Toward a Science of Metatheory

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Abstract: In this article, I explore the field of metatheory with two goals. My first goal is to present a clear understanding of what metatheory "is" based on a collection of over twenty definitions of the term. My second goal is to present a preliminary investigation into how metatheory might be understood as a science. From that perspective, I present some strengths and weaknesses of our field and suggest steps to make metatheory more rigorous, more scientific, and so make more of a contribution to the larger community of the social sciences.

Keywords: Metatheory, science, social science, science of metatheory, theory.

Social Science – Flapping Around in Circles?

In the integral community, as with other fields of the social sciences, many authors have worked diligently to create effective metatheories. Wilber (2001) and Laszlo (2007), for example, have produced metatheories that are both interesting and popular. However, a storm of controversy surrounds such theories because the existing paradigm of the social sciences does not include effective conceptual tools for evaluating metatheory (or theory, for that matter). This is not the fault of the authors. Indeed, they should be lauded as brave explorers who are pushing the boundaries of human thought. The problem, and an important reason for the criticism of theory and metatheory, is that there is no generally recognized scientific framework by which we might judge them.

What is this thing called metatheory, and how might it be useful? This is a question that has been alternatively surfaced, ignored, considered, derided, and viewed with amazement around the world of the social sciences. Despite (or, perhaps, because of) these varied reactions, there has been little effort to create a coherent and comprehensive science of metatheory. The effort has not been made, perhaps because there appears to be no need for such an effort. Perhaps those in the social sciences are satisfied with their existing views of theory. More likely, the conceptual "building blocks" were not in place to support the creation of a new science.

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As to the question of "need," we now face a seemingly endless array of local and global issues from psychology to policy. It is becoming increasingly clear that the challenge of those issues cannot be met with existing theory. That is at least one reason why we continue to develop new theory. Unless, of course, the bulk of academicians are insulated from these issues – which I think and hope is not the case! Because the development of more effective theory is so important, a critical question for the coming decade is, "How might we advance research and practice more rapidly to more effectively address the important issues of our time?"

The traditional approach of the social sciences is to apply expensive resources to the problem (time, money, researchers, facilities). This approach has generated thousands of theories and untold quantities of data. We have so many theories and so many data that it has become difficult to organize knowledge or resolve basic contentions within a field (N. D. Campbell, 2009).That befuddling excess of information can be traced to the origin of the social sciences. There, in an attempt to mimic the success of the physical sciences, social scientists were encouraged to seek objective facts through empirical research. A goal that has continued to the present day with calls for still more empirical research (e.g., Argyris, 2005).

What we seem to have overlooked is that a science, much like a bird, must have two strong wings if it is to fly. Empirical facts are understood in the light of a specific theory. And, theory can is built from a careful consideration of the facts. Indeed, theory and research are so intertwined that neither can exist without the other – and both are needed for a strong science. Theory and research are differentiable, but they are also inseparable – existing in a generative yin-yang relationship. While this is a generally accepted truism of science, the actual practice of science is rather different. Under the existing paradigm, a scholar presenting a research proposal is required to describe a specific and rigorous research methodology. However, that same scholar need present little or no justification for the theory. Indeed, some respected scholars have suggested that theory should be developed intuitively (Mintzberg, 2005).

There is the dichotomy that has hobbled the development of the social sciences. In contrast to the well-developed wing of research, the wing of theory is withered. We have made a habit of building and testing theory without a specific methodology, essentially relying on subjective intuition. As a result, we lack a solid metatheoretical perspective, we lack a rigorous and repeatable methodology for comparing research proposals on the basis of their theories (Dolan, 2007). We are left to consider the so-called facts of the situation without the benefit of a carefully developed and commonly understood context. This points to a vast gap in the literature; and, indeed, the science. Because theory and practice are (or should be) closely interrelated, the advancement as a science may be limited by the limitations of either. The science cannot advance without both.

Defining a science of metatheory is one important step. When that is done, scholars will be to seek and create theories that are more advanced – theories that can be tested according to the most rigorous and repeatable standards.

While much has been written on theory (for a good resource, see, for example, Van de Ven, 2007) the results do not seem to have enabled the success of the social sciences. Few of those methods require any degree of rigor. For example, the most commonly used claim of validity for

a presented theory is parsimony, but even that simple indicator is typically misunderstood and misapplied (Meehl, 2002). Further, by way of a thought experiment, if more parsimony led to better theory, we might conclude that the smallest theory would be the best of all – a difficult conclusion indeed. Based on this understanding of the necessary interrelationship between theory and research, it is reasonable to expect that the development of rigorous methodologies for developing and testing theory and metatheory will bring balance to the social sciences. This, in turn will accelerate the advancement of that science and aid in resolving the issues that face our world.

In short, there exists in the social science, a silent prejudice. Unrecognized and unabated, it eats at the heart of our science, destroying its legitimacy and impeding its advance. To create a more effective social science, we must first develop more mature, and more scientific approaches to the study of metatheory. In this, I refer to science as a process of investigation, replication, communication and the emergence of new and useful meanings. Not, as some think, of science as a complete set of natural laws where meanings are fixed.

A parallel concern is the ongoing struggle between modernism and postmodernism. Both are forms of metatheory (Ritzer, 2001) that shape the way we see the world. Briefly, and partially, traditional modernity emphasizes differentiation, simple-location, classification, and representation. While, in contrast, postmodernism is more about process, movement, interpretation, and change. The difference makes for interesting dialog (Chia, 2005), both inside each camp, as well as between them. Yet, drawing lines between the two is a modern approach and dialog is a postmodern approach. Both have something to offer the present paper that will help us to understand and advance scientific metatheory.

