DEVELOPMENTS IN CRITICAL SYSTEMS THEORY: ON PARADIGMS AND INCOMMENSURABILITY

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Abstract

This paper describes an investigation of the body of systems theory around the still unresolved issue of incommensurability between theories of different onto-epistemological paradigms. It chronicles 19 developments in systems thinking which attempt to incorporate multimethodological approaches to systemic research and design into coherent theories with the aim of improving systemic practice. With the advantage of hindsight, this research explains how each newly developed theory helped to advance critical systems thinking, from the creation and evolution of the critical-emancipatory paradigm through the increase in our sophistication of understanding what it means to act multimethodologically, across paradigms. The paper concludes by describing yet another attempt to move toward the establishment of a coherent theory for pluralism in spite of the incommensurability problem. Our ultimate objective is to advance new theory which may lead in practical ways to improved outcomes for systemic practice.

Keywords: multiparadigm; multimethodology; systemic intervention; systems theory; critical systems thinking

Paradigms of Critical Systems Thinking

The branch of philosophy in systems thinking called critical systems thinking can be said to have emerged from the research done by Jackson and Keys in 1984. The dozens of systems methodologies known at the time were examined and systematized by the assumptions that each made about the nature of the situation within which each was designed to operate. They called the project "A System of Systems Methodologies," a *meta*-methodology. A year later, *the nature of the situation* was reworked by borrowing from Burrell and Morgan's (1979) post-Kuhnian, onto-epistemological classification of sociological theories. This idea is described more fully below, but generally, methodologies for the so-called 'hard' systems (such as Operations Research and System Dynamics) became the members of the 'positivist/structural-functionalist' paradigm, and methodologies meant for 'soft' systems (such as Soft Systems Methodology and Interactive Management) were grouped together to form the 'interpretivist' paradigm. Identifying "the need for a critical approach," Jackson proposed "Critical Systems Thinking" (1985), a theory which (because of its distinctly different onto-epistemology) opened another paradigm—the 'critical-emancipatory' paradigm. Other systems theorists have similarly installed the 'postmodern-poststructuralist' paradigm as a theoretical home of yet another sort.

Each onto-epistemological paradigm advantages a unique world outlook which assumes distinctive approaches to shared universal concepts: Within a paradigm, points of view about the world's constitution and its structure are compatible—ontologically; its values, concerns, conventions and assumptions, 'truths' and traditions of working in the world, too, are generally shared—epistemologically. Each paradigmatic view is known to be valid and consistent; and very importantly, each offers a world of content, qualities and rich insights unavailable from the others. Grouped by these paradigms, or 'worldviews', the whole, diverse collection of systems methodologies is now more intellectually accessible and much more easily understood (Bowers, 2012). Systemists who typically practice only one or a very few methodologies are discovering that learning, teaching and practicing a large number of methodologies has become easier. More systems methodologies are thus likely to be used and so the context for effective systemic practice is widening.

The *positivist/structural-functionalist* systems paradigm (often referred to by any of its three words) is the world of modern science and social science: the world of certainty; of logical proofs and deductions, reproducibly verifiable facts and hypotheses, exact measurements, objective observation, of unbiased and universal truths. Socially, we are born into a world of traditions and structure that we must adapt to and accept. Its so-called 'hard' problems tend to be precisely definable, stable, operational, and technical (Tsoukas and Papoulias, 1996). This, our traditional paradigm, includes systems approaches such as: Barnard's Systems Theory, Contingency Theory, Socio-Technical Systems Theory, Beer's Viable Systems Model (VSM), Organizational Cybernetics, Operational Research (OR), Systems Analysis, Systems Engineering, System Dynamics, Senge's Fifth Discipline, Miller's Living Systems Theory, Tracy's Living Organization, Autopoiesis and Complexity Theory (Jackson, 2000; Bowers, 2011).

