. Soft systems thinking does not concern itself with studying how distorted communication happens, nor with how to bring about undistorted communication. To Jackson, this stems from its neglect of objective social conditions. (Schecter, 1991)*

In 1982 Jackson remarked, "It is surprising to find that at the moment no genuinely interpretive systems theory exists... Such a theory would have to probe the systemic nature of the interpretations individuals employ in constructing the social world" (Jackson, 1982). Fuenmayor believed that Jackson’s concerns about interpretivism
could be repaired with some new, interpretivist systems theory (see §5.4.4)

In 2000, Flood criticised what he called “non-reflective” interpretivism and explained that it was unfit for critical systems practice and could not be adopted as a critical systems epistemology because:

1. *it promotes the notion of subjectivity*;

2. *there are no explicit directives in the theory that aim to prevent the approach from being expert driven*;

3. *by recognising social communicative action it takes one of several necessary steps for ‘reaching out’ toward the systems epistemological ideal*;

4. *it would be epistemologically tenable in its own sociological terms if full participation was facilitated, however, because false consciousness and the ‘effects of material conditions’ are not dealt with critically, the rationality is clearly epistemologically impoverished*;

5. *it may well lead to ideological conservatism*; and
6. *therefore there is nothing in the rationality that helps to prevent the maintenance of power relations* (citing Flood and Ulrich, 1990).

In 2000, Flood described what *would* be acceptable.

> [Only] critical, or self-reflective ideas amount to an adequate epistemological ideal for social inquiry in terms of systems rationality, sociological epistemology, and of course systems practice. (Flood, 2000)

Interestingly, he makes no reference to Fuenmayor (1989a, b), whose Interpretive Systemology *had* generally satisfied those requirements eleven years earlier (see §5.4.4).

4.5.3.2. A generic interpretivist systems methodology

Here is Jackson’s ‘generic’ interpretivist systems methodology which, as I said earlier, is epistemological:

1. *“An interpretive systems methodology is a structured way of thinking with an attachment to the interpretive theoretical rationale that is focused on improving real-world problem situations.”*

2. *An interpretive systems methodology uses systems ideas as the basis for its intervention strategy and will frequently*
employ methods, models, tools and techniques which also
draw upon systems ideas.

3. The claim to have used a systems methodology according to
the interpretive rationale must be justified according to the
following guidelines:

a. there is no assumption that the real-world is systemic;
b. analysis of the problem situation is designed to be crea-
tive and may not be conducted in systems terms;
c. models are constructed which represent some possible
“human activity systems”;
d. models are used to interrogate perceptions of the real-
world and to structure debate about changes which are
feasible and desirable;
e. quantitative analysis is unlikely to be useful except to
clarify the implications of worldviews;
f. the process of intervention is systemic, is never-ending,
and is aimed at alleviating unease about the problem
situation and generating individual and organizational
learning;
g. the intervention is best conducted on the basis of stake-
holder participation;
h. changes that might alleviate the feelings of unease or
contribute to learning are evaluated primarily in terms
of their effectiveness, elegance and ethicality.
4. *Since an interpretive systems methodology can be used in different ways in different situations, and interpreted differently by different users, each use should exhibit conscious thought about how to adapt to the particular circumstances.*

5. *Each use of an interpretive systems methodology should yield research findings as well as changing the real-world problem situation. These research findings may relate to the theoretical rationale underlying the methodology, to the methodology itself and how to use it, to the methods, models, tools and techniques employed, to the real-world problem situation investigated, or to all of these.* (Jackson, 2000)

4.5.4. **Critical-emancipatory**

The third onto-epistemological paradigm of critical systems thinking, called ‘critical-emancipatory’ in this dissertation, requires us to distinguish between some similar-sounding concepts: critical reflection, critical reflexivity, and critical (emancipatory) social theory. It has to be said that the word *critical* has different meanings depending on the context in which it is used. "To be critical" generally means to investigate with doubt, and systems thinking has always required such
critical reflection which asks questions such as “What happened?”, “Did we do it right?”, “Did we do it well?”, “Can we improve?” Critical reflection is looking back at what has occurred and, with the benefit of hindsight, to critique it. “What went right?” “What went wrong?” Critical reflection is a vital component of the learning process (see Kolb’s (1973a, b, 1976, 1984) learning cycle, Figure 4).

But critical systems thinking incorporates one higher level of abstraction—to self-reflection, or what is called reflexivity throughout this dissertation; where we ask, for example, “Did we do the right thing?”, “Do we have our system boundaries right?”, “What might we have missed?” “What don’t we know?” In other words, in contemporary systems literature the term ‘critical’ is most often associated with the requirement for critical reflexivity, or self-critique.

However, in the social sciences, the term ‘critical’ is most often connected with the idea of political power (i.e. power over others) and dominance and control, after Marx and Habermas. To social scientists, critical issues are those which are understood as having aspects of domination and subordination, expression and repression, subjugation and liberation. To that meaning, critical systems thinking has issued the word emancipatory. In other words, what social sciences call critical concerns, critical systems thinking calls emancipatory con-
cerns and this dissertation follows that tradition. (Systemists who do not care for the connotations of the word ‘emancipatory’ have tried ‘liberation’ and ‘improvement’.) Worse, systemists often pile on both meanings when referring to the critical paradigm, hence here it is called the critical-emancipatory paradigm.

It has been said that science often operates on the assumption that the end justifies the means. That statement should be qualified, however. Rather than embody any sort of ruthlessness as the phrase would suggest, I suggest that science is ideally value free. As its enthusiasts will tell you, its ethical use is something about which science itself has no opinion. That may be the best supporting reason for other paradigms, especially the critical-emancipatory paradigm which seeks to provide ethical guidance to the systems practitioner regarding humanistic issues of power and control. Gregory (1992) goes so far as to say that, “It is suggested that any social inquiry must contain elements of reflexive (philosophical) and scientific (practical) inquiry together with ideology-critique and critical self-reflection in order to bring about the emancipation of individuals and groups.”

Many social and systems thinkers have criticised other paradigms and their methodologies for their emphases on control, compliance, agreement and the normalisation of the status quo—a charge most
commonly made against the interpretivist paradigm. For example, Fuenmayor said,

*We should recognize however that the degree to which soft systems thinking can bring about change in the real-world is determined by its essentially regulative character. It does not pose a real threat to the social structures which support the Weltanschauungen with[in] which it works.* (Fuenmayor, 1989a)

Critiques such as these led to the recognition of what Jackson called *coercive contexts*—those characterised by significant inequalities of power. As with science, other paradigms of systems thinking have little to say about power and control issues, hence there is a need for emancipatory approaches to systemic practice (Schecter, 1991).

Jackson has championed the emancipatory paradigm in critical systems thinking. *Emancipatory methodology,* he explained, is generally

... a structured way of thinking, with an attachment to the emancipatory theoretical rationale ... that is focused on improving real-world problem situations. ... Emancipatory *systems* methodology uses systems ideas as the basis for its intervention strategy and will frequently employ methods, models, tools and techniques which also draw upon systems ideas. (Jackson, 2000)
Claims that a systems methodology satisfies the emancipatory rationale, says Jackson, must be justified according to the following guidelines:

- An assumption is made that the real-world can become systemic in a manner alienating to individuals and/or oppressive to particular social groups.

- Analysis of the problem situation is designed to reveal who is disadvantaged and how they are disadvantaged by current systemic arrangements.

- Models are constructed which reveal the sources of alienation and oppression and propose alternative social arrangements in which these disappear.

- Models are used to enlighten the alienated and oppressed about their situation and what they can do about it.

- Quantitative analysis may be useful especially to capture biases in existing systemic arrangements.

- The process of intervention is systemic and is aimed at improving the problem situation for the alienated and/or oppressed.

- The intervention is conducted in such a way that the alienated and/or oppressed begin to take responsibility for their own liberation.
Changes designed to improve the position of the alienated and/or oppressed are evaluated primarily in terms of ethicality and emancipation.

Since an emancipatory systems methodology can be used in different ways in different situations, and interpreted differently by different users, each use should exhibit conscious thought about how to adapt to the particular circumstances.

Each use of an emancipatory systems methodology should yield research findings as well as changing the real-world problem situation. These research findings may relate to the theoretical rationale ... underlying the methodology, to the methodology itself and how to use it, to the methods, models, tools and techniques employed, to the real-world problem situation investigated, or to all of these. (Jackson, 2000)

Jackson lists these theories, themes, and methodologies associated with the emancipatory rationale:

- Emancipation as Liberation
- Critical Operational Research–Management Science (OR/MS)
- Habermas & the Critical Systems Approach
- Interpretive Systemology
- Freire’s Critical Pedagogy
- MacIntyre & the Moral Community
- Capra’s Ecological Sustainability
The commitment to emancipation is a commitment to human beings and their potential for full development via free and equal participation in community with others. It is also a commitment to recognising the barriers to human emancipation—unequal power relations and the conceptual traps which perpetuate them—and incorporating this understanding into systems thinking (ibid.).

The ideas of Jürgen Habermas, “the most influential modern thinker of the critical theory persuasion” (Jackson, 2000), were used to undergird the philosophy of critical systems thinking. In Habermas’ theory of knowledge constitutive interests (1971), humans have technical, practical, and emancipatory interests owing to our socio-cultural nature. Very briefly, the first two interests are about prediction and control for work, and interaction for mutual understanding, which he says are the principal means by which we strive to shape our physical and social environments. The third is derived from the exercise of power which distorts our means of achieving the goals of the other
two—an interest in learning how to liberate ourselves and control our own destinies.

In his theory of communicative action (or ‘communicative competence’) Habermas (1981) explains that humans are of ‘three worlds’: objective, social and subjective. In an ideal speech situation which requires communicative competence, the better argument will prevail through the process of discourse. Consensus would therefore be rational and genuine. Action would thus be subject to full public control. But for an individual to achieve communicative competence, society must establish special conditions relating to freedom and justice. These ideals can never be achieved in an absolute sense but, says Jackson (2000), we can still use the theory in order to unmask distortions which thwart their achievement. Habermas believes we can liberate ourselves and better control things in the technical and practical aspects of our world by understanding what it is that prevents us from doing it perfectly now.

4.5.4.1. A generic critical systems methodology

Here is Jackson’s ‘generic’ critical systems methodology (the ‘generic’ emancipatory methodology follows). I have marked out the prefix ‘meta-’ to update it according to the author’s (2003b) understanding:
1. “A critical systems [meta-]methodology is a structured way of thinking which understands and respects the uniqueness of the functionalist, interpretive, emancipatory and post-modern theoretical rationales, and draws upon them to improve real-world situations.

2. A critical systems [meta-]methodology makes use of a variety of creativity enhancing methods and techniques to examine the problem situation while ensuring, minimally, that it is viewed from the functionalist, interpretive, emancipatory and postmodern perspectives.

3. A critical systems [meta-]methodology uses generic systems methodologies, which can be clearly related back to the four theoretical rationales, as the basis for its intervention strategy—often employing the tactic of naming one methodological approach as dominant and others as dependent, with the possibility of this relationship changing during the course of the intervention.

4. The claim to be using a generic systems methodology, according to the particular theoretical rationale it is designed to serve, must be justified according to the principles and
guidelines established for the use of each generic systems methodology.

5. The generic systems methodologies called for use in critical systems practice will themselves frequently employ methods, models, tools and techniques which also draw upon systems ideas.

6. The choice of generic systems methodologies and of systems methods, models, tools and techniques will, in part, rest upon an appreciation of their different strengths and weaknesses as discovered during action research.

7. In order to ensure responsiveness to the complexity and heterogeneity of the problem situation addressed, attention must be paid to ensuring a pluralism of “clients”, theoretical and methodological pluralism, pluralism in the modes of representation employed, and pluralism in the facilitation process.

8. Since a critical systems [meta-]methodology and the generic systems methodologies it employs can be used in different ways in different situations and interpreted differ-
ently by different users, each use should exhibit conscious thought about how to adapt to the particular circumstances.

9. Each use of a critical systems [meta-]methodology and the generic systems methodologies it employs should yield research findings as well as improving the real-world problem situation. These research findings may relate to the relationship between different theoretical rationales, to the theoretical rationales underlying any generic systems methodology used, to the generic systems methodologies themselves and how to use them, to the methods, models, tools and techniques employed, to the real-world problem situation investigated or to all of these.” (Jackson, 2000)

4.5.4.2. A generic emancipatory systems methodology

Here is Jackson’s ‘generic’ emancipatory systems methodology:

1. “An emancipatory systems methodology is a structured way of thinking, with an attachment to the emancipatory theoretical rationale, that is focused on improving real-world problem situations.

2. An emancipatory systems methodology uses systems ideas as the basis for its intervention strategy and will frequently
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employ methods, models, tools and techniques which also draw upon systems ideas.

3. The claim to have used a systems methodology according to the emancipatory rationale must be justified according to the following guidelines:

a. an assumption is made that the real-world can become systemic in a manner alienating to individuals and/or oppressive to particular social groups;

b. analysis of the problem situation is designed to reveal who is disadvantaged and how they are disadvantaged by current systemic arrangements;

c. models are constructed which reveal the sources of alienation and oppression and propose alternative social arrangements in which these disappear;

d. models are used to enlighten the alienated and oppressed about their situation and what they can do about it;

e. quantitative analysis may be useful especially to capture particular biases in existing systemic arrangements;

f. the process of intervention is systemic and is aimed at improving the problem situation for the responsibility for their own liberation;

g. changes designed to improve the position of the alienated and/or oppressed are evaluated primarily in terms of ethicality and emancipation.
4. *Since an emancipatory systems methodology can be used in different ways in different situations and interpreted differently by different users, each use should exhibit conscious thought about how to adapt to the particular circumstances.*

5. *Each use of an emancipatory systems methodology should yield research findings as well as changing the real-world problem situation. These research findings may relate to the theoretical rationale underlying the methodology, to the methodology itself and how to use it, to the methods, models, tools and techniques employed, to the real-world problem situation investigated, or to all of these.*" (Jackson, 2000)

4.5.4.3. Critical systems heuristics

Ulrich’s (1983) critical systems heuristics was the first methodology to be admitted to the critical-emancipatory systems paradigm. Basically, critical systems heuristics intends to help ensure that the boundaries around what we call our “system” are critically and ethically considered and involve all those affected by our actions as interventionists. Critical systems heuristics plays a large role in shaping critical systems thinking and is discussed in several sections of this dissertation (e.g. §5.4.14, §5.4.16).
4.5.5. Postmodernist-poststructuralist

4.5.5.1. Postmodernism

If there is one thing about postmodernism on which almost everyone agrees, it is that postmodernism is ill-defined. This means that I must clarify its definition for the purposes of this study and affords me the opportunity to work with that concept in a way that I believe is more in keeping with the spirit of systems thinking as it is currently being used and with respect to the other systems paradigms. While some feel postmodernism is a destructive or self-defeating doctrine, I choose to see distinct advantages in its ideas. Some merely react to the term in ignorance, associate its philosophy with cults or hippies who want to wreck our norms and overthrow common knowledge. I see its radicalism as a tactic for knocking us back on our heals to get our attention and as a way of destabilising our sense that we have got it all right—so that we might accept its challenge “to think deeper and wider in time and space,” as Participant 8 says in her interview (§8.3.8). Postmodernism wants us to ‘look behind the curtain’ to see gross over-generalisations, notice our unquestioned assumptions and norms and unintentional biases. Look to its ontological roots in language.
In my view, postmodernism ultimately calls for humility, respect for others and their dignity, compassion, generosity, art and beauty and love—all concerns which come from the recognition of life as transitional, experiential, tenuous, constructed and localised (embedded in the present situation; derived longitudinally).

I especially appreciate process theory points out that “we have to work with what we have got” (Wood, 2005) and get on with it.

The common understanding that existed about the nature of systems thinking and the meaning of the key concepts used began to break down in the 1970s. A shared set of concerns was replaced by different factions championing hard, soft, critical and other perspectives [e.g. postmodern vs. critical, 1992-94]. The systems movement had succumbed to the paradigm wars that had overwhelmed other disciplines such as sociology. It is now widely accepted, and must be the starting point for any contemporary study of systems methodology, that these various strands of the systems movement use the concept ‘system’, and all the other important systems ideas, in different ways. [...] My assumption is that there is nothing about systems thinking that allows it to stand above the paradigms and to remain isolated from disputes between perspectives emanating from different paradigms. (Jackson, 2000)
4.5.5.2. Poststructuralism

*Poststructuralism* is also part of the postmodern paradigm. The reader replaces the author as the focus of interpretation. Poststructuralists reject the structuralist view of language as a system of associations between signifiers (words, symbols) and significands (those to which the signifiers refer) and the resultant webs of meaning which can be understood and shared. Structuralist ideas have been taken too seriously and that has given legitimacy to the use of language as a way to wield power over others that it should not have, they say. All of us play elaborate language games as ways to shape the truth and influence others. Poststructuralism rejects the deterministic link between signifier and significand.

*I think we shall lose ourselves in confusion and obscurity, in the so-called human sciences, because in those domains the distinction between word and thing is constantly blurred... Foucault may yet prove useful, ... to grasp the interrelations of “power” and “knowledge” that literally constitute us as human beings.* (Hacking, 1984)

As reflexivity is a central theme of critical systems thinking, how reflexivity is understood by poststructuralists is especially important and enlightening. It stems from their belief that all forms of knowledge are circumscribed by assumptions and commitments that influ-
ence what we do, say and write. “We therefore cannot be neutral nor put ourselves outside our research,” says Cunliffe (n.d.).

Drawing on the work of Derrida (e.g., 1976, 1978) and Foucault (1970, 1972), poststructuralist approaches to reflexivity are concerned with revealing the instability of language and truth claims by exploring the oppositional nature of meaning, the multiple readings of texts, the tenuous relationship between author/text/subject/reader, and the power relationships that exist in what are often seen to be neutral and normalized organizational—and research—processes. ...

Poststructuralist approaches... focus on the instability of language and meaning; they see agency as a product and site of language rather than as a human endeavour, and are interested in linguistic and discursive processes rather than relational ones. Scholars taking poststructuralist approaches to reflexivity examine the impact of often-contested linguistic, textual and discursive processes on power-ridden institutional practices and subjectivities. In addition, they challenge the privileging of particular meanings and forms of knowledge and representations (see Chia 1996; Choi 2006; Gatenby and Hume 2004). (Cunliffe, n.d.)
4.5.5.3. A generic postmodernist systems methodology

The following is Jackson’s ‘generic’ postmodernist methodology. I have already noted that Jackson’s ‘generic’ methodologies are epistemological in that they are about methodology. “Postmodern systems practice is a way of thinking and acting, with an attachment to the postmodern theoretical rationale, that is focused on disrupting real-world problem situations by critically questioning all received opinion and accepted ways of doing things.

6. Postmodern systems practice uses systemic and anti-systemic ideas as the basis for its intervention strategy and will frequently employ methods, models, tools and techniques which also draw upon systems ideas.

7. The claim to have used systems thinking and systems ideas according to the postmodern rationale may be sustained locally (as opposed to universally) according to the following guidelines:

h. an assumption that the real-world is constructed in such a way through discourse that particular groups and/or individuals are marginalized;

i. intervention in the problem situation is designed to reveal who is marginalized by existing power/knowledge structures;
j. diverse forms of pluralism are used to surface subjugated discourses and to allot marginalized voices to be heard;
k. diverse forms of pluralism are used to allow relevant stakeholders to express their diversity and, possibly, grant a ‘consent to act’;
l. quantitative analysis is unlikely to be useful except as part of the process of deconstruction;
m. the process of intervention takes the form of local (as opposed to universal) strategizing and subversion in an endeavor to allow new knowledge to come to the fore;
n. the intervention is conducted in such a way that conflict is reclaimed and diversity and creativity are encouraged;
o. facilitators and participants in the intervention take responsibility for any actions on the basis of exception, emotion and ethics.

8. Since postmodern systems practice can take different forms in different situations and be interpreted differently by different users, each use should exhibit conscious thought and/or an emotional response about how to adapt to the particular circumstances.

9. Each case of postmodern systems practice may yield research findings as well as changing the real-world problem situation. These research findings may relate to the theo-
retical rationale underlying the practice, to the framework for applying a postmodern systems approach, to the methods, models, tools and techniques employed, to the real-world problem situation investigated, or to all of these.”

(Jackson, 2000)

My own understanding of postmodernism in critical systems thinking is slightly different as explained in various places throughout the dissertation, and that is justified because postmodernism itself is both ill defined and general (and arguably must remain so).
Chapter 5. Multiparadigm multimethodological systems theories

The flexibility that can be gained by extracting methods, models, tools and techniques from different methodologies, and using them in combination, now seems to me to be so essential that its gradual acceptance should be seen as a third landmark [after SoSM and TSI] on the way to the establishment of coherent pluralism in systems thinking. (Jackson, 2000)

5.1. The case for pluralism

Building on work by Reed (1985), Jackson has identified four strategies for the overall development of systems thinking:

...isolationism (each approach develops independently of the others); imperialism (one approach absorbs the rest); pragmatism (practitioners use any method based on their immediate need, without regard to theory); and pluralism (the complementary development of all approaches). (Jackson, 1987a)

Isolationism and imperialism were later split into two types each:

Flood has expanded the four alternatives into six, distinguishing between methodological isolationism (use of one method only) and theoretical isolationism (use of multiple
methods, but guided by one paradigm), and also between imperialism by annexation (one approach incorporates the best elements from other approaches) and imperialism by subsumption (one favored approach provides the “what” and the other approaches provide the “how” according to the needs of the situation) [(Flood, 1989a, b)]. (Schecter, 1991)

The resulting six strategies for the development of systems thinking are, therefore,

- methodological isolationism
- theoretical isolationism
- imperialism by annexation
- imperialism by subsumption
- pragmatism
- pluralism

Practitioners choose from the same approaches to systemic intervention as well, says Jackson (1999). Isolationists “see their own approach to management science as being essentially self-sufficient. They believe there is nothing to learn from other perspectives which appear to them not to be useful or, perhaps, even sensible.” There are imperialists who have “a fundamental commitment to one epistemological position but a willingness to incorporate other strands of
management science if they seem to be useful... [but] explain the existence of alternative approaches... in terms of the approach to which they grant hegemony” (ibid.). Pragmatists pick and choose amongst the various systems methods based solely on what seems warranted by the current situation, not bothering with philosophical issues or ‘artificial’ theoretical distinctions. This practice is dismissed, however, because it does not “support the development of management science as a discipline” among other reasons (ibid.). The pluralist strategy would supply the theoretical support that pragmatism lacked. It would

... seek to respect the different strengths of the various trends in management science, encouraging their theoretical development and suggesting ways in which they can be appropriately fitted to the variety of management problems that arise. It was argued that a metamethodology would develop which could guide theoretical endeavour and advise analysts, confronted with different problem situations, which approach is most useful. In these circumstances, the diversity of theory and methods in management science could be seen to herald not a crisis but increased competence and effectiveness in a variety of different problem situations... Pluralism... offers the best hope of reestablishing management science as a cohesive discipline and profession—and on firmer founda-
Flood has also provided an in-depth exploration of the implications of Jackson’s argument, exploring the consequences of each approach in turn. His conclusion, like Jackson’s, is that pluralism is the only adequate option (Schecter, 1991).

As a critical systems practitioner myself, I try to see the larger problem through each paradigmatic ‘lens’, especially during the discovery process. In doing so I remake my distinctions; that is, I deliberately construct new boundaries around closely related aspects of the problem as it presents itself in the moment to creating conceptual systems and subsystems which are best understood through that systems paradigm, never expecting these boundaries to stay put as the real situation and my view of it continuously changes—see boundary making and critical systems heuristics (Ulrich, 1988, 1989) (§4.5.4.3) the act of distinction (Maturana, 1988a) (§5.2) and the critical moment of becoming (Bowers, 2010a and §6.12).

Likewise, the new methodology proposed herein (§7.3) directs a serial approach through multiple paradigms. These might each be called ‘phases’ but I think that term implies an engagement in a sequential
manner with a particular start and an end, which is not the way I think of it or would operationalise it.

5.2. Contemporary state of pluralist systems theory

Basic systems thinking is a general approach to problem solving or a way of seeing ‘problems’ as parts of an overall system and its environment and is concerned with the relationships between the constituent parts. Generally, simple and well-understood problems are easily solved, but systems thinking is especially useful when the issues are far from simple and well understood. Systemists study, design or intervene in situations which are: novel; especially complex or heterogeneous; rapidly changing yet persistent; those which involve lots of interacting parts, people, or unknown or unfamiliar resources; with problems which may be risky (politically or otherwise), persistent or long term. I like to say the easy problems have all been solved. For example, the systems I am especially interested in are those which constrain or negatively impact the lives of people who would otherwise make more of themselves.

Of course we hope not to overlook what might be important, but as this dissertation emphasises, no matter how carefully or how hard or how long we look, there is still a danger that what may be critical to
the successful outcome of a particular study, design or intervention may be unseen or overlooked because the information we may need may simply not exist (in a meaningful form) in the paradigm we are using.

This brings us to what Maturana and Bunnell call the problem of distinction (Maturana, 1988a; Bunnell, 2004b). Bunnell, herself explained this to me at the ISSS 2010 conference. She said the act of observing is about making distinctions; which implies that there are alternative ways of doing so. What I call an ontology she says is a particular way of ‘cleaving the universe’ by which we distinguish a domain of existence and non-existence. What is critical to realise is that, once we have cleaved the universe a particular way, that which does not exist—if it were to exist, would also have to be of that domain.

When we make a distinction
We cleave a ‘this’, and a ‘not this’,
And the domain in which the distinction is valid
Co-arises with the distinction. (Bunnell, 2010)

According to this philosophy, the ‘reality’ of the universe so cleaved may simply not intersect with the domain of existence of something else, and my point is that that something else may be critically im-
important. Consequently, the practitioner may only recognise a piece of the ‘larger’ problem context. And that represents a constraint upon effectiveness.

Here are three examples: First, if we were to consider the problem of airport congestion and choose to focus our investigation and intervention on efforts to optimise the operations of air traffic controllers, we might not detect their seething dissatisfaction with issues of overwork, forced overtime, and a perceived lack of concern by management. In another situation, perhaps we focus on consensus building and ignore a culture of oppressive control and nepotism by those in power. Lastly, by focusing on pragmatic concerns of the present we may undervalue the long-term need to foster the next generation or fail to recognise ongoing damage being done to the ecosystem.

Brocklesby spoke of the unexamined paradigm.

For those who, hitherto, have uncritically accepted the transcendental “rightness” of their own preferred paradigm, the awareness that objectivity is biologically unattainable [see §6.8, Maturana and Varela (1980, 1987)], and that in the end it all comes down to values and preferences, may trigger a change in their thinking. Even if it does not, and they decide to stick with what they know, at least knowing about competitors provides a platform from which to examine unexamined assumptions. When
there are no alternatives people are not in a good position to know what they have, so the presence of alternatives forces them to present their position, to defend it, and thereby understand it better. Moreover, it invokes a sense of humility as they become aware of the precarious quality of their knowledge. (Brocklesby, 1997)

5.3. Meta- and multiparadigm approaches

There is increasing awareness that complex systemic problems are best considered multiparadigmatic problems—systems with interrelated issues that cross paradigms. The systems community was told in 1984 that "the problem solver needs to be aware of different paradigms in the social sciences, and he must be prepared to view the problem context through each of these paradigms" (Jackson and Keys, 1984). But how is this actually done? Either...

- Pick a dominant and a subservient paradigm
- Take a metaparadigmatic stance outside all paradigms
- Create a new paradigm that subsumes the others
- Pragmatism -- downplay the relevance of (obviously inadequate, difficult) theory, focus on action in the moment. (Mingers and Gill, 1997)
5.4. The evolution of multiparadigm systems theory

5.4.1. Introduction

Critical systems thinkers have launched strong attacks on hard, structuralist and soft systems thinking; advocating instead for the development of emancipatory systems approaches. However, they did not call for replacing these earlier approaches with emancipatory approaches, nor do they any longer see critical systems thinking as an overarching, or meta-theory subsuming the other approaches under an overall emancipatory approach. Instead, critical systems thinking is now committed to a pluralist path which recognises the value of all systemic approaches in their own right—each dealing with different dimensions of problematic situations (Schecter, 1991). The following table tracks the historical introduction of theoretical concepts related to the development of the contemporary state of critical systems thinking and practice—pluralist and multiparadigm theories and multimethodologies.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>Jackson &amp; Keys’ A System of Systems Methodologies (SoSM) (1984); [coercive added] (Jackson, 1987a)</td>
</tr>
<tr>
<td>1987</td>
<td>Jackson introduces methodological pluralism (1987b)</td>
</tr>
<tr>
<td>1989</td>
<td>Fuenmayor’s Interpretive Systemology (1985, 1989a, b)</td>
</tr>
<tr>
<td>1990</td>
<td>Midgley’s Creative Methodology Design (Midgley, 1989b, 1990)</td>
</tr>
<tr>
<td>Year</td>
<td>Theorist and Theory Description</td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>1991</td>
<td>Flood &amp; Jackson’s Total Systems Intervention [TSI] (1991a; Flood, 1995a, b, c)</td>
</tr>
<tr>
<td>1992</td>
<td>Midgley's Ontological Complexity (1992a) [Habermas’ Communicative Competence as underpinning for pluralism]</td>
</tr>
<tr>
<td>1995</td>
<td>Flood’s [and later, Flood &amp; Romm’s] Diversity Management / Triple Loop Learning [TLL or TSI-2] (Flood, 1995b; Flood and Romm, 1996b)</td>
</tr>
<tr>
<td>1996</td>
<td>Gregory’s Discordant Pluralism (1996a)</td>
</tr>
<tr>
<td>1997</td>
<td>Midgley’s Creative Design of Methods (1997a)</td>
</tr>
<tr>
<td>1999</td>
<td>Jackson’s Coherent Pluralism (1999)</td>
</tr>
<tr>
<td>2011</td>
<td>Midgley’s Theoretical Pluralism (2011)</td>
</tr>
</tbody>
</table>

Table 2. Pluralist, multiparadigm and multimethodological systemic theories.

Several significant theories can now be called multiparadigmatic and/or pluralistic; all of which followed on from the first systems theory to consider the collection of all systems theories as a set—A System of
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Systems Methodologies, or ‘SoSM’ (Jackson and Keys, 1984) (see §5.4.3).

Early in the course of this project a literature search was undertaken to find and catalogue all systems methodologies and theories having anything to do with multiple paradigms. In his research published in 2003 Mingers had catalogued only five (Mingers, 2003). This research found eighteen and published a graph which shows them arranged by what I consider to be their ideological lineage (Bowers, 2008a).

![Figure 9. Multiparadigm systems theories (Bowers, 2008b, updated).](image)

5.4.2. The map of development of pluralist systems theories

Developments from this research have since informed a new model which also includes the theory proffered by this dissertation, P–S multiparadigm perspectivity. To display the additional information in-
cluded in this new model it became necessary to illustrate it four dif-
ferent ways: Figure 10 is the plain view, a graph of theories associ-
ated with the development of multiparadigm, multimethodological (or plu-
larist) theories in critical systems thinking. As before, these theo-
ries are arranged chronologically by what I consider to be their ideo-
logical lineage, but the graph is now complete. It has been arranged
vertically and parts have been shifted around a bit to fit the page.

Figure 11, the second view, shows the same graph of theories but
with additional information—citations to the publications which an-
nounced each new theory. In some cases major revisions are also
cited. Figure 12 is the third view of the same theories but its addi-
tional information indicates the major theoretical underpinnings or
the grounding theoretical support attributed to each theory. Figure 13
conveys additional, philosophical information. [(Jackson and Keys,
1984; Fuenmayor, 1985; Jackson, 1985; Flood, 1990; Jackson, 1990;
Midgley, 1990; Flood and Jackson, 1991a, c; Gregory, 1992; Flood,
1993, 1995b; Flood and Romm, 1995a, 1996b; Mingers and Brock-
lesby, 1996; Taket and White, 1996; Midgley, 1997a; Jackson, 1999;
Flood, 2000; Midgley, 2000; Mingers, 2006; Bowers, 2008b, 2010a,
b; Midgley, 2011; Bowers, 2012)].
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**Figure 10. Development of MP-MM theory in Systems Thinking.**
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Figure 11. Evolution of pluralism with originating publications.
Figure 12. Evolution of pluralism in CST with onto-epistemological support.
Figure 13. Evolution of pluralism in CST with additional, philosophical information.
5.4.3. A system of systems methodologies (SoSM) (Jackson and Keys, 1984)

With *Towards a System of Systems Methodologies* (SoSM), Jackson and Keys (1984) took the first steps towards multimethodology with a theory establishing methodological pluralism in the systems sciences (refer again to §4.3.). They developed the first metatheoretical framework (Mingers, 1997a), a scheme to classify all systems approaches by their assumptions about systems using two dimensions for categorization (see Table 1). First was the decision makers’ presumed agreement upon the particulars of the system and the goals of the research, design or intervention: unitary (a singular view), pluralist (many views) and (later,) coercive (or enforced) (Jackson, 1987a). Secondly, the perceived relative complexity of the system itself: mechanical or systemic. Into these combinations of ‘problem contexts’ they organised the contemporary methodologies according to assumptions made by the approaches themselves, their ‘domain of appropriateness.’

*Hard systems thinking (classical OR, systems analysis, systems engineering) was said to assume that problems are set in simple-unitary contexts because it takes as given that it is easy to establish objectives for the system of concern and that it is possible to model it mathematically. Sociotechnical, contingency and cybernetic ap-
proaches were related to complex-unitary contexts vari-
ous soft systems approaches to simple-pluralist and
complex-pluralist contexts; and no systems methodolo-
gies were available based on coercive assumptions.
(Jackson, 1997)

Methodologies should be judged on their effectiveness, they said,
only when they have been applied within the domain of systemic sce-
narios for which they are appropriate. SoSM’s utility, then, called
‘methodological complementarism,’ \(^{16}\) was to help inform the interven-
tionist’s decision as to which methodology to choose to employ in a
given situation. In other words, to pick the right tool for the job. It
effectively stopped the debates which saw methodologies in competi-
tion,

...because it presented the different methodologies as be-
ing appropriate for different types of problem context.
This should encourage mutual respect in management
science between those proponents of different approaches
who had previously seen themselves at war with one an-
other. It should also lead analysts to ask, on each occa-
sion the are confronted by a problem, which methodology
is appropriate to this problem context. Finally, it aids un-
derstanding of exactly what goes wrong when an inap-

\(^{16}\) ‘Theoretical complementarism’ and the critical approach emerged in the
next generation, ‘total systems intervention’ (TSI) (Flood and Jackson,
1991a).
Appropriate problem-solving approach is employed in a particular problem context. (Jackson, 1997)

In hindsight, Jackson said the idea of single “methodology selection”—rather than the use of different methodologies in the same intervention—and its “failure to adequately distinguish methodology from methods” were its significant weaknesses (Jackson, 2000).