The potential benefits of advancing the science of metatheory are profound. First, by developing new metatheory, we gain the ability to become more effective in the application of theory for the alleviation of social ills and the optimization of the human condition. Second, and closely related, by working from a metatheoretical perspective, we gain the opportunity to understand and integrate theories across disciplinary boundaries. The insights and capabilities to be gained, for example, by linking human development and public policy are quite intriguing.

In first part of this article, I will review existing definitions of metatheory in hopes of finding a more complete, more useful, and less pejorative definition. In the second part of this article, I will present an outline for a scientific study of metatheory based on an authoritative, modern definition as a step toward legitimizing the study of metatheory, and the subsequent development of more effective theory. Third, I will present a postmodern view of science, combining and reflecting on multiple views of what it means to be a science. Fourth, I will combine the two in an integral approach that avoids the main concerns of each camp and combines the best of both. And, importantly, what seems to offer the most workable directions for a science of metatheory.

Many Understandings of Metatheory

The most basic problem is the lack of a clear definition of metatheorizing. Because of it, we have what appears a series of isolated works, isolated sub areas within types of metatheorizing, and isolated types of metatheorizing. Metatheorists often feel defensive about what they are

doing because they lack a clearly defined intellectual base from which to respond to the critics. Thus what stand out are the criticisms that often go unanswered. (Ritzer, 1990, p. 11)

In a search of the literature, Mark Edwards (with some support from the present author) found over 20 definitions of metatheory. While this search was not comprehensive, we believe that we have identified a good cross section of the field. One of the first things I noticed in reviewing these definitions is that the authors seemed to be describing different things. While some were describing the broader field of metatheory, others were describing related, yet subordinate, areas of metatheory such as the evaluation or categorization of metatheory. In this section, I will provide an overview of the field, based on the discovered definitions.

Broadly, metatheorizing is the process of performing metatheoretical research. That process includes many different kinds of activities including sorting theories and/or sorting their components into categories (Wallace, 1992, p. 53), the use of reflexivity (Ritzer, 2009), deconstruction and reconstruction (Ritzer, 1992, p. 11), statistical analyses of the literature (Meehl, 1992), and nearly 20 other suggestions (Turner, 1991). Just as theorizing results in the creation of theory, metatheorizing results in a "metatheorum" which is a statement about theory in general or a statement about a specific theory (Wikipedia, 2009).

Abrams and Hogg (2004) take an alternative, primarily metaphorical, approach to describing metatheory. They suggest, for example, that a metatheory makes a good travel guide. Sklair (1988, p. 697) describes a metatheorum as reflecting the coherence between epistemology and objects of knowledge. This coherence extends to include a set of assumptions about the constituent parts of the world, and our possibility of knowing them. Overton (2007, p. 155), in contrast, says that metatheorems define the context in which the theories are made, and refer to the theories, themselves. He also goes on to say that a metatheory is a set of interlocking principles that describe what is acceptable and unacceptable for theory.

Broadly, the field of metatheory includes the study of the "sources and assumptions; and contexts" (Finfgeld, 2003, p. 895), including the study of theorists and communities of theorists (Ritzer, 1988, p. 188), the process of theorizing (Zhao, 2010), and the analysis of the methods, findings, and conclusions of the research (Bondas & Hall, 2007, p. 115) the use of those theories (Bonsu, 1998, August) as well as their implications (Turner, 1990). Finally, the prescription that metatheorizing should produce theories that are open to empirical testing (Sklair, 1988).

Although they all address the same general theme, these definitions of metatheory contain more differences than similarities. Such disparity makes it difficult to draw useful conclusions about any shared definition of metatheorizing or metatheorems. Also, these descriptions are most often very sketchy and fragmentary; indeed, they are almost entirely "atomistic." That is to say, most authors simply created a list of concepts that they considered important to the study of metatheory (e.g., metatheory is A, B, C, & D). Such an approach may be expected given the relative youth of the field. In contrast, more mature fields tend to contain concepts that are more closely integrated (e.g., A causes B and C, or A, B, & C are co-causal).

As the reader may notice, this broad range of definitions of metatheory overlaps with other areas of study. That overlap may cause confusion and concern (as well as the opportunity for

additional investigation and clarification). For the present article, however, I will focus on what might be considered the core of metatheory – without which, none of the other parts would be possible. This analysis begins by identifying the area of greatest agreement between the many definitions of metatheory.

Table 1. Aspects of metatheory as described by various authors

Author/s	Date	Analysis of theories	Is (or creates) a theory of theory	Integrates multiple theories	Analysis of assumptions	Makes implicit assumptions explicit	Analysis of underlying structure	Analysis of structure of theory	Deconstructive
Finfgeld	2003	x			x				
Bondas & Hall	2007	x							
Dervin	1999					x			x
Anchin	2008			x					
Sklair	1988								
Faust	2005	x							
Clarke	2008				x				
Fuchs	1991						x		
Weinstein & Weinstein	1991	x							
Zhao	2004	x							
Craig	2009		x						
Takla & Pape	1985				x				
Thorne, et al.	2004								
Paterson, et al.	2001	x							
Ritzer	1988	x		x					x
Gadomski	2001		x						
Wikipedia	2009		x						
Turner	1990							x	
Faust & Meehl	2002	x							
Bonsu	1998	x							
Colomy	1991	x							

In Table 1 I list the authors of 21 definitions of metatheory and their key ideas. The more complete definitions are listed in the appendix. From this arrangement of the data, a few important conclusions may be drawn. There are also contradictions, which may prove troubling or prove to be a source of new insight.