The *interpretivist* systems paradigm takes care to point out that each of us sees the world differently, subjectively, and each of us knows or understands it in their own way. This paradigm is concerned with and cares about reconciling issues of individuality and personal differences in a social world. It accepts that we disagree and are unpredictable. Reasoning is more often inductive and situated. So-called 'soft' problems tend to be broad, volatile and ambiguous (ibid.). In this paradigm we have, for example: Warfield's Interactive Management, Warfield's Interpretive Structural Modelling, Ackoff's Interactive Planning, Ackoff's Social Systems Sciences (S3), Churchman's Social Systems Design, Mason & Mitroff's Strategic Assumption Surfacing & Testing (SAST), Checkland's Soft Systems Methodology (SSM), Senge's Soft Systems Thinking, Soft Operational Research, Soft System Dynamics, Soft Cybernetics, Eden & Ackerman's Strategic Options Development & Analysis (SODA), Drama Theory, Strategic Choice, and Robustness Analysis (Jackson, 2000; Bowers, 2011).

The *postmodernist-poststructuralist* systems paradigm is known to be ill defined, which I insist presents an opportunity to take from the various opinions out there what we find useful, and likewise to set aside the solipsistic controversies. I will advocate for this paradigm because it holds to an acute appreciation of the limitations of human understanding. (Contrast that with *awareness* or *knowing* in the critical-emancipatory paradigm). It appreciates a world of unfathomable depth and inter-active dimensionality; considers events which are sometimes fleetingly transient, spontaneous or non-rational; the true nature of the world thwarts our attempts to 'know' it. The world we do 'know' and the values we hold are socially constructed, it says, and they are relative. Reliant upon our human-languaged constructions, ignorances

and biases are unavoidable and we must reflexively question the very bases of our assumptions. This paradigm exposes us to our limitations and can and should engender transparency, humility and open-mindedness (Bowers, 2012). In this paradigm we might include Taket & White's Pragmatic Pluralism (PANDA), Critical Pragmatism, Flood's Local Systemic Intervention and Flood's Creative Design of Methods (Jackson, 2000; Bowers, 2011).

The *critical-emancipatory* (or simply 'critical') systems paradigm can be characterized by its three commitments, or themes for debate: critical reflection, pluralism, and emancipation (or just improvement) (Flood and Romm, 1996). Critical systems thinking (referring to the paradigm, not the original theory) has liberated us from the one-size-fits-all, 'hard', positivist approach to everything for all occasions, says Flood (1990); or what from a larger perspective has been called imperialist or isolationist practices by Midgley (1992). In fact, the word 'critical' itself signifies an ethical commitment to *critical reflexivity*; that is, to self-critical, self-reflection and ideological critique (Gregory, 1992). To these ends, the philosophy charges us with taking responsibility for our action (or inaction). This paradigm rejects what seems defeatist in postmodernism and holds that we must nevertheless try our best to make sustainable improvements. And where poststructuralists see values, norms, judgements and traditions relative to one's own culture and time, in this paradigm we *do* nevertheless make informed ethical decisions, considered critically. Because of incommensurability, the body of theory remains unfinished. It includes theories such as: Critical Operational Research/Management Science (OR/MS), MacIntyre and the Moral Community, Fuenmayor's Interpretive Systemology, Freire's Critical Pedagogy, Habermas and the Critical Systems Approach, Community OR, Capra's Ecological Sustainability, Beer's Team Syntegrity and Ulrich's Critical Systems Heuristics (Jackson, 2000; Bowers, 2011).

Onto-epistemological incommensurability

Not *all* of the body of systems theories fits neatly into just four paradigms, however. *Multi-methodologies,* for example—theories which call for the use of more than one methodology in the same project—cannot be adopted by or assigned to a single paradigm if those methodologies are themselves best understood from different paradigms. There are epistemologically complex or eclectic theories such as Jackson's Critical Systems Thinking, and a variety which are pluralistic in practice and 'larger' than any one paradigm, such as Second Order Cybernetics. And there are those which are theoretically inconsistent or otherwise malformed so they are dismissed for our purposes of examination here. Except for the latter, such theories and practices can be criticized by theorists for what is known as paradigm incommensurability. That is, because paradigms are so different from one another, theories between them are *incommensurable* such that theories from one paradigm cannot be properly understood from within another paradigm.

> *The paradigm shift does not merely involve the revision or transformation of an individual theory, it changes the way terminology is defined, how the scientists in that field view their subject, and, perhaps most significantly, what questions are regarded as valid, and what rules are used to determine the truth of a particular theory. (Kuhn, 1962)*

Those who argue across paradigms can be heard saying to one another: "Your argument makes no sense, whatsoever!", "What you said is completely irrelevant!", "You are missing

the point, entirely!", and "You just don't get what I am trying to say, do you?" From their own context, neither sees the other's reasoning or principle concerns or approach to the problem as being legitimate. It may seem that we are destined to argue past one another.