5.4.4. Interpretive systemology (Fuenmayor, 1989)

Interpretive systemology (Fuenmayor, 1985, 1989a, b) is not a multimethodology. It is included here because Fuenmayor, in setting out to construct a response to Jackson’s observation that at the time there were no explicitly interpretive systems methodologies, created instead a hybrid critical-interpretivist, multiparadigmatic theory. Jackson’s lacunae was formally addressed by Fuenmayor. The groundwork was laid in his doctoral thesis, The ontology and epistemology of a systems approach: a fundamental study and an application to the phenomenon development/underdevelopment (1985) and fully developed in two papers, Interpretive systemology: a critical approach to interpretive systems thinking (1989a), and Interpretive systemology: its theoretical and practical development in a university school of systems in Venezuela (1989b). Here is a report by Schecter.
Fuenmayor and his colleagues have taken up the task of developing the critical kernel in interpretive systems approaches by providing a rigorous theoretical foundation for interpretive systems work [(Fuenmayor, 1985, 1989a,b)]. Fuenmayor’s work, which he calls interpretive systemology, is focused on the construction of basic theory (‘onto-epistemology’ in his terms) that is interpretivist, critical and also emancipatory. In his view, there is not a fundamental contradiction between the interpretive view and the critical view. Rather, the reasons for the non-critical nature of current soft systems work are its lack of an interpretive systems theory and the instrumental nature of the way it has been used. Fuenmayor describes the dominant approach to soft systems work as ‘pragmatic-regulative interpretive management,’ which uses learning as a tool for managing human organisations. In contrast, interpretive systemology considers learning itself as the key focus. This leads to a much more theoretically grounded, more critical approach. (Schecter, 1991)

Support was taken from Heidegger’s (1962) ontological phenomenology. Sokolowski explains.

The [Heideggerian] phenomenological method is rooted in intentionality, Husserl’s theory of consciousness. Intentionality represents an alternative to the representational theory of consciousness which holds that reality cannot be grasped directly because it is available only through
perceptions of reality which are representations of it in the mind. Husserl countered that consciousness is not ‘in’ the mind but rather conscious of something other than itself (the intentional object), whether the object is a substance or a figment of imagination... Hence the phenomenological method relies on the description of phenomena as they are given to consciousness, in their immediacy. (Sokolowski, 2000)

What in my terms is the ontology of his phenomenological approach, in his terms is ”the paradoxical recursive unity in which experience takes place.” He describes conscious reality as an emergent property—”the phenomenon of holistic transcendence”. I believe my theory has a more accessible explanation (Chapter 6). It has a corollary that I call “the critical moment of becoming” (§6.11).

What Fuenmayor actually did was to justify the use of interpretivist methods within a critical systems approach to intervention. In the context of this dissertation, interpretive systemology, then, is multiparadigmatic—part interpretivist and part critical-emancipatory. And, as it is a multiparadigmatic theory, interpretive systemology is open to charges of paradigm (i.e. ontological and epistemological theoretical) incommensurability and relativism.17

17 But with respect to the new theory proposed in Chapters 6 and 7 these charges could, perhaps, be dropped.
5.4.5. Critical systems thinking (Jackson, 1985)

Critical systems thinking was designed as a meta-theoretical framework; that is, an overarching theoretical framework intended to direct the use of other theories. Jackson’s critical systems thinking is all about the consideration of different existing approaches to systemic practice with respect to multiple onto-epistemological paradigms. Where, in a system of systems methodologies, the concept was meta-methodological, to inform the systemist in choosing the proper methodology, the object of this theory was to enable the systemist first to pick the one, right paradigm for a given real situation. The theory improved the earlier organising concept of methodologies categorised by SoSM’s scheme which assumes that the world has systems which are either agreed upon or not (unitary/pluralist/coercive) and which are either systemically complex or not (mechanical/systemic). Jackson adopted and adapted Burrell and Morgan’s (1979) onto-epistemological (and incommensurable) social paradigms to the domain of systems thinking. Burrell and Morgan categorized theories based on their underlying assumptions as to the deeper nature of the ‘world’ in which they operate—“What is in this world; what is it made of?” (ontology); and “What are its values and what sort of knowledge
we can have of it?” (epistemology). The individual paradigms of critical systems thinking (see Figure 7) are the subject of Chapter 4.

This theory also formally incorporated critical (social) theory into the body systems thinking, establishing for it the new ‘emancipatory’ paradigm, concerned with the exercise of power and control. The word ‘critical’ signified an ethical commitment to critical self-reflection and critical systems thinking was established with a mandate to approach systems critically—probing and questioning the problem scenario looking for situations of power and control, of dominance and submission, or coercion. It gave the systemist the ethical responsibility to (at least) expose such problems. What should the systemist do in such situations? Radical emancipatory methodologies were expected to be developed. First, though, was Ulrich’s critical systems heuristics (1989), a methodology to ensure that system boundaries (considered to be conceptually dynamic) include all those who would be affected by the research, design or intervention (see Critical systems heuristics, §4.5.4.3).

To demonstrate a variety of the systemic approaches available to the systemist, Jackson explained how metaphor can be used as a conceptualisation tool and why he believes it is beneficial to envision systems (in this case organisations) this way (my emphasis added):
Are organisations being seen just as machines; or are they being thought of as organisms needing to adapt to their environments; or as cultures in which different value systems and political interests co-exist? ...

Systems thinking, as I have tried to suggest, is able with its holistic view to see the broader picture and the true complexity of the management task. Systems thinking is also holistic in the sense that it entertains the perspectives offered on organisations and their management by various sociological paradigms. Its concern is to get the greatest benefit from each of these possible theoretical positions, adding its own contribution of rigour and relevance in each case. (Jackson, 2000)

To support the theory in terms of its use of multiple, incommensurable paradigms, epistemological support was drawn from the work of Laughlin et al. (1981) and Chua et al. (1981) combining Burrell and Morgan’s theoretical paradigms with Habermas’ theory of knowledge-constitutive interests (1971, 1974) (my terminology in brackets).

Laughlin et al. (1981) and Chua et al. (1981) have sought to critique and extend the Burrell and Morgan (1979) framework by incorporating Habermas’ interest constitution [knowledge-constitutive interests] theory, in terms of which the concerns of social theories are seen as reflecting either a technical interest for prediction and control (man-nature interaction), a practical interest for under-
standing (human communicative interaction), or an emancipatory interest (social relations of power, domination, and alienation). The technical interest constitutes empirical knowledge and parallels Burrell and Morgan’s functionalist paradigm [here, the positivist/structural-functionalist paradigm]. The practical interest constitutes historical-hermeneutical knowledge, paralleling the interpretive paradigm. The emancipatory interest constitutes critical knowledge, paralleling the radical-humanist and -structuralist paradigms [here, the critical-emancipatory paradigm].

[They] argue that the two schemes are parallel, but fundamentally different, in that whereas Burrell and Morgan merely explain the different paradigmatic categories, Habermas explains and reconciles the interest categories in terms of their being individually necessary (although insufficient) as human species, universal and invariant (ontological) forms of activity—namely labor, human interaction, and authority relations (Habermas, 1971; Giddens, 1977; Puxty, Soo, et al., 1980; Keat, 1981). This is an important improvement over the interparadigmatic incommensurability position of Burrell and Morgan (cf. Beyleved, 1975).

The three different kinds of knowledge imply different methodological approaches—namely empiricist [positivist/structural-functionalist], hermeneutic [interpretive], and critical [critical-emancipatory] methodologies. It is these
methodologies that constitute metatheoretical foundations for lower-order methods in the form of modes of inquiry and problem-solving approaches. (Oliga, 1988)

Later, Jackson described how ‘critical’ and ‘emancipation’ came to be separated explicitly in the following six years, and how the grand but vague ideas of radical emancipation were toned down.

Critical systems thinking has, since its inception, made somewhat vague statements about being dedicated to human “emancipation.” Putting this item on the agenda by promoting emancipatory systems thinking was a real achievement of the approach. ... The relationship between emancipatory and critical systems thinking was, for some time, so close that there was confusion about their separate identities. Eventually it becomes clear that “emancipation” was only one of three human interests which, following Habermas, critical systems thinking sought to support. Critical systems thinking, therefore, still embraced emancipation but as part of a much broader dedication to human improvement... in terms of bringing about those circumstances in which all individuals could realize their potential. (Jackson, 2000)

So systemists were released from a moral commitment to emancipate others, and instead were asked to accept the much more realistic
commitment to help “bring about the circumstances” “in which all individuals could [if they wished] realize their [own] potential.”

As to the other concept,

**Critical** systems thinking was seen as a wider approach to management science as a whole that was based on five “commitments”—critical awareness, social awareness, methodological complementarism, theoretical complementarism, and human emancipation (Jackson, 1991c). (Mingers, 1997a)

Habermas himself had abandoned knowledge-constitutive interests by 1981. Spaul (1997) had said that Habermas no longer found his early human interest theory to be defensible.

5.4.6. Creative methodology design (Midgley, 1990)

In 1989 Midgley had written about the problems of accommodating pluralism in critical systems thinking (1989a), and in another paper he advanced the term ‘whole methodologies’ and proposed ‘partitioning’ methodologies—where parts are taken out and combined with others (1989b). Despite the title, the 1990 paper is about the creative design of *methods*, not methodologies, and in the 1997 revision the theory takes the proper title (see §5.4.16). The 1990 and 1997 versions are considered separate theories for the purposes of this re-
search because of their differing philosophical underpinnings. The former (but not the latter) was grounded on Habermas’ knowledge-constitutive interests. It was conceived of as “an improvement to a system of systems methodologies (SoSM)” which was thought to be necessary because

...the issue of the researcher’s responsibility was not addressed in earlier descriptions of the use of the system of systems methodologies. The system of systems methodologies was also criticised for paying insufficient attention to the dynamism and complexity of most research situations. (Midgley, 1990)

Midgley says that “following reflection upon a particularly complex intervention,” the first known to have specifically attempted to employ the system of systems methodologies, he had

...problematized the [SoSM’s] notion of simple methodology choice, arguing that most research situations are perceived as sufficiently complex to warrant the use of a variety of methods. Therefore, it is more useful to think in terms of the design of methods than simple choice between “off-the-shelf” methodologies. (Midgley, 1997b)

Creative methodology design
...involves understanding the problem situation in terms of a series of systematically-interrelated research questions that express the purposes of the researcher (usually in dialogue with others), each of which might need to be addressed using a different method, or part of a method. These research questions are not necessarily determined as a complete set in advance but may evolve as events unfold and understandings of the situation develop. (Midgley, 1997a)

In the example he provides, the research questions which were asked were

...What should we evaluate current practice against? If the answer to this is a vision of the ideal service, how do we ensure that service users have a meaningful say in its production? How do we address the issues of power and expertise that arise so frequently when dealing with the design and management of mental health services? And how do we go beyond the boundaries of the current service to address peoples' needs more systemically?

Their decision was to combine methods from Ulrich’s critical systems heuristics (the twelve questions) and Ackoff’s interactive planning.

The synthesis of methods drawn from Critical Systems Heuristics and Interactive Planning--looks very different from Critical Systems Heuristics alone. However, it is also very different from Interactive Planning. The latter seeks
to "unshackle" the minds of participants in debate, to liberate them from unnecessary assumptions that limit creativity, but it does not do so with the specific intention of addressing power issues. By synthesising the principles and methods from the two methodologies into a new method... we produced something that was different from the sum of its contributory parts.

In retrospect, Midgley explained why Habermas’ knowledge-constitutive interests proved inadequate as an underpinning to this theory.

* A move away from the theory of knowledge-constitutive interests was considered to be necessary following two critiques: a critique of the use of the theory of knowledge-constitutive interests to underpin methodological pluralism (Midgley, 1989a, b), and a critique of the legitimacy of the theory of knowledge-constitutive interests itself. (Midgley, 1992b)

Interestingly, he did not question the assumption that it somehow nullifies the incommensurability problem; instead, he took issue with it in the sense that it is *imperialistic*, "creating a Grand Truth that is beyond question, and which seeks to invalidate any ideas that oppose it (Jackson and Carter, 1991)" (Midgley, 1997b). And, as to the theory itself, knowledge-constitutive interests
...describes the relationship that human beings have with the nonhuman environment as one of “prediction and control”. If this is used to inform the development of systems science, it is likely to reinforce the humanist assumption that the natural world is a resource for human control and consumption. It is far better to view human beings as having an interest in preserving and/or building a sustainable, interactive relationship with their non-human environment. (Midgley, 1997b)

In the same paper he goes on to explain that he finds Habermas’ “three worlds” theory of communicative competence a better foundation (see §5.4.16).

5.4.7. Liberating systems theory (LST) (Flood, 1990)

The title is deliberately ambiguous. Liberation is a double entendre. It stands for the idea of emancipation with respect to both humans and to systems theory itself. It is as though systems thinking has escaped its bonds and emerged anew, as critical systems thinking. The earlier eras saw systems in only ‘hard’ or positivist terms, for example as closed, open and autopoietic systems; later in ‘soft’ or interpretivist terms. Now critical systems theory sees systems in terms of ‘paradigms’ (weltanschauungen, or world views) and explicitly combines
critical and emancipatory systems thinking together in the third paradigm. The ideal is rather grand, as Fairtlough’s review reports.

It aims to take into account the interests (sometimes concealed even from themselves) of all those involved with, and affected by, the problem situation and by any proposed solutions. The ideas, the values, and the worldviews of problem solvers, whether they are experts, managers, or owners, are not enough; ideally everyone’s ideas, values, and worldviews must be considered, whether articulated or not. So the Critical Systems approach is inclusive not elitist, emancipatory not conservative, popular not expert. (Fairtlough, 1991)

Flood is a complementarist, which means that “he sees different theoretical and practical approaches as being potentially helpful to each other, rather than always being rivals” (Fairtlough, 1991). Unfortunately, complementarism suffers charges of paradigm incommensurability and relativism. Epistemologically, Flood considers the variety of ideas about knowledge and strategies for inquiry. He presents four main approaches to understanding inquiry and knowledge (ibid.).

- The linear sequential approach sees knowledge as cumulative. The more we know, the more the jigsaw becomes complete.
- The structuralist approach adds feedback to the sequential approach so that new pieces in the jigsaw
change the shape of the other pieces. New knowledge modifies old knowledge as well as adding to it.

- The worldviewist approach describes the history of knowledge in terms of paradigm shifts. New knowledge requires a whole new way of looking at things.

- Finally, the genealogical approach adds the notion of power to the worldviewist approach. The interests of individuals influence what is taken to be valid, and what is taken to be invalid, knowledge. The accumulation of a huge number of small interest-driven reappraisals results in a paradigm shift. (Flood, 1990)

To Flood, Foucault’s poststructuralist ideas explain how knowledge derives from personal statements about the way things are in the world, and that the describer gains power and influence by the particular choices he makes—something that Habermas’ larger view of society (in terms of mankind’s knowledge constitutive interests) does not address. For Foucault, communication is hopelessly contaminated by power-seeking moves. But,

_Flood wants to show that the two positions share features. It is these common aspects that, despite their differences, will enable them to be used within a ‘meta unity’ which he terms ‘Liberating Systems Theory.’_

“Cooper and Burrell (1988)... [note] that Habermas has been vigorous in his criticisms of Foucault and that the
groundings [of the two positions] appear to conflict. From another angle, however, a commonality that turns out to be a linchpin in the following studies, can be found at a meta-level, and is characterized as an open and conciliatory approach to competing views and traditions. (Flood, 1990, pp.22-23).”

Flood does not acknowledge that overcoming the contradictions that emerge from the ways in which the two theoreticians conceive of power is ‘extremely difficult.’ However, this does not prevent him from trying to achieve

“an adequate epistemology that is constructed from the complementarist ideas of Foucault’s Interpretive Analytics and Habermas’ knowledge-constitutive interests (Flood, 1990, p.50; emphasis added).” (Gregory, 1996b)

Flood tries but does not succeed in reconciling these two approaches to power, agrees Fairtlough. Why? Because the two ways of understanding are different ontologically and epistemologically; that is, they are incommensurable. Flood and others who see the great value in his ideas would go on to establish a postmodern-poststructural paradigm to accommodate Foucault’s ideology.

Midgley points out Flood’s apparently contradictory logic theoretical claims.
Flood (1990) accepts the incommensurability argument: he suggests that it is possible to have methodological commensurability while acknowledging theoretical incommensurability. However, it would seem to me that this stands in opposition to his claim that critical systems thinking is “meta-paradigmatic”: it means that, if critical systems thinking is theoretical in nature, we must recognise that it is incommensurable with other perspectives based on different theoretical assumptions. (Midgley, 1997b)

5.4.8. Total systems intervention (TSI) (Flood and Jackson, 1991)

Flood and Jackson’s total systems intervention (TSI) relies upon Jackson’s critical systems thinking (1985) for its onto-epistemological paradigms and on complementarism (as in SoSM). But, rather than generally using just one methodology (as in SoSM) or possibly multiple methods, but from just one paradigm for a particular intervention (as in critical systems thinking), TSI describes the meta-methodological use of multiple methodologies to deal with different situations in the same intervention. It sought to “operationalize pluralism in each of its three phases—creativity, choice, and implementation.” (Jackson, 2000).

Here is how Flood summarized TSI.
The problem solving system TSI has been developed to provide managers with a practical and useful systems-based approach to problem solving. It offers procedures to integrate all methods for problem-solving in a process which ensures that they are employed to tackle only the issues they are best suited to. (Flood, 1995a)

What are the rules for this new way of practicing systemic research, design and intervention?

Following worries that this might be interpreted as a call for a "rule book" for the application of systems methodologies, Jackson (1990) made it clear that the diagnosis of a problem situation should not replace critical thinking about the reasons for intervention. It should simply be used as information so that the researcher can remain aware of the limitations of the methodology s/he is using and act appropriately. (Midgley, 1997a)

Like SoSM, TSI is complementarist. This is the major criticism of Gregory (1996a) who says that the main tool, complementarism, "hinders the approach in its efforts to provide an adequate foundation for Critical Systems Thinking." She has developed a radically altered view of complementarism’s harmonious perspective, ‘discordant pluralism’ (see §5.4.10).
Jackson’s own rejection of the theoretical basis for TSI were explained in the three publications that introduced his next two scholarly theories, coherent pluralism and critical systems practice (Jackson, 1997; 1999, 2000) (see §5.4.14).

Attempted improvements by Flood (1993) are never followed up or ‘ratified’. This where TSI-2 starts. Flood (1995b) abandons SoSM (but not TSI) as an underpinning for his theory, diversity management (DM). DM takes TSI, now dubbed ‘TSI-2’ into the postmodern. Flood and Jackson do not publish together from this point forward.

5.4.9. Ontological complexity (Midgley, 1992)

Because I acknowledge that statements about ontology are discursive rather than “true” in an absolute sense, I regard the perspective I am developing as useful in relation to other discourses we are currently dealing with, i.e., those surrounding the notions of pluralism, complexity, interdependence, and the future of systems science. It therefore has a "local" significance (in both time and space), even when our discourses are about "global" issues! (Midgley, 1992a)

I agree with Midgley that the sources of the problems presented by pluralism are ontological, but where I imagine their resolution lies somehow ‘beneath’ or at a more base level than their incommensura-
ble ontologies, in this paper Midgley imagines the solution is somewhere ‘above’ them in a metatheoretical level. In this paper he is responding to “a strong call for a pluralist approach which recognizes the strengths and weaknesses of all working methods through the use of a meta-theory that allows their complementarity.” This paper imagines the sort of ontology that would support such a metatheoretical framework for critical-systemic pluralism.

Midgley’s theory details three systemically-interdependent “complexities”: natural world complexities of object relations, complexities of moral decision making and complexities of subjectivity. Different methods, he finds, “have evolved to handle the different forms of complexity.” “Therefore, if systems science is going to tackle some of the major issues of today in an adequate manner, it must embrace methodological pluralism” (Midgley, 1992a).

Building on his idea for partitioning methodologies into essential parts and combining them with others (1989b), “all working methods” would be “adapted” to serve in a new meta-paradigm; unplugged from their own onto-epistemologies and plugged into this new meta-one, I believe. Of course, Jackson has held that this must not be done, ‘denaturing’ them from their true philosophies; it smacks of pragmatism.
Later in the same year, Gregory published a paper which explains that any meta-approach is necessarily corrupting to the nature of the thing subsumed, replacing its motives with new, overarching ones; and she rightly declares that a meta-approach is an imperialist approach which assumes it is the right approach and that all others are wrong (see §5.4.10)—a position which is antithetical to ideological critique, one of the foundational tenets of critical systems thinking.

5.4.10. Critical appreciation, Discordant pluralism (Gregory, 1992, 1996)

The problem at this time in the mainstream of critical systems theory is that it sees pluralism with respect to paradigm incommensurability as a problem of commensurability. Mingers and Brocklesby (1997) also wrote that “appealing to a higher level of reasoning, or meta-theory, allows methods to be combined without destroying the integrity of the paradigms from which they originate.” It is known that a meta-methodological framework merely concentrates the problem as if to say, “Look. This is a model of paradigm incommensurability.” Jackson’s critical systems thinking, a meta-theoretical framework is the same, except at a higher theoretical level. Midgley’s ontological complexity shows that a meta-epistemological theory must ‘unplug’
methodologies from their original onto-epistemologies and ‘adapt’ them, denaturing them, to serve a new, grand vision.

*It is difficult to comprehend how a theoretical integration of the different methodologies can be achieved, given the conflicting assumptions on which they are based.* (Gregory, 1996b)

Gregory’s Ph.D. dissertation presents a different perspective on the issue of pluralism in critical systems thinking that she calls *critical appreciation*. It is underpinned by an epistemology she developed as well, *discordant pluralism*. As was said earlier, Gregory is critical of the “open and conciliatory complementarism” of SoSM and TSI, and goes about explaining why it is not an adequate foundation for critical systems thinking: “it lacks the ability to provide for consideration of radically alien perspectives…” “because it is inherently consensus oriented.” Importantly for pluralism, she says, complementarism brings with it problems of paradigm incommensurability. She exposes TSI’s *meta*-theoretical ‘complementarist’ pluralism as a form of imperialism in disguise. Instead, her model, critical appreciation, specifies what I consider to be basic qualities of modern (i.e. pluralist) critical systems thinking, critical reflexivity and multiparadigm multimethodology. First, critical reflexivity, or “critical self-reflection and the explicit critique of ideology” (my emphasis),

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...incorporates two crucial components advocated by Habermas and endorsed by Bernstein [(1983)]: critical self-reflection based upon an analogy of Freud’s model of dream-analysis, and an explicit critique of ideology. ...

And secondly, multiparadigm multimethodology.

It is suggested that any social inquiry must contain elements of `reflexive’ (philosophical) and `scientific’ (practical) inquiry together with ideology-critique and critical self-reflection in order to bring about the emancipation of individuals and groups. A model of self-society dynamics reveals the need for reflexive inquiry, discourse and action (as exemplified in the critical appreciation process) in any efforts to transform ‘self’ or ‘society’. (Gregory, 1992)

After identifying and separating these various components of critical systems inquiry and action, she leads the field in a new direction.

Rather than attempting to circumscribe all of systems thinking with critical systems thinking which would require that we ‘adapt’ the various systemic approaches to fit within an overarching approach guided by critical-emancipatory principles, Gregory is among those who rightly point out that such subordination would necessarily corrupt those other approaches. She speaks instead of a new “relationship between critical thinking and pluralism” (my emphasis), and calls for “an a priori commitment to a new, discordant pluralism”. Rather than
trying to see a problem as either a this or that type of situation, in the systemist’s “problematique” it can be many or all of them at once. Each view is “juxtaposed” within a “constellation” (or web) style of conceptual organisation where the nature of the differences between these views supplies the tension which keeps them apart.

She prefers “multidimensional evaluation” where methodologies are used together but in parallel, in order to protect the different contributions they can offer according to their distinctive theoretical underpinnings. (Jackson, 1997)

Rather than trying to reconcile differences between ways of conceptualizing problem scenarios (as with complementarism), discordant pluralism celebrates them. The differences between paradigms are no longer seen as problematic, but as distinctions which represent their value with respect to the others.

Discordant pluralism thus has three main features. The first of these is its local, contingent, and historically situated nature. Second, discordant pluralism promotes communication with other, radically different and alien perspectives. Here, the emphasis is on communication which can help us ‘come to a deeper understanding of ourselves precisely in and through the study of others’ (Bernstein, 1983, p.96). The third feature concerns the
use of insights gained through such communication to provide for ethical decision making. This is achieved through the juxtapositioning of oppositional view-points within a constellation that supports both one perspective and the other. Issues need no longer be framed in an “either/or” manner. (Gregory, 1996b)

“Gregory insists that it is impossible to transcend the paradigm debate: each attempt to do so must inevitably involve researchers in making new paradigmatic assumptions” (Midgley, 1997b). Discordant pluralism puts critical systems thinking back into agreement with Burrell and Morgan (1979), at last—paradigms are incommensurable. Gregory has produced our first theory which explicitly calls for acceptance of paradigm incommensurability. It is not a resolution to the problem itself, but it is a critically important step forward for critical systems theory. (My proposal is also based on the acceptance of paradigm incommensurability; see Chapters 6 and 7.)

5.4.11. Diversity management (triple loop learning) (Flood and Romm, 1995)

Flood and Romm (1995a) get right to the point of the issue of theoretical incommensurability, explaining it quite well. The solution as they see it is a form of postmodern freedom from grand ‘truths’. Now, decisions are made and actions taken based on the conciliation be-
tween argumentors; that is, on Habermas’ (1981) theory of communicative competence (which had been proposed in 1992 as a better grounding theory for pluralism than Habermas’ theory of knowledge-constitutive interests by Midgley (1992a)). Where Gregory (1992, 1996b) has “discordant pluralism”, Flood & Romm have “conciliatory discord”. In their paper, the section on theory (5.3) is quite difficult to understand but, in my opinion, comes to nothing that either resolves or delegitimises incommensurability, yet it is used to justify their approach to judgement and action. The attempt is made to blend the intentions, but not the actual theories of Habermas and Foucault. I believe it steps over the problem without resolving it—as if they are saying that we have to learn to live with paradigm incommensurability, and Habermas’ theory is just a cover for a pragmatic resolve to ‘keep buggering on’. It seems to me that “conciliatory discord” is a methodological solution to epistemological concerns. Truth is then too unstable. Also, how legitimate is it to argue from different points of view which are incommensurable?

From this epistemology they derive and develop the idea of the ‘oblique’ use of methodology—in which a method is used to serve a purpose very different than that for which it was originally intended.
“The key... is to operate them using the principles of a different perspective” (Midgley, 1997b). For example,

...a system dynamics model, usually associated with the functionalist approach, being used as a detailed cognitive map for the purposes of enhancing debate in an interpretive framework. (Jackson, 2000)

The main philosophical problem, said Mingers and Brocklesby, “is the [theoretical] legitimacy of transferring a technique developed within one paradigm to another” (1996). By 1997 Jackson, writing about Flood and Romm’s ideas, had concluded that “pluralists must learn to live with and manage a degree” of paradigm incommensurability.

The great merit of unrestricted multi-method use, as practised by some in OR [operations research] and some who embrace postmodernism, is that it allows practitioners the flexibility to cleave closely to what is appropriate in the problem situation and to the twists and turns taken by the intervention.

The next sentence, though, carries a consistent charge—mind that you remain theoretically conscientious!

The weaknesses, however, must also be recognized and are associated with an almost inevitable relapse into pragmatism or an unreflective imperialism. The use of
methods, tools and techniques, without reference to the methodology and paradigm supporting their use, means that we cannot learn about the effectiveness of these in supporting interventions conducted under the governance of a particular rationality. (Jackson, 2000)

5.4.12. Pragmatic pluralism (Taket and White, 1996)

With respect to pluralism, it’s “mix and match”, not a solution to theoretical incommensurability, said Jackson in 1997. He offers some of his harshest criticisms for this theory.

Taket and White (1995) argue that the degree of complexity and heterogeneity encountered in most evaluation situations prevents the adoption of the kind of contingency logic underpinning... [TSI’s] complementarism. They also advocate a pluralist strategy for evaluation but based on a more eclectic approach. This approach must recognise the heterogeneity within the group concerned with an evaluation and recognise evaluation as a social process. It can be thought of a a kind of “pragmatic pluralism” in which parts of different OR/systems methods are combined, “in a process that might be labelled ‘judicious mix and match’”, according to the requirements of the situation and the changing responses of the evaluation party. Taket and White allow that their strategy lays them open to the charge of combining methods based on
incompatible theoretical assumptions, but make little progress in resolving this problem. (Jackson, 1997)

We must protect paradigm diversity, said Jackson. If paradigm diversity is to be protected, then incommensurability “cannot simply be ignored in the way that Taket and White (2000) propose in their pragmatic pluralism.” He warned,

The eclectic use of different methods, without reference to methodology or paradigm, means that we cannot ensure paradigm diversity. All the methods and models employed may be used according to one implicit paradigm. (ibid.)

5.4.13. Critical pluralism, Multi-paradigm multimethodology (Mingers and Brocklesby, 1996-7; Mingers 1997)

Mingers and Brocklesby’s ideas are collected from a series of two papers and two book chapters published in the space of two years, each with a substantial overlap (Mingers and Brocklesby, 1996, 1997; Mingers 1997a, c). Mingers and Brocklesby’s “multi-paradigm multimethodology” accepts Midgley’s theories regarding: philosophical support for multiparadigm pluralism based on Habermas’ newer theory of communicative competence, specifically in its ‘three worlds’; the detachability of ‘techniques’ (which are essentially methods not yet de-
ployed) from their onto-epistemological origins and combining them to create mixed methods in a multimethodological approach. And like Midgley they declare that critical pluralism is for a new “pluralist” metaparadigm.

There is a new term for the first paradigm in the first paper, “empirical-analytic”, and the third paradigm is “critical-realist”.

Multimethodology should be used on all occasions, they say.

> It is necessary to go beyond using a single (or on occasions more than one) methodology to always combining several methodologies, in whole or in part, and possibly from different paradigms, to make the most effective contribution in dealing with the richness of the real world. (Mingers and Brocklesby, 1996)

But they acknowledge there is still the matter of paradigm incommensurability.

> However, mixing methodologies, particularly from different paradigms, does present serious problems—philosophically in terms of paradigm incommensurability, ...

(ibid.)

They separate technique (the production of methods) from methodology and say that either whole methodologies are used or parts are
taken out and combined with others—what Midgley (1989b) called ‘partitioning’. They discuss varieties of multimethodologies such as a multiparadigm version of “methodology enhancement” where, for example SSM plus parts of VSM are combined; or where “parts of methodologies from different paradigms are brought together to construct an ad hoc multimethodology [mixed method] suitable for a particular problematic situation.”

Their new framework for mixing methodologies takes a critical realist perspective (from Bhaskar, 1989, 1994) in order to investigate methodologies themselves so that ‘detachable’ elements and their functions might be identified for such purposes. The framework deals with the problem of methodological mapping in two dimensions in order to identify the characteristics of different methodologies according to their ability to assist with various aspects of systemic enquiry, design, or intervention. Their ‘map’ considers three ontological positions, vertically: ‘material’, ‘personal’ and ‘social’ (Habermas’ ‘three worlds’); and splits epistemological concerns into four “stages” horizontally: ‘appreciation of’ (what), ‘analysis of’ (what), ‘exploration of’ (what), and ‘action to’ (what effect) (as with Midgley’s (1990) creative methodology design). These two dimensions form twelve concerns for the stages that they say any “fully comprehensive intervention needs to
undertake”, each box having some sort of “activities” to cover. “Thus, each box then generates questions about particular aspects of the situation/intervention that need to be addressed” methodologically.

Jackson faults this method of mapping the various components of methodologies to the four “stages” of an intervention, saying that

Under pluralism there is no justification for such a procedure. To functionalists, for example, the ‘appreciation’ stage of an intervention, carried out according to an interpretive logic, is not ‘richer’, it is simply misguided. 

(Jackson, 1999)

Like Mingers and Brocklesby’s multimethodology, TSI’s three phases (creativity, choice and implementation) were each supposed to be pluralist, as well, said Jackson. The problem was that insufficient emphasis was placed on it being an iterative process “continually cycl[ing] around creativity, choice and implementation, changing as appropriate which methodologies are ‘dominant’ and ‘dependent’” (ibid.).

To justify these types of practices in terms of theory is of course the most difficult and unresolved issue. Mingers and Brocklesby said they have “reflected on the mandate that methods from different philosophical traditions should not be combined.” They said that Jackson
appeals to Habermas’ knowledge-constitutive interests (1971, 1974) “to circumvent paradigm incommensurability” and that Midgley “appeals to Habermas’ ‘three worlds’ theory of communicative competence (1981) to justify methodological pluralism,” but neither Jackson nor Midgley had sought “to question the veracity of the incommensurability thesis itself.”

As I see it, the solution they found an “all of the above” strategy. They put together the grandest of the grand meta-paradigms and throw in everything to support it. In one paper they are “decidedly modernist” because they “wish to make a reasoned argument” and in another they adopt postmodern positions. They chose to keep Habermas’ newer (1981) theory of communicative competence and buttress it with extra ontological support from Bhaskar’s (1989) critical realism, and epistemological support from Giddens’ (1984) structuration theory and Searle’s (1995) construction of social reality. Both Giddens and Bhaskar, they say, *deemphasize* the distinctions between the various ontological and epistemological concerns. Both “dispute the claim that we must choose between the competing realities offered by realist or nominalist thinking” and both are capable of ontologically “subsuming subject/object dualism” (Mingers and Brocklesby, 1996).
Deemphasizing theoretical concerns is as pragmatist’s strategy, I would say. Deemphasizing differences between what is real (or not) and what is true, or good, right or proper (or not) is what psychiatry calls schizophrenia. I believe it is better to respect each paradigm’s ontological and epistemological determinations rather than pretend that the differences between them are negligible. As to Bhaskar’s critical realism, I have deconstructed Mingers’ summary of critical realism to point to certain relativisms in its ontology (my emphasis added):

Ontologically, the strongly held claim that there does exist a world independent, to differing degrees, of human beings and that the underlying mechanisms generate the events we observe and experience. (Mingers, 2006)

and its epistemology...