First, and most simply, metatheory is focused on the analysis of theories. Ten of our 21 authors specifically agree on this point. In contrast to this general agreement around the core of metatheory, few authors describe metatheory as the analysis of context. Therefore, we may reasonably conclude that studies of theory are at the core of metatheory, while other studies (e.g., contexts, groups of theorists, methods, applications, etc) are less so. Second, it may be noted that six of our authors describe metatheory as making implicit assumptions explicit (Dervin, 1999), analysis of assumptions (Clarke, 2010; Finfgeld, 2003; Takla & Pape, 1985), analysis of underlying structure (Fuchs, 1991), and the analysis of structure (Turner, 1990). These are essentially deconstructive approaches (Dervin, 1999).

In contrast to this deconstructive approach, metatheory may also be understood to integrate multiple theories (Anchin, 2008b; Ritzer, 1988). The two approaches may be inseparable as one cannot combine integrate two theories without also integrating the assumptions, structures, and concepts of those theories. In short, metatheory (as the study of theory) may be conducted in at least two ways. It may be integrative (where multiple theories are combined). It may be deconstructive (where theories are parsed into their constituent components for analysis and/or recombination). Either way, the process leads to the creation of a metatheory, metatheorum, or "a theory of theory" (Craig, 2009; Gadomski, 2001; Wikipedia, 2009).

To summarize, the field of metatheory is richer and more complex than is expressed by any single definition to date. The following definition strives for conciseness, rather than completeness as the main focus of this article is the development of metatheory as a science. So, this definition (a simple, though useful, prelude) suggests that:

> Metatheory is primarily the study of theory, including the development of overarching combinations of theory, as well as the development and application of theorems for analysis that reveal underlying assumptions about theory and theorizing.

This definition, it should be emphasized, reflects the state of understanding of metatheory to date. And, as noted above, this level of understanding has not proved sufficient for advancing theory or metatheory – perhaps because the terms are too fuzzy. In the process of creating this definition, however, a potentially clarifying co-causal relationship begins to emerge. Here, the analysis, evaluation, and integration of theory leads to the development of new methods of evaluation, which may then be used to evaluate the results. Far from a useless tautology, this suggests a path for the development of some conceptual constructs through the development of other conceptual constructs. By explicating this developmental process we may accelerate the development of such constructs. This occurs in much the same way that one may use a map to more easily locate a store for buying maps. Or, the way one may use telecommunication to collaborate on the creation of more effective telecommunication systems. These are positive feedback loops, rather than useless tautologies.

In the above section, I have briefly summarized the field of metatheory. However, a larger question lurks. It is generally understood that the reason for metatheory is the development of better theory. Indeed, many or all of the same "rules" that apply to the development of theory also apply to the development of metatheory. Because the two areas share a common heritage, they may also share a common failing. Who is to say, for example, that our failure to make

effective theory will not be replicated – leading to our failure to make effective metatheory? To avoid this trap, we must take metatheory to another level.

Where the creation of theory is understood to occur within a specific field of study, we might take a different view of metatheory and investigate metatheory as a field unto itself. However if the field of metatheory is to have any some degree of respect and usefulness, it must be understood as a legitimate science. As a science, we can expect metatheory to make advances and develop insights that may be applied to theories across the sciences. In the next section, I will investigate the idea of metatheory as a science from a modernist perspective.

Towards a Scientific Metatheory

Many voices have called for the advancement of social theory (e.g., Dubin, 1978; Leong, 1985; Popper, 2002; Van de Ven, 2007). To date, however, the methods for the scientific study and advancement of theory have been ineffective. For example, Meehl reports on 11 known methods for advancing theory (Meehl, 2002). However, he finds them to be primarily intuitive – and so unsuited for scientific investigation. Indeed, a recent study by HERA concluded that there was no method of evaluation that could be counted on to work effectively (Dolan, 2007).

To achieve greater effectiveness, we must reduce the epistemological indeterminacy around metatheory – we must learn to represent more clearly our knowledge about the similarities and differences between metatheories. In this, the ideas presented in this paper support the many excellent suggestions of Tom Murray (2006).

In this section, and the following sections, we will investigate how we might study theory and metatheory as a science unto itself. An important expectation is that following scientific methods will enable the creation of effective metatheory, effective theory, and more effective methods and practices. There are many understandings of what science is. So, in order to develop a deep and nuanced view, I will investigate the science of metatheory from multiple perspectives. In this section, I will investigate scientific metatheory from the modernist perspective. In the following sections, I will investigate scientific metatheory from a postmodern perspective. Then, I will discuss a combined perspective of a scientific metatheory.

To frame a modernist perspective of science, I begin with a recent and concise definition where, “Science is the pursuit of knowledge and understanding of the natural and social world following a systematic methodology based on evidence” (Science Council, 2010); which includes:

A. Objective observation: Measurement and data (possibly although not necessarily using mathematics as a tool)
B. Evidence
C. Experiment and/or observation as benchmarks for testing hypotheses
D. Induction: reasoning to establish general rules or conclusions drawn from facts or examples
E. Repetition
F. Critical analysis
G. Verification and testing: critical exposure to scrutiny, peer review and assessment

In this section, I will briefly review what is to have a modernist science, and explain how those standards may be applied to metatheory.

A – Objective Observation

Observation includes the description (and often measurement) of subjective, objective, and relational experience. Yet, in the social sciences, where two people might observe the same phenomena and arrive at dissimilar conclusions, the idea of objective observations becomes problematic. Because "There are no facts independent of our theories" (Skinner, 1985, p. 10) and "no observation may be totally theory-free" (Hull, 1988, p. 492) and, "no two scientists are ever in total agreement with each another" (Hull, 1988, p. 493). This situation has made advancements in the social sciences incredibly difficult and led to the fragmentation of many (perhaps all) fields of study.