The key to understanding battles like these lies in the realization that both sides are right, and all of these statements are true statements—within their own paradigms. We can thus recognize paradigm incommensurability, but what can we do about it?

As this paper demonstrates in its review of developments in the body of theory, Systems Thinking still lacks a logically coherent framework which can properly ground and inform multiparadigmatic multimethodological approaches to practice (Bowers, 2012). Without such a framework, some of the real-world implications are:

- Constraints upon the grasp the practitioner may have of significant aspects of the problem situation, especially those which present themselves only in an alternative paradigmatic context.
- Limitations in the variety of methods which may be deployed to affect an ongoing intervention, those associated with alternative paradigms.
- Effective practice suffers from the lack of informed guidance from proper theory and coherent multimethodologies.
- Lacking proper theoretical support, learning from outcomes or contemporaneously through action research suffers because what happened cannot be properly linked back to an understanding of its basis.

Among the possible ways forward all but pluralism are pointless. Isolationism (where each approach develops independently of the others), imperialism (where one approach annexes or subsumes the others), and atheoretical pragmatism (where practitioners use any method based on their immediate need without regard to theory) are philosophical dead ends for us (Jackson, 1987; Flood, 1989a, b). 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" (Jackson, 1999). Atheoretical pragmatists pick and choose among the various systems methods based solely on what seems warranted by the current situation, not bothering with philosophical issues or 'artificial' theoretical distinctions (ibid.). The pluralist strategy, in contrast, supplies the theoretical support that pragmatism lacks. 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. … 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… (Jackson, 1997)*

The systems community was told in 1984 by the founders of Critical Systems Thinking 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). Since then there has been an increasing awareness that systemically complex problems are best considered multiparadigmatically, as systems with interrelated issues that cross paradigms. But how is this actually done?

The evolution of multiparadigm Critical Systems Theory

A search was undertaken to find and catalogue academic publications regarding systems methodologies and theories having to do with multiple paradigms (Bowers, 2008). Where an earlier study had catalogued only five (Mingers, 2003), this research found 19. These were organized and mapped considering: their ideological lineage after what was discovered of their philosophical approach, theoretical underpinnings, date of publication and contribution with respect to the theme. The results were mapped (see Figures 1 and 2).