Epistemologically, the fact that we do not have pure, unmediated access to this world but that our knowledge must always be locally and historically relative. But in accepting epistemic relativism we do not hereby accept judgemental relativism—there are grounds for choosing between competing views. (ibid.)

which leads to the validity claim for critical multimethodology in terms of pluralism...
Methodologically, the retroductive approach of hypothesising generative mechanisms that would explain our experiences and then trying to confirm or deny their existence. This underwrites a pluralist view of research and intervention methods... (ibid.)

I find faults with the philosophical underpinnings, not just with its schizophrenia and other relativisms, but also with respect to paradigm incommensurability. First, I believe that the foundation of critical realism recognises and relies upon but does not adequately explain the fuzzy boundary, or “differing degrees”, between ontology and epistemology—between what is real and what is abstract—that we find varies between the paradigms; something that I feel my theory explicates very well (see Chapter 6). Secondly, I believe that with critical realism the concept that knowledge is historically relative (i.e. that truth depends upon the times) except that there are grounds for choosing between competing views (i.e. that truth is a matter for judgement) makes what is then considered to be ‘true’, true at this moment, to us; but not at some other time or to some other people—whether you call this ‘relativism’ or not—it is epistemologically incompatible with the understanding of the same word and concept in the positivist/structural-functionalist paradigm (which considers ‘truth’ to be enduring and independent of the knower). It is a form of
rationality which distinguishes itself from the rationalist tradition “by locating rationality in structures of interpersonal linguistic communication rather than in the structure of the cosmos” (Habermas, 1989). My theory, on the other hand, considers epistemologies as valid within their paradigmatic context, not across those contexts (see Chapter 7). With relativism in terms of what is ‘real’, and incompatible rationalities in terms of what is ‘true’, I believe that this and other frameworks which rely on support from Bhaskar’s critical realism (e.g. systemic intervention and the creative design of methods) suffer problems of ontological and epistemological relativisms and paradigm incommensurability.

Although they did say that “multimethodology has the potential to capture the spirit of postmodernism,” their earlier theory, critical pluralism, did not support it.

*We do not pursue this [postmodernist] line of thinking in detail here because our case hinges upon constructing a reasoned and rational argument in support of multimethodology. Our position is therefore decidedly modernist.* (Mingers and Brocklesby, 1996, p.111)

In the 1997 adaptation of the paper just mentioned they reversed themselves and proposed a new, postmodern “pluralist paradigm”
with a new framework for mixing methodologies. Actually, they said, it is natural to practice postmodernism multimethodologically (Mingers and Brocklesby, 1997).

In rejecting the theory himself, Jackson cautioned systemists against it, fearing relapses into pragmatism.

*We cannot afford to allow the theoretically uncontrolled employment of diverse methods, tools, models and techniques that appears to occur in management consultancy. One reason for this is that we want to learn the value and usefulness of the tools and techniques we use; we want to do research so that we can improve them. Only by using the methods and tools under the control of a methodology which clearly serves one paradigm can we test them and discover how to improve their effectiveness in supporting an intervention conducted according to that rationality. ... This consideration rules out, for me, the option of 'multiparadigm multimethodology' apparently proposed by Mingers and Brocklesby.* (Jackson, 1999)

5.4.13.1. What is this thing called Critical Systems Thinking? (Midgley, 1996)

This paper is a critique of the contemporary state of critical systems thinking and, importantly, proposed and brought about three major changes: First, critical systems thinking, rather than being a meta-
paradigmatic theory, has instead developed a distinct onto-
epistemology; it is therefore better understood as a (non-meta)
paradigm. Second, the commitment to critical awareness is better
understood as an ethical critique of boundaries, à la Ulrich and
Churchman. Because of these two changes, the “totalizing” theories
of Habermas are no longer required. Third, the commitment to hu-
man emancipation is more thoughtfully considered a commitment to
“improvement”.

In 1991, TSI described the meta-methodological use of multiple
methodologies from different paradigms, supported by Habermas’
theory of knowledge-constitutive interests. Gregory criticised its har-
monious philosophy of complementarism and questioned the legiti-
macy of Habermas’ theory to overcome incommensurability. Midgley
said that a metatheory like TSI would have to “unplug” and “adapt”
eexisting methodologies to serve its own onto-epistemology. Gregory
saw this co-opting as corrupting and “denaturing” and rightly pointed
to it being a form of imperialism—athema to theoretical pluralism.
She saw methodologies “used together, but in parallel... according to
their distinctive theoretical underpinnings.” The paradigms must be
allowed to stand apart from one another and their theories and
methodologies to remain incommensurable. We must protect theo-
retical diversity. Midgley, then Flood and Romm adopted Habermas’ “three worlds” theory of communicative competence, but this position was dismissed as utopian (later, even by Habermas, himself). Logically, then

... if CST is indeed theoretical in nature, we must recognize that it is incommensurable with other perspectives based on different theoretical assumptions. ... CST is trying to establish the foundations for a new paradigm. (Midgley, 1996)

In lieu of Habermas, the paradigm needs a critical systems philosophy.

My proposal for a first step to correct this problem is to support Ulrich’s (1993) argument that methods to support critical reflection on making boundary judgements should be used to enhance critical thinking up-front—both when we enter into interventions, and periodically after that.

Why the primacy of critical boundary judgements?

Failure to realize the full implications of this will inevitably result in some of the most important boundary judgements—those that determine who the researcher will talk to and how the initial remit of the work will be defined—being made in an uncritical manner. (Midgley, 1996)
Research around the central theme, the boundary of a system, was pioneered by Churchman (1968), says Midgley.

Prior to the work of Churchman, many people assumed that the boundaries of a system are “given” by the structure of reality. In contrast, Churchman made it clear that boundaries are constructs that define the limits of the knowledge that is to be taken as pertinent. There is also another important element of Churchman’s understanding of “system.” When it comes to human systems, pushing out the boundaries of analysis may also involve pushing out the boundaries of who may legitimately be considered a decision maker (1970). Thus, the business of setting boundaries defines both the knowledge to be considered pertinent and the people who generate that knowledge (and who also have a stake in the results of any attempts to improve the system). ...

Not only did Churchman introduce this fundamental change in our understanding of “system,” but he also made clear the importance of critique. When discussing “improvement” [which Midgley prefers to the term “emancipation”], Churchman (e.g., 1979) followed Hegel, who stressed the need to expose our most cherished assumptions to the possibility of overthrow. (Midgley, 1996)

Here is Midgley’s (1997) review of Ulrich’s critical systems heuristics.
Critical Systems Heuristics gives a list of 12 questions that can be used to generate debate during planning. These focus on various issues such as whose interests ought to be served by the development of a system, whose "expertise" should be accepted, what criteria of evaluation should be used, and who should participate in planning and management. In terms of its principles, Ulrich claims that there is a need to challenge the powerful when they do not take account of others affected by their activities. He suggests that Critical Systems Heuristics can have a useful role in confronting "pseudo-dialogue" (insincere communication). Indeed, this challenge to power is the "emancipatory principle" that Flood and Romm (1995b) emphasise when describing Ulrich's work. However, Ulrich also suggests that his 12 questions, if answered in meaningful dialogue with stakeholders, can help establish boundaries within which further systems interventions can take place that allow for the transcendence of narrow self-interest so that everybody can benefit. There are therefore two principles lying behind Critical Systems Heuristics: the "emancipatory principle," which assumes that there is sometimes a need to challenge those with power because they pursue their own interests with little regard for the interests of others, and the "participative principle," which (in Ulrich's view) assumes that people can be supported by the use of boundary questions in gaining the competence needed to enter rational debate with others, using a common language, and reach
accommodations so as to transcend narrowly defined interests. (Midgley, 1997a)

Midgley’s considered critique of Ulrich’s methodology is not all positive, however.

...Critical Systems Heuristics is not really that effective in directly challenging coercion. This is because coercion is usually characterised by closure of debate. The pseudo-dialogue Critical Systems Heuristics can allow people to challenge is a very mild form of coercion indeed. However, this is not to say that the methodology does not embody emancipatory principles: the 12 questions it offers can help facilitate consciousness raising within an interest group, thereby allowing for the identification of forms of coercion that might otherwise have gone unnoticed or unmentioned. These forms of coercion can then be dealt with at a later date. (ibid.)

The third major change was to reinterpret the commitment to “human emancipation”.

The term “human emancipation” will often be interpreted as the promotion of human well-being separate from consideration of the “environment.” Certainly, the ethical critique of boundary judgments will, to an extent, address this, but I would also suggest a change of terminology. Instead of talking about a commitment to human emancipation, why not call it a commitment to improvement?
Towards a Framework for Multiparadigm Multimethodologies

This deemphasizes the “human,” and brings CST more in line with Churchman (1970), for whom “improvement” (especially sustainable improvement) is a concept of central importance. (Midgley, 1996)


In 1997 Jackson proposed a new, pluralist “critical systems practice.” Unlike TSI, critical systems practice (CSP) would not be meta-theoretically ‘above’ the paradigms, but would “manage between the paradigms.” It would nevertheless call itself a meta-methodology which would remain committed to the practice of choosing one ‘dominant’ methodology at a time to run an intervention, “with ‘dependent’ methodologies reflecting alternative paradigms in the background.” It would keep its critical commitments which he named “critical awareness”, “social awareness”, and “ethical alertness”. It would “loosen the link between methodology and method.”

He did not give specifics as to its ontology or epistemology in 1997 (there was no mention of Habermas) but, nevertheless, he made radical changes from past positions which would require them:

First, critical systems practice would not “aspire to metaparadigmatic status.”
Pluralism... must accept and manage a degree of incompatibility between paradigms at the theoretical level.

This new position is one which is antithetical to the so-called “totalizing discourses” of Habermas’ theories; in Jackson’s case, Habermas’ knowledge-constitutive interests had, up to this point, been the centerpiece of the validity claims for that stance. In 2000, he referred to it as a “theoretical prop”. This represents an epistemological break.

Next, what did not change is that it remained a metamethodology.

A metamethodology is required which protects paradigm diversity and handles the relationships between the divergent paradigms.

No methodology may stand without its supporting onto-epistemology.

To what paradigm does this now belong?

The meta-methodology accepts that paradigms are based upon incompatible philosophical assumptions and that they cannot, therefore, be integrated without something being lost.

This implies that the new epistemology understands and accepts paradigm incommensurability.
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It seeks to manage the paradigms not by aspiring to meta-paradigmatic status and allocating them to their respective tasks, but by mediating between the paradigms. Paradigms are allowed to confront one another on the basis of "reflective conversation" (Morgan, 1983). Critique is therefore managed between the paradigms and not controlled from above the paradigms. No paradigm is allowed to escape unquestioned because it is continually confronted by the alternative rationales offered by other paradigms. (Jackson, 1997)

This the first time that I am aware of that Jackson indicated an acceptance of paradigm incommensurability as inescapable, theoretically. This implies that complementarism is out; discordant pluralism (Gregory, 1992, 1996b) is in. In 2000, he explicitly acknowledges Gregory’s contributions as an improvement. The acceptance of paradigm incommensurability is of course, in my opinion, the only logical conclusion if we accept two main tenets which can be derived from developments through 1997 in this line of thought:

- Critical systemic practice must be theoretically informed pluralism (it is anti-pragmatist), by which I mean that methods are critically-reflexively derived from (or adopted by) methodologies (from different paradigms), each one operated from within its own proper paradigmatic perspective. In other words, methods but not methodologies can be used to
serve foreign paradigms. Paradigm diversity is to be preserved.

- Critical systemic practice is based on critical reflexivity, which obligates the systemist to ideological self-critique and the ongoing consideration of the developing situation through alternative paradigms. Paradigm diversity is to be appreciated.

“There is a clamour for pluralism in methodology use in the applied disciplines,” Jackson wrote in 1999. “They do not have time to wait for theoreticians to iron out all the problems associated with pluralism.” Coherent pluralism, “the use of different methodologies in combination”, is intended to explain “the form that pluralism needs to take if it is to be both theoretically defensible and provide the greatest benefit to practitioners” (Jackson, 1999).

One weakness of TSI is that it grounds its pluralism, or `complementarism', uncritically on Habermas' early theory of human interests. It tends to suggest that it can, on the basis of Habermas' work, stand `above the paradigms', picking out appropriate methodologies according to the particular human interest to be served. As Tsoukas (1993) noted, however: `Different paradigms constitute different realities and, as such, they provide answers, either explicitly or implicitly, to all three human interests'. If TSI claims to stand `above the paradigms' how can this claim be grounded? If it has to abandon this claim does it
mean that TSI constitutes a new paradigm in its own right? If this is the case, what has happened to pluralism? Equally worrying, as Spaul (1997) recounts, is that Habermas himself no longer finds his early human interest theory to be defensible. (Jackson, 1999)

A year later he criticized TSI as well for

...its lack of attention to “agents” and the process of intervention. Another serious flaw, noted by Mingers and Brocklesby, is that TSI emphasizes the use of “whole” methodologies. It is, in their terms, an example of “whole methodology management.” Because it seemed impossible, from the way TSI was described, to detach methods, models and techniques from the methodologies with which they were most closely associated, TSI lacked a degree of responsiveness in addressing complex, dynamic problem situations. (Jackson, 2000)

In 2000 he again renounced his belief in what others have called “totalizing” meta-theories (i.e. complementarism, Habermas’ knowledge-constitutive interests, Habermas’ “three worlds” and theory of communicative competence).

Pluralists must learn to live with and manage a degree of paradigm incompatibility. It is no longer tenable to believe, in the manner of TSI, that paradigm incommensurability can be resolved by reference to some meta-theory
such as Habermas’ account of different anthropologically based human interests. Or, for that matter, on the basis of his later work (dealing with communicative rationality) on the “three-worlds”—as Midgley [(1992, 1997)] and Mingers and Brocklesby [(1996)] have occasionally sought to suggest. (Jackson, 2000)

Jackson then wrote and published “generic” systems methodologies: “a generic positivist-functionalist systems methodology” (§4.5.2.5), “a generic interpretivist systems methodology” (§4.5.3.2), “a generic critical systems methodology” (§4.5.4.1), “a generic emancipatory systems methodology” (§4.5.4.2) and “a generic postmodernist systems methodology” (§4.5.5.3)—which I assert are epistemological statements, supporting, motivating, indeed directing methodologies.

My own methodology suggests these can be used to guide and inform systemic practice (see §7.3). Here is an excerpt from the critical systems metamethodology.

A critical systems metamethodology is a structured way of thinking which understands and respects the uniqueness of the functionalist, interpretive, emancipatory and postmodern theoretical rationales, and draws upon them to improve real-world problem situations.

A critical systems metamethodology makes use of a variety of creativity-enhancing methods and techniques to
examine the problem situation while ensuring, minimally, that it is viewed from the functionalist, interpretive, emancipatory and postmodern perspectives.

A critical systems metamethodology uses generic systems methodologies [see §4.5.2.5, §4.5.3.2, §4.5.4.2, §4.5.5.3] which can be clearly related back to the four theoretical rationales as the basis for its intervention strategy—often employing the tactic of naming one methodological approach as dominant and others as dependent, with the possibility of this relationship changing during the course of the intervention.

But there is as yet no theoretical framework for critical systems practice that would make coherent pluralism ‘coherent’. “In the light of the abandonment of Habermas’ solution to the issue of paradigm incommensurability,” he says, we must look elsewhere for “other proposals as to how theoretical pluralism should be handled” (ibid.). And that is as far as it goes.

Critical systems practice was also designed to loosen “the link between methodology and method,” to overcome “a significant weakness of TSI” and “provide the necessary flexibility in intervention without losing the ability to learn and without endangering paradigm diversity” (Jackson, 1997). By 1999 he called this idea essential:
The flexibility that can be gained by using methods, models, tools and techniques (from different methodologies) in combination, now seems to me to be so essential that its gradual acceptance should be seen as a third landmark [after SoSM and TSI] in the establishment of pluralism in management science. (Jackson, 1999)

In use, he added that interpretivism should be the first approach taken to begin a systemic investigation because

Experience tends to suggest that interventions carried out using interpretive systems thinking, for example SSM, proceed more smoothly than those governed by functionalist or emancipatory rationales. The involvement of participants in the process of change gives them a feeling of ownership of solutions. The participative emphasis of interpretive approaches tends therefore to ensure implementation in a wider range of cases than expert-driven approaches resting on functionalism. Further, since those likely to be involved in many systems interventions will be senior managers, emancipatory concerns are often difficult to introduce. (Jackson, 1999)

This conflicts with what I believe was the better advice Midgley gave in 1996 that “methods to support critical reflection on making boundary judgements should be used to enhance critical thinking up-front.”
5.4.15. Creative design of methods (Midgley, 1997)

What Flood and Romm (1995a) call their "oblique" use of methods (the use of methods for purposes other than those they were originally designed for), Midgley argues is better explained by his theory of creative design, introduced in 1990. In this update to the earlier work (see Creative methodology design, §5.4.6), he describes how the methodology was used effectively in an intervention in which an ad hoc methodology was synthesized to combine the use of Ulrich’s critical systems heuristics’ twelve questions with methods of Ackoff’s interactive planning. Midgley reports a result which is more than the additive effect one would have expected from the Flood-and-Romm-style of oblique use of these methods; rather there was a synergistic result from his creative design. Midgley also reinterprets two interventions reported in Flood and Romm (1995b), to demonstrate his contention that the creative design of methods better explains their results than those given by the authors themselves.

5.4.16. Systemic intervention (Midgley, 2000)

Midgley says paradigm incommensurability is dealt with because we learn and integrate new ideas from different paradigms and we add them to our own understanding (what I call our virtual paradigm).
Importantly, he says that this occurs at the individual, group and research community level. (Midgley, 2000).


5.4.17. Critical multimethodology (Mingers, 2006)


5.4.18. Georgiou’s systems epistemology (2007)

Ion Georgiou (Georgiou, 2007) leads to a proposed systems epistemology as being stimulated by the need for effective systems meth-
Methodologies. Methodologies are informed by epistemologies which are situated between ontology and ethics (the three branches of philosophy). Systems theory must be constituted with systemic principles, systemically, he says, and calls for a return to its ‘lost’ roots from general systems theory: principally holism and boundary critique, and for establishing emergence as its fundamental isomorphy. Emergent properties cannot be explained as being traceable to any cause or causes—we must accept that—he says, but they do depend upon the dualistic structure from whence they occur and the interconnections of component parts. Apparently, he sees ‘system-ness’, ontologically.

Eventually, Georgiou leaves it at this: “We are holistic thinkers condemned to critically engage with, and within, only dogmatism and bounded rationality.” Apparently, his epistemology is defeatist.

How this provides methodological guidelines for the practice of systems thinking is not satisfactorily addressed.

5.4.19. Midgley’s theoretical pluralism (2011)

In this paper the systemist is a practitioner of action research, and the theoretical perspective shifts to that of the researcher. This shift can be seen to have been derived from the earlier
...turn to participative practice when the value of exploring different stakeholder perspectives came to be highly valued (e.g. Churchman, 1970; Ackoff, 1981; Checkland, 1981; Argyris and Schön, 1985; Reason, 1988; Fals-Borda and Rahman, 1991; Whyte, 1991; Rahman, 1993).

Given that different stakeholders can use different theoretical framings. [my emphasis] (Midgley, 2011)

Now, though, it is the researcher’s perspective that becomes the centre of philosophical concern. By “drawing upon more than one theoretical ‘lens’ to inform practice,” Midgley says, the researcher gains “greater flexibility than adherence to a single theoretical perspective.”

The case for theoretical pluralism is that

...when multiple theories are used as a resource for the comparison of different ways of seeing the phenomenon of concern, critique is enhanced (Morgan, 1986; Flood and Jackson, 1991b; Flood and Romm, 1996a). Implicit within different theories are contrasting themes, narratives and metaphors, which (when made explicit) can cast new light on a problematic situation. (Midgley, 2011)

Midgley returns again to the roots of critical systems thinking for support for theoretical pluralism.

Rather than seeing systems as bounded physical entities, Churchman realized that a system is bounded conceptually by the researcher as s/he chooses what to include
and exclude in observation and analysis. All knowledge is dependent on boundary judgments, whether these are implicit or explicit (Churchman, 1970; Ulrich, 1983). If we recognize this, then [my emphasis:] both knowledge generating systems [e.g. the systemist] and the world itself come to be defined in exactly the same manner: [original emphasis:] through the process of making boundary judgments. (Midgley, 2011)

In terms of the focus of this research, what is new (see my emphasis in the citation above) is that he intimates that the systemist constructs himself or herself and the world this way, as well. Whereas my own theory considers this generative process to be ontologically based (see Chapter 6 and Bowers, 2008a, b; Bowers, 2009a, b), Midgley sees it in terms of knowledge generation, epistemologically. The process of boundary making occurs locally (with respect to the here and now), he says, “so even epistemological theories can be viewed as contextually useful or not, just like any other kinds of theory”. I agree. But without deeper theoretical support this is epistemological relativism.

To justify multiple theoretical perspectives Midgley frames the argument in terms of the issue of subject-object dualism. In describing my own theory in Chapter 6, dualism as it is commonly called, is given its own section, §6.4. As I see it, if I am the subject (the sys-
temist in this case), it follows from the quote above that I define myself as well as what it is I see as existing in the external world (its objects). But where, in my theory, everything (with respect to me) is constructed by me, Midgley’s theoretical pluralism is slightly different—“all knowledge is dependent on boundary judgments”. It specifically omits ontological concerns. What we have, he says, is

...a dualism “between the process of making boundary judgments and the content of any analysis. Whether it’s an analysis concerning the world, or an analysis concerning knowledge generating systems that give rise to understandings of the world. This actually means that it is possible to accept any number of theories about either knowledge generating systems or the wider world.

(Midgley, 2011)

Yes, I agree we can accept any number of theories (and the research helps us to understand why), but there is nevertheless still paradigm incommensurability between different theoretical positions.

He says it would be a mistake to give “ontological primacy to the process of making boundary judgments” because “we would indeed be saying that they somehow magically come into being prior to the agents who generate them. But my theory does grant ontological primacy to boundary making judgements and does not describe an
ontology with ‘ready made’ boundaries. In it, ‘becoming’ is a local emergent process that involves us, observing, from a particular epistemological perspective. As Midgley explains how we can (and should) observe and create knowledge from multiple perspectives, my theory explains the multiplicity of ontologies, of ontological epistemologies, and of incommensurable theoretical perspectives. My theory is needed to explain why they exist and why they are incommensurable. Epistemological relativism, as well, is not solved, but it is properly resolved. I believe my ontology could be used to augment Midgley’s theoretical pluralism should he choose to adapt it for such a purpose. It seems that each theory is deficient in areas which are the other’s strengths.
Chapter
6. Process–Structure ontology, relativism, pluralism, the critical moment of becoming

6.1. Introduction

Observation is done by observers, and knowing is done by knowers. (Glanville, n.d.)

The diagram below is an overview showing how the components of the proposed theory, p–s multiparadigm perspectivity, align structurally. P–S multiparadigm perspectivity is a new approach to systemic research, design and intervention. The ontology and the critical moment, new theoretical constructs developed for this research project, are described in this chapter. The following chapter (Chapter 7) covers the other components, the epistemology and methodology, and how they come together as an approach or a framework for multi-paradigm multimethodology meant for the systemist who would engage with the world through multiple perspectives. Lastly, how this new approach represents a resolution to the problem of paradigm incommensurability and avoids charges of relativism are the subjects of §6.10.
The research question is:

Is it possible to create a theoretical framework for systems thinking and practice which resolves the long standing problem of paradigm incommensurability and enables a new, coherently-informed multiparadigm multimethodological approach to systemic research, design and intervention? [TB].

This chapter defines and argues for a new ontology which is designed to enable a resolution to the problem of paradigm incommensurability and provide support for multiparadigmatic multimethodological approaches to systems for the systemist. Again, as in Chapter three,
ontology is the study of what can be said to exist and about categorisation of those things; epistemology is the study of knowledge and knowledge making, about how logic is applied and used, and about the validity of statements expressing knowledge claims, truth or fact. An ontology populates a worldview with the things which may exist, and an epistemology gives the worldview meaning and values. Ontologies and epistemologies work together in philosophical partnerships. Indeed, according to Bhaskar (1989),

Ontological and epistemological questions are interrelated in the sense that the way we gain knowledge about the world, what comprises an adequate explanation, depends on the sort of beings that exist in the world. To put it another way, the object we are studying determines the knowledge we can have of it. (Craib, 1992)

In the following sections I discuss:

- The parts and definition of the p–s ontology
- The philosophical issue of subject/object dualism
- How sense making happens in the brain
- The ‘critical moment of becoming’
6.2. Reality space

6.2.1. External reality space

Systemists may not agree on what is ‘out there’ in the ‘real’ world, but we do believe that there is some external (vis the mind) world. It is our environment and within it we are born, live and are engaged, are effected by and affect.

That the external world includes entities having an independent, so-called ‘objective’ or ‘real’ existence as-theys-are-in-themselves is also taken as fact and rarely seriously disputed. However, confusion has been generated by obtuse quotes such as ‘various types of constructivism, interpretive or post-modern stances... to a greater or lesser extent deny the possibility of an observer-independent reality’ (Mingers, 2000). Such a statement should have been more carefully considered. A deeper read exposes a personal frustration with the conclusion that it is impossible for humans to ‘know’ external reality as-it-is-in-itself (which does exist). Sometimes ‘reality’ is denied as in the postmodernist sense—because the term itself is a label too overloaded with human bias to be of any practical use. In extreme subjectivism it is questioned ‘whether there exists an external world worthy of study’ [emphasis added] (Burrell and Morgan, 1979). Critical real-
ists most cleverly say that if an independent reality did not exist then we would have to invent one.

6.2.2. Internal reality space

We also acknowledge a second domain of existence, an intra-personal (mentally internal) ‘world’ of consciousness; each one’s own internal, experiential or ‘subjective’ world. Ontologically speaking, one can only access one’s own. This world is ignored by the functionalist paradigm except to stress its own requirement that the researcher be ‘objective’. See the discussion on objectivity vs. subjectivity for more.

6.2.3. Intersubjective and social reality space

The situation gets a bit more complicated when we consider human (social) and person-to-person (intersubjective) relationships. Here our theory must acknowledge onto-epistemological relativism between the conventional non-functionalist paradigms. The epistemologies, depending upon their own philosophical and methodological concerns, declare whether or not a social realm exists and, if so, whether it is in whole or in part of the external world (i.e., it is pre-existing and into which one is subsumed) or exists in whole or in part within the internal world (i.e., it is contrived, of one’s own making).
The same relativism applies to the intersubjective—a realm of negotiated understanding between ourselves. This framework defers to the conventional paradigms as to the ontological status of both. In this reality space we may encounter notions of influence which are the principal concern of theories of the critical-emancipatory paradigm.

6.2.4. Summary

The three kinds of reality space closely parallel the ‘three worlds’ Habermas claims are inferred in any validity claim: ‘natural’, ‘subjective’, and ‘normative’ (Habermas, 1981). See the section on Midgley’s Systemic Intervention theory for more.

6.3. Two ontic types

Because each paradigm is self contained, each requires its own definitions for concepts such as ‘reality’ and ‘world’, and in so doing each assigns more or less importance to either of the two sides of the ontological partition between an ‘inner world’ and an ‘external world’. Each approach declares, assumes or implies its own ontological memberships and the epistemological significance of the objective and subjective worlds (and, if they should exist, the social and intersubjective realms within either of them). In relative terms it could be
said that the ontological partition moves back and forth, or more or less inclusive, depending upon the epistemology. Of course there are many ways to consider being, existence and meaning, and the management of any divisions between them, but this interpretation does furnish some justification of the need to define and populate our ontology with two ontic types:

- **Type 1**: Of the physical, natural, tangible or ‘real’ world in the sense of its being as-it-is-in-itself. The transcendental characteristic of entities of an ‘external world’, independent of an observer.

- **Type 2**: Of and dependent upon one’s mind. The transcendental characteristic of mental phenomena and disposition (conscious, pre- or post-conscious, subconscious, or unconscious).

- Both definitions apply to the base disaggregates of the their constituents having only extrinsic (human-given) macro-attributes such as: meaning, function or purpose, structure or form, type or name, association or membership.

Ontology is not a science but a branch of metaphysical philosophy. To ‘start up’ an ontological theory, claims are made about the a priori existence of elementals such as those defined above. Statements of
or inferences to fundamental ‘first causes’ are permitted, too. It is all then taken for granted by the epistemologies and methodologies.\textsuperscript{18}

6.4. Subject-Object dualism

Although “we can, if we take the trouble, use language to make infinitely refined distinctions in context” (Collier, 1994), it is generally too tedious and difficult to do. Everyday language is replete with reifications, or what Bhaskar (1986) describes as an epistemic fallacy followed by an ontic fallacy. That is, a projection of the external world onto one’s subjective, phenomenal map followed by a projection of the subjective onto the external world. This behaviour is possibly (and I propose it is) owing to the physio-electro-chemical workings of the brain and its structures; consequently embodied in the mind and reflecting in the structural limitations of discourse. Simply put, perhaps it is physically impossible for the brain–mind combination to accommodate subjects without meaning and association so that reification and projection are necessary and natural functions of human thought and its internal dialectic processes. This brain–mind relationship is of central importance to the ontology. It has determined the

\textsuperscript{18} Not always. Epistemology affords the means by which we question our ideas of ontology.
requirement of our two ontic types and sets their definitional characteristics (which will, by the way, improve as the theory matures).

Rejecting classical realist assumptions that our faculties of observation afford us direct and correct knowledge of the world, it is more likely as Kant said in the 18th Century that the human experience of things consists of how they appear to us (Kant, 1956). (Think of how five witnesses are likely to give five different accounts of the same crime.) Midgley mentions the “impossibility of comprehensive understanding” and says that “the complexities of the world slip the grasp of the human observer” (2003, p.78). Why must this be so?

Systems researchers Maturana and Varela (1987) describe a brain-based evolutionary model of human sense and experience. Basically, as their theory which is well accepted in the field of systems thinking goes, the nervous system evolved over many successive generations as a perceiving faculty in the Darwinian sense—it improved survivability and reproduction. As the brain developed the mind emerged as a complex sense-making system. Also with Darwinian roots are emotions which accompany the senses and make up the embodied ‘sensations’. Although we are not typically conscious of it, our perceptual data is severely limited because, out of all that exists that could be
sensed, the body has only particular types of sensors or ‘senses’, mainly: sight, sound, taste, smell and touch.

Our ability to affect the world is also limited by other constraints of the body. For example, a human body has a certain range of size and mass, can move at a certain speed, can reach or run only so far, is only so strong and has a limited lifespan. The brain, our senses and body are co-evolved, so we are not specialised to ‘know’ of things outside those constraints. Consequently these constraints largely determine how we come to ‘know’ our world; and what we see, believe and thus act in the world.

*Our experience comes to us mediated by our sensory and mental apparatus. What we can experience depends on the nature of our faculties, what our faculties can handle, and what they do to what they handle.* (Maturana, 1988a)

This is a fundamental concept for understanding the new framework so it is important to explore it further.

It is the brain’s job, moment to moment, to make sense of sensations and with the mind infer a great deal more from our past experiences and learned constructs. We seem to do this by constructing mental ‘scenes’ of an ongoing ‘drama’ that correlates—however weakly or
strongly—to an external world which can be only be partially sensed; all the while maintaining a sense of self and continuity, filling gaps with assumptions and compensating as learning occurs (Bhaskar, 1989; Collier, 1994)—what Husserl refers to as the ‘lifeworld’. Maturana, similarly claims that

\[
\text{Cognition is not a matter of transforming external data of a transcendental [objective] reality—a universe—captured through our senses into mirror images in the brain. Instead, what we know of as “reality” is an active projection of our own cognitive structure. (Brocklesby, 1997)}
\]

It is from this loose association, or ‘coupling’ with an external world that our inescapable conflation of what is ‘real’ with what is mental-with-associations comes. This transitory ‘mess’ is what we call ‘reality’. Differing assertions as to what is, what is external and what is internal, or what is objective and what is subjective distinguish the paradigmatic onto-epistemologies and sets them apart from one another.

When Maturana and Varela set out to answer the question, “What distinguishes entities or systems that we would call \textit{living} from other systems, apparently equally complex, which we would not”, they found the answer involves the fact that living systems are self pro-
ducting. They studied this and coined the term autopoiesis (self-producing). With respect to the evolution of brain and the autopoietic emergence of human consciousness, they said,

*The linguistic domain, the observer, and self-consciousness are each possible because they result as different domains of interactions of the nervous system with its own states in circumstances in which these states represent different modalities of interactions of the organism.* (Maturana and Varela, 1980, p.29)

According to Husserl (1965), ‘awareness’ is a more physical, ontological process; ‘consciousness’ or the ‘Conscious continuity of situational self-awareness’ and the longterm ‘lifeworld’ is an epistemological process.

The main concern is objective vs. brain-based realities and how they are involved with the split between ontology and epistemology.

This endeavour is not solipsistic. *Solipsism*, at the extreme end of subjectivism, assumes reality lies in the consciousness of an individual (Cunliffe, n.d.). Solipsism denies that we can establish the existence of an objective world at all since our own mental world is the only thing of which we have immediate knowledge. But in the proposed new ontology we do not require ‘immediate knowledge’ of an
objective world; we say that—whatever it is—it exists. As stated earlier, the objective existence of so-called ‘real’ things must be granted because their existence can be proved by their affects.

The dissertation derives its ideas from the systems research and OR/MS literature, and from various schools of philosophical thought, e.g. phenomenology (Hegel and Baillie, 1931; Merleau-Ponty, 1962), transcendental idealism (Ingarden, 1975; Allison, 1983), Piaget’s constructivism (Wadsworth, 1996), radical constructivism (Glasersfeld, 1995, 1999; Cunliffe, 2008a), critical realism (Bhaskar, 1986, 1989; Collier, 1994; Mingers, 2000, 2006), post-structuralism (Dreyfus and Rabinow, 1982; Tilley, 1990), postmodernism (White and Taket, 1994, 1996), process ontological theory (Wood, 2005) and personal construct theory (Kelly, 1970).