In a post-positivist approach, with its attendant assumptions of uncertainty, there are great benefits associated with triangulation – combining multiple views to create a more effective understanding of our lived world (Rousseau, Manning, & Denyer, 2008, p. 486-487). Within a post-positivist world, there is little room for so-called "objectivity." Yet, the word still caries weight. And, in the present paper, it may be understood as representing an approximately repeatable experience within a context of metatheoretical investigation. That is to say, if two researchers of similar education undertake an investigation of the same theories using the same research methods, they should reach the same result. The extent to which their results are similar is the extent to which the approach may be considered objective.

In contrast to the more general range of social sciences, the field of metatheory has an advantage in this aspect because metatheory is a primarily hermeneutic approach where, "Hermeneutics is the interpretation of texts" (Bentz & Shapiro, 1998, p. 170). Thus, we metatheoreticians have access to books and journals that are (at least for a time) stable. That means, where many social events come and go in the blink of an eye, forcing researchers and their human subjects to rely on memory, we have the opportunity to revisit the texts with all the care and patience needed to fully understand the authors. In short, we are less subject to the transience of our observed subjects. Another benefit to the metatheoretical approach is completeness. That is, we have the possibility to analyze entire "worlds," where other social scientists must make do with a small fraction. For example, if we wanted to create a metatheory based on all the works of Durkheim, we could (conceivably) collect and analyze his complete writings. In contrast, a social scientist who wanted to develop a new theory of child development could never observe all the children in the world.

In the scientific process of metatheory, the subject of analysis is primarily theory. The process of investigating theory, in part, involves the process of deconstructing existing theories (Dervin, 1999). Importantly, we can share those texts with other scholars to determine if we share the same viewpoints. That means we can begin to develop some degree of objectivity based on the similarity between our observations and interpretations of texts. In short, in the study of metatheory, we have the opportunity to be a more effective science than most fields of social theory because (in the area of objective observation) we suffer fewer effects of transience, easier opportunity for completeness, and greater opportunity for objectivity.

It is critical, however, to note that the opportunity to achieve these aims is not enough to make metatheory into a science. We must show through our work that our efforts have reduced transience, increased completeness, and increased objectivity. That, in turn, suggests that our metatheoretical analyses should include a large percentage of the available writings in a given area of study to exemplify completeness. Similarly our analyses should be collaborative efforts to exemplify objectivity.

B – Evidence

The collection of evidence is an important part of any scientific endeavor. Specifically, this refers to evidence that may be used to support (or contradict) one's theory (or metatheory, in our field of study). Without the anchor of recorded evidence, the metatheorists may be accused of blue-sky speculation. Because this evidence consists of theories, the collection process may be fairly simple. One needs only collect the theories and hold them against the requirement of future reference. Evidence should also be identified and saved on the "next level" of analysis. For example, if a metatheorist has collected a number of theories and enumerated what percentage of those theories were actually tested, that too is evidence. And, the responsible scientist should keep that evidence available in case there is a challenge to the theory and a need to "show your work."

As noted above, in the pursuit of metatheory, that evidence will come from the analysis of other theories. The evidence may be theories, the propositions within theories, or other data that is directly related to the theories. While Ritzer (1992) seems to suggests that metatheory should be focused on analyzing theories of the "middle range," that seems to present an unnecessary limitation on the field of metatheory. There is no a priori reason why metatheory should not include the analysis of theories on all subjects – from subatomic particles through galaxies, including psychological, social, and economic theories along the way. Of course, in investigating such a range of theory it is important that the metatheorist identify some form of similarity. For example, causal and co-causal propositions are found in theories of the natural and social sciences (Wallis, 2009c).

Whether the evidence is collected from a broad range across disciplines and sciences, or the evidence is collected within a very narrow field of study, an important question remains as to how much evidence is enough? This is an opportunity for future investigation and clarification. The tacitly accepted practice seems to be that one has enough evidence when one is able to successfully convince others of the validity of one's model. Yet, this is a weak standard as some people may be convinced with little evidence while others will not be convinced if they face all the evidence in the world. This concern leads to the need for testing.

C - Experiment and/or Observation as Benchmarks for Testing Hypotheses

Within the field of metatheory, two intertwined branches are emerging. One branch is primarily concerned with the creation of overarching theories, while the other branch is concerned with developing and applying rigorous and repeatable tests to theory. This is an important distinction to surface at the time because the hypotheses derived from each branch will be tested differently.

Metatheory Testing

Van de Ven (2007, p. 137) reflects on what might be the most common point of view for theory appraisal. Drawing on Weick and Thorngate, Van de Ven agrees that the creation of each theory requires a tradeoff between simplicity, generality, and accuracy. For example, a theory might be made more accurate, but that would require the theory to become more complex. This approach has led many theorists to claim that their theories are valid because they are parsimonious (Meehl, 2002). This is like claiming that something is good because it is tall – without a relative measure, the claim has no value.

By far, the strongest argument for testing theories comes from Popper (2002). Popper argues with strength and conviction that the only effective way to test a theory is to falsify that theory in practice. That view is, of course, itself a form of theory. And, importantly, has not been falsified. Adopting a metatheoretical perspective (see Wallis, 2008b), I noted how Popper was the product of a modern age. So, his search for modernistic "objective" knowledge seems to have blinded him to other forms of knowledge. By reframing Popper's own ideas, I suggested three paths for the validation and falsification of theory.