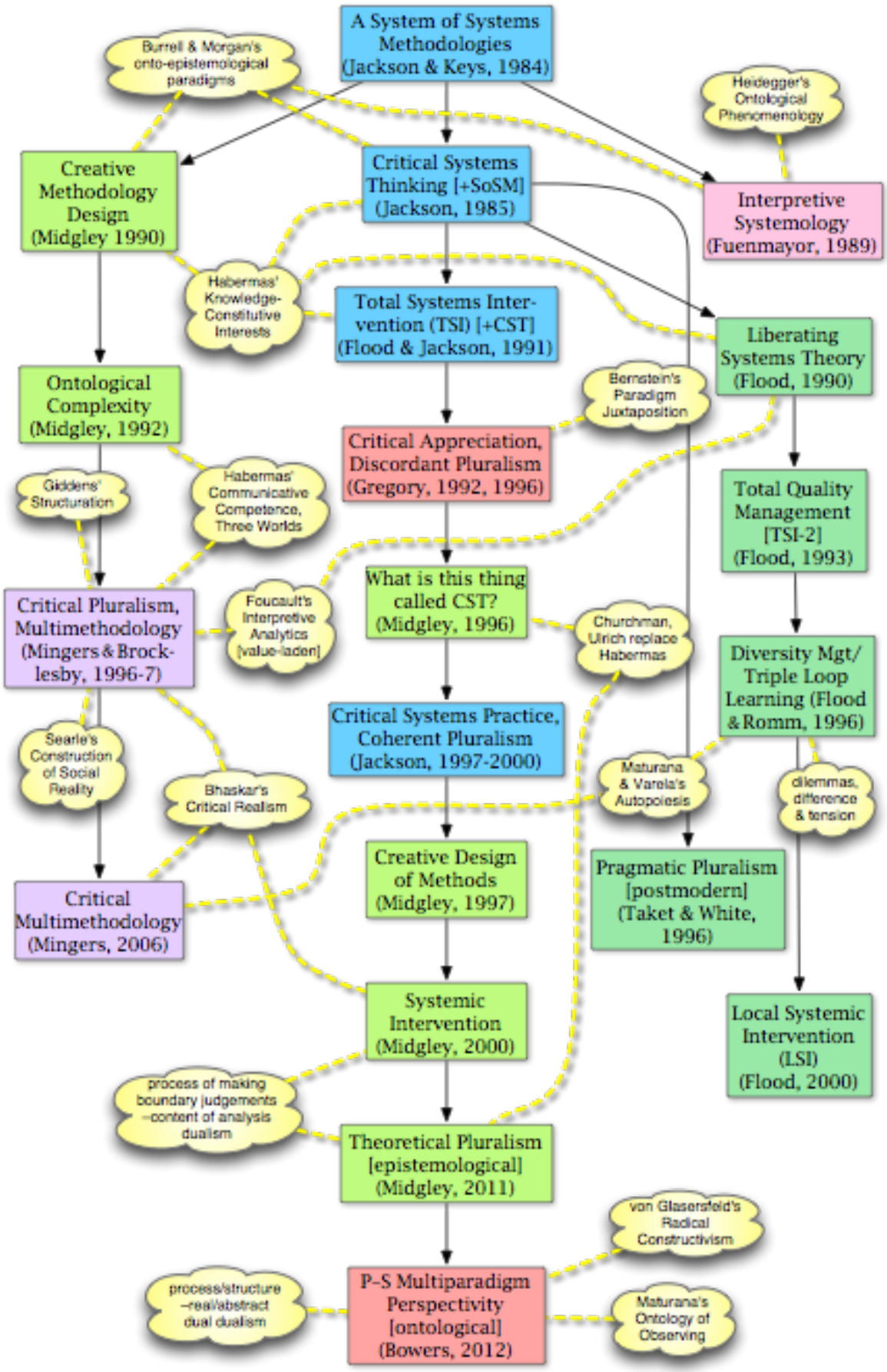

Figure 1. Theoretical aspects of the evolution of pluralism in CST.