6.5. Process–Structure ontology

The new ontology designed to support these concepts consists of just one elemental member called ‘process–structure’, a dualism of process and structure that is isomorphic across ontic manifestations—physical and abstract. In the next chapter the theory’s epistemology explains why such an ontology is both necessary and suffi-
cient and how, in practical terms, it serves the systemists’ endeavours.

Here the defining features and forms of process–structures are listed:

- **Process–structures**, or p–s’s (pronounced pee esses) are dynamic, contain other p–s’s recursively, combine, separate and interact amongst themselves in terms that we think of systemically as: networks, hierarchies, dependencies, etc.; and when they do they generate what we think of as emergent properties which constitute the objects of reality. P–S’s ontologically populate our various ‘worlds’. Troncale (2006) has shown there are dozens of fundamental configurations (of what I call complex p–s’s and he calls isomorphies) used throughout nature, isomorphically. Consequently, says Troncale, a recognised configuration of structure (e.g. a loop as in a feedback loop) can be indicative of its process (e.g. feedback), and vice versa.

- Process–Structure, as the name suggests, is a duality (as in sameness and unity) in and of itself. ‘Process’ and ‘structure’ are affects or aspects of the same inseparable unity. In relative terms, ‘structure’ is slow ‘process’ and ‘process’ is fast ‘structure’ (Troncale, 2004–2007). Note that in our everyday discourse we often ignore (or fail to see) this duality and speak naively of just one aspect or the other. Also note that process, as I use the word, has nothing to do with function or purpose. Both words here have the simplest possible meaning.
• P–S’s are coupled transforms—as structure changes, process changes and vice versa (Troncale, 2006). In a system, the disposition of a p–s is codetermined by other p–s’s.

• There are two types of p–s’s: physical p–s’s are manifestations of the physical ontic type, and abstract p–s’s are phenomena of the abstract ontic type (defined above). We say that (with respect to the mind) the former exists only externally; the latter, only internally.

• Physical type p–s’s exist in space–time, independent of an observer. We say that they are the ultimate constituents of matter, energy, gravity, etc.; and as such, are thought to have an ultimate origin in the ‘big bang’ and are explained by the laws of physics.19 Generally, configurations in the scales encountered by the systemist are well understood in terms of mathematics and engineering.

• Abstract type p–s’s are the ultimate non-physical constituents of active mental constructs. They are emergent, generated from physio-electro-chemical (physical) p–s’s of the brain. They are known to compel structural changes to the brain, as well—a necessary reciprocity between mind and brain that is not well understood. This may be considered a cycle in ‘physical’ terms coupled (somehow) with a more-or-less continuous process in experiential or abstract terms.

• To the mind, abstract p–s’s are emergent experiences in the present ‘moment’—becoming, within the context of the sub-

19 Einstein showed that matter and energy are transforms—matter is ‘slow’ energy and energy is ‘fast’ matter. ‘Forces,’ including gravity are extra-dimensional affects of matter–energy. Thermodynamics (and entropy) apply.
jective moment passing. The future cannot be experienced but can be anticipated; the past merely recalled (Wood, 2005).

- The two types do not combine, mix or interact in any direct or deterministic fashion, but dubious phenomenological associations between them made by the workings of the brain just doing its job are unavoidable (Maturana, 1988b). Reification, as previously mentioned, confuses the abstract type with the physical type (Wood, 2005); indeed, the brain–mind may be built for this and handles it quite easily. Bhaskar’s two epistemic fallacies (above) involve both types of p–s’s as well. Other ‘loose’ associations between ‘physical’ and ‘abstract’ types include wilful motion, communication, and the learning process accompanying structural changes in the brain.20

Conceptually, ‘process–structure’ is meant to be isomorphic over the two ontic types. A ‘physical’-to-‘abstract’-to-‘physical’ isomorphism is exemplified in the brain-to-mind-to-brain coupling (described above) where ‘physical’ p–s’s involving neurons somehow evoke the emergence of ‘abstract’ p–s’s (thoughts), and those ‘abstract’ p–s’s somehow induce physical changes in the brain. For the practitioner, the concept of isomorphism is also useful as a tool to facilitate an appreciation of the mental ‘shifts’ and changes of perspective that have to

20 The term ‘loose’ is used to indicate that these mechanisms are not direct, perfect or deterministic.
happen when an intentional change of paradigm is made (as is called for in the new methodology explained in the next chapter) or if we are to reflexively follow, question, project, imagine or reflect upon the ‘dubious’ associations, unavoidable reifications and projections we ourselves continually make—a primary concern for the postmodern paradigm.

6.6. The p–s ontology

A complete theoretical framework is composed of ontology, epistemology and methodology. Ontology in the sense I mean here is a branch of metaphysics which operates at the fundamental base or root level, conforming to the philosophy and supporting the epistemology. An ontology is a collection of ontological statements which concern the essence of being. An ontological theory addresses the basic issues of existence and of reality itself, asking questions such as, ‘What entities exist or can be said to exist?’ and ‘How are such entities naturally categorised or grouped?’

The ontology I wish to establish here is intended for inclusion in a framework designed for the needs of the human systemist (systems designers, theorists, practitioners, interventionists and researchers. That framework operates in the subjective realm of the systemist. It
is not considered ‘objective’ because it lives in the mind of the systemist. It is not meant to be a theory of everything or for everyone. It does not subsume, make obsolete or hierarchically dominate any other theoretical framework. It respectfully leaves to the other paradigms that which is theirs and it co-exists. Rather than being a theory of everything, it is intentionally minimalist; as minimalist as possible so as not to violate the declarations above.

6.7. Physical process–structures

Imagine a world without living, conscious beings. No consciousness and no thought; no abstractions. Things are just what they are—just things-as-they-are-in-themselves. Nothing has been observed. There is no meaning because meaning does not exist. (This concept is almost unthinkable!) Nothing means anything, it just is what it is as-it-is-in-itself. There are no feelings and no people and there is no society. There is no language and there is no discourse. From our world, we have called that sort of world ‘objective’. Postmodernists would say that even this word, ‘objective’, is an intrusion into that world and gives it meaning, whatever it is, that is not there. To repeat, as it is in itself, that world does not and cannot even have this or any other label. This is a deep but worthy thought—a postmodern thought—which
causes us to notice our human condition; a condition from which we cannot escape. As I am a human I must impose myself upon the world, lest for me there is no world. But, as a postmodernist as well, I remain aware (indeed vigilant) that I am doing so.

In proposing a new ontology I state that such an objective world does have a manifest existence which is not dependent on us. It is physical (existing in space and time, of matter and energy). It is our objective world and humans just happen to live ‘upon’ it. This is also the standard, non-controversial and well-understood (in their terms) world of the modernist physicist and so I need not go into it further except where I see implications for the systemist, which follow.

As a positivist systemist\textsuperscript{21} I say that we observe physical processes and physical structures; processes and structures which co-exist and co-operate very intimately; so intimately, in fact, that differentiating between process and structure has proven to be relativistic, arbitrary, even artificial. Mingers (2006, p.67) observes that “the systemic differentiation of structure and process is always relative to time and the level of resolution.” I would say instead that it is always relative to the observer’s time and scope perspectives. Slow down a process enough or look closely enough and it will show you its structure.

\textsuperscript{21} I wear many hats.
Speed up a structure or look at it from further away and it will show you its process. I claim that the intimacy between process and structure is complete and that they are actually the same—process and structure are descriptive of different aspects of the same duality as-it-is-in-itself. We find it convenient, though, to label this (which is relatively stable) a structure, and that (which is not so stable) a process; but I say that in this world there is only one basic kind of thing ‘out there’ (cf. e.g. Foucault).

Einstein (1905a, b) discovered and proved that time and space are transforms of one another; that is, ‘time’ and ‘space’ are also descriptive of different aspects of an underlying duality, space–time. Later, he also discovered that matter and energy are also transforms of one another (ibid.); that is, ‘matter’ and ‘energy’ are different descriptions of an underlying duality. What we ‘see’ as either time or space or as matter or energy, happens when we notice different qualities (or aspects or indicators). Questioning our terminology helps us improve our underlying concepts. Further still, Einstein proved that there is no matter-energy where there is not also space-time, and vice versa—the fabric of the universe. I say that (from the perspective of the systemist, at least) space-time and matter-energy are bound together as one kind of ‘stuff’ which I call process–structure,
or (p–s), of the physical variety. The plural form and aggregates are called *physical process–structures*, or physical p–s's (pronounced "pee esses"). You could call it a space-time/matter-energy double duality type of thing, but if you see that my terminology is not incompatible with physics then it is not necessarily illegitimate to change the terminology so that we appreciate it in terms of other attributes. New terminology also has the advantage that it breaks free from previous associations.

The p-s ontology simply declares that this is the way things are; that *this is all that exists* (well, almost, as we will see next). It is a minimalist ontology.

**6.8. Abstract process–structures**

Remember that we are imposing the labels ‘objective’ or ‘physical’ on the world as-it-is-in itself and that we have admitted to having a limited, fluid, subjective understanding of the world via those labels. It is the human way. That is, here there is no direct link between our ‘knowing’ and the world as-it-is-in-itself, as claimed by the philosophy of direct realism. To illustrate, how many types of snow are there? I hear that "the Sami recognise about 300 different qualities of snow and winter pasture—each defined by a separate word in their lan-
guage" (2005). The point is that my understanding of ‘snow’ is very
different from that of the Sami people. Which is correct? Neither?
Both? What is this snow as-it-is unto itself? I do not know. My under-
standing is subjective. I can make objective measurements and ob-
servations, but measurements and observations are not ‘understand-
ings’. They contribute to my subjective understanding. Importantly,
when I notice that my understanding does not correspond to what I
observe, I have the opportunity and the need to learn (Spencer,
2000). As Maturana (1988a) says, the world we experience (i.e. our
reality) is a subject-dependent creation and a result of our lived ex-
periences. Cognition is a human activity which produces what I call in
my ontology abstract process–structures, or abstract p–s’s.

What about the correlation between abstract and physical p–s’s?
Think of snow-as-it-is-in-itself (which is in these terms some physical
p–s) versus ‘snow’ (which is some abstract p–s). Do these physical
and abstract process–structures exist independently of one another,
is one dependent on the other, or do they co-exist and co-operate?
Physical process–structures are certainly fine as-they-are-in-
themselves in a world without thought. But this is not a world without
thought. There are no systemists who do not think. So, for the sys-
temist, this is a world in which there are both physical and abstract process-structures. So they do co-exist. Do they co-operate?

We have now got to the philosophical quagmire of ‘subject–object dualism’, or as it is known to philosophers—‘dualism’. It has been debated for centuries. The most appropriate and contemporary description I have found of this difficult issue in terms closely related to those we are using is by Winograd and Flores:

There is a long history within philosophy of viewing mental and physical descriptions as applying in incommensurate domains. In approaches based on this 'dualism' it is taken for granted that mental predications (such as "X knows that Y..." or "X perceives a Y") are not expressible in terms of physical descriptions of a nervous system. Having made this assumption, it becomes a confusion of levels to ask whether a particular physical activity of the nervous system is a 'perception' or whether a certain state is one in which the organism 'knows' some 'fact'.

Among the scientists who work in areas such as neurophysiology [e.g. Maturana] and artificial intelligence, however, it is a strongly held working hypothesis that there is a systematic and recurrent relationship between the two domains [emphasis added]. It is assumed that "X sees a red spot" can be correlated with a particular pattern of activity in the retina and visual cortex, or that
“John believes that Brutus killed Caesar” can be associated with a particular pattern of data in John’s brain, viewed as a computer with appropriate software and storage devices. Few researchers adopt the naive approach [my emphasis] of looking for immediate correlations between the mental and the physical except in peripheral functions like the image manipulation done by the retina. Usually the argument is based on an analogy to computer programs, in which the organization of the software provides a level of ‘functional description’ that is abstracted away from the specifics of the physical implementation. An entity counts as being explained when its behavior can be described in terms of a compositional analysis that postulates parts that are functionally identified—that play functionally defined roles in its operation. (Winograd and Flores, 1986)

So there is a relationship between neurons and sensation, but the link with abstraction still has not been made. in the physical and computer sciences. Maturana and Varela say that brain evolution and abstraction are intimately related. Thought is an emergent property, say the systemists, and in this ontology that is assumed. Importantly, thought processes are rightly considered epistemological, but the emergence of thought is something that happens a priori with respect to the systemist. With respect to the systemist, abstract p–s’s are
what this world is made of. They enable us to discover that an ‘objective’ world exists.

Maturana’s work shows that (in my terms) abstract process–structures are dependent upon physical (i.e. neural) process–structures for their emergent existence. It is in this way that the two types, physical and abstract, are inseparably bound together and inter-dependent. Maturana and Varela’s work is important, too, because it clarifies our understanding that humans have no direct access to an ‘objective’ world; beliefs notwithstanding.

6.9. Complex process–structures, society, et cetera

What about Habermas’ third world, society? Regarding this theory, is society and by extension, culture real unto itself? Many say yes, many say no. The epistemology of this theory says that, if it does, it is a complex process–structure of both ontic types, physical and abstract. If society does exist, one way to see that it has a physical component is to observe its artefacts: structures such as those called churches, schools, contracts, laws, courts, etc.; processes such as all forms of participation: marriage, military service, graduation, baby showers and funerals. And society, if it does exist, is of course abstract because there would be no society without the collection of citi-
zens from whom it is an emergent property. It is not in the domain of the proposed theory to explain society and/or whether it exists. Nothing needs to change in the ontology to support (or preclude) the existence of society.

The same can be said of power and control as it is understood in the critical-emancipatory paradigm; and of language, aesthetics and the various other concerns of postmodernism. And so, too for “other dichotomies such as structure versus agency, determinism versus voluntarism, causation versus meaning [Astley and van der Ven (1983)]” (Gioia and Pitre, 1990).

In general, this can be said for the other paradigms: The p–s ontology does not declare or predict the existence of anything... but anything that exists (with respect to the systemist) according to this theory can be understood as existing, ultimately, of abstract and/or physical p–s’s, or more accurately, emergent from them. It declares that there are complex forms of both types and that emergence does occur, but the p–s ontology is not concerned with their particular forms nor whether any particular ‘thing’ is composed of one or the other or both types.
What about the transcendental or spiritual realms? We defer to the believer. History? We defer to the historian. All these are the concerns of other theories. This theory does not preclude them.

In summary, what does the p–s ontology have to say about [insert your favourite concern here]? On that, the p–s ontology is indeterminate and intentionally under-defined. With respect to the p–s ontology and the systemist those concepts refer to what would be in the realm of the emergent properties of p–s’s and, as such, could never be traced back to the state of their origination. From this p-s ontological perspective the question is not answerable. The epistemology and methodology of this new framework is similarly minimalist.

6.10. Relativism, ontological relativism, ontological pluralism

6.10.1. Relativism

Relativism is a relationship of some sort between something and something else, regarding or depending on or with respect to... what?

From Mosteller (2008),

“Definitions of the term relativism can be too narrow, as in 'Relativism is the denial that there are certain kinds of universal truths’ (from Pojman, 1995, p.690); or too
broad, as in 'Any doctrine could be called relativism which holds that something exists, or has certain properties or features, or is true or in some sense obtains, not simply but only in relation to something else' (from Lacey, 1986, p.206).”

Pojman is criticised on the grounds that his definition restricts relativism to one domain—universal truths—which in fact is not part of the discussion here. Lacey, he says, admits too much to be useful. Indeed, “Everything is relative” and “anything goes” are the often-heard criticisms of general or generic relativism, or relativism by default—which is not part of the discussion here, either. Mosteller’s own definition is that:

Relativism asserts that a particular instance, \( Y \), exists only in combination with or as a by-product of a particular framework or viewpoint, \( X \); and that no framework or standpoint is uniquely privileged over all others. That is, a non-universal trait \( Y \) (e.g., a particular practice, behaviour, custom, convention, concept, belief, perception, ethics, truth, or conceptual framework) is a dependent variable influenced by the independent variable \( X \) (e.g., a particular language, culture, historical epoch, a priori cognitive architecture, scientific framework, gender, ethnicity, status, individuality) (Mosteller, 2008)
Most commonly, the word *relativism* is associated with epistemological or moral concerns. It is sometimes (though not always) interpreted as saying that all points of view are equally valid, in contrast to an absolutism which argues there is but one true and correct view. According to the results of a US national survey published by Barna Research (Barna Group, 2002): 64% of adults agree with the statement that “the truth is always relative to the person and their situation,” 83% of teenagers agreed that moral truth depends on the circumstances, whilst only 6% said that moral truth is absolute (from Mosteller, 2008). This data lends support to the idea that, regardless of the efficacy of their opinions, epistemological or ethical relativism as a concept is generally accepted by the public. Mosteller’s working definition of *philosophical relativism* is more carefully thought out:

*The nature and existence of items of knowledge, qualities, values or logical entities non-trivially obtain their natures and/or existence from certain aspects of human activity, including, but not limited to, beliefs, cultures, languages, etc. (ibid.)*

Though this definition can be applied to philosophical inquiries in ontology, epistemology, ethics, aesthetics, etc., it is not exactly fit for purpose here.
6.10.2. Ontological relativism

In this dissertation the new philosophy is based around a new ontology defined in such a way that, from it and with respect to the systemist, the paradigmatic ontologies can be seen to be emergent properties. This opens up the philosophy to the charge of ontological relativism, but I argue that charges of other forms of relativism are not relevant. Epistemological and moral relativism are avoided because the systemist will be working in only one paradigm at a time (see epistemology and the new framework in the next chapter).

Ontological inquiry has nothing to do with truth or morality which are epistemological concerns; it is more basic. It is concerned with what it means to be, with the being-ness of this or that. Although conventionally, the adjective ontic refers to “the real as opposed to the phenomenal”, Heidegger (1962) flips the very idea of the term “real” and calls ontology “the phenomenology of being”, referring to the view that whatever comes into being comes “to be” in the observer.

*Ontological relativism* has to do with things or entities with regard to their being-ness in one ontology as opposed to another. Mosteller writes,
Ontological (or metaphysical) relativism is a version of relativism where the very nature of reality or specific things that are real are thought to derive their existence or their natures from some activity of the human mind or beliefs or practices from within a particular culture (Mosteller, 2008).

I would clarify this by adding that different cultures have their own culturally-derived ontologies, so the ontological relativism then is between them—in this case, cultures. In other words, what is depends on who you are, culturally. In another way, he continues, what is depends on how you look at it:

One way of illustrating this type of relativism about what is real can be shown by an examination of various drawings or sketches which are, ambiguous (or reversible or bistable). One example is of a picture, the famous 'duck-rabbit'. This first sketch of the duck-rabbit was originally published by Hoseph Jastrow and is similar to a simplified version presented by Ludwig Wittgenstein in his Philosophical Investigations (1953). An additional type of Gestalt drawing was referred to by Edwin G. Boring (1930), an American psychologist early in the 20th century. It is ambiguous between a young and and old woman (ibid.).

The idea that is often inferred from such ambiguous drawings is that human cognition functions as a constructive tool to create a visual reality of our own making. The
inference then is something like this: if it is possible to do such constructing in simple cases, perhaps much of what we think is objective reality is nothing more than the mind's construction.

Thus, says Baghramian (2004), “what is real, what exists (either in part or whole), is [also] relative to human interests.”

Meanwhile, the P–S ontology fits with the postmodernist foundation upon non-determinism, acknowledging that a level of ‘unknowable’ supports the level of unknowns which lies beneath the known.

### 6.10.3. P-S ontological pluralism

Ontological pluralism simply acknowledges the variety of ontologies and their validity in themselves, with respect to the systemist. The p–s ontology proposed in this thesis claims to support the emergence of the various ontologies of the critical systems paradigms with respect to the systemist deploying them. The term “with respect to the systemist” is essential to provide a context for this carefully circumscribed form of ontological relativism which I now call p–s ontological pluralism:

- Of and unto itself, the p–s ontology is intended to be consistent and whole. As the conventional paradigmatic ontologies of critical systems thinking are considered to be emergent from the p–s on-
• Neither is there a relativism between the conventional ontologies with the p–s ontology in place because we are no longer moving between them. We do not translate one reality into another. We therefore do not face any sort of reconciliation. Instead, to shift from the current paradigm to another we simply refer back to the p–s ontology (remember it is formless and free from meaning with respect to the systemist) and from there ‘deploy’ the other paradigm. The ontologies of the conventional paradigms have a common source, but they emerge in the moment of becoming in their own internally-consistent paradigmatic forms.

It may help to remember that there are a variety of ‘infinities’. We know from mathematics that there are disjoint infinite sets (sets which have an infinite number of elements, none of which are in the others). There is not just one ‘infinite’ set; in fact the set of infinite sets is itself an infinite set. For example: the set of even integers (0, ±2, ±4, ±6, ...), the set of odd integers (±1, ±3, ±5, ...), the set of rational numbers (those equal to one whole number divided by another whole non-zero number) and the set of irrational numbers (non-rational numbers, e.g. pi and the square root of 2). Infinities come in different sizes, as well. For example, the set of rational numbers is a larger infinite set than the set of whole numbers because it contains the former set and more. The set of all numbers is larger,
still. But this is not how we consider ontologies—we typically think of
the elements of one ontological set as simply all there is. Why? It is
the context that matters. The p–s ontology is a different, null context.

6.11. The critical moment of becoming

The linguistic domain, the observer, and self-consciousness are each possible because they result as
different domains of interactions of the nervous system
with its own states in circumstances in which these states
represent different modalities of interactions of the organ-ism. (Maturana and Varela, 1980, p.29)

Maturana’s ontology of observing is centred in the observer and has
several qualities: Cognition is a biological phenomenon and reality is
a consequence of the praxis of living in the world. Self-consciousness
is a consequence of the distinction of self from other. Making distinc-
tions is languaging. Language allows us to form the stuff of the world.
Without language we are incapable of distinguishing or making sense
of phenomena. Objects do not preexist language.

Our living takes place in structural coupling with the world
that we bring forth, and the world that we bring forth is
our doing as observers in language as we operate in
structural coupling in it in the praxis of living. (Maturana,
1988a)
And we must remember that the objective world as-it-is-in-itself is becoming, too.

"Nothing is, everything is becoming" —Heraclitus. (Gare, 1996)

In terms of p–s ontology, I say that objective reality has no distinctions, it simply is. It takes a human to assign distinctions and to make meaning. And that is the reason why I cleave the universe here, between the physical and the mental. In Maturana’s terminology there is the objective (without quotes) and the "objective“ (in quotes). He describes the relationship between the thing and its distinction as structural coupling, a process which takes place physically in the brain. Maturana points to the complete inability of the human mind to distinguish between perception, illusion and hallucination. He adds that later on there are self-correcting mechanisms. Let me illustrate with an example of my own.

I once fell from a great height. I had stepped off the edge, surprised that I had not noticed the gap. The experience of free fall was terrifying. I will never forget it. I gasped and sat up in bed, confused. The sensation of falling had gone, yet I had not hit bottom. I scanned my surroundings with all my senses, reevaluating the danger.
With some effort I came to believe that I was actually in bed, safe, and that I had not fallen. [TB]

Mingers has said that “all descriptions and explanations are made by observers who distinguish an entity or phenomenon from the general background” (1997b). Maturana and Bunnell (Bunnell, 2004b) remind us that ‘the general background’ is also our own creation; the result of ‘cleaving’ the universe that determines what in my terms is a paradigm.

George Kelly (1970), the creator of Personal Construct Theory, explicitly stated that

Each individual’s psychological task is to put in order the facts of his or her own experience. Then each of us, like the scientist, is to test the accuracy of that constructed knowledge by performing those actions the constructs suggest. If the results of our actions are in line with what the knowledge predicted then we have done a good job of finding the order in our personal experience. If not, then we must be willing to change something: our interpretations or our predictions or both. (Kelly, 1970)

Participant 2 said in her interview with me, “Basically what he is saying is that everybody is a personal scientist who tries to make sense of their world with whatever tools they have at hand.”
Mingers (2006, p.56) on Maturana said:

Organisms have arisen that can make complex and recursive descriptions of their descriptions and thus they become observers. Moreover, within this linguistic domain a description of the self is possible, and thus descriptions of the self describing the self and so on. So is born the self-observer and self-consciousness. ...

At each stage emerges a domain of new and different interactions—interactions with relations, with internal nervous activity, with descriptions, with descriptions of descriptions, and finally with self-descriptions. All are made possible by the underlying biology, but none are reducible to it.

That is, the self-observer and self-consciousness are emergent properties and phenomena.

Morgan and Smircich (1980), in The Case for Qualitative Research produced what academia considers to be version two of Burrell and Morgan’s (1979) Sociological Paradigms and Organizational Analysis. As it applies to systems theory, the onto-epistemological assumptions held by the four conventional paradigms of critical systemic theory (positivist/structural-functionalist, interpretivist, critical-emancipatory and postmodern-poststructural) position each of them somewhere on the continuum between objectivism and subjectivism. As was already
mentioned, this is by no means the only metric with which to compare theoretical approaches, but it is certainly one of the one most widely accepted (Deetz, 1996).

*Objectivism*, at one end of the scale, incorporates ontological *realism* and epistemological *positivism* which see reality as external. The philosophy gets its name from its axiology, which separates the researcher from the researched so that ‘objective’ results are obtained ‘independently’. Positivism—the epistemological meaning-making investigation of that reality—is, however, a mental enquiry. Therefore, in terms of process–structure, objectivism may focus on the ‘physical’, but in practice requires both ‘physical’ (type 1) and ‘abstract’ (type 2) ontic types to satisfy its onto-epistemological requirements.

At the continuum’s other end, *subjectivism*’s ontology, *nominalism*, sees reality as an internal product of the mind. At the extreme there is nothing but the mind, *solipsism*. A mind, however defined, implies the existence of a physical brain. Then in our terms the practice of subjectivism also requires both ontic types.

The other two paradigms take intermediate positions on the objectivism–subjectivism continuum. The critical-emancipatory paradigm is concerned with power relationships and their effects on human action. This implies that both physical and abstract ontic types exist.
The postmodern paradigm views external and internal ‘realities’ so complex and interrelated as to be unknowable and questions the validity of even the terms ‘reality’ and ‘truth’. The terms ‘internal’ and ‘external’ imply the need for both ontic types.

Altogether, this means that any paradigmatic theory, if it can be positioned somewhere along the objective–subjective continuum, makes onto-epistemological and methodological assumptions which employ and rely upon both the ‘physical’ and ‘abstract’ ontic types. The argument, therefore, is that process-structure’s two types are necessary... but are they sufficient?

Critical systemic thinking holds that its four paradigms (which I call the ‘traditional’ or ‘conventional’ paradigms) are each valid and that they are complementary in their comprehensiveness. No one paradigm subsumes another (nor could it, says paradigm incommensurability). There is no hierarchy among them. Since their domains are separated (but not disjoint), it is illogical to accept that any paradigm could legitimately prohibit the existence of another. It follows, then, that no ontology may legitimately prohibit another’s. Since, it is proposed, we use paradigms to better understand various different aspects of what is roughly the same, or co-located, ‘problem situation’,
their ontologies must be considered relativistic;\textsuperscript{22} that is, alternative references of some kind to some same-inclusive reality-as-it-is-in-itself ‘problem situation space’.

Viewing these traditional ontologies as each referring somehow to some relative pool of the ‘stuff’ of the problem situation space as-it-is-in-itself supports this basic assumption: that reality as-it-is-in-itself is capable, somehow, of supporting the emergence of the ontological memberships of each of the conventional paradigms. Then, in terms of the ontology of this new framework and to fulfil the greater promise of its design, one more stipulation is necessary to complete its ontological definition: the ‘pool’ of ‘stuff’ in the problem space consists of process–structures.

Referring once again to Burrell and Morgan’s objective–subjective continuum, the dissertation will support arguments about both ends, that: by emphasising the \textit{structural} qualities of the ‘physical’ type of process–structure, (1) a deconstruction of ontological realism can be made which lends support to the idea of process–structure as an ultimate ontology; and inversely, (2) that realism can be considered an emergent property of an indeterminate configuration of process–structures. In a similar manner but by emphasising the \textit{processual}

\textsuperscript{22} Ontological relativism, §6.10.2
qualities of the ‘abstract’ type of process–structure (3) ontological nominalism can be deconstructed to lend support to the idea of process–structure as an ultimate ontology; and inversely, that (4) nominalism can be considered an emergent property of an indeterminate configuration of process–structures. Finally, because process–structure is holistically constituted from both aspects of both types, this covers the area between the extremes. Altogether, what these ideas yield is shown here in tabular form where the diagonal represents the objective–subjective continuum.

<table>
<thead>
<tr>
<th>Process–Structure’s aspect</th>
<th>structure aspect</th>
<th>duality [sameness]</th>
<th>process aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘physical’ type</td>
<td>objective</td>
<td>partially objective, partially subjective</td>
<td>ontologies</td>
</tr>
<tr>
<td>both types</td>
<td></td>
<td></td>
<td>ontologies</td>
</tr>
<tr>
<td>‘abstract’ type</td>
<td>subjective</td>
<td></td>
<td>ontologies</td>
</tr>
</tbody>
</table>

Table 3. Map of ontologies onto aspects of process–structure.

Other onto-epistemological dimensions can be explored as well, such as regulation vs. change (Burrell and Morgan, 1979), local/emergent vs. elite/a priori (Deetz, 1996), relativism vs. realism (Cunliffe, n.d.) to determine their fit and feasibility with the philosophy of the new ontology, but that is beyond the scope of this research.
6.12. What p–s ontology is not

What this ontology is not is important, also. (Insofar as what has already been stated about the mind making associations, unsuitable assumptions about it can be pruned this way.) (1) It takes a distinctive stand on the debate as to whether reality is objective or subjective—it is both and they are of different ontic types. External existence as-it-is-in-itself is objectively real but unknowable as-it-is-in-itself to the human. Internal existence is a different type of existence, virtually independent but perhaps loosely associated (or ‘coupled’) with the external, as a subjective experience. (2) Process–Structure ontology cannot be called ‘yet another’ participant in the structure versus agency debate. Here, neither structure or process is separable from its dual aspect. Moreover, p–s’s operate only in the ontology and (as we shall see later) are unknowable as-they-are-in-themselves to the epistemology.

There are four phases in Critical Systems Practice (Jackson, 2003, p.308): creativity, choice, implementation, reflection. It lacks a specific call for reflexivity. There must be reflexivity in any critical systemic approach. Also different is “the strategy of alternating dominant and dependent methodologies” (ibid. p.314), whereas my theory
would have us regularly and fluidly ‘shift’ paradigmatic points of view as a form of critical awareness.

Bhaskar’s critical realism, says Craib, uses the concept of a ‘form and function’ dependency in epistemology. P–S uses the simpler terms ‘process’ and ‘structure’ and this dependency occurs at the level of ontology. And ‘dependency’ is instead understood as duality in the p–s ontology (aspects of the same unity).

Also distinctive to my theory is that the concept of process–structure is explicitly isomorphic over its two ontic types (physical and abstract) just as the mind is fluidly relativistic in what it considers to be ‘real’ and external and what it considers to be ‘real’ and internal. This unique ‘ontological feature’ is key.

6.13. Conclusion

We must not sidestep the issue of the nature of consciousness, but we must admit that, even after centuries of thought it is still not well understood. The debates about consciousness continue in the realms of pure philosophy. It seems as though what is currently best understood is that one’s approach is determined by one’s intent. In other words, the way you approach the question of the nature of con-
sciousness depends upon the nature of your questioning. Today, it can be argued that there are many valid ways of questioning and therefore many answers; including some which are, like our paradigms, incommensurable. If we are to rule out solipsism, then, the matter must be handled pragmatically unless and until a consensus is reached. Perhaps in this regard this new theory can help us move forward.

This theory takes just the essence of what it is that is “not well understood” and teleologically calls it the critical moment. I have tried to surround this small bit with as much of the latest thinking I could find in my research which makes sense to me. These ideas are a synthesis from a variety of ideas taken for the most part from the systems literature.
Chapter 7. The framework to support multiparadigm multimethodologies

7.1. Introduction

Making sense of experience involves “placing stimuli into some kind of framework” (Weick, 1995). The well-known phrase “frame of reference” has traditionally meant a generalised point of view that directs interpretations. When people put stimuli into frameworks, this enables them “to comprehend, understand, explain, attribute, extrapolate, and predict” (ibid.).

A theoretical framework is an approach to research and practice. It is a logically and philosophically coherent linked set of ontology, epistemology and methodology. This one is aimed at the systemist-interventionist. Addressing the issues of beingness and becomingness, the new framework defines a simple ontology of process-structure which occur in both physical and abstract ontic types (see §6.7, 6.8).

The philosophy of contemporary systems thinking is a loose, eclectic collection of theories, reflecting the divergence of systems practice. A taxonomic map of the systems theories pertinent to the purposes of this study helps to clarify:
The branch of systems thinking called critical systems thinking includes a special group of theories which, in one way or another, involve the other paradigms in a collective way with the intent to accomplish either or both of two things: to deal with the problem of paradigm incommensurability at the theoretical level, or to offer theoretical support for (or to simply sanction) the multimethodological generation and use of methods from more than one paradigm in systemic research, design or intervention. The theory developed in this research project is one of these, as well.

Systemists who adopt this new theory and practice it would accept the validity as well as the utility of having four conventional systems paradigms. We know that there is no standpoint of human understanding which is entirely a-paradigmatic; that is, without a framework of onto-epistemological assumptions. Although one may be unaware of it, in fact everyone has a ‘worldview’. This includes the pragmatist. Those who accept and practice this new theory would recognise and respect such paradigms as worldviews which are incommensurable with respect to one another. To make proper use of them, however, the critical systemist must be educated in this regard and be able to question the relative appropriateness of his or her own habitual worldview. Further, this approach expects the systemist to
‘immerse’ himself or herself in other paradigms and perform a thorough investigation whilst in each one as defined and directed by its own onto-epistemology, methodologies and best practices. The new epistemology reflects the understanding that the problem situation itself and any information we can obtain it is only available to us paradigmatically. In this framework those paradigms are the positivist/structural-functionalist, interpretivist, critical-emancipatory and postmodern-poststructural. This theory understands that each of the four paradigms offers a distinct and indeed very different world to appreciate, with different concepts and configurations of ‘the system’ itself and its boundaries, membership and environment; and different understandings of the state and inertia of the system, its embeddedness, etc.
Figure 15. A multiparadigm multimethodology process diagram.