In the "world of facts," or data, a metatheory must (at the very least) be constructed of data – explicitly drawn from existing theory. A better metatheory would use data from multiple sources. The best metatheory is one where the theory may be applied to predict what future data will emerge. In the "world of meaning," the metatheory must (at a minimum) make sense to the author. A better metatheory would make sense to the editor, reviewers and readers. At the highest level, a theory is accepted in a consensus of expert opinions and that theory is preferred over other theory of the same domain. Finally, in the "world of theory," a metatheory must (at the very least) include logical arguments. A better theory is one that is constructed of specific propositions. And, the best metatheory is one that is constructed of carefully integrated, co-causal, propositions. The tests within any one of these worlds is certainly of limited efficacy. However, when combined, they create a potent standard for the evaluation of theory and metatheory.

A common argument for advancing the validity of a theory or metatheory is the claim that it "works" in practice. However, by itself, that is a weak claim because anything can be said to work. The deeper question become whether one theory or metatheory (and its derived hypotheses) works better than any other. For example, imagine an experiment where one prays for rain using a variety of techniques and direct those prayers to a variety of deities. I imagine that the results of such an experiment would not show much difference in rainfall. For another example, one might claim that the very popular management change process of Total Quality Management (TQM) is a valid theory because it is widely used, generally accepted, and seemingly successful. However, a more critical analysis find that the TQM fails more than 70% of the time (MacIntosh & MacLean, 1999). The more effective theory, or metatheory, is the one that can be shown to work better than another when applied within a specific context.

Rigorous evaluations should also be applied to those tests, and to the understanding of the context. It is not sufficient, for example, to claim that all theories are acceptable in some context and all theories exist in some context, so all theories are valid (a useless, non-generative,

tautology). So, to conclude this section, it seems that we have the opportunity to identify, clarify, formalize, and apply rigorous methods for testing theory and metatheory.

Theory Bounding

An additional approach related to theory building is the idea of theory "bounding." It is an essentially metatheoretical process to delineate the boundary of a theory. Generally, a theory is bounded by additional explanation of where that theory may be legitimately applied – sometimes called the "limiting values" (Hitt & Smith, 2005). For example, a scholar might make a theory about team development. And, because the research was based in the telecom industry, that theory might be bounded by a statement such as, "This theory only applies to teams working in the telecom industry."[2]

In bounding the science of metatheory, we can say that our realm of study is theory. Further, the theorems that apply to the realm of theory, as a whole, are the theorems that are most central to the science. It is possible, of course, to subdivide the field of study. One might, for example, develop theorems that apply only to theories of sociology, or theories of health care. Such approaches, while they may drill-in to greater depth within a specific area of study (e.g., theories of sociology), are also less central to the science of metatheory, itself.

A legitimate science must be bounded in terms of subject matter. Further, the theory developed through the study of that subject matter might only be legitimately applied to that subject matter. For example, one cannot study galaxies and expect the resultant theories to work very well when used to choose a color for bedroom curtains. This simple idea brings with it some powerful conclusions. For example, if one is attempting to develop a "theory of everything" (TOE) the implication is that one must study everything. The impossibility of this requirement suggests the impossibility of developing a legitimate TOE. It is certainly possible to develop a generalizable abstraction – where a theory developed in the study of one organization may be legitimately applied to another organization. It seems less likely that one can studying a drop of water, develop a theory, and apply that theory to understand human development. Where exactly one draws the line is a matter for continued investigation.

D - Induction

An important part of science is the building of theory. And, in the field of metatheory, the building of metatheory (Craig, 2009; Gadomski, 2001; Wikipedia, 2009). As with the creation of theory, the process of metatheory creation is essentially one of induction – where a metatheoretician identifies related propositions within two or more theories and integrates them to generate an overarching metatheory or derive a rule for the analysis of future theories. By way of context, the inductive process begins with an abductive experience, "a surprising observation or experience. This is what shatters our habit and motivates us to create a hypothesis that might

[2] Yet, in theories of physics, we see no such bounding. For example, Ohm's I=E/R relates to volts, amps, and ohms of resistance. Those are the aspects of the theory, and they do not apply to other things such as color or emotion. Therefore, it seems to make more sense to suggest that a theory is self-bounding – based on its constituent propositions.

resolve the anomaly" (Van de Ven, 2007, p. 101). Also, the inductive process may be seen in contrast to the deductive process, which is related to the testing of theory.

Drawing on Weick, Van de Ven suggests that from the myriad hypotheses, one might find the best theory by subjecting those hypotheses to a variety of thought-trials. "The greater the number of diverse criteria applied to a conjecture, the higher the probability that those conjectures which are selected will result in good theory" (Van de Ven, 2007, p. 109). While his approach may also prove useful, it also has a fatal flaw. Because, if one uses ten criteria, nine of them might be useless. In such a situation, the other nine that are not causally related to theory-improvement would overrule the one criterion that might result in a better theory. This is the same kind of problem faced by most people during an election campaign. One receives a flood of information, yet little of it has any true bearing on the qualifications of the candidates! Instead of developing a list of criteria, Van de Ven rests on the bench of "plausibility" Thus returning to a more or less intuitive form of evaluation. He extends that idea to link plausibility with conjectures that might be interesting to readers such as problems in society that need to be explained. This "appeal to the audience" is not a strong argument. Indeed, instead of leading to good theory, such an approach might lead authors to invent problems so that they may write persuasively to "explain" those problems and create supposedly "good" theories and metatheories.

This might be good literature but it is not good science – from the modernist perspective. And, as a result, the suggestion does not rise to the level of good metatheory. At this stage, however, there may be no way to avoid the rather abductive nature of the process. Instead, that moment where we think to ourselves – "That doesn't make sense!" – is the moment when we begin a sense-making process. With careful effort, we find that something makes sense that did not before. This is part of making implicit assumptions explicit; an important part of metatheory (Dervin, 1999).