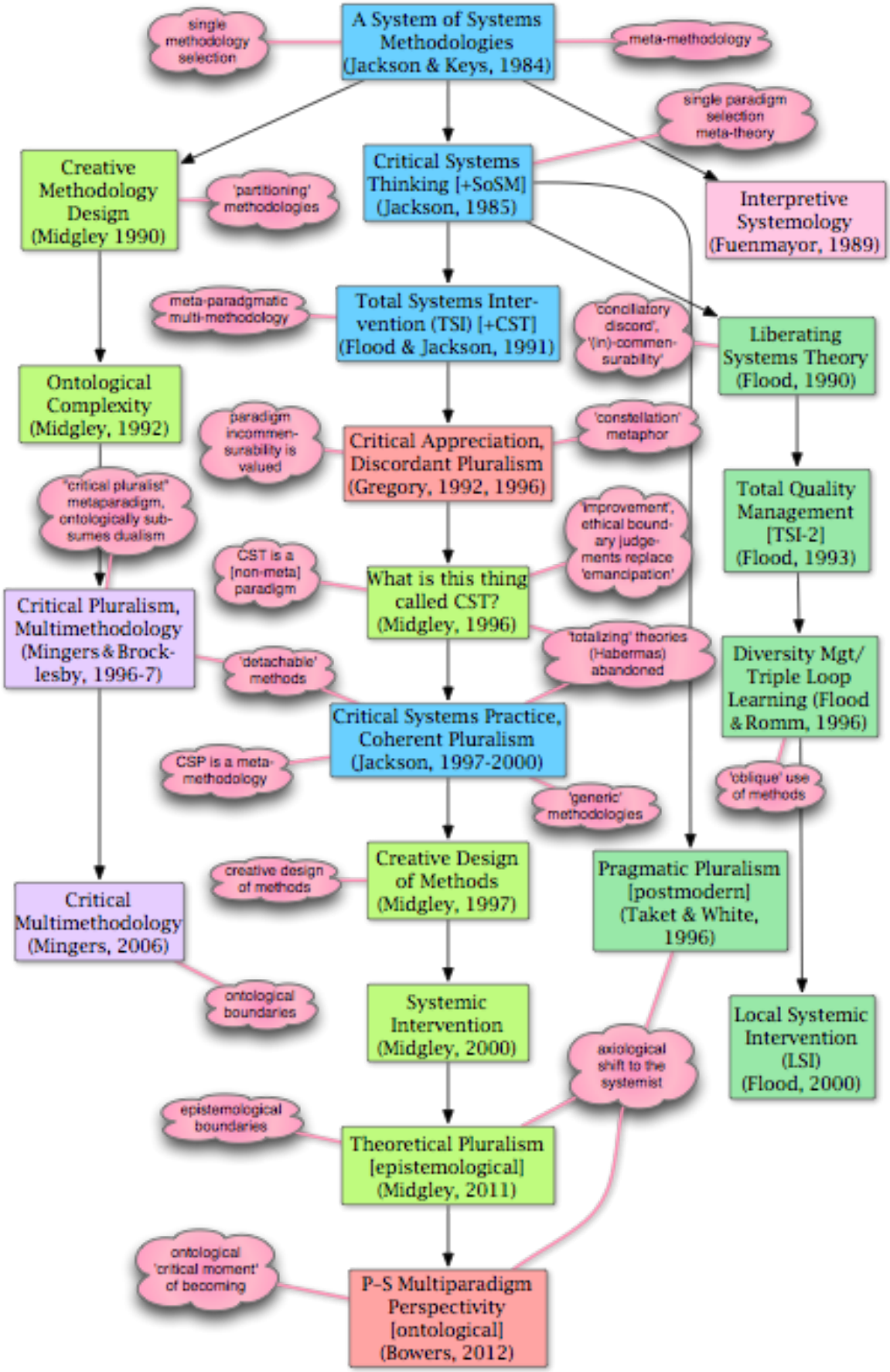

Figure 2. Philosophical aspects of the evolution of pluralism in CST.

Summaries of the analyses of 19 multiparadigmatic approaches to critical systems thinking (see Figures 1 and 2) are very briefly summarized from the more detailed study (Bowers, 2012). The reader is urged to refer to the original works (cited), though, as the study here is tightly focused on only a select few concerns in order to develop the narrative which emerges retrospectively from the larger study.

We begin with the 'meta-methodological' *system of systems methodologies*. The set of systems methodologies was first imagined by Jackson and Keys (1984) to be complementary—one might call it a 'happy family'. Or, like a golfer selecting the appropriate club to make a particular shot, the system of systems methodologies would have the systemist pick an appropriate methodology from the set according to the problem context.

Methodological complementarism was followed by theoretical complementarism in Jackson's early version of *critical systems thinking* (1985). It was 'meta-theoretical'—directing the appropriate selection of the right theory—from the set now grouped onto-epistemologically into paradigms (after Burrell and Morgan, 1979). Now the systemist would reflexively (self-critically) question his own ideology, conceptually set and reset his system boundaries, and look as well for evidence of coercion. Habermas' (1971, 1974) humanist theory of knowledge-constitutive interests was cited as a foundational theory in an explicit attempt to cover the obvious incommensurability issue that theoretical complementarism produced.

With *interpretive systemology* Fuenmayor (1989) sought to create a hybrid approach by translating the critical, interpretive and emancipatory methodologies into terms of Heidegger's (1962) phenomenology. From a phenomenological perspective Fuenmayor solved the incommensurability problem but the result was unacceptable; other perspectives would be abolished to leave only one paradigm, and so pluralism was lost. As for the theories themselves, adapted to phenomenology they were thus denatured from their own philosophies and they could no longer be truly critical, interpretive nor emancipatory.

Midgley pointed out the complexity of the intervention in his *creative design of methodologies [methods]* (1990). Real-world situations require the creative deployment of several methods, he said; but rather than being 'pulled off the shelf' they could and should come from informed 'partitioning' of methodologies into parts and combined with those from others. As with Jackson's CST, Habermas' knowledge-constitutive interests was used to cover incommensurability.

With *liberating systems theory,* Flood (1990) fused the critical with the emancipatory into a single paradigm. To Habermas he added Foucault's (1972) poststructuralist understanding of the power of ideas and how social processes shape the 'truth'. He acknowledged the incommensurability and relativism but maintained that, as a metatheory, this was acceptable in practice.