A critical systems paradigm with P–S (process–structure) ontology, critical moment, ethics, methods and mixed methods:

Figure 16. Process flow diagram of the new framework in use.
The figure shows the structure of the framework in action. Specific products of any one of the conventional paradigms of critical systems thinking (see the selection of onto-epistemologies) are pulled through the process that is the critical moment of becoming, from “all-that-is” in p–s form and take shape as they are then perceived to be.

What contemporary critical systems thinking regards as a multidimensional or multiparadigmatic reality to all that is, I assert that it is the opposite, that the underlying support for our multiparadigm perspectives as actually a-paradigmatic. And that it is because the mind is required to make sense of the world, that is, its job is sense making, that it appears as though reality may come in all the multiparadigm, multidimensional forms of constructed experience. It is perhaps the critical hermeneutics of John Thompson (1981) which most clearly understands this, but contemporary systems theorists: Jackson, Flood, Mingers, Midgley, Taket & White, Gregory, Fuenmayor, and others have also contributed pieces of these ideas. Maturana, a systems neurologist, brilliantly explains the implications of experience shaped by consciousness emergent from the functioning brain, itself a product of biological evolution (Maturana, 1988a, 2002; Bunnell, 2004a).
7.2. The epistemology

Ontology as concerns human understanding can only be artificially separated from epistemology because, as previously noted, the brain–mind requires meaningful associations; what something is is integrated with its meaning.

For example, it would make no sense to simply accept the statement: “ontology is process–structure in two ontic types” without knowing what those terms mean and why it is believed to be so. The reason for assigning ontological status to process–structures is explained by the needs of the framework’s epistemology (philosophy which deals with meanings and associations). Why not simply declare that the world is made of cheese? Because the epistemology has to make sense of the world specified in the ontology (and there is only so much you can do with cheese).

Here, an epistemology is developed to explain how the process–structure ontology works to support our (i.e. systemists’) internal and external worlds (as previously described); and, as in all other paradigms, what in these worlds concerns us, what is of value, and how we understand what we discover in them, as follows:
Process–Structure is proposed as a new ontology into which, working backwards, the membership of the four conventional paradigmatic ontologies could be deconstructed. That is, if you deconstruct a thing, say foo, you get a bunch of p–s’s no matter which ontology foo comes from. As in the arrow of time, however, the operation runs only forward, in the constructive direction because those ontological con-structions are emergent in the systemic sense, by which it means that a cause cannot be determined—there are an infinite number of possible sources. (The process of emergence is well understood in this respect. For example, water is wet is an emergent property of a collection of H₂O molecules.) Ontological members of one of the traditional ontologies emerge from the ‘formlessness’ of process–structures into their familiar in-paradigmatic forms. I call this constructive process the “critical moment of becoming.” It can also be described symbolically as cmᵢ(ps) ≡ O(i) where the index i is an onto-epistemology. That is to say, the result of the critical moment of becoming of an onto-epistemology upon process–structure is equivalent to the function of Ontology (i.e. ontic membership, or becoming) over that onto-epistemology. It is an epistemological conceptualisation of an event positioned between process–structure and another ontology as it is conceived. It works for any onto-epistemology.
Teleologically, the critical moment of becoming is the philosophical ‘glue’ which adapts process–structure to the onto-epistemologies of the conventional paradigms. I would say that it can be understood as a mechanism of translation (i.e. movement) between them yet it remains separate and apart from both and affects no change to either. Again, ontologies are metaphysical theories about what simply is. I speculate that in humans the mechanism of the moment of becoming first appeared somewhere in our evolutionary past with the development of the nervous system; it is physiological with ancient roots tied to the viability of the species (Bunnell, 2004a, b).

It is not well understood but I believe we must not sidestep the nature of consciousness. We can say in terms of systems thinking that thought is an emergent property of a brain which we see as a complex system. Then if we accept the premises of this theory already put forward, then what is plausible? What possibly useful knowledge can we create if we focus on the smallest part of what it is that is not well understood? We cannot say that the critical moment of becoming is a collection of only abstract p–s’s. There is no doubt that there is a dependence on the physical brain. Where and when a thought is created—there is a coupling of physical and abstract p–s’s... This is why I say that physical and abstract p–s’s are isomorphisms. Somehow, in
the instant of its emergence thought is simultaneously physical and abstract. Perhaps thought begins in the physical form and changes, somehow becoming abstract. But in Maturana’s terms the structural coupling works both ways—thought causes physical changes and the physical brain somehow embodies the thought. The reciprocity is critical. It is how we learn. This explains how it is we can keep a stream of consciousness. This means that the isomorphism works both ways: abstract thought is an isomorphism of brain activity, and brain activity is an isomorphism of abstract thought. And this reciprocal isomorphism operates more or less continuously—it is coupled—it exhibits a duality.

Now we can look again at problems with multiparadigmatic theory—paradigm incommensurability and relativism. First, a review of the problem. There is epistemological relativism between different paradigms; that is, what you see depends on how you look at it. This is by definition logically inconsistent; that is, that cannot be true. Hence, the problem.

Therefore the new epistemology should recognise, accept and admit to both ontological and epistemological relativisms between the paradigms. However, and most importantly, there is no relativism between the p–s ontology and any one of the paradigmatic ontologies.
Remember, the paradigmatic ontologies are locally emergent. Between the paradigmatic onto-epistemologies, yes, there are relativisms. Between the p–s ontology and any one of the paradigmatic ontologies there is not. The paradigms remain incommensurable with respect to each other. Their epistemologies each have their different ways in which we may come to know the world. None can claim to have access to all that is.

One of the great triumphs of systems science has to be the knowledge it has developed regarding the behaviour of ‘holons’. Perhaps one of the most important aspects of holons is emergence. Society emerges from people, for example. Wet emerges from water molecules. What is most important and most difficult to accept, though, is that emergence is a one-way process. Let me explain how I understand emergence: That which is emergent can only be said to have come from indefinite, rather than specific causes. This is like reversing the integration process in calculus—the derivative is not the same as what you integrated—in the integration process (the emergence, if you will) information is lost. And it must be lost so that we can see the ‘forest’ for the ‘trees’. The loss and emergence are coupled, I believe. In this sense that which is emergent is no longer contained within its source.
The irreversibility of emergence is what precludes ontological relativism between the conventional ontologies via the p–s ontology.

Epistemology is the theoretical level of logic and explanation, of values and experience and reason. In the new theory, however, the world has no form or meaning or values or reasoning or reasons—it just is. But there are the conventional paradigms. The new epistemology must hold that the conventional paradigms are built for those things. It ‘knows’ that the systemist can from this theoretical place ‘switch’ or ‘jump’ or, as the methodology says, ‘deploy’ any conventional paradigm. From another paradigm a systemist may ‘switch’ to this theoretical pseudo-‘a-paradigmatic’ place, but there is nothing here except the ability to ‘switch’ to any other paradigmatic stance. It is merely a pivot point between the conventional, meaningful paradigms (or micro-paradigms of the systemist). And that is the only thing it does, methodologically. Epistemologically it ‘knows’ that other paradigms are known to be valid, consistent, and meaningful with respect to themselves.

The process–structure ontology is designed to prevent us from imposing associations, objectifying or reifying anything within it, an idea informed by poststructuralism. It is in fact designed so that, out of the infinite number of possibilities (a-paradigmatically) which could
be ascribed to ‘reality’ at any one time (paradigmatically), no one possible form or aspect is privileged over any other. In that sense it is hierarchically flat. It is either determinate (from God’s eye view) or infinitely indeterminate (from the systemist’s point of view); whichever you prefer is correct. This theory has nothing to say about God. At the same time, it may provide us with a theoretical place of retreat to, allowing us to dump and re-imagine the ‘reality space’ of a problem situation, such as you would do with Ulrich’s boundaries in critical systems heuristics (Ulrich, 1983), or in the critical moment (§6.11), or in reflexivity (§2.5.4), or as in postmodernism questioning the terminology in our thoughts (§4.5.5).

Let us look again at the collection of theories. When we look at the onto-epistemological assumptions made by a variety of theories it appears that what is epistemological to one theory may be ontological to another. (That is, ontological membership is a function relative to the paradigm and its epistemology.) For example, compare structural functionalism (which considers reality to be ‘external’ and may include social structures) with interpretivism (which sees reality as a product of the mind). To the systemist (our domain of applicability) ‘systems’, in turn, are either ‘in the world’ or [as in SSM] ‘a process of
enquiry into the world’ (Checkland and Scholes, 1990). It depends on the paradigm.

(See also “What p–s ontology is not”, §6.12). Consider how this thinking differs from that of Bhaskar’s critical realism (1989; Collier, 1994):

*Critical realism demonstrates that ideas, concepts, meanings and categories... exist in the world, independent of human beings,... are equally as real as physical objects. They are emergent from, but irreducible to, the physical world, and have causal effect both on the physical world (eg in the generation of technology) and the social and ideational world. ... Ideas once expressed are no longer wholly subjective—they become intransitive and available for investigation, debate and judgement by others.* (Mingers, 2000).

Unlike critical realism, the p–s ontology does not include objects with pre-constituted boundaries that we can access, nor does its epistemology have ideas, concepts, meanings and categories—what I would call already aggregated (or constructed) abstracts. To consider a thought ‘real’, I believe, is an act of observing (Maturana, 1988a; Bunnell, 2004b). Thoughts are constructed in the moment of becoming and meaning depends upon the local, or micro-paradigm of the observer.
Bhaskar’s onto-epistemology makes an epistemological break with the tradition of the critical-emancipatory paradigm. But, in my opinion, systems thinking. But this new theory acknowledges relativisms between ontological and epistemological membership from theory to theory. An epistemic fallacy in one may be perfectly consistent in another. One can also find the same kind of relativism between process and structure. Effectively, this is an acknowledgement and acceptance of paradigm incommensurability, but it reflects the human disposition and would allow each established paradigm to remain whole and useful as it is.

I believe that what is needed is a minimalist epistemology, one that does no more than say, as this theory does, that we already have four epistemologies that are proven and well understood. Refer to them for that. Leave to them that which is theirs. How that is done in this framework is the subject of its methodology.

In this new framework, different paradigms are respected as to what is understood within them to be real and internal vs. external with respect to the mind. Its epistemology accepts the paradigmatic relativism of knowledge and the contextual dependencies of their methodologies. Substantial aspects of conventional epistemologies and methodologies are intentionally absent from this framework because
(a) they are not essential to the complete elaboration of this paradigm (built as it is to independently employ the four conventional critical systems’ paradigms) and (b) they are well-supported and properly used only in context, whilst immersed in it. There should be no call to refer to this framework as relativist as in-paradigmatic processes are consistent within their self-containment.

7.2.1. On ethics

I would like to see the separating out of ethical considerations which are typically ill-defined and distributed throughout the current conceptual frameworks of critical systems thinking, and the reestablishment of ethics as the third branch of philosophy, along with ontology and epistemology. The philosophy of ethics is concerned with purposeful action and how such action ought to be exercised, both in general and particular circumstances (Audi, 1999). It not only seeks normative guidelines but, as meta-ethics, uncovers the higher-order assumptions, arguments or structures which make such guidelines possible. Involved as it is with human questions of action, ethics embodies political philosophy, indeed may be understood as the political science of being (Georgiou, 2007) and responsibility. It is currently fashionable to bury the word ‘ethics’ in the literature of systems the-
ory and practice. This, it seems to me, smacks of some sort of implied objectivity or enlightenment.

We claim an ethical justification for ‘emancipation’ in critical systems thinking, and also for the commitment to ‘improvement’. If there were a specific ethics component in our theoretical frameworks this is where specific commitments would be spelled out. Nonetheless, the absolute priority given to the processes we call ‘critical’ in ‘critical systems thinking’ ultimately requires the practitioner to judge between alternatives, and even make judgements as to which alternatives are to be considered. Consideration should therefore be given to raising the importance of ethics to to the level of ontology and epistemology, including it among the fundamental components of our theoretical frameworks. Exposed at this structural level, assumption making and decision making then must come clean in a process of transparent, reflexive communication. There, ethical assumptions are subject to ‘critical’ examination by those involved with the project at hand, thereby submitting them to the processes whereby they can be adjusted and realigned as need be by the situation, the participants and those otherwise affected by any subsequent action (Ulrich, 1983; Midgley, 2000). Ethics, as its own area for systemic study, can evolve, and policy guidelines can emerge to encourage the develop-
ment of methodologies and methods that are ethically informed and inclusive.

7.3. The methodology

Methodologies, aligned as they are with their epistemologies, are used to put philosophy into action in the world. Methods are the actual actions to be taken \textit{in situ}. Referring to its methodology, the framework developed here directs a multiparadigmatic investigative procedure, reflectively compiling and organising what is discovered and making critically-reflexive assessments of the knowledge pooled from those paradigmatic views in the manner of best practice.

The new methodology prescribes an investigation which entails `deploying’ the various paradigms in a serial manner for the purpose of exploring and appreciating the ‘world’ and the embedded historical situation as it is revealed to the systemist whilst immersed in each.

In conjunction with the critical oversight functions described above, a critically-reflexive evaluation of the collective ‘big picture’ is otherwise ongoing. It leads to deliberations and decision making guided in spirit by ethical and aesthetic considerations (transparently disclosed as part of the oversight function for a critique-and-improvement dis-
Regardless of the choice of multimethodology, before a method can be deployed the methodology directs a reflective, paradigmatic look back to ensure it remains true to its theoretical heritage.

The overall philosophy will take a fresh look at the notion of a critical systems paradigm. It envisions a theoretically cohesive approach to critical systems thinking and practice combining a multiparadigmatic investigation and a general multimethodology which uses—in their proper theoretical contexts—the dozens of epistemologically-specific systemic methodologies developed over the past fifty plus years. Jackson and Keys (Jackson and Keys, 1984) took the first step with their system of systems methodologies where the problem context (later, paradigm) rightly became the driving force for considering which would be appropriate choices for the methodology to be used in a particular situation (Jackson and Keys, 1984; Flood and Jackson, 1991a; Jackson, 1997; Jackson, 1999). Multimethodology, or methodological pluralism supports a more sophisticated understanding of the problem situation and allows for the deployment of more than one method in a single intervention; multiparadigmatic multimethodologies are those which, in addition, make use of methodological thoughts from across the paradigms (Flood, 1990; Gregory, 1992;
Flood and Romm, 1996c; Gregory, 1996b; Taket and White, 1996; Jackson, 1997; Mingers, 1997c; Jackson, 1999; Midgley, 2000).

This new methodology informed the experiment (the subject of the next chapter) designed to test basic assumptions of the framework. Several lessons were learned and an improved methodology is called for, one which will involve further research. It is described in the Conclusions chapter.

7.4. The axiology

The theory only specifies that the system of concern is axiologically considered through the perspective of the observer who is a systemist. That is, all epistemological concerns of the theory (such as there are) are addressed from the point of view of the systemist. This is in keeping with the p–s ontology, the epistemology and the methodology. Similarly, the axiology is minimalist, as well. It is intentionally devoid of other axiological concerns such as values and aesthetics which cannot be supported by the p–s ontology and the epistemology already discussed. For those we defer to the conventional paradigms.
7.5. How to use the new framework

This chapter has allowed me to develop my ideas for a new critical-pluralist systemic framework which, by deferring to the conventional paradigms’ onto-epistemological approaches (in their own terms), we are able to leverage comprehensiveness with the perspectivity made available via their deployment; and, by deferring to their epistemologies and methodologies, we are able to leverage our effectiveness in systemic research, intervention and design projects. The new methodology calls on the systemist to readily detach from this, the current paradigmatic stand, and transition to another. ‘Deploying the paradigm’ means assuming (taking upon oneself) the paradigm’s concepts of internal and external realities, knowledge, ethics, aesthetics, methods, etc. to conduct some part of the research. As I have shown, our minds are already accustomed to the subjective relativity of ‘being’ and ‘knowledge’ and well versed in reification. With some initial coaching and practice, our paradigm shifting skills should develop. We then return to this, the critical paradigm, for a critical reflexive evaluation of the information gathered from each deployment—a debriefing, if you will—reflecting upon our in-paradigmatic experiences. Actions to be taken to intervene are decisions also reflectively considered in the same way.
Multimethodological approaches (like this one) which would employ more than one methodology from more than one paradigm in the same intervention have been orphaned from the collection of proper, widely accepted approaches to research and practice ever since the concept of ‘paradigm’ was first adopted by systems theory. The new theory proposed in this dissertation accepts incommensurability and defines an ontology of process–structure which is shown to support an epistemology and methodology calling for the serial deployment of each of the established critical systems’ paradigms and engagement with their ‘world’ views for a critical, reflexive evaluation of the insights gained and the subsequent employment of any of their methodologies. By engaging process–structure in the moment of becoming with each of the four traditional systems ontologies, the practitioner allows each paradigm to complement or compete with the others in terms of ontological, as well as epistemological and methodological relativism—a relativism dependent upon facets of the specific problem situation of concern. In this way, p–s and its framework extend the concepts of complementarism, critical appreciation and pluralism beyond methodologies to paradigms.
Chapter 8. Testing the idea of multi-paradigm deployment

8.1. Introduction

Can we imagine ourselves shifting paradigms? Burrell and Morgan (1979) argued that because each paradigm was radically different and incommensurable with the others, that changing paradigms was rare—akin to a religious conversion (Cunliffe, 2010). But despite what much of the literature says, perhaps making a paradigm shift is practically effortless, as easy as putting down one book or magazine and picking up another. Or changing the television channel. We are talking about having human experiences from different points of worldview. I think it is not unlike reading a work of fiction in which the author speaks from the first-person point of view of one of the characters, as Samuel Clemens famously did with Huckleberry Finn. It is an effective literary tool employed to have us identify with or to ‘walk in the shoes’ of that character. The author does not have to teach the reader how to do this beforehand, it is a capability we have already and are able to use without much, or better, any conscious effort at all (because, say Maturana and Varela (1980), as a species we are adapted to it). What we are talking about is not at all the same as having empathy for another; this is much more direct; the author...
hopes for us to become that character. As to the reader, those moments of being someone else somewhere else can be compelling experiences.

In the same spirit, I believe that another paradigmatic stance can be evoked. First its worldview might be described in general terms as an overview, then more specific examples of the sort of experiences one would have in that paradigm could be described, like storybook adventures. This is, in fact how I designed the methodology for the interviews (Chapter 8). Jackson's generic methodologies (2000; 2003b) could be used as a solid starting point to guide this sort of project.

The experiment was designed to be learned from. It afforded me the opportunity to try out my idea that paradigms can be evoked and observe what happens when systemists are presented with the challenges that paradigm switching presents. I sought, specifically to test two very basic assumptions made by the new framework. First, would the experienced practitioner be both willing and able to do this? The primary issue is whether or not a practitioner can switch from one paradigmatic stance—principally, one’s own ‘natural’ paradigmatic perspective—into another which might feel artificial or academic in the sense that it is not the ‘natural’ way in which the systemist approaches his or her world of practice. The second was whether or not
they would discover or uncover important new facets of a situation when they re-imagined and re-examined it from within different paradigmatic perspectives; and, if so, whether or not they would consider those discoveries to be of any value.

The method chosen leveraged my acquaintanceships with members of the International Society for the Systems Sciences (ISSS), casual friendships built in previous years whilst attending and presenting at the ISSS annual conferences in Cancun Mexico (2005), Sonoma California (2006), Tokyo Japan (2007), and Madison Wisconsin (2008).

None of the interviewees had prior knowledge of the research strategy or the nature of the data to be collected. The plan was to elicit experiences with the ISSS, first in their own words; then to explain a little bit about the philosophy and methodologies of first, the functionalist paradigm, then the interpretivist, then the critical or emancipatory, and finally the postmodern paradigm. After each description I would ask them to give it a try—to ‘assume’ the position themselves and re-examine the same situation through that different paradigmatic lens. It turns out that the first five were asked to imagine a hypothetical situation—that they had been hired by the ISSS as a systems practitioner in order to examine and analyse the ISSS and to make recommendations and possibly implement them. In this sce-
nario, the ISSS was supposedly concerned that it was in decline in terms of membership, etc. and wanted the systems practitioner to help them to understand, if it was occurring, why it was occurring and what they thought were the possibilities for turning it around. In other words, they were to imagine planning a systemic intervention on the ISSS.

My expectations had been influenced by the opinions and reports of various theorists who have spoken and written on the matter of paradigm shifting. The consensus is that a person cannot be expected to make such a paradigm shift without a great deal of difficulty and perhaps a great deal of training (Mingers and Brocklesby, 1996; Brocklesby, 1997; Mingers and Brocklesby, 1997).

The process of transforming an agent who works within a single paradigm into someone who is multi-methodology literate is perhaps an unlikely, although by no means impossible, proposition (Brocklesby, 1997).

This supposed difficulty may have had a chilling effect on further research into the matter.
8.2. Research methodology

8.2.1. Semistructured interview

The semistructured interview was chosen over other data collection methods for several reasons. Qualitative data from the systemists’ point of view was needed, in other words it was necessary that the participants speak for themselves. They were invited to tell their own stories. A plan was thought through that would first give us an impression as to their own worldview which I call their ‘natural’ paradigm and recognise as a fluid, evolving, learning and adapting ‘micro-paradigm’ (see §3.2.3, ‘Virtual-‘ or ‘micro-‘paradigms). Data from this part of the method would then serve to establish a basis against which data collected in the remaining stages would be compared.

I wanted to establish and maintain a relaxed and open rapport with the interviewee. A structured approach might be perceived as more formal, challenging and perhaps a bit threatening, as if they were being evaluated or judged. Indeed, when first asked whether or not they would like to participate in an interview for this research project, most expressed some hesitancy having to do with the quality of their qualifications; but they were each assured that I just wanted to chat about what they already knew. “It is about how you come up with ideas,” I said. I sought to leverage the rapport I felt I had established
in our earlier casual, friendly encounters. I thought that the level of compliance with what they would be asked to do (first to open up to me to tell their own story and then to explore four paradigmatically incommensurable worlds) would depend upon their level of trust and comfort with the approach.

A more structured interview would have had one benefit that the very casual approach I chose did not have, though. I was not always well prepared and clear, not always thorough and articulate. With a proper script I could have simply read through it, having the additional benefit of consistency as well. Consequently, there are inconsistencies, errors and omissions on my part as the interviewer. With a script I would not have skipped over the interpretive paradigm as I did with Participant 4, or forgotten to ask the question about value as I did with both Participants 8 and 10. Upon reflection I know that I should have been better prepared, and in the future I will remember that. Rather than blame the method I had better blame myself for a flawed implementation.

If time and circumstance had permitted I would like to have run the whole experiment again with other participants, using lessons learned from the first experiment to improve the practice.
8.2.2. Thought experiment

Within each interview the systemist was guided through a series of thought experiments. Information on the philosophy and methodology of the thought experiment comes from a recent dissertation by Luis Sambo (2009):

*Denscombe (2007) defines an experiment as an empirical investigation under controlled conditions designed to examine the properties of, and relationship between specific factors; while Sorensen (1992) defines an experiment as a procedure for answering or raising a question about the relationship between variables by varying one (or more) of them and tracking any response by the other or others. For both definitions it implies the execution of experience with appropriate equipment, tools and material. The aim of any experiment is to answer or raise its question rationally. Sorensen (1992) considers thought experiment as an experiment that claims to achieve its aim without the benefit of execution. What makes an experimental design a thought experiment is the way it is presented to the audience – as a design that aims to convince or puzzle in its own right. ... The difference is that the aim of a thought experiment is enlightenment. Many of the heuristics used to identify procedures as experiments, are also used to identify thought experiments. Thus the typical thought experiment scores high on scientific content, hypothesis testing and manipulation (Sorensen 1992).*
Denscombe (2007) raises the issue of reflexivity concerning the relationship between the researcher and the social world; this is an anti-positivist view according to which, there is no prospect of the social researcher achieving an entirely objective position from which to study the social world. The argument is that the researcher can never stand outside the social world they are studying in order to gain ground from which to view things from a perspective that is not contaminated by contact with that social world. According to reflexivity concept, our sense making about the social world and the meaning we give to events and situations are shaped by our experience as social beings and the legacy of the values, norms and concepts we have assimilated during our lifetime (Denscombe 2007)” (Sambo, 2009).

There were ten interviews. Each interview was recorded and later transcribed. The participants had agreed to this and were told that their words would only be used for my own research purposes. Five were asked to consider a specific hypothetical scenario—an intervention with the ISSS organisation. The others were allowed to choose any intervention with which they had recent experience. The interviewee was asked to tell me about that intervention in their own words. Then each interviewee was asked to re-examine that same situation as though they were a positivist-functionalist. I repeated this step, taking them through interpretivism, critical-emancipatory,
and postmodern paradigms. I consider each of these five explorations thought experiments. Finally, each interviewee was asked to reflect on what had just taken place and to report whether or not they found the experience to be of any value to them.

8.2.3. Introduction

The study was designed to collect data which might indicate to what degree systems practitioners might accept and adopt ideas advanced by the thesis, principally that skilful employment of a multiparadigmatic perspective:

- enables a more comprehensive appreciation; and that
- that appreciation may uncover significant aspects of the situation which might have been otherwise overlooked or under appreciated and transform the practitioner’s conceptualisation; and that
- a transformed conceptualisation could mean a new more informed approach would be considered; that
- those new aspects, associated epistemologically as they are with a set of their own distinct methodologies, represent additional tools and opportunities for engagement which might not otherwise be considered; and
- if thoughtfully brought to bear, the use of these additional methodologies could impact positively on these situations and thus contribute towards improved outcomes.
It might indicate the efficacy of such a practice and tell whether or not practitioners *would* engage in a pluralist practice when it was otherwise indicated. The interviews would gather feedback from each participant by asking at the end of the interview, first, whether or not the experience succeeded in helping them to discover anything new or significant; secondly, it would solicit their opinion as to whether or not the experience had been worthwhile or of value to them, personally.

### 8.2.4. Data collection and analysis

Altogether, ten interviews were secured and conducted. The interviewees were selected casually—all were participants in these two gatherings of systemists, they were available, they responded positively to the request to interview them for 30–45 minutes for the data collection phase of my Ph.D. research. Some were suggested by others as persons with diverse backgrounds and interests; some for being wise; others for being ‘different’, somehow, from the others. My Ph.D. supervisor approved of the selection in terms of diversity and ‘fair play’. There was a balance of men and women and a wide scope of age and experience from academics, researchers, and practitioners.
8.3. Findings from interviews of ten systems practitioners

8.3.1. Interview with ‘Participant 1’

“Where you’re going to have problems is if you don’t have some coherence in the system itself. In this case, some coherence in the society. So in its current state it’s probably easier to downscale the activities like conferences and whatever you do than it is to grow and expand it upscale to other things. Where you end up with irreconcilable differences is when you have a lot of people who really aren’t there for the same reason.” —Participant 1

This was my first interview. Participant 1 and I are acquainted and he was aware I was working on my dissertation in the area of systems thinking. To start the conversation I explained: “My thesis and this interview has to do with how ideas are generated, how problems are perceived. Problem situations, you know, that we deal with in interventions and possible solutions to that, you know, we come up with. Because as systems people I think we’re different... because we propose to intervene and fix or correct or ‘improve’ somehow. We try to act in the world.” I asked him to imagine himself hired by the ISSS as a systems consultant-interventionist because the Board perceives that they are on a path of diminishing sustainability. What they have tried before has failed to revitalise the Society. As the person hired to
do the intervention, I asked him to tell me what he perceives to be the main issues and problems, and what plan he might propose to the Board of Directors as a way forward.

Participant 1 first laid out his understanding of the problem scenario from his ‘natural’ paradigm with a historical perspective. He traced the Society’s organisational development from its inception and initial growth, into maturity, and more recent decline in terms of ideas, membership and funding. He spoke of the disenfranchisement of its traditional sources of funding from once upon a time when academics with big names came with big budgets and academic conferences were funded liberally. He described the Society’s failure to attract and keep other sources of funding; a failure largely attributed to the Society’s “inward focus” and a persistent dearth of real-world results. The membership is of two minds, he said. One is interested in philosophy and theory, expecting others will adapt them to their own real-world problems; the other is put off by the philosophy and theory and focuses on the applications of systems thinking, typically employing one method in the area in which they specialise; e.g. transportation, environment, business, teaching. Funding opportunities are diminishing for the former type and improving for the latter. He said the ISSS needs “to begin to connect the kind of professionals that the Society
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is designed for with the kind of activities that the Society does.” Appeals to more specialised targets such as environmentalists or healthcare professionals might bring more to the conferences.

The Society’s identity is an organisation which dared to go its own way: “So you’ve got some history of the hard and soft people, you’ve got the history of the split from AAAS [American Society for the Advancement of Science, est. 1848, which currently has 127,000 members!]. If it were still a part of the AAAS it would be a different kind of society in a lot of ways because it would probably have followed the tracks of science more... simply because of that affiliation over time. In and of itself might have become either split up into other parts of the way those disciplines have evolved or it would have become a bit more of its own discipline... more focused and specialized in its own way, I would assume. And since it didn’t do any of those things it now really is kind of a stand-alone... a lot of it is just a legacy association.”

The path, he said, has always been difficult and where it is going remains unclear. “We’ve been trying to swim upstream against all the other paths that most things have taken. We’ve been working against specialization, we’ve been kind of working against reductionism. A big part of the issues is going to be finding what to work with not what to work against. ... You can trace a lot of different luminaries and presi-
dents of the organization over the 50 years of history that have had very different ideas about what it should be, what direction it should go.” Without a clarity of focus a purposeful system will tend to decohere, he warned. “The difficulty of... where you’re going to have problems is if you don’t have some coherence in the system itself; in this case, some coherence in the Society. So in it’s current state it’s probably easier to downscale the activities like conferences and whatever you do than it is to grow and expand it upscale to other things,” which is risky because, “You end up with irreconcilable differences... when you have a lot of people who really aren’t there for the same reason.”

Participant 1’s ‘natural’ paradigm was identified as critical-emancipatory. See results table, Table 4, §9.2.

_Positivism-Functionalism_

Next, I described the positivist-functionalist paradigm and asked him to investigate the same situation, this time as a positivist-functionalist: “Okay, let’s shift to the next phase. First we have the functionalist paradigm. Functionalist is the world of science, general systems theory, measurables... You can say it gets quite complex there... calculus and multivariates and you have physical laws that you can count on and determine. Production of factories measured by
how much output per hour. People think of very solid terms. The world is external, measurable and knowable. And we can make certain determinations about that. Now, if you can shift into this mode of thinking that way... And you know people who will only think in those terms. If you can put yourself in that hat right now [gesture: putting on a hat]... I’m calling it... say... deploy the paradigm... upon yourself to your external projection of the world. Then can you then, with that color of vision on you, can you please explain in this same idea... ISSS issues, you know. Through that mechanism there.”

He immediately understood what I was on about. He told me about the early systems thinkers who started and established the ISSS. At that time there were only what came to be known later as positivist-functionalist, or ‘hard’ systems, and ‘hard’ systems theories.

In the analysis of this section of the interview I discovered several positivist-functionalist thoughts he had not raised in his ‘natural’ story: He mentioned that “science was very much connected with a lot of the original people in the Society.” He said these men and women had reached a level of mastery so that “they had enough insight to see the limitations of their own disciplines.” (The concept that mastery is a prerequisite for an epistemological break-through is an issue that Participant 7 also raises in his interview.) The interpretiv-
ists, or ‘soft’ systems people as they became known, thought the positivist-functionalist approach was overly reductive. It did not include the human issues, primarily ethics. But their new epistemology was opposed rather than accepted. Its ways did not fit within the existing domain or expectations in terms of what were considered acceptable solutions. He sees this resistance as “just an evolitional stage, maybe, that people and ideas tend to go through.” He criticised the Society for not really “producing things that were very clearly thought out to an endpoint as opposed to just interesting and conceptual.” It is the engineers and hard science researchers who get funding, he said. I note that he did not propose any solutions.

**Interpretivism**

I told my story about interpretivism in the first person: “The interpretive paradigm recognises that I see the world differently than you see the world. We come with our own experiences that, when we have new experiences they have to integrate into it, right? Maturana and Varela were saying we come biologically predisposed to only understanding a world in a limited way, perceptually. So our world seems to be actually, not there [I gesture outwards], [but] in here [gesturing to my head]. Because that’s the only world that matters to me, in here. Because if I don’t have it here, right? If it’s there I don’t know.
Right? So there may be an objective world but the subjective world is the only one that concerns me.” My notes say, “Boom! He immediately understands me and shifts into this paradigm quite naturally.”

He added, “Well, it’s not just the only one that concerns most people, it’s the only one you truly have access to.” I asked him if he thinks this is closest to his ‘natural’ paradigm and he told me that he uses both positivist-functionalist and interpretivist paradigms and that both are necessary.

I asked if that was easy to do or difficult and he said, “Well, it’s always difficult because you... they really are separate... um... separate areas of the world. Separate ways of understanding in a lot of ways. And there are people who do... who can span those quite well. But they tend to be people who have really been able to cross over and explain and write about those things at a different level.” Perhaps I can infer that he was talking about the paradigms and incommensurability. He did not mix these worldviews. He switched between one and the other “separate ways of understanding.” Did he take a meta-theoretical perspective? No, I believe he consciously switched between them depending on the context. He said, “It works well as long as the subject matter fits.”

Other ‘interpretivist’ issues he found included:
• A schism between the ISSS and the more exclusively positivist Societies.

• A system can be defined “in just about any [way] depending on who’s looking at it because it’s only subjective, anyway.”

• Using consensus-seeking methods.

• On subjectivity: “You change the group and the information’s different. You change the group and it’s a different system. You change the group and it doesn’t exist anymore because they don’t see it that way.”

They have found, he said, that remaining in the subjective, consensus-seeking mode can and has undermined objective needs. One such need which has been undermined is the need to be selective in terms of which papers to accept for publication and presentation; affecting a “deterioration of the quality of the presentations”. The negative effect from this is an appearance that anything goes. And that “creates some real problems if you’re trying to say we are a professional society or we’re working towards a science.”

To add to his thoughts on the deterioration of quality he said, “Because people felt like inclusion— or diversity— or, you know, some ethical principle was more important than the quality of the ideas and the information.” I think that this comment is perhaps a critical-emancipatory concern. Participant 1 seems to suggest that the ISSS
needs to attend to and act more on its objective concerns. But how? This was left unresolved. And according to the other interviewees who have gone to this issue, it remains unresolved. Later in the interview he suggests that, despite its problems, there are members of the ISSS who are acting, nevertheless, in ways I see as pragmatic.