As the evidence of theory is collected, combined, analyzed, and insights begin to emerge, the results begin to resemble the integration of multiple theories – an important part of metatheory (Anchin, 2008b; Ritzer, 1988). Some tools of theory building include:

- Intuition
- Observation
- Abstraction
- Creating propositions
- Defining key terms
- Describing the domain of application
- Identifying the units of analysis
- Sampling some appropriate and relevant set of theories
- Analyzing the "data" using rigorous research methods
- Identifying core constructs and their interrelationships

In a detailed review of the *Handbook of Sociological Theory*, Treviño (2003, pp. 284-286) notes several forms of theory construction including: Jasso's suggestion to engage in voracious reading and use of mathematics, Carley's creation of computer simulations, Joas and Becket's synthesis of existing theory, Turner and Boyns' consolidation of theory within a grand analytical

scheme, Bailey's reduction in detail to focus on concepts, Lopreato's call to discover general principles, and Lindenberg's method of decreasing abstraction. From a complexity theory based approach, Ostroff and Bowen (2000) encourage theorists to note the degree of stability and change that occurs at each level under analysis. Also, Morgeson and Hofmann (1999) provide guidelines for theory-creation. Their process involves delineating the structure, function, and outputs of a given system. However, this view of an organizational system seems to be more descriptive than theoretical and Dubin (1978, p. 12) notes that theory is not merely describing, categorizing, or stating a hypothesis).

Sussman and Sussman (2001, pp. 90-92) claim that the golden rule of theory development is to make one's hunches explicit by writing them down. This, they contend, also includes an assumption that the reader will be able to see more easily whether the theory is likely to be effective, and show who will benefit. To facilitate this process, they suggest four criteria for theory building (that may also be used for theory testing).

1. The theory should be plausible – it should make sense.
2. There must be enough variables within the theory so that the theory is useable.
3. The theory should be testable.
4. There should be a heuristic value to the theory – it should be useable across multiple situations.

The rules that apply to theory building also apply to metatheory building because each metatheory is also a theory – albeit one whose domain is understood as the study of theory. Importantly, combining, and integrating, multiple theories is an inherently metatheoretical process. Some call the results theory, while others call the results metatheory. However, because all theories are built from previous theories (or, a combination of existing theories and new data), and no difference has been shown in application between social theory and social metatheory, the two may be considered synonymous. This indicates an important area of study for the field of metatheory. Because, if it can be proven in application that metatheories are more effective than theories the social sciences, as a whole, will have taken a giant leap forward.

The existing state of metatheory building is, unfortunately, impoverished in regards to suggestions for building theory. One important source of information on how to perform metatheory building comes from the literature on the construction of middle-range theory. For example, Mintzberg (2005, pp. 361-371) encourages theory builders to use their intuition and to "be brave." This might, conceivably, lead to brave theories, but there is no way to test the bravery of a theory (or the theorist). Nor is there any suggestion that a brave theory might be more effective in practice. Therefore, the theorist should be very wary about accepting advice that leads to untestable theories. For those theories cannot be tested cannot be improved. The same advice applies to metatheoreticians.

When building metatheory, the data used comes from the analysis of extant theory. Metatheoreticians investigate existing theory and extract or acquire insights from that set of theories. For example, one may look at a set of theories and perhaps categorize them (e.g., complex or simple) and abductively identify a categorical rule (e.g., parsimonious theories are easier to test and complex theories cover more ground). From what might be called a "content

metatheory" perspective, one may look at a set of theories – each containing a different set of concepts. One might conclude that all valid theories must include some (or all, depending on the rule) of that set of concepts. Van de Ven (2007) suggests that the process of abstraction, when correctly applied, can increase the generality of a theory (because a more abstract theory can be applied across a broader range of situations). Abstraction also makes it possible for a theory to become less complex while increasing accuracy.

While most suggestions for theory building are "one-shot" bits of advice (e.g., be creative), a more complex and rigorous approach is to transparently follow a particular methodology. One such methodology, designed specifically for metatheory is Reflexive Dimensional Analysis (RDA). RDA was derived from grounded theory, as well as dimensional analysis (Wallis, 2006a, p. 7). Because it involves constructing new theory from the combination of existing theories, RDA is essentially a metatheoretical process. RDA proceeds according to the following steps:

1. Define a body of theory.
2. Investigate the literature to identify the concepts that define it.
3. Code the concepts to identify relevant components.
4. Clump the components into mutually exclusive categories.
5. Define each category as a dimension.
6. Investigate those dimensions through the literature, looking for robust relationships.

Examples of this form of theory construction may be found in benchmark studies of complexity theory (Wallis, 2009a), complex adaptive systems theory (Wallis, 2006a, 2006b). Another approach that deserves some attention is the process of Grounded Theory (GT). GT is a rigorous process of theory creation (Glaser, 2002) representing a structured methodology for theory creation with good potential for use in the creation of metatheory. Importantly, GT could provide a clear link between the data (theory, in our field) and the resulting metatheory by moving the data through a set process (Goulding, 2002) that can be summed up as:

1. Coding the data
2. Thematizing the data
3. Finding relationships between the themes

Grounded theory suggests the use of an "open coding" process. There, the researcher intuitively codes the data. In that sense, the first step might be seen as an a priori one. In contrast, in the process of thematizing the data, the research is to look at the coded data and identify common categories for grouping them. This process might be seen as essentially a posteriori in the sense that the researcher begins with data, and then identifies a relationship. Similarly, the third step of finding relationships between the themes suggests an a posteriori approach – albeit one that calls for more creativity and abduction.