From the ideology of complementarism and the onto-epistemological paradigms of Jackson's CST, Flood and Jackson created a meta-methodology called *total systems intervention* (TSI) (1991). It described a multimethodological approach where each methodology would deal with a different issue within the same intervention with respect to five 'commitments': critical awareness, social awareness, methodological complementarism, theoretical complemen-

tarism, and human emancipation. It sought to "operationalize pluralism in each of its three phases: creativity, choice, and implementation" *(Jackson, 2000)*.

In *ontological complexity* Midgley (1992) explained that the sources of the problems presented by pluralism were ontological, but he imagined that the solution was somewhere 'above' them, theoretically. He proposed a grand "pluralist approach which recognizes the strengths and weaknesses of all working methods through the use of a meta-theory that allows their complementarity." They have evolved to handle the different forms of complexity, he said; so we must embrace methodological pluralism. Building on his earlier, creative design idea for partitioning methodologies into essential parts and combining them with others *(1989)*, "all working methods" would be "adapted" to serve in a new, pluralist meta-paradigm. Habermas' 'three worlds' theory of communicative competence *(1981)* was accepted as a new, more substantial and fitting epistemology for critical systems thinking.

Gregory took an orthogonal approach. Pluralism could not be 'meta-', which she called "imperialism in disguise," always and necessarily corrupting to the nature of the thing "subsumed." Nor could it be complementarist. The concept itself, she argued, "lacks the ability to provide for consideration of radically alien perspectives… because it is inherently consensus oriented." And complementarism brings with it problems of paradigm incommensurability. She criticized the harmonious philosophy of complementarism and questioned the legitimacy of Habermas' theories to overcome incommensurability. Her model, *critical appreciation* (1992), specified critical reflexivity plus a multiparadigm multimethodology she called *discordant pluralism* (1996b). As advocated by Habermas and endorsed by Bernstein *(1983)*, she specified "critical self-reflection based upon an analogy of Freud's model of dream-analysis and an explicit critique of ideology" and a "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). Her approach celebrates the differences between theories "through the juxtapositioning of oppositional view-points within a constellation that supports both one perspective and the other." She was the first of us to accept that paradigm incommensurability *per se* is, in fact, inescapable. Furthermore, she recognizes it as her model's distinct advantage. It is *because* they are incommensurable that alternative theoretical perspectives have the power to so radically alter our comprehension of a given situation. But the problem of theoretical incommensurability would remain unresolved, she said. "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).

Total quality management (Flood, 1993) was a series of suggestions to improve TSI. For this reason it has been called *TSI-2*. They were never followed up on (Gregory, 1996), and Flood's ideas continued to evolve (see ahead).

Flood and Romm got right to the point and explained incommensurability quite well in *diversity management* (triple loop learning) (1995a). The solution as they saw it was a Foucauldian form of poststructuralist freedom from grand 'truths'. Based on Habermas' newer theory of communicative competence (1981), decisions would be made and actions taken based on conciliation between the argumentors—i.e., *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 delegitimizes incommensurability, yet was used to justify their approaches to

judgement and action. That is, they stepped over the problem rather than resolve it. The implication is that we have to learn to live with paradigm incommensurability and it seems that Habermas was used again to paper over what amounts to a pragmatic resolve to 'keep buggering on'. The attempt was made to blend the intentions (but not the actual theories) of Habermas and Foucault. As I understand it, they created a Frankenstein's monster that was frightening, misunderstood and unwelcomed in the world. So it was dismembered. Parts that strengthened the emancipatory mission were kept and the rest was tipped into the bin labeled postmodern.