**Critical-emancipatory**

To explain the critical-emancipatory paradigm to Participant 1, I said, “Well, um, let’s shift to emancipatory or ‘critical’ systems thinking. And in this area we are talking about the voices that are not heard. Perhaps dominance and suppression. Or perhaps thinking about fostering the environment where little grass roots bloom or whatever you want to say. A thousand blooms or whatever. And critical in the sense that we need to remove ourselves from ourselves and look down [gestures] on how are we doing what we’re doing? Not just reflective with what’s going on here and how can I make it better, but what am I doing and can I make myself and make the process I’m doing better. Okay, so reflexive in that sense. And then constant re-evaluation as you, uh, an ongoing thing, the ability about the thing that brings in ethics... as you were saying, the ethics comes in here. Uh, who am I to presume, perhaps, that this is better and this [gesture] is not. It opens up that idea. You have the boundaries issue,
once again, and... I have set boundaries. Are those good ones? Does this need to be fuzzy and reset [eraser gesture]? Critical in the fact that you must always help yourself understand you set these boundaries without, [perhaps], knowing you have done it. And so break and try to reevaluate that. Critical Systems Heuristics comes into my head in there. So in this sense can you see, can you put the critical attitude in your head, be in that paradigm and look again at the ISSS and tell me, through this lens, what it is that you see.”

He said that the critical-emancipatory paradigm has come from Hull University and is not generally known in the society. “There is some understanding and appreciation of those ideas... [but not] to the degree that they are the operating principle by which lots of people truly operate.” There are those who would bring it in and have the ISSS “keep questioning things about itself” but “it tends to fall into solipsism... where people find themselves arguing just for its own sake without any particular goal or boundary to work from.” Reinforcing that is the Society’s tradition of inclusion.

Postmodernist

I describe my thoughts about postmodernism: “All this is nice but so many points of view and so many old theories and... who are we to know it’s the end of it? Actually, reality is far beyond what humans
could ever perceive. Situations, if you think of terms of interconnections of things and synchronicities in time are so far beyond what the human brain, according to Maturana and Varela, was ever designed for. It’s beyond our capacity. So, the real situation, if we could even have any idea of perhaps even imagining there is one—is completely inaccessible. Far, far deeper... You would have to go far, far deeper in granularity than any of us could ever get and you will fall into solipsism. Postmodern really did fall into this solipsism.” He says that reminds him of deconstruction. I continue: “Exactly. What’s the use? The world can go to hell and we can never really figure it out and if we did it would be like being... trying to impose our will and we’re not willing to do this.”

“So. I think postmodern phase two was: There’s something to be said about this infinite, like, complexity and the fact that there’s so many voices, who could ever hear them [all]? Boundaries are so perfused, you know, there’s so much multiplicity to what real life is. There’s something to be said about that. But can we deal with understanding it, anyway? There’s that pragmatic [being practical] side emerging, I think, from the postmodern, I think. There are postmodern people that, er, would... say, critical realism or something. But really it takes this postmodern ideas a little bit further and pragmatically tries to
make that function somehow to fit some purpose. Rather, move forward and take action in the spirit of what Jackson calls ‘improvement’. Right? If it is possible, we are called upon as humans to try to improve. You know. Okay. Um... Can you look then at the ISSS in that lens? Re-describe it again to me. Re-imagine and re-describe it again to me. Tell me what you see.”

He starts by saying that he doesn’t necessarily see it the same way I do. He throws in aspects not heretofore mentioned. The ISSS is “an ongoing, evolving thing. It’s the morass of individuals and ideas and connected with all kinds of other organisations and affiliations and desires, you know?... People want to become recognised as experts. People want to take ideas and turn them into books. People want to... In it’s own way it’s kind of the organic, ongoing, market[place].”

“...And there is at the same time a bank account and there are actual functions that happen. And at some point either there will be people who are willing to put the amount of time it takes in doing the actual things that have to be done to keep an organisation going.” It is a problem that needs to be managed at the same time it must remain unmanaged!

“...And people will either bring enough resources to make a conference happen and put their time in... or not.” Put another way, “That’s
a real basic reality. So you can look at it in lots and lots of different ways. And there are lots of reasonable ways to describe it in terms of what it is that keeps people coming to it and, you know, it doesn’t make any sense to try to somehow confine it to a particular thing.”

**Experiment’s value**

Did he find any value in doing this experiment? He said it is always useful to look at a problem from multiple perspectives and that he is quite used to doing it “as a regular repertoire”. I ask if that means that what I am trying to formalise he does just as a matter of fact. He said, “Yes.” For Participant 1, “It’s helpful, it’s not different or new.”

### 8.3.2. Interview with ‘Participant 2’

“...everybody is a personal scientist that tries to make sense of their world with whatever tools they have at hand. And that uh, the difference between people who are labeled ‘crazy’ and people who are labeled ‘sane’... the big difference between them is that the constructs they had of their world were more suitable and more functional.” —Participant 2
Introduction and her ‘natural’ paradigm

I asked participant 2 to describe the situation as she sees it and what her own approach to this situation might be. She assumed an historical perspective to tell how the Society came to be and why the situation later came to be problematic. Systems’ early days, she said, saw the convergence of new ideas and brilliant people who addressed them. Not true of today. Big names established themselves but have since retired and to a certain extent the Society is still running on the brilliance of its early days. What can we do? “My best guess is that our best strategy is basically to roll along as best we can and wait to catch the next wave.” We have seen “techniques and knowledge that have been developed in the systems community and then applied to a discipline—the discipline runs off with it and uses it as a basic tool,” and we don’t necessarily get the credit. The publishing industry is partly to blame for that. We need to become better known, but we cannot expect too many people to connect with such advanced thought nor keep up with the pace of the growth in knowledge and information. Similarly, there is too much demand on today’s CEOs and decision makers who may have great responsibilities but cannot be intellectually prepared with all that they need to consider. A systemist is a rare type of person and the education system is not set up to increase our numbers, nor set up for us to teach. We could edu-
cate if we had funds. [5 of the 10 interviewees were or have been educators.] [All interviewees mentioned funding problems.] More people should be able to earn a living in Systems. We haven’t broken through so that people see our work as valuable. When we do work (if we can find the right clients and settings), people see it. She implies we need to seek clients rather than waiting for them to find us. Some of our methods, however, are not quick, easy and cheap. With funds we could do projects ourselves; for example, community work, that could serve as demonstrations.

I asked “What about internal factors?” There is progress with the ISSS website, she said, but we need to do more with its social aspects. We may need to switch to meeting online instead of at annual conferences due to constraints of money and ecology. ISSS should offer more scholarships and coordinate with other Societies.

Participant 2’s ‘natural’ paradigm was identified as positivist-functionalist. See results table, Table 4, §9.2.

Positivism-Functionalism
She has friends, she says, “who would be saying things like, you know, you have to focus on marketing, marketing, marketing. Branding, marketing, public relations; doing something that would put you
out there, somehow. Umm, some of these things I think we do to some extent... They would be saying, ‘Can you quantify the benefits of some of the projects that you’ve done?’” and then tells stories about good interventions that went wrong for external reasons.

**Interpretivism**

I describe interpretivism and ask her to look at the ISSS once more using the interpretive paradigm. “Okay,” I said, “I have three other hats for you.”

She said “Okay!” and smiled. Her comments began with the thought that we should be made aware that our actions have consequences in the external world affecting people’s perceptions of who we are, and that we should question our means. I scored this as critical thinking. She adds that interpretivists have always been included in the ISSS—which I scored as a positivist-functionalist comment about interpretivists.

**Critical-emancipatory**

Among her thoughts: The ISSS exercises little power over its members. Academics may have power in their own institutions to direct students’ studies. The ISSS tries to facilitate its people but has little money. It is not involved in politics. Members *do* have the power to
circulate their own opinions. Lack of money is a constraint that disempowers everyone. Our own view of self can entrap us or incapacitate us. When times are hard, as they are now, people may have to tolerate what they otherwise could be free from. We are more constrained externally, we don’t constrain internally. The ISSS welcomes new students.

**Postmodernist**

Once again, I give my ‘customised’ version of postmodernism and invite her to look at the ISSS that way.

“Postmodernism,” she said, “is about language; and our language [systems thinking] should be simplified and more normalised in order for us to understand each other and be understood by others as well.”

“A time of change, such as we have now,” she said, “is turbulent and unsettled, making it seem complex.” Complexity theory is “really, really good at dealing with the usual situations. The advantage of that is to have energy and resources left for the unusual situations that don’t fit to the usual categories... With normal science... you find more and more people and more and more situations don’t fit. When too many things don’t fit you have to change the category.”
Experiment’s value

Did she see any value in doing this?

“Well, I think the main thing that surfaced towards the end was the uh, perhaps a stronger appreciation of how important it is to find a way to communicate about how we see things. The patterns and language being very key, here.”

8.3.3. Interview with ‘Participant 3’

“I like Mike Jackson’s framework. A lot. Um, it is, [sigh] it helps actually to shift from one point of view to another. But I don’t know how useful it is, how different some of these perspectives are.” —Participant 3.

Introduction and her ‘natural’ paradigm

Participant 3 is distinctive by taking a customer-centric point of view, asking what type of person would attend an ISSS convention (which she considers to be an academic organisation) and what other types would find that it was not for them.

She would rather have told me about her own work and starts to do so, but I pushed back and brought the ISSS scenario back to the fore. (Later I realised this was a mistake. From the fifth interview on, I allowed the interviewee to pick the topic of their own intervention.
It added a new dimension of variety to the experiment and yielded much more insightful and interesting information for the experiment. It also lends support to the applicability of the method to a variety of problem scenarios.)

Participant 3 sees the Society as a service to academics and by extension, the wider world. She would ask the conference organisers to tell her what its purpose is. What is its greater good? “What’s the purpose of a professional organisation that is supposedly doing integration across the social and natural sciences? What are we trying to achieve?” She said that because the service is not being very well used, then “one should look at the environment and the people it could be serving.” Since the conference location is moved each year, could it become a service to the ‘local’ community each year? That would be one way of providing service. “We could look at it in terms of users, providers, and the wider community.” We bring “resources” and we could connect and work with the communities’ “resources”.

Participant 3’s ‘natural’ paradigm was identified as critical-emancipatory. See results table, Table 4, §9.2.
Positivism-Functionalism

I had asked the first interviewee to “shift into” another paradigm, “to do what I call ‘deploy’ the paradigm”, to “analyse it in that way”; and I asked the second to “put the [paradigm] attitude in your head”, “be in that paradigm” and “tell me what you see”. With Participant 3 I began by saying, “I need to shut you down”:

“Now I’m going to have to, sort of, perhaps shut you down a bit. Now, can you imagine a person who thinks in the um, the, you probably have colleagues or friends who think only in the functionalist paradigm. “How much does this cost?” “When can it be done?” “How many people do you need?” “How much improvement, can you get 3% reduction out of this?” or, or whatever. And they’re, they’re into everything that can be measured and if it’s, if it’s not fact it doesn’t exist. It’s not true. So. First of all, if you would just uh, sort of, shut yourself down into imagining you’re like this type of person— Could you re-imagine the ISSS for a moment, thinking in just those terms, how you would see the world differently. And, and, sort of possible um, solutions you might be able to come up with within that particular paradigmatic view.”

“How many registrations have we got this year?” she said. “And can we afford to advertise? We could make use of university websites.”
There are the practical aspects of running a conference and fiscal concerns. She praised Jennifer Wilby and others who give so much of themselves.

Interpretivism

“Okay. Perfect,” I say. “Switch to um, uh interpretive paradigm. . . .”

She remarks about the fact that how differently people see the world and the fact that they come together is “actually quite special.”

“There is, to a large extent a tolerance of, of, diversity, of viewpoint... There are debates, but they are done fairly.”

In terms of the ISSS and its basis in various paradigms, “when the dialogue actually closes down,” she says, it is usually the case where at least one person “imagines that they have the... one and only true paradigm.” She gives a specific example of a conversation she had with another member earlier that day: “The debate was, though, that his maps were the truth and... He is very respectful in listening to other people. However, he still believes that their paradigm is the truth... I said ‘Yes, I think possibly your arguments do hold for, for the natural sciences up to a point. But even the natural sciences have evolved through debate and, and paradigm shifts. So you’ve always got to be open to testing out ideas.’”
“Okay. Wonderful!” I say, “Can we switch to critical systems thinking or emancipatory, it might be called ...”

Her response was about the traditional emphasis we in the ISSS have of *diffusing* power plays (as they are inevitable): “I think that a lot of the ... participants at ISSS are very good at working with power.” How? “Whenever people are taking themselves too seriously there will be humour and there will be ways of addressing it... If people are critical and systemic there isn’t much chance for a total power approach to prevail at the time.”

“I get fed up with postmodernism taken to extremes,” she said. “Uh hmm.... I don’t buy postmodernism,” she repeated. “I would say, first and foremost that I am not a postmodernist. However, I do think that some of the postmodernist ideas have been very enriching. We, in fact, if we buy into the notion of multiple truths and perhaps on no possibility of finding the truth; we remove the hope of social environmental justice. So I, you can’t really function that way, at all. Besides which I don’t actually buy it. Because I believe that the more you engage in dialogue and testing out ideas, the better the match or response to a particular situation.”
“I accept the fact that you can have expanded forms of testing so that, instead of just the experts making the decisions, you have the people who are going to be affected by the process. That’s a falsification process. That’s a testing process. And you can build in principles of subsidiarity. You can build in sort of Ashby’s rule... It certainly helps if you take into account the people who are going to be affected and if you said what Béla Bánáthy suggested, ‘think of future generations’, then the probability is that you are going to come up with much better decisions. I avoid the notion of truth. Instead, I stick with ‘better’, ‘more just’, ‘more appropriate’ decisions and then I don’t have to get into that territory.”

Experiment’s value

“Yes,” she said when asked the question as to whether or not this experiment was of any value to her. “Encouraging people to look at an area of concern even thinking about how to frame that area of concern by using critical thinking tools is great. And many students have said that it’s changed their way of seeing the world, that it’s made them much better at research, it made them better policymakers.”

Then she reminds me that my thesis assumes the systemist is not one of those “mean spirited” people who would rather not learn, would rather not change; someone who would say, “I have an ex-
tremely good life and everybody else may be suffering— I think I’ll just continue doing what I am doing because why should I change?” She reminds me that change happens very slowly.

Another good point she makes is that “critical systems thinking is only as good as the practice. So I like thinking of praxis.” That prompts me to ask how she feels about pragmatism (operating without a theoretical approach). She says that there is ‘narrow pragmatism’ and ‘expanded pragmatism’ from West Churchman’s “Design of Inquiring Systems”. When I point out if that is a theory about how pragmatism should be done, then what is practiced is not pragmatic (as in pragmatism), she responds, “Uh hmm. But you think about the consequences instead of just in narratives for others and for the environment and the next generation—that form of, of pragmatism of thinking about the consequences is actually— If you take it and think of it in those expanded terms then um, it isn’t uh, necessarily problematic. So, idealism matters how you see it, idealism can be problematic if in fact you are not prepared when you set what ought to be doing the following, but if your lenses of what ought to be the case are very limited, then you will make very poor decisions. Whereas with EXPANDED pragmatism based on a design of inquiring systems that asks questions, ‘Well, what will be the implications for myself, for
others, for the environment,’ and you use those sorts of questioning tools you can make much better um, decisions.”

8.3.4. Interview with ’Participant 4’

“If this Society is going to last in the long term and be effective we need to address this whole issue of how can we help the access to society to make systems thinking mainstream. Because, at the moment, systems thinking is seen by a lot of people as some sort of a cult or a movement of a few people in the world who try to tell everyone this is a new discipline, there’s a new way of thinking... So I started to realise that we will have to become much more conspicuous in practice.” —Participant 4.

This interview was a disaster on my part, but there were remarkable results, nevertheless. Because of the difficulty I had here, in subsequent interviews I abandoned the original hypothetical scenario, the ISSS’ viability, and asked the interviewee to choose an intervention of their own—something they had done in the past. Had this been the case here, Participant 4 would certainly have been more engaged and more capable of connecting his real experiences with theory. He does manage to get his own story in, anyway, but I do not manage that well and the interview is overlong.
Participant 4’s natural approach is for the most part positivist-functionalist and he focuses on natural environmental and socio-cultural issues involving problems of sustainability. He wants to establish a network of education centres where teaching and learning take place together in ‘learning laboratories’.

The problems with the ISSS are owing to the disconnection between ourselves and the wider world, he explains. It is too cerebral and inactive, disengaged from problem solving activities.

Participant 4 contributes three great stories about how he introduces people to systems thinking—the red spots story, the monkey story and the housecleaning story—all stories with practical problems that everyone can relate to, and all are resolved with systemic thinking.

Participant 4 is an expert on a modeling tool called Bayesian belief networks. He has just discovered that another modeling tool, causal loop diagrams, illuminates a different and highly valuable understanding of the same system. He plans on blending these methodologies in future practice. Another colleague has FAM software that helps deal with political and legal issues. Using all three together this way, Participant 4’s practice will then be a true mixed-multimethodology.
Introduction and his ‘natural’ paradigm

Participant 4 presses for a shift in emphasis from our “inward focus” towards an orientation on action and results. The viability of the ISSS depends on becoming known in the world, mainstream, and become more conspicuous through systems practice, “Infiltrating society with systems thinking and systems education, problem-based research.”

He is involved in planning to form “a network of systems education for systems education.” From this, training would take place in learning laboratories for sustainability; practice and research together.

Because we need to teach everybody, from the Ph.D. to the taxi driver, talking about systems concepts in simple terms is necessary, he said. For example, ‘leverage points’. He would draw a lever and fulcrum and say, “if you press that little thing, the whole thing, you can lift a big weight.” It makes it easier for them to understand participatory analysis, systems analysis and systems thinking. Then in the learning laboratories they see that it works.

The red spot story is a humorous allegory. Basically, a person with red spots all over his body seeks help. The first recommendation is to get makeup to cover them up. Then they shower and the makeup comes off, the spots are still there. To be effective, he needs to know why they are there. A medical doctor tells him his liver is sick and
gives him tablets. That’s a systemic intervention, to stimulate the liver. But talk to all the stakeholders. For example, a taxi driver says, “No, the reason his liver is sick is because he drinks a tremendous amount of alcohol.” Another man says that he knows the he is a stressed out person, and when he gets stressed out he gets spots. The problem is stress. Looking further we find the guy has marital problems that cause the stress. The stress causes the drinking which effects the liver and causes the spots. He needs marriage counseling, after all. When this kind of simple model or simple examples are used, he said; they understand very, very quickly.

The monkey story comes next. As he tells it, the Germans gave $3M to protect the habitat for monkeys in Vietnam by promoting tourism. Tourism boomed, but the monkey population did not rebound as expected. It turns out that the new prosperity had bypassed the local population, the true stakeholders. As business scooped in the revenues from tourism, they remained poor. It was discovered that locals were forced to hunt and fish illegally to feed themselves and their families. Here we have another example of a systemic intervention gone wrong due to the failure to find and intervene at the true root of the phenomenon.
Participant 4’s ‘natural’ paradigm was identified as positivist-functionalist and pragmatist. See results table, Table 4, §9.2.

**Positivism-Functionalism**

I try to seek his buy-in on the idea of paradigms. I’m aware that he is skeptical of theory, but at this point I do not know how alien my ideas are to him. I rush through the briefest of introductions and I throw my instructions out at him as if this was a quick review of something he is already very familiar with.

He begins haltingly. “I th-, hm. I think, I understand—, I’m not sure I understand you correctly but... I think that, we have all... We have members that are like that. They only think in those terms, right?”

“Yes,” I replied. “You, you would, then kind of be like them and look at this picture and tell me what you see out of it that way.”

He says that the ISSS doesn’t do anything, they just talk about doing things. He wants to see intervention in action, case studies, proposals. He states, reflexively (in the sense of reflexivity) that he needs to understand how theorists and practitioners “feed off each other,” because, he says, “I tend to lose interest in... in that person if they continually tried to explain everything that we do with theory but never
gets to the point where this person actually takes action with us in practice. They will remain theorists.”

Interpretivism
The interview had gone on too long already. In the interests of time I decided to skip interpretivism. This is yet another flaw in my approach to data collection. Unfortunately, the decision to omit this section was a bad one. As there will always be an unknown area here, it weakens support for my general observations and conclusions.

Critical-emancipatory
He says that maybe the ISSS should think about changing its format. "I should go there," he says, "and give a paper then say, this is what we’re doing—, this is what I’m doing—, these are the findings—. This is the new theory that we developed off these findings—. And this is how we apply it now—." He wonders if we waste time talking about theory.

“When we go away from here, I’m still going to use Bayesian belief networks, [redacted] is still going to use… and [redacted] is still going to use FAM.” Then he had an idea. Maybe “we can talk to each other about these things and see how the one can build on the other… How 1 + 1 could become 4. And how we can take good bits out of Bayes-
ian logic and good bits out of causal loops and, and so on, and maybe... these things converge... then new and innovative things emerge.” Later, in his answer to the question of value, he gets deeper into this idea and it becomes something very special.

**Postmodernist**

We work with uncertainty, he said, and we will never have all that we need to know, but our process has to be one of continuous improvement and continuous learning.

**Experiment’s value**

He reports a particular problem with learning theory in the traditional sense. For him, the "show me” approach, rather than the "tell me” approach works. I would classify him as an expert pragmatist. He admitted that he would be sticking to the one method that he knows works—Bayesian belief networks—but by the time we got to this section (on what, if any, benefit the exercise had for him), he was already designing a new, mixed method:

"What will really happen with causal loops and Bayesian is those two things have converged and what’s emerging out of that is new things that, that we, that was not possible before when you ONLY look at Bayesian or ONLY looked at causal. Very simple things like if you ONLY look
at Bayesian you don’t really understand the interconnectedness. So you can drill down into this thing and you can understand all of the parts of the car needs to be working. And they need to be cleaned. And they need to be... But if you don’t know exactly how they all fit together you will never get that car to run. So that... these two actually help us to do things that we previously couldn’t do easily with just causal loop modeling. You know? And, and the Bayesian belief networks help with that.

“And then [redacted] came in and he said, we have the Popeive[?] computer. And I still don’t know how it works but he says that also helps you identify leverage points. So maybe there’s 3 methods that we could throw together. And uh. And uh, yeah.”

I believe the experiment helped him recognise his isolationist approach which seems also to have stimulated a synthesis of different methods. He now be less hesitant to “look behind the curtain” of these methods to check into their theoretical underpinnings. As he said, “It’s easier to identify what tools or what theory to use and match to the particular tools or one of the other things if you actually understand the theory.”
8.3.5. Interview with ‘Participant 5’

“I’ve been wondering how do we get fresh blood? Which I think is very important... So I think new blood is very important. And two new-blood things that I have noticed... It’s one way of getting, experimenting with bringing in new blood of a certain calibre... One way of bringing a younger blood in and a newer blood... The average age is... old.” —Participant 5

**Introduction and her ‘natural’ paradigm**

When she was new to the ISSS, Participant 5 said, she was overwhelmed. She criticised an apparent lack of relationship between the papers given at the conference. A common complaint from newcomers is that their first conference was not what they expected. “It is difficult to take it all in.” She spoke of the need for fresh blood. The ISSS may be stale. There are too many old people and too few young people; again something that was a mismatch with her expectations. She does acknowledge that this is not the place for an intellectual who is “too young” and she does talk about the wisdom and intellectual excellence of the Society. There is a lot here yet to be learned.

Participant 5’s ‘natural’ paradigm was identified as critical-emancipatory. See results table, Table 4, §9.2.
**Positivism-Functionalism**

I mistakenly assumed that she knew about the paradigms of critical systems thinking. I rushed through my description of the first paradigm and the instructions.

“If I was talking from a functionalist perspective, what would I, how would I say it differently, what I have said now?” she asked.

If I were a positivist-functionalist, she said, “I would then be talking about how do we quantify the quality of the conversations.”

**Interpretivism**

She said, “When I hear people talk, at least conceptually I say to myself, sometimes they are reinforcing my meta-level understanding of something. And that’s really good. But sometimes they break it. Either by introducing something that I’ve never really thought about, or something that is contrary to my meta-level understanding. And that’s when I say I get a chance to re-look at my meta-model, whatever that happens to be, or my meta-understanding across the spectrum to say, “Okay. How do I now change?” Do I accept it and do I stay with my uh, and change you know that new stuff or that change stuff, and change my meta-level of it, or do I say, ‘No! Even though that might be right for you, in my experience I still hold where I am’. And it’s against that that I tend to, to rate it.”
"I think what is really useful is that when a person can utilise their power in a fashion that enables those who want to be reflective to reflect."

One of her concerns is the topic of values and ethics, something that various members of the ISSS are concerned with and make important but that she feels do not translate well to interventions. If we don’t take the time to have the ethics and values conversations with our clients, she said, we can “fall into that trap of posturing as if we know, conclusively or exhaustively.”

This then leads her into associations with philosophy and idealism, greed and capitalism, and the tradeoff that occurs in the design of systems: we cannot design systems that can withstand every disaster, so where do you draw the line on robustness? And how do you admit to doing that and justify your decisions? She doesn’t stop there. Concern after concern is mentioned, one after another and they are overwhelming.
Experiment’s value

She seemed genuinely very pleased that she had discovered and learned valuable things, but it was not clear what they were.

8.3.6. Interview with ‘Participant 6’

“The thing that I’m most interested in is the creation of democratic institutions and the dispersal of power.” — Participant 6.

Introduction and his ‘natural’ paradigm

The previous five interviews had been done three months earlier. By this time I was ready to try letting the interviewee pick his or her own intervention: “We start by having you pick your system and just telling me your natural approach. How you see... What you see in your system as things that are issues and concerns and then how you think maybe you think you might approach uh, some resolution.”

His case study is with a cooperatively owned community market to help them implement an “ethical merchandizing code.” This co-op is 25 years old and has 8,000 members. It was originally founded by a group of Society of Friends, or ‘Quakers’, who held a few strong values: “a marginal belief in God, a belief in peace, a belief that they wanted to provide themselves with healthy, organic food.” Today’s
members are diverse and simply like shopping at this particular shop “because it has good quality merchandise; locally sourced, sustain-
able, organic (to the most part) food.” To keep to those values the management had developed a detailed code of merchandizing that was some four pages long. There were problems. “It wasn’t being implemented, [and] wasn’t being used at all by the staff.” Participant 6 was asked to intervene and see that it was successfully imple-
mented.

In “intimate” interviews with small groups of managers, he found that there was “a disconnect” between what the Board of Directors had established and what was actually happening on the ground. The four page merchandizing code was “very complex, very qualitatively based, very value based.” The Board did not want the co-op to buy from vendors who did not have “a good track record” of human rights, union rights, or animal rights. After many attempts to work out how to implement the policy, it became apparent that the infor-
mation required to vet every product supplier and to keep up to date on possible violations of the purchasing criteria by any of them was an immense task—they would have to form an entirely new depart-
ment to do this—and it was seen as a commitment and responsibility
that nobody wanted to assume. It was decided that implementation of the policy as it was currently conceived was unworkable.

At this point there was an expectation that Participant 6 was an expert, and as such, he should know what ought to be done. In any case, they waited for him to impose a solution. This, he said—avoiding a coercive situation—was the most difficult part of the intervention for everyone. He insisted that he was not an expert; he had no magic solution; and that the future was up to them; theirs to decide. His hope was for individuals to engage and take power for themselves; to liberate themselves from what would otherwise be imposed.

Then one of the group members said that in his department they kept a notebook of documentation on each product for the employees to record whatever information, good or bad, they knew or heard about, including customer comments. At some point it had become a reference. The thinking was that if a customer wanted to know about a particular product or supplier they could read this material and make up their own mind whether or not to purchase the product.

The decision to take this concept companywide was suggested and approved. It would be transferred to the web, customers could search through it and would be invited to contribute, as well. A self-selected
A group of employees would control for malicious comments and otherwise allow whatever seems reasonable to be posted. The great advantage of this, says Participant 6, is that it takes the co-op out of the vetting and policing business. The point of power and responsibility then rests in the consumer. They may take the power for themselves. They decide which products to support, and which products not to support. It then becomes evident which products should be removed from the shelves—those not being purchased.

Participant 6’s ‘natural’ paradigm was identified as critical-emancipatory. See results table, Table 4, §9.2.

**Positivism-Functionalism**

Participant 6 was able to act out what a functionalist might do. If there was a dip in revenue, for example, he said he would look at trend data to see if it was a periodic cycle; for example, a seasonal thing. Next, he might look at whether the customer demographics had changed and look at the local economy, etc.; ruling out the most likely causes like a doctor might diagnose a patient. He would look at whether the dip was owing to any particular department or product. Then he might look for structural changes in the company itself, policy, for example, or a change of management. He would search for root causes, he said.
Could he find positivist-functionalist aspects in his own intervention scenario? There was a nine second pause while he thought. I imagine he was consciously disengaging from his intervention as a critical-emancipatory systemist and trying to re-envision the problem as a positivist-functionalist. Was he then able to do that exploration? That this took so many seconds suggests the high level of complexity—when this sort of thing is being done for the first time.

“What I would see would be the inability of the General Manager to find creative solutions to a problem,” he said at last. In that situation it looked like the failure of the General Manager to implement the Board’s directive. He added that he would probably try coaching him to develop his skills.

**Interpretivism**

He would start by getting clarification from the Board and from the group members what is meant by ‘human rights’ and ‘animal rights’. For example, what about whether or not a company provided ‘decent living conditions’? He would seek to further ‘quantify’ those ideas and seek consensus on something measurable. Then he would seek to get ‘buy in’ from the stakeholders, “So that we all know what page we’re on and what our expectation and what our responsibilities are.”
He said, “What we’re really saying is that we don’t want to sell products from companies that do not have a good track record of human rights, and what that really means is we don’t want our customers to buy [them], which really means we want our customers to know who the bad guys are and who the good guys are... It gets political. It’s completely value based.” If the consumer wants a Coca-cola they will buy it, anyway. “But if enough people don’t want to buy it, it will go away.” This is also a form of negotiation, he said, but it’s “negotiating with their wallet.”

At about this time I said, “Stop! Now you’re getting into values.”

Critical-emancipatory
Considering how this is Participant 6’s “natural paradigm”—he even identified it as such—I skipped over the critical-emancipatory paradigm. I now consider this decision to have been a mistake; some new thoughts or insights might have surfaced.

Postmodernist
“My purpose here on Earth,” he argued, “is to leave the world a little bit better than I left it and to build the family of humanity... So, I’m not so much interested in theory. I’m interested in praxis. I’m inter-
ested in what theory does for humans. My goal is human flourishing... I can’t work with that paradigm in that system,” he said, reluctantly.

I said, “Uh huh,” and sat back, giving him a moment to think. It was a new technique for me.

Presently, he said, “It’s impossible. It would be... It would... I can’t work with that paradigm in that system, But to the extent that I could, I think that the the the um, the solution... the process that was developed in this particular intervention was as close to it as I could come. Because what it does is allows the ultimate consumer, the member, to say...” and then he switched his point of view from the systemist to the consumer and said, "You don’t want me to buy Coca Cola because you have given me a whole stack of information that says that it’s an evil company... I’m going to buy it anyway. I am in power. I am not accepting your value. You are... If you tried to impose your value upon me it would be a... patronizing me and demeaning me as agent.”

Then he switched back to his own point of view to sum it all up. “They achieved their goals by basically saying, ‘Well we believe that everybody... That nobody in their right mind would buy this product because it’s such an evil company.’ But in point of fact, the point of de-
cision, the point of power rests in the adult person, the agent, who has the the right to do that, if they want.”

(There is an optimism in the idea that the company will trust the consumer to do the right thing for themselves. This is liberation from being the liberator.)

It had become such an exciting experience, I think for both of us, that the interview protocol broke down. I jumped in and it became a lively, quick exchange of creative insights. I said, “Yes! And you know what too, postmodernists have to understand... that our values are transitory. I might care today—”

“Absolutely!” he shouted.

“I might care today and I might not care tomorrow. In the heat, you know, give me a Coke!... And I might change my mind with new information. It’s all in flux. And I’m allowed to change my mind!”

“You are because you’re an agent,” he said. “And in point of fact, you cannot, you know... The truth, the truth is a chimera! It does not exist.”

“Yes! Excellent!”
Language and ‘truth’ are fundamentally mismatched. He said, “You can’t even talk about it linguistically. What you can talk about linguistically is *justification*.”

**Experiment’s value**

“Oh, you know,” he said, in response to my question as to the experiment’s value, “only in the last. You know, when you asked me the question about the postmodern thought. And uh—”

“Well, that was the hardest one to get out of you,” I interjected.

“Yeah. But I’m so... the answer was there. And I’m so fascinated in conditions of power uh, that uh... Power and value go hand in hand.

**8.3.7. Interview with ‘Participant 7’**

“I would love to add to your last words [about whether or not systemists can switch paradigms], um— ‘Can they do that?’ They can and they have to... It is good for your training to focus on one... theory you learn in depth. You really read the books. You really know the methodologies. You really know the background. And that gives you possibility to stand firm, to hold your ground. And at the same time it allows you the flexibility to approach any other kind of method and include that into your toolbox because you know how to relate to that. See, whenever you study one specific method or methodology or theory
Participant 7 spoke of “the NLP folks”. I had first assumed that NLP was the name of the company where the intervention took place, but it seems the most likely reference is to ‘neuro-linguistic programming’ which is

...an approach to communication, personal development, and psychotherapy created in the 1970s. The title refers to a stated connection between the neurological processes ("neuro"), language ("linguistic") and behavioral patterns that have been learned through experience ("programming") and can be organized to achieve specific goals in life (Tosey and Mathison, 2006).

His approach sees reality as a pluralism of individuals’ viewpoints (ontological), efforts for coming to a consensus and establishing normative expectations, in the sense that participants must collectively agree to measurements and milestones (epistemological), which they then agree to act on and achieve together (methodological). Ontologically, it is subjective. Epistemologically, it is interpretive. By defi-
nition, therefore, Participant 7 first takes an interpretive approach to systemic problem solving. But NLP is a positivist/structural-functionalist theory and he relies upon it to fashion and shape a consensus and then to fashion and shape a project of change management agreed to and with commitments from the participants. His approach is therefore a blend of interpretivist and positivist/structural-functionalist practices.

Introduction and his ‘natural’ paradigm

He begins by describing his methodology in general terms. There are always three steps, he says—inquiry, mapping and hypothesis—ing—and the more stakeholders involved in this the better the quality. Inquiry is “exploring the situation with all the systemic and non-systemic tools which are available” (the difference being how a tool is used). This data may be “insights you produce or stories you come to hear about... or whatever.” Mapping is making a picture of the “foci of attention” or issues raised from the inquiry data, by paraphrasing and “entering the ‘loops of understanding’ and all these kinds of things”.