The iterative interactions between research and data, as well as developing relationships between the themes suggests a generative approach that is reminiscent of the mélange of social construction. Also, each step of the process is documented for transparency. However, with grounded theory, the process is surfaced for clarification. One of many examples may be seen in the development of a complex (yet useful) integrated strategic planning framework for dynamic

industries using Grounded Theory (Tsai, Chiang, & Valentine, 2003). It has yet to be shown if either grounded theory or RDA might be repeatable. Although, it seems that both methods seem like they would have a higher level of repeatability than (for example) intuitive methods of theory building.

To summarize the more general conversation on the construction of metatheory, it seems that metatheory has offered little that is new in terms of theory building. Our field has adopted calls for triangulation (framing this as the use of multiple theoretical lenses). Authors with a focus on metatheory have echoed calls for techniques such as imagination and discipline. And, they have (to a small extent) formalized existing approaches to theory building. This lack of rigorous methodology may account for some criticism of metatheory. Similarly, for the process of building metatheory, I have only seen scholars use the same tools as have been used for building theory. Therefore, in looking at metatheory, theorists are able to see and criticize in our work what they do not see in their own. That is, a lack of methodological rigor. This lack of rigor may be exemplified as the lack of repeatability in the process of theory creation.[3]

It may be impossible to develop repeatable experiments for theory creation because the origins of theory seem shrouded in the mists of imagination. Who is to say exactly where Newton's ideas for laws of motion arose? In this, I do not refer to some apocryphal apple, rather the formal mathematical relationships. The inspirations and ideas are lost in moments long past. In the study of the creation of metatheory, on the other hand, explicit theories and metatheories remain for study. This may indicate a more fruitful direction for the advancement of a scientific field of metatheory – which will be explored in the following sections.

E - Repetition

Repeatability has long been a mainstay of science. For a negative example, about twenty years ago, two physicists claimed that they had achieved nuclear fusion at room temperature (instead of the millions of degrees of temperature required by generally accepted theories of physics). They shared their news with the world, and many scientists eagerly repeated their experiment. However, the same results were not forthcoming. This attempt at repetition allowed the world to quickly determine what worked and what did not.

Innovation, as with theorizing, is also important to the process of metatheorizing. Used by itself, however, it may take on the appearance of blue-sky speculation. In a science, we balance the trend toward speculation by applying the more rigorous standard of repetition. Applying the process of repetition to scientific metatheory, we might expect (from a modernist perspective) that two scholars who begin with the same source data and apply the same techniques for metatheory building, while working to address the same topics, should develop the same

[3] Dubin notes that the process of theory construction may be inescapable as man creates models of the sensory world then uses those models to comprehend the world. Or, put another way, a theorist is one who observes part of the world and seeks to find order (Dubin, 1978, p. 5-6). While it may be inescapable, that does not mean it is hopeless or useless. For example, we cannot negate gravity, but we can use it to our advantage (e.g., downhill skiing, accelerating space probes through a "slingshot effect," enjoying the benefits of rainfall, and more).

metatheory. However, to the best of my knowledge, this kind of study has never been attempted. This lack of repeatable studies suggests a great opportunity for metatheoretical study.

For example, a teacher or researcher could conduct a classroom exercise by providing a set of theories to three (or more) groups of students – with the assignment that each group should develop a set of metatheoretical insights based on the data set. The results should prove interesting – and highly stimulating to the science of metatheory. It may be expected that each group of students might employ a different methodology – and perhaps have different aims in their exercise. One group might simply combine all the theories to create one large (and amorphous) theory. Another group might identify similarities of structure between the theories, while a third group identifies new insights based on what the existing theories did not cover. In short, without some guide, it is unlikely that there will be repeatability in the science of metatheory.

In light of the difficulty of obtaining repeatable results in the creation of theory, it may be more useful to develop formal tools for the analysis of theory. These should be rigorous so as to enable repeatability. This is not, in any way, to restrict the imagination and creativity of the metatheoreticians (which, fortunately, is rather irrepressible). Instead, this is to channel that creativity to where it might be more usefully applied to advancing the science[4]. In short, in order to have repeatability, we must have the rigorous methodology of critical analysis.

F – Critical Analysis

Where the tree of metatheory is beginning to blossom is in the area of critical analysis. The idea that theories may be evaluated seems to instill some with a sense of dread (Fiske & Shweder, 1986, p. 2); as if any method for evaluation must somehow be arbitrary. Yet, it is important that we evaluate theory to ascertain if it is, indeed, a valid theory. And, those methods of analysis need not be arbitrary. Without some form of objective evaluation, we are left with a situation of complete relativism which renders everything meaningless (D. T. Campbell, 1983, p. 124).

The analysis of theory is an inherently metatheoretical exercise – as in Ritzer's M_u (Ritzer, 2001, p. 18) and occurs more frequently than most imagine. For example, every academic paper involves the implicit and/or explicit examination of extant theories, a consideration of which theories (or parts of theories) might be suitable for advancing a new theory or research project. What is being coalesced and clarified here is a set of evaluative methodologies that might be called metatheorems because they are useful for conducting metatheoretical analysis. This, of course, is rather different from the kind of "metatheories" that would be understood as

[4] Imagine a poet who is using a word processor. Each time she types a word; the computer inters a random word in its place. Can poetry be made this way? No – the very process of creativity requires reliable tools. During the scientific revolution, each scientist had his own theory – a very creative situation. Today, each person still has the opportunity to have his or her own theory. Yet, there is one prevailing (perhaps dominating) set of laws for electricity. While some might see those laws as infringing on more creative interpretations, I would suggest that those laws enable creative work in the design of electronic devices such as cell phones and computers. And, in turn, those devices enhance creativity, art, and communication in myriad ways.

overarching a range of theories and/or disciplines. Both of these, of course, are different from "metatheory" as the entire field of metatheoretical endeavor.