Mingers and Brocklesby's framework, *critical pluralism* and *multi-paradigm multimethodology* (Mingers and Brocklesby, 1996-7; Mingers 1997), evolved throughout a series of two papers and two book chapters published in the space of two years. At first they are "decidedly modernist" because they "wish to make a reasoned and rational argument", later they adopt a postmodernist position and propose a new "pluralist metaparadigm" for critical pluralism. They developed a methodology for detaching methods from their methodologies where "parts of methodologies from different paradigms are brought together to construct an ad hoc multimethodology [mixed methods] suitable for a particular problematic situation." To justify these types of practices in terms of theory is of course the most difficult issue. Mingers and Brocklesby say they have "reflected on the mandate that methods from different philosophical traditions should not be combined." Jackson, they charge, appeals to Habermas' knowledge-constitutive interests (1971, 1974) "to circumvent paradigm incommensurability," and Midgley "appeals to Habermas' 'three worlds' theory of communicative competence (1981) to justify methodological pluralism", but neither Jackson nor Midgley ever sought "to question the veracity of the incommensurability thesis itself." Mingers and Brocklesby chose to keep Habermas' newer *theory of communicative competence* (1981) and buttress it with extra ontological support from Bhaskar's *critical realism* (1989), and reinforce it, epistemologically, with support from both Giddens' *structuration theory* (1984) and Searle's *construction of social reality* (1995). Never mind the obvious relativisms and incommensurability between these alternate philosophies, they seem to say; both Giddens and Bhaskar 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).

Jackson's 1997 review of Taket and White's *pragmatic pluralism* (1996) is informative because it indicates his own developing philosophy. In this theory, he said, 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" (Jackson, 1997). He warned that "the eclectic use of different methods, without reference to methodology or paradigm, means that we cannot ensure paradigm diversity" because, as in this approach, "all the methods and models employed may be used according to one implicit paradigm" (ibid.), echoing Gregory's theme. As for the incommensurability issue, "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," he concluded.

Midgley's *What is this thing called Critical Systems Thinking?* (1996) is both a critique of the contemporary state of critical systems thinking and a proposal for the realignment of its phi-

losophy and the commitments of TSI. First, rather than being meta-paradigmatic, critical systems thinking had instead developed a distinct onto-epistemology. Therefore, it would be better understood more broadly as a paradigm and like the others, a collection of theoretically compatible systemic methodologies. Second, TSI's epistemological commitment to critical awareness would be better understood as an ethical critique of one's own systemic boundary making choices—*à la* Ulrich and Churchman. Third, because of the other two changes, the "totalizing" and "utopian" theories of Habermas were no longer required. He reports that Heidegger's phenomenology has also been rejected—in favour of Bhaskar's critical realism (Collier, 1994). Fourth, TSI's commitment to human emancipation might be more thoughtfully considered an ethical commitment to "improvement", especially sustainable improvement, he says. The critical-emancipatory paradigm was not yet settled.

Jackson proposed a new, pluralist *critical systems practice* (CSP) in 1997, *coherent pluralism* in 1999, and developed the framework in his book published in 2000. It would keep TSI's critical commitments which he named "critical awareness", "social awareness" and "ethical alertness", and it would "loosen the link between methodology and method." Unlike TSI, coherent pluralism would not be meta-theoretically 'above' the paradigms, nor would Habermas be used to prop it up as such. It would instead "manage a degree of incompatibility *between* paradigms at the [*non*-meta-] theoretical level" [my emphasis] (Jackson, 1997). Oddly, though, he described CSP as a *meta*-methodology

> *...which protects paradigm diversity and handles the relationships between the divergent paradigms… 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 <u>between</u> 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… The meta-methodology accepts that paradigms are based upon incompatible philosophical assumptions and that they cannot, therefore, be integrated without something being lost. (Jackson, 1997)*

How does this resolve the incommensurability issue? Never mind, he says, "there is a clamor for pluralism in methodology use in the applied disciplines. 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—was 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). So, for now, he wrote,

> *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'… In the light of the abandonment of Habermas' solution to the issue of paradigm incommensurability, [we must look elsewhere for] other proposals as to how theoretical pluralism should be handled. (Jackson, 2000)*

What Flood and Romm (1995a) had called the 'oblique' use of methods (the use of methods for purposes other than those for which they were originally designed), Midgley argued was

better explained by his earlier theory, now updated and more correctly renamed the *creative design of methods* (1997). He described how it had been used effectively in an intervention in which an ad hoc methodology was synthesized from Ulrich's critical systems heuristics and methods of Ackoff's interactive planning. He also reinterpreted two interventions reported in Flood and Romm (1995b), to demonstrate his contention that theoretical creative design of methods better explained their results.