Next is a deeper analysis which asks, “What are the semantics behind that? What are the leading distinctions which create these subject matters... What are the practices behind it?” And finally, “Out of that
comes the hypotheses.” It was important, he said, to be solution oriented, rather than problem oriented.

I asked him to talk about a specific situation.

The intervention was a for change management with a manufacturer who had recently experienced rapid growth. The concern was over “quality issues”. His company, he said, uses systemic inquiry for exploring social systems, organisations, institutions, NGO’s, etc. In this case he interviewed the department head (the primary stakeholder) and later two interviewers also did so. (He did not mention what was said in or agreed at those meetings.) Their intervention was a two day workshop held with the department manager’s 25 direct reports—supervisors, I assume—and this is where the three stages he mentioned above occurred: exploring, mapping, hypothesising, “and testing them out on the people to see if we had, so to speak, the Leggo bricks out of which we were able to build up a change process for those.” It involves “exploring what kind of change, what kind of activities they are coined to.” Then, “we have to sort that out and bring them in a meaningful order,” so they are “moving towards the next practice, rather than the best practice”.

His role is not to provide a mastermind solution, but to “facilitate” dialogue and decision making. Otherwise, “people won’t identify.”
They could do this themselves, he said, if they create the same practice of “holding the space to facilitate their communication.”

Lastly, he mentions that these projects require him to accept responsibility for the whole process. And, as the facilitator, this includes his guarantee to protect the primary stakeholder (department manager) from attack. “People can get very mad” in these workshops, he said. Taking full responsibility and providing protection assures the primary stakeholder and lowers the perceived risk.

Participant 7’s ‘natural’ paradigm was identified as positivist-functionalist. See results table, Table 4, §9.2.

**Positivism-Functionalism**

In Participant 7’s terms, we have an “ecology of paradigms.” And of the positivist-functionalist paradigm: “Yes! Yes! Yes! We need it desperately. They need it desperately.” He pointed out again the fundamental importance of the map (the central metaphor) that is created from everybody’s ideas in the intervention. He said, “They need to know where they are and how they get where they want to go,” and “We need to lay out the landscape.” “With the map you can say, ‘here you are.’ The map can tell you how far you have come and how far you still have to go.” The map then links to resources. He reminds us
that many change management projects fail because they do not properly account for the need and the usage of resources. Resources need to be measured and monitored as well as milestones, he said.

“So after the first set of sessions they were able to engage in the whole endeavor. So that they knew what they had signed up for... We won them over and their energy.”

Volunteers were called for to form a task force and steering committee. They were asked to meet three times over the summer “to keep the whole thing going and to do further preparation and refinement”.

Interpretivism

What is most interesting in his reexamination of his story with the interpretivist perspective relates to the high value that interpretivism generally places on consensus and normative power. (Contrast this with positivist/structural-functionalism which is not concerned, with critical-emancipatory which is suspects coercion and repression, and postmodernism which values individualism.)

“It’s not... so much to get the truth out of people... That can change. Overnight or even from one moment to the next one. ... They come out of the head and into the social realm of the group and so the
end... it is not something rock solid. It is something that can be embraced and taken on a journey. So.”

“A lot of the process is negotiation in terms of how do I see the world, how do you see the world, and how can we agree on something that enables us to jointly march in one direction. ... We’re back to the map. What is the kind of map that we are looking at? Is that the map which will enable us to uh, to venture the journey?”

I think this is about persuasion—a skill that can be studied and developed; here we see it is especially useful for the methods of interpretivism.

“The NLP [Neuro-Linguistic Programming] people are pretty advanced in that. The pacing and leading thing.” [Pacing and leading are facilitation techniques to manipulate the flow of conversation. Pacing is establishing rapport to make persuasive communication easier. Leading is steering your prospect toward your point of view. (Mortensen, n.d.).]

Critical-emancipatory
He wants to separate the critical and emancipatory aspects and begins with the emancipatory: He said, “You wouldn’t be surprised if I
tell you that... we are engaging... in the stuff that we do, starting with the emancipatory side.”

“The problem (as opposed to solution) focus would be, ‘Oh, that is injustice and we have a problem with power’ and all this. Get away from all of that. Solution would be ‘what is the best balance for inclusion and participation in the process?’”

“Open up the room for everybody. Get everybody involved... Really engage them in the process by listening. First of all, listening. Um, nothing is more powerful than listening if you want to win over somebody” (followed later by getting them to accept responsibility for what needs done).

“... But not to the price that you hit the leader with a club over the head.” (Later, we find out there were meetings beforehand in which he and the leader, or boss, have made an agreement about what was to happen during this meeting.)

Then he moves on to the critical aspect of the critical-emancipatory paradigm. In this phase he traces the origin of his technique back to its roots in group dynamics which then the idea was to “fuel up the conflict in the group and then let them work it out... And whatever comes is okay.” Not very successful, he says. Next were systemic
consulting and systemic therapy methodologies working with teams and resources. Now the idea is looking for the possible ‘next practice’ to change towards a more desirable state. With this there has to be a determination as to whether the change will be ‘enough’. It also involves discourse analysis.

It is up to the critical-emancipatory paradigm to point out the potential abuse of power. The critical and emancipatory aspects work together. The critical looks at boundaries and reflexively questions itself. The emancipatory looks for power and control issues with the intent to liberate where it finds unfairness. The critical will help with the idea of what is ‘unfair’ here.

Postmodernist
Participant 7 corrects and adds important ideas to my description of postmodernism. He says that the reasoning of decisions, being transparent and open for critique belongs in the critical paradigm. He considers postmodern to be “engaging with the practice, not with the map;” that is, not with the model. It considers resilience and viability. It is, he says, about mastering the craft of your methodology so that it can be done effortlessly. He brings up the idea of aesthetics and design. Ranulph, for example, he says, is “brilliant, by the way. Where systemic design meets systemic practice. Design as such is a
very postmodern practice in this respect. And so we can learn a lot from designers in the way... how they go about approaching a problem, approaching a task. They, they don’t even approach problems. They don’t have problems. They want to bring something to the world and then they go. And if they see what they started isn’t getting them anywhere, they start over again. And they wouldn’t call that a problem.”

Experiment’s value
I prefaced the wrap-up question with a bit about my thesis: “I wanted to know,” I said, “Can systems thinkers do it? Can they rotate through different paradigms, pull out anything useful, or will their brains break? Or will they refuse? Or will they not understand or they will not engage with this ideas of shifting paradigmatic views.” Then I went on about how important it is to employ some kind of multiparadigmatic perspective.

“I would love to add to your last words” he said. “Um, ‘can they do that?’ They can and they have to. To extend their practice wherever they go.” He said it is like the Japanese martial arts tradition of mastery of the sword where the ultimate goal is winning without fighting. It is a brilliant story.
It is good for your own training to focus on one of those—to have one theory you learn in depth. You really read the books. You really know the methodologies. You really know the background. And that gives you possibility to stand firm, to hold your ground. And at the same time it allows you the flexibility to approach any other kind of method and include that into your toolbox because you know how to relate to that.

See, whenever you study one specific method or methodology or theory to its end, you come to the end where a strong theory softens because it faces its boundaries, where it can’t explain any more. Where you have the paradox at. Where you see that you can’t really find the question. So to speak, the end of paradigm. And you have to reach that and or... I’ll put it the other way around, if you reach the end of paradigm then you’re again in a position where you can reflect on the whole method or the methodology, the whole theory and put it into a postmodern contingency of methods. And say, ‘Okay, this is one method. It has its strengths, it has its limitations.’ It’s a method... er, it’s a theory. It’s a weapon. It’s a tool. And there are other tools which do other things. But my mastery, as a systems practitioner is to elegantly [use] this theory or to elegantly handle this method. And not to be intrigued by the strength of the method and saying, ‘Okay, I have a sword. And whenever somebody comes along I chop his head off.’”
Then I asked the question, “when you went through this exercise with me, did you find anything of value out of that for you? Did you come up with any thoughts that you hadn’t had before... or seen?” And I got another beautiful story.

"A lot of the tools, methods, methodologies that we use are fairly trivial in the end and in their application. So you can more or less easily mimicry the whole thing. And go out and about and sell your services as consulting or even as systemic consulting. But then you are out in front of the theory, not behind. Blaise Pascale said it so nicely. "All development goes from the trivial through the complicated to the simple. And there is a difference between simple and trivial. And the middle bit makes a difference."

And that’s why a proper practitioner needs uh the education and qualification and the exposure to the theory and the methodology and has to go through the whole thing to its very end. Then you can take it from there.

It seems that what Participant 7 learned from our interview is what it was he felt he needed to tell me that I did not know. It enriched me.

**8.3.8. Interview with ‘Participant 8’**

"A being... of course we have preferences. But the preferences arise out of a moment. As long as we maintain a manner of relating with others that takes into account
their legitimacy of beings and takes care some thought about the consequences of our actions far beyond ourselves, whether it’s just for the one closest to us like you right now, or the biosphere as a whole. And wisdom has to do with that balance of operating with care, understanding and expansion of perspective which we mentioned before, and a willingness to flow with the times and not... be a... a non-attachment. To be always willing... to redesigning constantly, if we talk in Ranulph’s terms which are quite new to me, by the way. I had never thought of using design as something I would want to do, until he explained his view of it.” —Participant 8.

Introduction and her ‘natural’ paradigm

She tells a story of a lecture she gave and what happened afterwards. When it came time for audience questions and answers, the first few people to queue up behind the microphone were male. After several questions she said she would just take one more question. At that point, one of those in the room objected, saying that it should be a woman’s turn to ask a question. The expectation, she said, was that she should ask the man at the front of the queue if he would step aside to let the woman behind him ask the last question. Instead, though, Participant 8 suggested that this was not a conversation about sexism, and told a story about her Estonian culture where there is not even a word which means “he” or “she”. As she intended,
the group then seems to have realised that they had imposed the idea of sexism onto a sex-neutral situation.

Hers was the only interview I had where the interviewee’s ‘natural’ paradigm seems to be postmodernist-poststructuralist.

Participant 8’s ‘natural’ paradigm was identified as postmodern. See results table, Table 4, §9.2.

**Positivism-Functionalism**

Her story involving gender assumptions does not translate well to the positivist-functionalist paradigm. It seems well understood within the postmodernist-poststructuralist paradigm where there is a richness of meaning that is lost when the same situation is explored from the positivist-functionalist worldview. Perhaps that is why participant 8 and I had great difficulty coming to an understanding of what it was that I expected her to do.

“…Can you look at your same situation as a functionalist only? So imagine you’re someone else.”

“Oh,” she said, “imagine I’m someone else. Okay. …[pause] It’s a mystery there. … From that perspective [does] such a happening have to be either a mystery in the sense that something else must have happened. ? … Or, or I don’t under… I don’t see what actually
happened. It’s yet to be revealed. … Okay … There must be an explanation but the explanation would be looked for within a conventional paradigm?”

I did not understand her questions. I resorted to trying to put it in terms I had heard her use in her presentation. “Uh, in your terms, you would cut the world in such a way that you see things as the scientific mind does.”

“… … If I was that person.”

“Uh huh.” Now she realises that I do not understand her concept the same way as she, we assume different positionalities. Hers is in the minds eye of the observer; mine is external, observing the observer.

She explains, “Not only that but it’s the training. It’s not tha— usually people aren’t actually cutting the world when they’re in this mode. It is how they’ve been raised in their education system.”

“Well,” I say, “my theory is that people have a ‘natural’ way, and I want them to go through the different paradigmatic views [specifically].”

“Aah!” she realises.
“To to stretch their uh normal way of thinking about things. So I want to see if you can do this for me. ... Find something in that narrower viewpoint of functionalism that might bring something of value out.”

Again, I realise that my preparation was not up to par. She says, “Okay. In the functionalist way, that particular incident could have been explained by... that is, ‘She told a joke.’” This I take to mean that another way of looking at what happened was that there was a situation of tension which was resolved when she made light of it. She seems to have reinterpreted what happened by projecting how someone who lacks her postmodern way of understanding would see it. At the time none of this made sense to me so I thought it best to just move along.

Interpretivism

“Oh, subjectivist,” she says. “And we agree to disagree,” she replies. ‘That’s okay. You can think your way.’ And that could have been also the explanation for it. I gave forgiveness to the questioner and the people and the next man in line and the woman. So we agree that you all have these different perspectives and that’s okay. We’ll live in a multiplicity.”
Critical-emancipatory

Like Participant 7, she asks and I agree to take critical and emancipatory separately. First, emancipatory.

“Um, the person who claimed sexism in the first place was obviously in that view, or he would not have had that concern that there was a power play of the institution against the weak. And whether... and the weak may not have been a victim, but he... and it was a man, so I can say ‘he’... he claimed that this woman was an unwitting victim of the circumstances. And I, in my more powerful position [chuckle] yet, of being the conference moderator did an extra power play on top of him. So it removed his power which was, actually, a power play, too. And gave the power back to the questioners by creating a larger space for the... for the whole question period.”

“And you didn’t invalidate his opinion,” I said.

“I played with his power play,” she proudly stated.

Emancipatory:

“So we have to broaden our time and space horizons,” she added.

“Yeah. Okay. And that... this is one of the first steps I like to have people make in coming to... I don’t know what I call my world [paradigm]—it’s none of them yet [laugh]—which is being able to think
further in the consequences, in time and space. So my responsibility as the conference coordinator was to be concerned for the feelings of all the people in the audience, and what would happen next, what was happening with the presenter—whether they were being put on the spot as well—and for the questioner. So broaden out and bring a wider view to bear on the situation.”

“This was also happening... but none of them [the paradigms so far] describe what I felt I did.”

**Postmodernist**

Her response to my ideas about the postmodernist-poststructuralist paradigm was interesting and informative. “I do differ from that. ... And that is I do not like the notion of values for starters. ... Because values are already distinctions that you have made in the... as if they were something permanent, as if they were to be upheld as some reifications of uh ideas. They have very much the same influence as a moral code has as a set of rules who derive from ethical behavior under most circumstances. So in a, being... of course we have preferences. But the preferences arise out of a moment. As long as we maintain a manner of relating with others that takes into account their legitimacy of beings and takes care some thought about the consequences of our actions far beyond ourselves, whether it’s just
for the one closest to us like you right now, or the biosphere as a whole. And wisdom has to do with that balance of operating with care, understanding and expansion of perspective which we mentioned before, and a willingness to flow with the times and not... be a... a non-attachment. To be always willing... to redesigning constantly, if we talk in Ranulph’s terms which are quite new to me, by the way. I had never thought of using design as something I would want to do, until he explained his view of it [in his plenary talk at the conference] (cf. Glanville, 1980, 1996; Glanville, 1999, n.d.).

Experiment’s value

I forgot to ask her thoughts on the value of what we had just done.

8.3.9. Interview with ‘Participant 9’

"I was going to explain to her why it [her methodology, the 30-30 roundtable] was so good. And my partner... said, 'No, no, no, no. Don’t say that when you go in— afterwards... Just ask her, "Do you have any questions?’” and I said, 'Oh, you’re so right on!’ So after she’d experienced this whole 30 minute roundtable I said, 'Do you have any questions?’ And she said, 'Yes. Wouldn’t it be better if the students could answer each other?’ And I thought, 'Oh, my god. Where do I draw [the line]?’” — Participant 9.
Introduction and her ‘natural’ paradigm

Participant 9 has developed her own methodology called the Round-table and spoke exclusively about it, focusing on a specific case study where it was applied. She spoke about its application as being appropriate wherever there are groups having meetings, and especially in schools. “Teachers need new methods” she says, that are “very easy to use”. And not just in the classroom. Explaining its suitability to a superintendent of schools, she said, “We could put it in your faculty meeting. We could also put it in your PTA meeting”. Her years of experience have taught her that administrators and teachers are overworked. She stresses that it is tiny and takes only 30 minutes a week. Overworked, stressed-out people do not want a lot of information about theory, she says.

I believe she sees the stakeholders and participants as pragmatists—uninterested in theory. She wants to introduce them to what she does by showing them what it does instead of explaining. So the stakeholders are pragmatic, the implementation of the method is pragmatic. Her view is that it is critical-emancipatory theory, and the methodology itself is emancipatory.

The roundtable method looks like this: The leader decides upon a topic and distributes a reading to each of any five people to be read
aloud. This succinctly describes what is to happen; that is, the format of the meeting and the rules. The topic (whatever might be appropriate at that time) is introduced. Everyone in turn ‘shares’ (speaks) once, for a set period of time which is strictly enforced, on the topic, extemporaneously relating their own thoughts whilst the others only listen. The group ends each person’s share only with “Thank you”. The method ends when everyone has had the opportunity to share or time runs out.

Participant 9’s ‘natural’ paradigm was identified as critical-emancipatory and pragmatist. See results table, Table 4, §9.2.

**Positivism-Functionalism**

I made an egregious mistake. I used the terms “functionalism” and “positivism” without defining them. I just assumed she knew what I meant when I used those terms. I now clearly understand that the degree to which I should expect anyone to engage with my methodology must principally depend upon the degree to which they understand its terminology. She spoke about being positive versus being negative. It is functionalist because it only takes 30 minutes, by the 2\textsuperscript{nd} week the teacher has learned to do it herself, and by the 3\textsuperscript{rd} week the students can lead it, themselves. It is scripted; it teaches leadership, listening, speaking, leading. After 5–10 sessions there is a re-
view for revision meeting where changes to the leader’s script can be decided upon, which gives them design experience, a sense of control and stewardship.

**Interpretivism**
She says that she doesn’t pretend to be objective or neutral. She shows enthusiasm and tries to promote its wider acceptance. It is designed so that everyone’s unique way of understanding the topic is shared with everyone else.

**Critical-emancipatory**
“One of the risks of emancipatory practice,” she says, “is that when you point out power imbalances, polarities can increase. In this methodology you don’t point out the power imbalances, you *redis-tribute* the power. … Which is true democracy,” she says.

**Postmodernist**
She does not have a negative pre-disposition and seems eager to explore her system as a postmodernist. “We don’t know what we know. We don’t know anything. Generally, systemists want to change everything—systemically. But that’s too big. So I’m changing 30 minutes. She learned from Béla Bánáthy that people in a system can act in four ways: reactive and resistant, inactive, proactive, and interactive. Her methodology “understands and accepts those attitudes”: 
"For the reactive person who says, 'I don’t want to do anything new, except what I want to do,’ the Roundtable says, ‘Oh! It’s just a novel new way of spending 30 minutes. We have to spend 3 hours in faculty meetings anyway. Are you willing to do 30 minutes?’ And this is how it responds to inactive people—they can pass if they want. They don’t have to do anything. Proactive people, it says in the guidelines all you can say is “Thank you,” and we’re looking for diverse opinions. And for interactive, we don’t need to worry about the interactive person, they already know what to do.”

Experiment’s value

Her first reaction to the question was no, “It was just fun.” Then she changed her mind. “I learned specific new ways to look at my system. That’s what I learned. And I learned a little bit more about interpretivism and postmodernism. The other two…” I remind her are critical-emancipatory and functionalist, “I think so.”

That Participant 9 took the pragmatic approach in introducing the methodology in the case study particularly interests me as relates to one of the central assumptions of this research. In general, to move forward, I ask whether we should deal with lacunae in the theory concerning multiparadigm multimethodology, which means that we have got to navigate the train wreck that is paradigm incommensurability; or not, which then defaults into forms of pragmatism in prac-
tice. I argue for the former, and say of the latter that ‘anything goes’ may be fine within a limited domain of low-risk, simpler problems, but the trade off is that we lose so much of the richness, knowledge and diversity that embodies systemic theory and jettison all its guidance, rationale, rigour, etc. that has been developed, tested, improved and matured before us and currently available to us. Without the theory it's just ethnography—stories of what has happened—but not why.

In Participant 9’s story, the pupils’ teacher asked, “Wouldn’t it be better if the students could answer each other?” Participant 9 had intentionally chosen to wait for enquiries before giving any explanations, and answered—still without any reference to theory—with three reasons: 1) “You’ve got to hear all 30 students in 30 minutes”; 2) “If the student only hears ‘Thank you’, [then they each] get absolute equal time”; and 3) “If the student hears neither… approval…[nor] disapproval… then the students are going to listen more deeply to themselves”. This worked in the sense that it sufficed for the moment. And by answering just the question asked, Participant 9 did not overwhelm the teacher with deeper matters and protected herself from being seen as pedantic. No further questioning from the instruc-
tor is mentioned, neither does Participant 9 mention that she ever did explain the methodology’s emancipatory *raison d’être*.

If that is so, I believe there is a danger, even the likelihood that the teacher might run roundtables herself, knowing how to do it but not why. Without knowing anything of the emancipatory epistemological underpinnings and how that informs and motivates the methodology... without that guidance, the practice would almost certainly drift, soften, or change in other ways (such as having the students answer back) which would corrupt its fundamental emancipatory purposes and aims. It seems to me that to be effective on its own, pragmatic instruction must be accompanied by a strict obedience to a discipline which ensures that the practice is never changed.

In this case, for this teacher, the approach to learning from the bottom up was well received. It was quick, non-threatening, and simplistic; almost effortless. The pragmatic approach works as an introduction to the methodology. But for sustainability the purposes and rationale—why it exists in the first place—must also be communicated and understood. In this case it is about holding open the social space artificially for 30 minutes to provide an artificially silent, neutral, value-free zone and there inviting each participant to speak in turn for an equal period of time and say whatever they wish to say. The
participant might then express what had been repressed or suppressed. It can result in feelings of increased self-worth, self empowerment, self respect, of being listened to, released from or unburdened—what we lump together and call emancipatory. It is this fundamental concept of holding open a neutral, non-threatening space that is the key. Only then would a practitioner understand why the other students must not be allowed to answer each other during this time. To comment or critique would corrupt and politicise the value-free space. Once understood, it is likely that the methodology will be used with the proper intent and achieve positive results. “One little boy said, ‘Teacher? It teaches courage.’” Emancipatory practices have a great potential for changing lives in the most genuine form—one changes oneself.

8.3.10. Interview with ‘Participant 10’

“I really see the need... to take those really soft system ideas and make them hard in the model” –Participant 10.

Introduction and his ‘natural’ paradigm

Participant 10 had attended my talk earlier in the day where I was invited to give a presentation on my paper “Towards an Ontology for Critical Systems Thinking and Practice”, so he is familiar with my ideas but not with the experiment. In this interview he describes his
PhD dissertation research project which aims to study ‘land use change’ using the methodology of agent-based modeling.

Participant 10’s ‘natural’ paradigm was identified as positivist-functionalist. See results table, Table 4, §9.2.

**Positivism-Functionalism**
Because he had already told his story in positivist-functionalist terms, Participant 10 did not uncover anything significantly new when he was asked to reexamine his system as a positivist-functionalist.

**Interpretivism**
He speaks of the model as though it is reality, its components are objectified (abstractions given real existence) and anthropomorphised (abstractions are humanised) and the overextended expectations of this type of model are largely derived from this way of thinking about it. This leads to a gross overestimation of the model’s ability to ‘simulate’ real situations, and therefore overconfidence in its validity and predictive powers. The stated design purpose of the model is to simulate the outcome of different policy decisions.

**Critical-emancipatory**
His critical-emancipatory reexamination of his study of land use change and his modeling method was very illuminating. In this
thought experiment, he uncovers implicit assumptions and questions his value systems. He critiques the model for things he now notices it does not take into account and explores ideas for repurposing it. He discusses the phenomena of land use change as a social and environmental concern, talks about the negative impacts to the land, displaced and excluded people and to society. He sees it driven by the power of money and willful social stratification which has negative impacts on the less well to do. He projects a bleak future. He reveals his concerns and admits they have motivated his design and approach to the project.

Finally, he repeats his confidence in the model’s ability to simulate what is intended and its predictive validity.

Postmodernist
Participant 10 does his best for me, however poor my description of postmodernism, and identifies his judgement that there is a problem called urban sprawl, in spite of the fact that those who benefit from the situation “love it”. He calls the problem “unsustainable”. And he demonstrates reflexive thinking about his model, saying “There is something very dubious about trying to model how people make decisions.” This is a new insight and a new appreciation that such real-life complexity cannot be simulated in this type of model. He says a
bit later, “trying to model the system accurately... is a pipe dream”.
That is no reason to abandon the effort, though, because in creating
this sort of model “you learn so much. You learn how the system
works by trying to put it... trying to take it out of the air in this very
soft, sort of mushy, complex interactions and trying to put it in silico
in something as hard as code.”

That statement, so awkwardly worded, tells me that language, too, is
not up to the task of conveying this deep complexity. And if language
fails here, so will an effort to write the computer code. No wonder we
find it so simplifying to objectify and anthropomorphise. Postmodern-
ism is sometimes called the “linguistic turn” because it focuses on our
use of language to think. The postmodernist understands that lan-
guage is the brick and mortar of the constructed consciousness.

Experiment’s value
He said, “I really see the need for... engaging the stakeholders” in the
design, which he had not done, deciding himself what the model
needed (and what it did not). He said of the decision making code
that he had put himself in their place. Now he sees that if stakehold-
ers were involved in the design and testing they would understand it,
appreciate what it was doing and learn so much it would be “off the
charts”.

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Participant 10 says that the experiment was worthwhile for him. It has given him ideas which he will take back and use to improve his research project. He mentions improving the model’s representation of landscape and “working on the perception piece—the agents’ perception models and expectation formation.” He stated again that he assumed that agents would make the choices that he would make when given the particular circumstances and that he now realises this is “not completely valid” but still an improvement over other agent-based models he has seen.
Chapter
9. Findings concerning the experiment

9.1. Qualitative results

I had finished the interviews and typed up the transcriptions. In analysing the first interview, my conversation with Participant 1, it was difficult to decide which systems paradigm matched best with his ‘natural’ story about the ISSS. He described various aspects of the problem situation that I confidently labelled ‘positivist-functionalist’. For example, he, like the rest of us, used language that indicates our understanding of the ISSS as having a real existence—a thing unto itself. He described how different ISSS members saw things differently and spoke about their unsuccessful attempts to come to agreement on various issues; ideas I tagged ‘interpretivist’. He spoke about the Society’s members regularly questioning its reason for being. They wondered whether their organisation’s internal structures and processes were those that could best serve those goals and ideals, and whether it should be more or less inclusive. I recognised this as reflexivity and tagged it ‘critical-emancipatory’. Similarly, I tagged parts of his story as ‘postmodern’, as when he concludes that perhaps the Society ought to remain unconstrained and allowed to become something no one can foresee; although he realises this would mean
that the outside world will continue to criticise the Society for lacking a strong organisational culture and lacking rigorous standards.

In his re-examination of the ISSS with the postmodern perspective, Participant 1 brings out the incommensurable nature of the complex problem. He cares very much about the Society and this long-running problem has frustrated us all. There are positivist-functionalist issues such as the need for funds, new members and conference volunteers. There are interpretivist issues as the Society is founded on principles of inclusion, accommodation and acceptance of non-mainstream ideas. There are emancipatory issues like democracy and tolerance and refuge for non-mainstream ideas. There are critical dimensions, such as the need to reassess what is and is not being done to change course and remain viable. Postmodern issues center on the multidimensional complexity of the problem and the apparent paradox of having to manage a system that is essentially self-organised and voluntary.

In his ‘natural’ story he was able to explore the ISSS in all four paradigms as evidenced by the fact that he was given at least one tag for each one.

By the same definition, Participant 2 was also able to do all four paradigmatic explorations. I had assumed that she was an interpre-
tivist, but the data does not support that. I was quite surprised when
she said, “our language [systems thinking] should be simplified and
more normalised in order for us to understand each other and be un-
derstood by others as well.” It may be that she has forgotten the
epistemological differences between positivism-functionalism and in-
terpretivism and the reason for the first epistemological break in sys-
tems thinking has to do with the ability interpretivism has to deal
with this type of information, something that overwhelmed the
positivist-functionalists.

Participant 3 has had conversations with other members that I would
say centre on the issue of paradigm incommensurability. She has de-
bated other members (who are positivist-functionalists) who profess
to have worked out a better understanding of the one, true world-
view. She has tried and failed to convince them that their worldview
may be valid and consistent and perhaps ‘better’ than others—but not
‘best’. “Yes, I think possibly your arguments do hold for, for the natu-
ral sciences up to a point. But even the natural sciences have evolved
through debate and, and paradigm shifts. So you’ve always got to be
open to testing out ideas,” she says. She explored all four paradigms
and brought forth new ideas in each one, as well.
My fourth interviewee, Participant 4, most met my expectations. He seemed, however, to be a pragmatist; repeatedly things like “Doing is the most important thing” and that “theorists are boring”. His way of learning is ‘show me’. His way of teaching is storytelling. No doubt the interview would have gone better had I stuck to a prepared script which included better descriptions of the paradigms. Looking back, it was a mistake to assume that all my interviewees would be somewhat familiar with the central concepts I used, in part because I assumed they would be familiar with the history and development of systems thinking and the split when we adopted interpretivism. In future interviews, rather than taking a predetermined “one size fits all” starting stance, I should begin by establishing a level of intersubjectivity. I need to be prepared yet remain flexible with how I describe the paradigms, either from the top down as I consistently did in this project, or bottom up with stories or concrete examples first. It should all be written down to be referred to as needed. I should ask more questions like, “Do you follow me?” to regularly check whether or not they have processed what I have said before moving on. I should ask them to interrupt me whenever I say something they don’t follow.
Sometimes along the way I learned that the interviewee would accept the idea of being in a particular paradigm more readily if I told them that their own ‘natural’ approach was very wide—too wide—and that what I wanted them to do was to close down their perspective until all they could see were aspects of this one paradigm I had just explained. This “linguistic turn,” a principle of the postmodern paradigm, appears to shift their attention toward what I have implied is already there that they need to find for me, and away from what was perhaps lacking in their old world view and the needed to be created so that it would appear in the new one. All they needed to do was to block out all the other stuff and when they looked again they would see it. I suppose I would say that the idea I had for doing that was the result of a creative process in the postmodern paradigm. I am intrigued with this sort of reframing with language used intentionally for problem solving.

It is interesting, too, that this also matches the ontological philosophy of the theory I propose. ‘Everything’ is already there in the P–S ontology, and is potentially there (it is there when we ‘observe’ it) in the conventional ontologies. Remember, it is through the critical moment of becoming (‘observing’) that we make the particulars of the world
real, solid, defined, bounded in the particular ways—in the ways that
the brain operates.

As I have said, at the time the interviews were done the methodology
had not yet been well developed and that I originally approached the
challenge of testing my basic ideas from the viewpoint shared in the
scholarly literature—that switching paradigmatic point of view was no
simple matter for the entrenched systemist. Various writers have said
for example that we are so habituated to our own particular way of
engaging with the world that we are recalcitrant and defend our
learned and idiosyncratic ways instinctively. We cannot simply hop
from it to another and another... and we won’t, they say. We do not
believe in other world views. Basically, we disagree that any other
world view could be be valid or valuable, or we are simply ignorant
and believe that seeing the world so differently is impossible.

I reasoned, therefore, that my approach would have to be non-
threatening, maybe even fun. “Pretend,” I would ask them in a light-
hearted way, “to imagine seeing the world through different ‘lenses’.”
In my opinion this approach was completely successful, notwithstanding
the naive, amateur bungling—which may have actually helped by
eliciting some sympathy. Empathy on my part lead to a more compli-
ant approach to the paradigm shifting process. Describing it as ‘shut-
ting down’ their natural ‘wide angle lens’ to focus in on just the issues appropriate to the worldview of the other paradigm yielded immediate results. This approach seems to work like putting blinders on a horse.

I believe now more than ever before that our ‘natural’ paradigm is so rich we cannot help but that it would otherwise intrude on the serially-paradigmatic investigative process.

I learned that I do need to establish a solid level of intersubjectivity. For that I must clarify my definitions of the paradigms, mention a few applicable methods, repeatedly ask the interviewee if he or she is clear in their understanding of what has been said so far, and offer to keep explaining until they feel that we are ‘on the same page’.

I should expect that this is a skill that will benefit from practice, like any other, both for me and for the interviewee. Repeat performances, even on very different problems of concern, would be easier and better. I learned that people like being asked what they think when they believe you sincerely want to know, and that they enjoy talking about their experiences when they know you are truly interested.
9.2. Quantitative results

Ten systemists participated in individual, semistructured interviews. Data analysis took two tracks, qualitative and quantitative: Discourse analysis was chosen to produce qualitative, contextual rich descriptions and summaries of each interview. (See the preceding sections and summaries.) Critical hermeneutic analysis was chosen to support the assignment and placement of paradigm tags throughout each conversation; and afterwards the tags were simply counted and placed in the table below, one column per interviewee. As described in the following text, the contents of the table should not be construed as factual in any objective sense; each number simply indicates that I placed a particular tag so many times in the transcribed text.

The quantitative results of the critical hermeneutic analysis are presented in the table below. The three divisions of the table are: (top) the systemist’s storytelling in their ‘natural’–paradigmatic worldview; (middle) the systemist’s re-examination through each paradigm; and (bottom) the systemist’s report of what was of value in doing the exercise.
As indicated in the top section, the ‘natural’ paradigm, Participant 1 told his story (a hypothetical intervention with the ISSS) in mostly critical-emancipatory terms as judged by the number of critical-emancipatory tags (7) relative to the others. For that, Participant 1 is categorised in this experiment as having a basically critical-emancipatory approach. Participant 3, Participant 5, and Participant 6
are also considered to be basically critical-emancipatory systems thinkers in this exercise for the same reason. Participant 6 identified himself by saying as much straight away, “My paradigm is an emancipatory paradigm.” Likewise, Participant 2, Participant 4, Participant 7, and Participant 10 are considered to be basically positivist-functionalists here. Participant 8 is here and generally identifies herself as a postmodernist researcher (following on from the work of Humberto Maturana). Participant 9 is both a critical-emancipatory systems thinker (5 tags) and a pragmatist practitioner (6 tags). Participant 4 received 5 pragmatist tags as well.

The classification of ‘natural’ paradigm serves from here as the base from which to consider whether or not the individual systemist was able to make the ‘shift’ into the various other paradigms. It is important that they do report findings from other paradigms to lend validity to the premises of this research. The middle section of the table reports those results.

When asked to re-examine their own systems as if they were positivist-functionalists, all but one of the non-positivist-functionalists were able to report positivist-functionalist issues, suggesting they were able to switch to this paradigmatic worldview, at least to some degree. The number of positivist-functionalist tags ranged from 0 to
11. Participant 6 breezed through it, rattling off 11 issues in telling his positivist-functionalist approach to diagnosing and problem solving. As I reflect, this was the response I had expected from all of the interviewees. On the other extreme end is Participant 4. He is a ‘natural’ positivist-functionalist, and in our interview I rushed through the description of positivism-functionalism. As a consequence of that and the fact that he was not familiar with the ideas or the terminology of paradigms and positivism-functionalism, he did not understand what I was after. Instead he reflexively questioned his distaste for theory and made no observations that I could tag as positivist-functionalist. I realise now that I should not expect even some systemists to have encountered these ideas before. Neither should I expect a helpful response if my intent and instructions are not well understood.

Pragmatism which appears here (Participant 4 and Participant 9) and in the bottom section is discussed separately in the next section.

In the next phase, re-explorations by the interviewees of their systems as interpretivists indicate numerically that they were able to shift into (their own understanding of) the way in which an interpretivist sees the world. The tag count ranged from 0 to 10. Again, it is especially important that those who are not ‘naturally’ interpretivists
were able to report relevant findings. Most of the systemists were able to produce new interpretivist observations from my description of it. Participant 4 was not asked to do so because I felt that the interview, at over 5,500 words, was already overlong. The most interesting outcomes of this phase were from Participant 2 and Participant 10, who I believe got it wrong.

Participant 2 chose to *describe* interpretivism and place it in context within the history of the ISSS—in positivist-functionalist and critical-emancipatory terms. And similarly (but with liberal use of anthropomorphisms) Participant 10 did not shift from the positivist-functionalist into the interpretivist paradigm, either, but described interpretivist *features* of his positivist-functionalist, agent-based computer model—agents that in his words “see the world differently” (one from another) have “different preferences,” and “make decisions” differently.

This type of misunderstanding, or error, was unexpected and for that reason alone it is important to this research. It is also important because it is what I consider to be a kind of misapplication of the concept of multiple paradigms. What Participant 2 and Participant 10 did are classic examples of how positivist-functionalist make sense of interpretivism from within the positivist-functionalist paradigm. They
are real demonstrations of paradigm incommensurability. For, just as positivism-functionalism (owing to its dependence on realist ontology and positivist epistemology) takes place only within the positivist-functionalist paradigm (which is a worldview having a realist ontology and positivist epistemology), interpretivism (owing to its nominalist ontology and anti-positivist epistemology) can only take place within the interpretive paradigm (which is a worldview having a nominalist ontology and anti-positivist epistemology). There are other kinds of misapplication as well. As an example, let us say that systems practitioner Foo is an efficiency expert and makes process flow diagrams and mathematical models of every system she studies. And let us say that Foo attends her first systems conference. She may be eager to engage with other positivist-functionalists, but be put off when the talk turns, say, to labour unions or ecology or aesthetic design.

I find that when someone is negative towards the idea of paradigm shifting it is only because they cannot see the validity or value of another paradigm besides their own ‘natural’ paradigm. When someone is negative about matters relevant within what (to them) is a non-‘natural’ paradigm, those negative concerns are invariably expressed from the point of view of another paradigm, usually their own ‘natural’ paradigm. For example, Foo may think that the others are wast-
ing time talking about matters that are irrelevant or that mean nothing to her.

Participant 10 received only one interpretivist tag. On the high end, Participant 1 received 10 tags and Participant 6 got 9—both are apparently well used to this paradigm and with thinking as interpretivists.

The critical-emancipatory re-explorations elicited 88 memes tagged as such. Participant 6, who had already explained his system in ‘naturally’ critical-emancipatory terms had the fewest tags—four. In this phase he had little else to say. Especially significant in this phase was that Participant 10’s re-examination not only produced the greatest number of critical-emancipatory tags, his re-examination transformed his conceptualisation by making a more appropriate dis-connection between the real, living system and his agent-based modelling approach. To be fair, I was not passive. I raised some of my own concerns and asked several questions to guide him deeper into the problem, prompting him to take a more critical perspective on various bits of it. I was delighted to engage with him and watch as he deconstructed the problem and reflexively questioned his approach and presuppositions. His new conceptualisation is deeper; his model is
more circumspect and appropriately described. He will not abandon the model, but he has adjusted the way he understands it.

Many people approach the postmodern paradigm with a negative attitude. Why postmodernism has such a bad image is a question I keep asking myself. What they seem to know is that it is fatalistic, radical and even destructive in practical terms. It invalidates our beliefs and what we know to be true. This seems reactionary. Surprisingly though, when I took the interviewees through the paradigm in my terms—in which part of what I say is that we have to throw away what in postmodernism is useless to the systemist—everyone came out with interesting postmodern thoughts about their system.

Just as Participant 10 (a positivist-functionalist) came to a transformational understanding of his own system through interpretivist and critical-emancipatory thinking, Participant 6 also came to a transformational understanding of his critical-emancipatory system—through postmodernism. In my conversation with Participant 6 we explored different ways in which the critical-emancipatory and postmodern paradigms see the purpose and use of values and choices differently. As I understand it, the critical-emancipatory thinker believes that he or she can decide what is good or bad, right or wrong, the degree to which pressure becomes coercion and where
what is acceptable becomes unacceptable. Therefore and thereby the critical-emancipatory thinker believes he or she can ultimately act righteously in everyone’s best interest. Postmodernism sees that and reminds us that we cannot ‘know’ with certainty and that to act is to ignore or dismiss that cold fact. To the postmodernist, to act should be viewed by the actor as an informed *pragmatic* decision (not to be confused with pragmatism)—not what is ‘right’ or ‘best’ or ‘good’ in any ultimate sense—a pragmatic decision that is inescapably biased. That is, to me, the great contribution of postmodernism—knowing and (humbly) admitting the certainty of uncertainty. And one of its important dividends is that such beliefs flatten social hierarchies. The intention is not to stop me, the systemist, from acting for fear that I will err, it is that I am displaced from being God. “Oops!” I say to myself, “I had better be sure.” I return then to the critical-emancipatory paradigm and ask “Am I doing the right thing? Have I missed something? What is it that I don’t know that I may need to know to make a better decision?”

In the interview, Participant 6 decided that, without these ideas from postmodernism, the critical-emancipatory approach can become a form of modern day colonialism—harkening back to a time where the erudite and ‘proper’ British ethnographer deigned to live amongst the
savages ‘as one of them’ and ‘objectively’ reported back to ‘civilisation’ the shocking and titillating details of a different cultures’ ‘barbaric’ practices—a history which Participant 6 says he (as a privileged and educated white male) himself, is ashamed of. I likened it to old movies and plays where white men and women would portray Africans in black face. The thought is how dare we put forth that which we understand about others as though it were objectively true, or assuming that such views really are the way they see themselves? How dare we make decisions that affect others, believing they are the right decisions, without bothering to check our assumptions regarding those others?

Without postmodernist influences we can be unthinkingly disrespectful, demeaning and coercive. Whenever it is possible and in effect workable to do so, the postmodernist systemist would like to design a system whereby an individual takes his or her own decisions on personal matters. It is best to have these kinds of systems self-organised, open and transparent. Of course it is not as simple as that when the decisions one makes for oneself affect others, but it is a postmodern ideal. In these trickle-up systems, an individual’s choices do have compounding, co-creative and emergent social and environmental effects.
Participant 1’s postmodernist re-investigation brought about several ideas for the ISSS. He talks about how distinctly different individuals are, how they have different motives and values and goals; how they are connected to various extended networks and other organisations; and how the ISSS, being like a bazaar of ideas, attracts a rare quality of people who come together to interact. He makes it sound almost magical. Participant 2 talks about continual change and extraordinary complexity and how we struggle along with language as a way to make sense of things. Despite her statement “I don’t buy postmodernism,” Participant 3 contradicted herself more than once, adding some valuable thoughts. “With postmodernism,” she said negatively, there are “multiple truths” and “no possibility of finding the truth,” which removes “the hope of social environmental justice.” But in the next breath she said “I believe that the more you engage in dialogue and testing out ideas, the better the match or response to a particular situation.” And that is exactly what postmodernism ultimately calls for. It seems that despite her disagreement with postmodernism she is in complete agreement with it! Participant 4 said he agrees with postmodernism in at least one respect, that we work with uncertainty. He said we need to realise that we can never know enough and there may always be unintended consequences to any intervention. Despite that, though, he says, what we should do is to do our
best at finding out how we think the system works and enhancing our understanding. I could not disagree.

As to the bottom section and the question of value, two of the interviewees were not asked whether or not they thought that doing this exercise was of any value to them, an oversight for which I am to blame; and Participant 1 responded only in terms of his ‘natural’, critical-emancipatory paradigm, the other seven reported from between four and nine things tagged from their non-’natural’ paradigms.

The following table shows aggregate statistics across the population (n=10) of interviews.
In this section I look at the two sets of results which were derived from the experimental dataset. The aim is to see relationships between the two sets of results and make critical evaluations about what that may mean in specific instances (micro) and what might then be summarised about the overall picture (macro).

Table 5. Statistics (n=10) from Table 4, above.

9.3. Combining the results
These two sets of results information come from the same source of data—transcripts of the ten interviews which have been analysed and tagged (coded) using the subjective principles of critical hermeneutics (described above). It is important to remember that this is not the same as working with two independent sets of results, so there is no true triangulation. The quantitative result set is just used to provide another way of looking at the dataset. Tabular representation is an analytical tool that is simple and easily understandable. It is particularly useful to look at this data numerically because the two tables are so condensed they can be used to spot outliers (data that falls outside the typical range) and its location in the table points to the section of the qualitative data where the actual information can be found.

In systemic terms we could say that it is particularly useful with large qualitative datasets to condense two aspects of that data (interviewee and paradigm) quantitatively and by presenting those results in tabular form each cell represents a location in the original qualitative dataset. This helps us to manage a large qualitative dataset and it is only by taking a different paradigmatic approach that this is possible. Participant 4 has found a similar synergy by using both Bayes-
ian belief networks (interpretivist) and causal maps (positivist- functionalist).

Again, the purpose of the experiment was to check two basic philosophical arguments of the proposed framework for complex systems design and intervention:

- that practicing systemists can actually re-engage with the problem situation from different paradigmatic perspectives as they understand them, and

- that the systemist will judge the practice to have practical value.

As the table shows, Participant 6 (whose ‘natural’ paradigm is generally critical-empancipatory) was able to report 11 observations as a positivist-functionalist. He is apparently well educated in the paradigms of critical systems thinking and firmly believes that his system is far better understood in a critical-emancipatory context. That eleven is a large number in this situation is misleading, however. I cannot conclude that Participant 6 has found a new positivist-functionalist understanding of his system; the number simply means he was able to enumerate several positivist-functionalist aspects within it. So in this case, the quantitative data does not triangulate
with the qualitative understanding. It does not support an assumption that this experience was of practical value, but it does support the first assumption being tested—that it can be done. More generally, it suggests that if, prior to deploying this method, a systemist familiar with a particular paradigm has already been through a critical evaluation of the system of concern with respect to that paradigm, then the memes raised in the corresponding operation of this method will include those which were already discovered. In such a case they will have been critically evaluated as well, and this operation might seem to be merely a process of recall. But the systemist knows that critical systems thinking is a recursive and iterative process and should therefore take the opportunity to critically re-evaluate and reflexively ask again, “What more is there to learn here?” To the critical systems thinker, this is not time wasted nor is the re-evaluation through that paradigm perfunctory or unnecessary. In this case it seems that Participant 6 did see something new, “the inability of the general manager to find creative solutions” and “to deal with unanticipated problems,” and he made a recommendation that the manager should be mentored.

Pragmatism, whilst not actually a paradigm, is singled out here for discussion because it is anomalous and was completely unexpected.
As I have explained I am biased against pragmatism and planned not to include it to any great extent in this project. But I was quite surprised in the text analysis process to be confronted with straightforward evidence of pragmatism, first in the interview with Participant 4 and again in the interview with Participant 9.

As I reviewed Participant 4’s transcript it became obviously necessary to consider it. He observes an egregious imbalance and calls for the ISSS to de-emphasise its dependence on theory and focus instead on the production of practical results by acting. To him it was our “inward focus” that was largely to blame for the Society’s problems. “Theory is boring,” he repeated; we need to “just get on with it.” I had been dead set against pragmatism; but Participant 4 went on to show me that starting with a practical demonstration or a story may be the best approach to introduce people to systems thinking. Afterwards, explaining why the demonstration worked or the story was resolved then presents a more accessible route to theory. Rather than push the theory, the need to understand why the example worked requires the theory and so the person who wants to learn then pulls it in. It is about learning, from the point of view of the learner, rather than teaching, from the point of view of the practitioner. I was thus forced to create a new, pragmatist tag and label five chunks of his
‘natural’ story as pragmatist. Owing to the strength of his convictions I am obliged to categorise him as both a positivist-functionalist and a pragmatist.

Participant 4’s pragmatism may stem from an instinctive dislike of theory, but Participant 9 was also tagged six times with the pragmatist label but for a very different reason. Hers is an intentional, conscious strategy (within an otherwise theoretically-based, critical-emancipatory approach to intervention) which employs pragmatism as the method of its implementation and delivery. Participant 9’s method is to simply demonstrate the Roundtable in action. She purposefully avoids giving any explanation or rationale beforehand and simply runs a session; saying only that it is simple, takes very little time, and that it just works. The pragmatic approach is best, she says, because the stakeholders and participants are already overloaded and stressed out. She believes they do not necessarily want to know any theory or sit through an explanation of it; and even if she did, she doubts that they would understand or that they would agree with its critical-emancipatory assumptions. To bypass any pre-judgement she simply asks them to watch or participate in a session. From Participant 9’s story, I can now see the possible benefit of taking a pragmatic approach to the implementation of a systemic meth-
odology, but I do have additional concerns. The first has to do with sustainability. The Roundtable is hygienic and sessions are supposed to be conducted on a regular basis. Participant 9 does not share my conviction that sustainability depends upon the stakeholder understanding the theoretical rationale behind the method. For example, if the participants do not understand why a person who is sharing must not be interrupted or criticised and that they be guaranteed their full share of equal time, then they will not understand the effort it takes to hold open and protect the emancipatory safe space and why it is absolutely vital to do so. Further, Participant 9 does not mention the need for it, but I believe that transparency and full disclosure is a moral duty to those who are affected by what we do, whether or not it is invited. So not only should they know, we owe it to them to tell them.

So “pragmatist” appears in the ‘natural’ paradigm section of the table and in the totals, but not in the middle. I do not see how I could ask my interviewees to re-examine their system as would a pragmatist.

In the middle section, Participant 1 seems to have been most prolific in the interpretive paradigm, reporting more than twice as many issues as he did in his ‘natural’ paradigm story. This may not be a surprise considering it is considered to be his general approach as well.
It is also interesting that he is flagged six times for postmodernist ideas when he re-examined his system explicitly in postmodern terms.

Importantly, this result (Participant 10) supports both test concerns. The method has broadened and transformed the systemist’s appreciation of the problem situation and informed his approach strategy.

As to the question of value, Participant 1 reported nothing of value outside his ‘natural’ paradigm and approached the question—which calls for critical reflection on what just happened—from a critical-emancipatory standpoint, which is also his ‘natural’ paradigm. He is already familiar with the paradigms and he stated that he does not “find it foreign at all to look at things through a lot of different perspectives and paradigms.” In reporting the value to himself of doing this exercise, Participant 1 reverts to his ‘natural’ paradigm. If that is true, what zero means in this case is that he has no need for a new methodology such as this one because he already does a similar thing ‘naturally’. For a systemist like Participant 1 it produces no new information.

Participant 4, alone, received tags for pragmatism in this section, but these he earned by simply reiterating his distaste for theory. Perfectly understandable coming from him, pragmatism is one of his ‘natural’
paradigms (along with positivist-functionalist). Therefore, I would not claim that this amounts to any new insight nor represents any added value.

9.4. Summary

A brilliant person is likely to explain the most complex situations using concepts from all four paradigms of systems thinking; but not intentionally bracketed formally as I have done in this experiment. Using unstructured interviews with a diverse group of ten systemists I undertook an experiment to test: 1) whether or not and to what extent it was possible for the systemist to shift into each of the four paradigms and re-examine the same problem of concern, and 2) whether or not and to what extent doing so would elicit new aspects of understanding and prove to be of some value. The results were mixed and the method was flawed. Nothing is proven in the positivistic sense of the word. But the evidence suggests neither of the two tests failed.

Not everyone agreed that the interview yielded new insights for them, but every one taught me more. Not only did I get a more and more rich picture from what each interviewee said, I remained actively engaged with the idea of crafting my eventual methodology.

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With such a loose approach to the interview process I remained free to reflexively re-consider that approach while it was happening and to remain flexible in order to learn more and to improve the process. The more important aims were to feed back to my design of this new theory which was my larger goal, and to gain practical experience so that I could improve my methodology.

My assumptions going into these interviews reflected the ‘common wisdom’. That is, we (systemists in particular) each have one habitual, automatic way of understanding the world from which we judge other ways of looking at the world as nonsensical, invalid or ill-informed. I expected to find them, in my terms, positivist-functionalists for the most part; fewer would likely be interpretivists; fewer still would be critical-emancipatory in terms of worldview, and I expected no postmodernists. I never expected to find pragmatists. I did expect that each systemist would resist to some extent and defend their own ‘natural paradigm’. I expected it would be somewhat difficult, very difficult or impossible for them to switch from their ‘natural’ paradigm into another. I did not expect to find pluralists.

My assumptions going in that each systemist would have one habitual paradigm was not necessarily true: Half of them did seem to overwhelmingly favour one paradigm (Participant 10, Participant 7 and
Participant 4: positivist-functionalist; Participant 6 and Participant 3: critical-emancipatory); but in telling their ‘natural’ stories, four of them (Participant 1, Participant 2, Participant 3, Participant 10) mentioned subjects from all four paradigms, according to my tags.

The proportion I expected to find was not met: four positivist-functionals, no interpretivists, five critical-emancipatory thinkers, one postmodern.

Very surprisingly, two systemists very clearly expressed definite reasons for being pragmatists: Participant 4 insists that theory crowds out action; Participant 9 has developed a very well grounded critical-emancipatory methodology, but insists that its method of implementation be pragmatist. They are quite successful doing what they do, so I am convinced I need to rethink my strong stance against pragmatism.

To the extent that I expected resistance or defense, the negatives expressed had only to do with a prejudice against postmodernism (Participant 3, Participant 1), and a vague fear that perhaps additional perspectives or more voices would complicate the situation rather than clarify it (as I believe) and possibly lead to decision-making paralysis.
The extent that anyone found it difficult to switch paradigms as I asked them to do in this experiment has to be for the most part due to my poor descriptions. (Refer to the transcriptions where I am quite critical of myself in specific situations.) Otherwise, I found that if the participant did not report anything I could tag as being from that paradigm, it was because they chose to describe the paradigm itself rather than ‘assume’ the paradigmatic stance and report specific observations as I had asked. I cannot say that they could not do so, only that they did not do so.

The findings were surprising. Yes, this sample size is too small to support any general claims of reliability or generalisability. It is a highly selected group of systems researchers and practitioners. They are the motivated ones, the active practitioners, those who come to conferences for systems research in order to share and to learn and to network with other systems people.
Chapter 10. Conclusions

10.1. Introduction

The thesis asks, “Is it possible to create a new theoretical framework for systems thinking and practice which resolves the long standing problem of paradigm incommensurability and enables a coherently informed multiparadigm multimethodological approach to systemic research design and intervention?” The research project identified four objectives, five aims, and five contributions to knowledge that would be the focus of the plan to investigate the question. These foci are discussed in the following sections of this chapter. The chapter starts first with a reflective account of the experience of undertaking this research project and dissertation, how it was originally conceived, how that changed over time with circumstance and an increasing knowledge base, mistakes and blind alleys and how some unexpected findings transformed the way the problem itself is now understood. Limitations are reflectively related and some thoughts about the implications of this project are recorded as well.
10.2. Primary reflections, how the research project evolved

The impetus for starting this Ph.D. dissertation with this topic was that I believed that I understood the way that we commonly take a multiparadigmatic perspective of the world around us (in an easy and comfortable way) that current systems theory does not explain. With respect to the concept of ‘paradigm’ as we know it and use it, it is my opinion that we are stuck with theoretically incommensurable paradigms. I felt that the resolution of this mismatch must lie at a more basic level than other approaches with which I was familiar have focused. I understood that my approach would necessarily have to stem from a new ontological base.

The research project as originally proposed said only that a new ontology would be produced and that it would show how the incommensurability issue could be resolved by a subsequent theory based upon that ontology. As the research project proceeded the ontology became more thoroughly developed. A philosophy developed about the nature of the organisation of nature as asymptotically undefinable and around the definition of ontic elements whereby there is such a property. A great deal of effort went into explaining the ontological elements themselves with their unusual qualities, why there were these and not others, how and why such an ontology (assuming it
were the case) was possibly sufficient and necessary to support the world as we know it (if we did know it). I eventually realized that I was creating its epistemology. Further, I found that for the systemist to put these ideas into practice a general methodology would be necessary. What was originally an ambitious but manageable research project to create and justify a new ontology expanded quite naturally to include an epistemology and then a methodology and became a project that undertook to create a new entire theoretical framework.

Nor, as it was originally conceived, did the research project did include the idea of testing the new ontology in the real world. However, once it became a project for the design of an entire framework, it was decided that an experiment was called for to test it. I was invited to the Conversation of the IFSR in Pernegg, Austria in April 2010, and then in July I presented an early paper on my ideas at the six-day annual conference of the International Society of the Systems Sciences in Waterloo, Canada (where I was presented with Sir Geoffrey Vickers Award). At these events I managed to interview ten systemists.

This project hopes to make a contribution to knowledge by improving the theoretical foundation for the paradigm of critical systems thinking with the addition of new theory specifically targeting the ground-
ing of multiparadigm multimethodologies with respect to the long-standing problem of paradigm incommensurability. I also hope that with its explication that a-paradigmatic reality appears to us only paradigmatically and its specific call for a critical approach which directs the systemist’s employment of all four paradigms it will contribute to our understanding of and success with pluralistic engagements.

10.3. Assessment on the objectives of the research project

In this section, the research question and the aims and objectives of this thesis are restated with the intention of answering each of these points with regard to how they have been addressed in the thesis.

10.3.1. Regarding the research question

*Is it possible to create a new theoretical framework for systems thinking and practice which resolves the long standing problem of paradigm incommensurability and enables a coherently informed multiparadigm multimethodological approach to systemic research design and intervention?*

The research has completed the aims and objectives which were planned to answer to this question by implementing the research plan
consisting of four objectives, five aims, and five contributions to knowledge. These are detailed as follows:

### 10.3.2. Regarding the research objectives

The objectives of this research are to:

- Conduct research to develop a historical perspective into theories which address multiparadigmatic and multimethodological approaches to systems thinking and practice, and to create a map which indicates their theoretical relationships and supporting philosophies.

A tremendous amount of work has gone into the design of this project, into its actual research, and in the production of the dissertation. The table "Development of Multiparadigm Systemic Theory" (Table 2) includes 12 new entries compared with the last such survey (Mingers, 2003) and should prove to be a valuable resource for future systems theorists and researchers. Figures 10–13, a taxonomy of multiparadigm systems theories in four views, is (I believe) the first time such a tree of theoretical provenance has been produced. It indicates intellectual heritage and philosophical support which had not yet been done.

- Explain the problem of paradigm incommensurability and how it relates to theoretical support of any cross-paradigm multimethodological approach.

Research found that no literature reports a credible successful solution to the problem of paradigm incommensurability. It would seem that those who have done so have erred, and are typically considered
‘relativist’. Others ignore the problem or change the criteria with which they categorise theories so that there are no paradigms to be incommensurable with. I believe that the theory here does have merit. In the least, I hope it stimulates some lively, creative discussions and keeps the issue alive.

- Propose a new ontology that reconciles the problem of paradigm incommensurability and an epistemology and methodology to make it a functional as a theoretical framework for systemic research, design and practice.

The results are the subject of Chapter 5. The P–S ontology is a dual duality of structure/process and is isomorphic between real and abstract ontic types. It works with a mechanism called the critical moment through which the systemist pulls onto-epistemologically (paradigmatically) formed constructs.

- Test the new theory in order to demonstrate whether or not its basic assumptions are satisfied: that systemists can and will take a serially multiparadigmatic look at a highly complex system of concern and, if so, report that it was valuable to do so.

Tests were performed with ten systemists. Refer to Chapter 7 for the tests and detailed analyses, and to Chapter 8 for general results and findings.

10.3.3. Regarding the research aims

The aims of this research to reach those objectives are to:
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- Explore the development and divergence of systems thinking’s methodologies in terms of their grounding philosophies and chart a paradigmatic taxonomy.

- Focus this research on the multiparadigm, multimethodological branch of critical systems thinking and the philosophical attempts within it to resolve the central problem of paradigm incommensurability. Discuss why these multi-meta-, bridging and pragmatic paradigmatic theories have all failed to produce satisfactory bases for multiparadigm multimethodologies.

- Building on the leading edge of critical systems theories, explore and develop new ideas for the concept of an a-paradigmatic reality; and, with the specialised needs of the systems community in mind, propose a simple, inclusive ontology which intrinsically supports it. Posit how such an a-paradigmatic reality might translate by the mind–brain from a seemingly multiparadigmatic ‘potential’ into a specific, paradigmatically-constructed experience.

- Produce a new epistemology and methodology to make a model for a new systemic approach based on the process–structure ontology which specifically supports cross-paradigm multimethodologies and their engagement in systemic practice. Show how, for the systems practitioner, such a framework facilitates a rich understanding and theoretically legitimises a multiparadigmatic, pluralistic approach to methodology, method making and practice.

- Design an experiment to test the theory’s basic assumptions and as a critique and validation exercise. Conduct interviews
of ten systemists by walking the interviewee as a systems practitioner through an exploration of a problem situation using the model and multiple paradigms. Analyse and report results.

The plan for this research project was well constructed except that the scope of the subject matter and the amount of knowledge required to fulfill the research objectives were both underestimated. However, the products of this research can stand on their own and attest to the fulfillment of the aims and objectives of the project. That more could be done indicates there is some value to this work and that it would be worthwhile to continue this line of thinking. More, then, is hopefully to come.

10.4. Regarding contributions to knowledge

Contributions the dissertation makes to knowledge include:

- The map of systemic theories re: multiparadigms or multimethodologies and their supporting philosophies.

Refer to Figures 10–13 which include 20 theories, 12 more than either Midgley’s (1997b) original research or Mingers’ (2003) followup. This is also the first map to show the historical provenance of multiparadigmatic theory in systems thinking, as you can see by the par-
ticular branching structure in all three graphics. By following the philosophical underpinnings shown in Figure 12 you can see how these have been taken up, as well. This work is distinct, too, because it may serve as a quick reference from which to locate the original works (Figure 11) of these important theories.

- The P–S ontological theory as a resolution to the problem of paradigm incommensurability with respect to the systemist.

The ontology is developed in Chapters 6, and the theoretical framework, including the epistemology and a methodology in Chapter 7. Refer to the graphical illustration of the components of thought involved in this theoretical approach, Figure 15.

- A usable understanding of the mind-brain's production of paradigmatic observations pulled as emergent properties of an a-paradigmatic reality we cannot know.

The P–S ontology works through a mechanism I call the critical moment of becoming. Refer to Chapter 5.

Testing was done and results were mixed. The testing process was not rigorous and mistakes were made, however the qualitative data suggests that systemists can shift paradigms (it does not show that they cannot) and that doing so may have value. See Chapters 8 (tests) and 9 (results). A quantitative summary is shown in Table 5.
The theoretical components of the new framework were described just above, development and testing have also been described. The systemist may find it useful to refer to Figures 10–13 (development of MP-MM theory in systems thinking, evolution of pluralism with references to the original publications, evolution of pluralism with supporting theories, evolution of pluralism with additional, philosophical information) and to Figures 2 (structural components of a new critical systemic pluralism) and 15 (a multiparadigm multimethodology process diagram).

- The need to increase systemists' awareness of the paradigms of systemic practice and of multiparadigm multimethodological approaches.

The test design assumed that practicing systemists would be at least somewhat aware of the concepts of the critical systems paradigms, but they were the minority. The majority of current systemist participants were not familiar with the terminology: positivism-functionalism, interpretivism, critical-emancipatory and postmodernism. This would seem to indicate that few systemists are academically current and it reflects the divergence of systems and a focus on specialisation. The theory prescribes a serially multiparadigmatic approach. To do so, the systemist will most likely need to be educated.
To find this theory of value, though, may stimulate us to want to know more.

The examination of the interview data from Participant 1 forced me to create a new ‘pluralist’ label (defined as “one who typically takes fluid, multiparadigmatic perspectives”) for the ‘natural’ paradigm of the systemist. This lead to a cycle of learning and involves a reconsideration of my idea of ‘systemist’ which is a central concept of this dissertation. Unfortunately, time does not permit me the opportunity to take the framework through a complete cycle of change to incorporate that learning. For that, I call for further research.

Similarly, a related issue which had come up more than once (i.e. Participant 7, Participant 9, Participant 8, Participant 3) is the idea of mastery and how a master comes to know the limits of their paradigm and then gains the wisdom to transcend it and switch to another in such cases. That seemed to me to be what Participant 1 was doing in a fluid, easy manner. In order to tell me about the various aspects of the problem situation, he (as a pluralist) would switch into the paradigm which was most appropriate for those thoughts. From this new understanding of pluralist practice I developed a flow of consciousness perspective of what happens in terms which should also be incorporated into a future version of the framework.
Such a pluralist practice, like the theory I have put forth, is not a perspective itself. Like the new theory, it is incomplete without the particular paradigms’ perspectives. Its purpose is to call upon whichever paradigm is appropriate in the moment. The pluralist perspective is just a pivot about the moment of becoming.

How is that different from pragmatism? To the pragmatist there are no contradictions and no paradoxes. Decisions are made to settle a contradiction (one way or the other) when it arises, and paradoxes are intentionally ignored, so in effect they do not exist. But Participant 1 understands the complex situation with the ISSS cannot be solved. That is, he understands that it cannot be solved. There will always be a plurality of members’ points of view and beliefs. There will always be paradigm incommensurability—something the pragmatist cannot understand. No one way exists, for example, which can order and organise the Society in such a way that would satisfice for the scientific stereotypes without sacrificing the Society’s very identity. The pragmatist would decide that the Society must change its identity. And members have done this and will probably continue to do this. They simply cannot abide the paradox and leave incommensurability to be what it is—incommensurable. This takes us back full circle, to the reason why this theory was created in the first place.
10.5. Limitations

The primary limitation of this research project was that of time. In terms of practical implications this means that the framework needs more development. I have no doubts as to the quality of the research that I have completed and the amount of knowledge I have acquired throughout the span of this project, yet the project feels incomplete. I did not manage to switch off research mode completely until time had almost expired. Reflexively, knowing that time was expiring I should have made a plan to manage this cutoff. There is then the need to improve the framework and its theory by incorporating the findings of the experiment and their derivative implications. A huge amount of research from the literature awaits its incorporation into the thesis; much of it ready but not yet to the point that it made the inevitable cutoff deadline. And there is so much more yet to learn!

The time constraint has left many important but non-essential topics out of this thesis and still others have been described in little depth. I have learned that the time constraint should have been taken far more seriously when this research project was conceived and planned. Now I believe I more completely understand that this is the nature of research—

The more I know, the more I know I do not know. (TB)
10.6. Practical implications

It occurred to me to question my own ‘natural’ paradigm. Not surprisingly, it turns out that I am a pluralist as well. In conducting the interviews, I generally took an interpretivist approach and occasionally slipped into one of the other paradigms which would best support the intent and the expression of my idea of the moment. (In dialogue, I consider my point of view to be very important and think of the intentional use of the point of view as a matter of technique. For example, I find that I am likely to be understood and can establish a certain level of intersubjectivity when I slip into the paradigm I am trying to explain and speak from it in the first person.) Had I realised or even noticed that I was a pluralist before I had to admit that some of my interviewees were ‘naturally’ pluralists, I may have been able to build this into my theory. But since I did not, this has to be put forward as one of the issues that will make it into the next round of the learning and improving cycle.

How valid is the experimental data? The interview method was flawed and applied inconsistently. I now know better, but at the time it seemed more important to learn from each interview experience and adapt my approach to the next one than it was to be consistent. The findings revealed two critical issues that had not been considered in
the philosophy and design of the new theory: pragmatism and pluralism. Both make it necessary for the theory to be re-evaluated in the next iterative cycle of experiential learning in the manner of Kolb (1973a, b, 1976, 1984) and critical systems thinking; and that should also be followed by another round of testing which will also have improved.

The theory it defines an ontology which is without form, (that form is only assigned by the human through the critical moment), but the design of the ontology itself is done with languaged concepts. We are unable to imagine a “formless” world without giving it a form that is “formless”. I wonder whether or not this and other concepts may be too difficult for the systemists (for whom it is designed). It cannot hurt, though, that it reminds us that by seeing the world paradigmatically, we are necessarily imbuing our world with our own biases and simplifications. Questioning ourselves, we can ask “what is it that is seen which was not there” and “what is there that has been blocked out?” When we question simplification we can ask “what is it that is deemed ‘important’ and what is it that has been filtered out?” It is true that when we shift paradigms we free ourselves from one framework with biases and simplifications only to be trapped in another with different ones. I insist, though, that it is not an act of futil-
ity but is actually liberating when compared to having only a single paradigmatic perspective. The world is complex. We should improve the variety of means we use to come to understand it and the variety of tools we use to affect change responsibly.

10.7. Summary

The dissertation answers “Yes” to the research question:

_Is it possible to create a new theoretical framework for systems thinking and practice which resolves the long standing problem of paradigm incommensurability and enables a coherently informed multiparadigm multimethodological approach to systemic research design and intervention?_

This project has been a greatly rewarding and enriching life experience. I have stood on the shoulders of giants. This research will hopefully add something to the discussion amongst the theorists, academics, designers and practitioners in the systems community about our present trajectory and what it means for the future if we continue to specialise. It is possible that we could change course and begin to come together instead by educating ourselves and others to become theoretical and methodological pluralists and by working to-
gether in teams of other pluralists and specialists. I hope to be afforded the opportunity to continue developing this line of thinking.
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