In 2000, Midgley reported that the basic premises of critical systems thinking were accepted and shared widely enough that it had grown into a 'true' paradigm. With *systemic intervention* (2000), he explained that paradigm incommensurability is dealt with, because as individuals learn and integrate new ideas from different paradigms, they add them to their own understanding, or *microparadigm* (after Yolles, 1996). Importantly, he said that this occurs at the individual, group and research community levels. Perhaps now conceding that Habermas' theories had been used since 1985 to paper over the incommensurability issue, he writes "It is not enough to find a philosopher whose work superficially seems to support a methodology and throw in his or her name to add spurious credibility to otherwise unsupported ideas… It is important that philosophical and methodological reflections inform each other… I see the relationship… as non-hierarchical". Bhaskar's *critical realism* is used to dismiss charges of incommensurability with this sleight of hand:

> *If one takes the view that theories should fit together like pieces of a jigsaw puzzle to create a picture that is as near as it is possible to get to an accurate representation of reality, then theoretical contradictions are a problem… Instead, if theories come to be judged in terms of their utility for given purposes (and of course they can interact with purposes, shifting the agent's understanding of an intervention), contradictions need not be a problem.*

For his *critical multimethodology,* Mingers (2000, 2006) draws support from a previous paper, *The contribution of critical realism as an underpinning philosophy for OR/MS and systems* (2000) which is also based on Bhaskar's critical realism. In my opinion Bhaskar's critical realism befits the needs and assumptions of the critical-emancipatory paradigm and completes it. Nothing is wrong with that, except that it will not properly support pluralism, *multi*-paradigmatically.

In Midgley's *theoretical pluralism* (2011) the systemist is a practitioner of action research, and the theoretical perspective shifts to that of the researcher who becomes the center 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, 1991; Flood and Romm, 1996). 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 to the roots of 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 both knowledge generating systems [e.g., the systemist] and the world itself come to be defined in exactly the same manner [my emphasis]: through the process of making boundary judgments. [original emphasis] (Midgley, 2011)*

He sees boundary judgements as a critical epistemological process upon which all knowledge generation depends. Boundary making occurs locally (with respect to the systemist, here and now), as s/he chooses from what exists which to include and which to exclude. Conceptually, "even epistemological theories can be viewed as contextually useful or not, just like any other kinds of theory." Critical realism explains how we and the world itself "come to be defined" this way. There 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)*

Midgley has again enriched the critical-emancipatory paradigm. However, as we accept or reject individual theories based on any number of judgements, including whether or not they contribute to our understanding of any given situation, that does not resolve their incommensurability. Since 1992, at least, Midgley has known that the problems presented by pluralism are ontological, but has never suggested an ontological remedy. It would be a mistake, he says, 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" (2011).

A new approach – ontological perspectivity

Yes, boundary making has to happen epistemologically. But epistemologies are dependent upon their ontologies exclusively to support the existence/non-existence of 'everything' considered real or unreal, whether physical or generated. The members of an ontology are understood by its epistemology(-ies)—paradigmatically, by definition. Boundary judgements are made within paradigms. By extension, one epistemology will never be enough to support pluralism because one ontology is not enough. One ontology will never be enough because one paradigm is not enough.

P–S ontological perspectivity emerged from a Ph.D. research project at the University of Hull (Bowers 2012). It is a radical approach designed specifically to address the problem of paradigm incommensurability beginning with a new ontology which could somehow support and explain the independent existence of other ontologies, non-specifically. Of course, an explanation requires an epistemology which must be supported by that ontology. Their union is a theory which is useless to systemists unless it also includes at least one methodology describing how it can be used. Once completed, a framework for a new approach to pluralism in critical systems thinking emerged. It draws from the research to compile and analyze the 19 ap-

proaches described very briefly above. And it includes new ideas derived from, for example, Maturana's ontology of observing (1988) and Glaserfeld's radical constructivism (1995).

Very briefly, the systemist will shift between paradigmatic experiences by using this new approach as a pivot point. The systemist simply, creatively and easily steps away from one paradigm and into another. In Gregory's terms the systemist can thus move among the constellations. Because of its deliberate minimalism it cannot subsume, change, interfere with or denature any existing systemic theory or practice. And far from being difficult to do, this is, in fact, something we do all the time, anyway, without even thinking about it. The difference here is that, as systemists, we will do it deliberately, critically. This framework does not solve the incommensurability between paradigms, it respects their integrity. It is, however, a solution to the theoretical problem of using multiple paradigms. It enables coherent pluralism.

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