To the extent that the metatheoretical methodologies described in this paper are fuzzier, they will be less useful to the development of metatheory as a science. To the extent that they are more rigorous and repeatable, they will bring the field of metatheory closer to the status of a science. In this, one may conduct fuzzy metatheory and be legitimately accused of conducting bad science. However, before the accusation may be considered valid, we must have reliable, repeatable, critical methods of analysis. In this section, I will present a number of methods as a way of starting a conversation that will allow us to keep criticism in its appropriate place.

Within the study of metatheory, there is broad agreement that the analysis of theories is an important part of metatheory (Bondas & Hall, 2007; Bonsu, 1998, August; Colomy, 1991; Faust, 2005; Faust & Meehl, 2002; Finfgeld, 2003; Paterson, Thorne, Canam, & Jillings, 2001; Ritzer, 1988; Weinstein & Weinstein, 1991; Zhao, 2010). Indeed, given the breadth of that agreement, critical analysis be considered central to the field of metatheory.

In his recent book, Edwards (2010, pp. 206-214) applies an impressive array of tests that may be applied to metatheories. Derived from Ritzer and others, these include:

- Nesting – ensuring that the metatheory is grounded in theory.
- Linkage – identifying and describing relationships between conceptual elements of theories.
- Comparative Techniques – qualitative comparisons and calibrations between theories under analysis.
- Conservation – integrating theories without supplanting them completely.
- Uniqueness – does the metatheory provide something new?
- Parsimony – keeping to the minimum number of explanatory factors needed.
- Generalizability – what other areas of research might the metatheory be applied?
- Level of Abstraction – how many variables and theories might be integrated?
- Internal Consistency – how relevant are the lenses of the metatheory to one another?
- New Factors – can a new theory, or lens, be identified?
- Relationships Between Factors – have the theoretical lenses been carefully identified, and linked and have the internal facets of each lens also been identified?
- Credibility – is the underlying logic reasonable?

Advancing these methods to the point where they may be applied with objective, repeatable rigor will be a boon to the science of metatheory. Among the more objective methodologies developed for the critical analysis and evaluation of theories are:

- Complexity – as a measure of parsimony (Ross & Glock-Grueneich, 2008).
- Static Robustness – as a measure of the internal integrity of a theory (Wallis, 2008a).
- Dynamic Robustness – measuring the stability of a theory as it moves between scholars (Wallis, 2009b).

It is important to note that while these essentially metatheoretical methods have been applied to the analysis of theories, they have not been applied to the analysis of metatheories. So, again,

the field of metatheory could benefit greatly from continued investigation along these lines. In the following sub sections, I will briefly describe a number of other methods that may prove useful to the metatheorist.

Categorization

One approach for conducting metatheoretical analysis is categorization. This is a fairly simple method for conducting metatheoretical analysis, which aids in the process of generating metatheory. One way of looking at the processes of metatheorising is to combine the models of Ritzer (2001) and Colomy (1991) which categorize metatheoretical activity based on the aims of the researcher. This gives us four categories of metatheorising: (a) reviewing the theories within some domain, (b) preparing to create middle-range theory, (c) creating an overarching metatheory and (d) determining the strengths and weaknesses of other theories and metatheories.

Another method is suggested by Gregor (2006, p. 620). Her five interrelated types of theory are distinguished as: (a) theory for analyzing, (b) theory for explaining, (c) theory for predicting, (d) theory for explaining and predicting, and (e) theory for design and action.

Kaplan (1964) suggests six forms of structure for theoretical models. His forms of structure include a literary style (with an unfolding plot), academic style (exhibiting some attempt to be precise), eristic style (specific propositions and proofs), symbolic style (mathematical), postulational style (chains of logical derivation), and the formal style. This last, the formal style avoids “reference to any specific empirical content” to focus instead on, “the pattern of relationships.”

It is also possible to categorize theory in a number of other ways. For example, one might create a category based on some specific context (historical, geographical, etc). Similarly, one might also describe a history of theory, identify schools of thought, or identify geographical differences (e.g., European and African) in the origin or use of theory. Each of these methods, and many others, may provide useful to scholars. Categorization, however, does not necessarily require a deep engagement with the theories under analysis (although, of course, it might). For example, one might engage in a metatheoretical categorization of existing theories by the date those theories were published. In such an approach, one need never look at the theory at all. Therefore, while it may be useful in some context, categorization may not be central to the field of metatheory.

General Norms of Validation

Kaplan (1964, pp. 311-322) discusses the validation of theories in terms of three types of norms (correspondence, coherence, and pragmatics).

Norms of correspondence. "Truth itself is plainly useless as a criterion for the acceptance of a theory." Indeed, an appeal to facts rests on a bedrock of common sense; yet, those presuppositions also stand in the way of scientific advance, "and progress has required the courage to thrust them aside." "What counts in the validation of a theory, so far as fitting the

facts is concerned, is the convergence of the data brought to bear upon it, the concatenation of the evidence - beautifully illustrated, to my mind, in Ernst Jone's essay on Symbolism."

Norms of coherence. This norm suggests that new theories must be fit into the existing body of theory. In this area, Kaplan discusses the simplicity of a theory, and the need to assess that theory in comparison to other theories. Essentially asking which is the best theory to use for a particular situation.

Pragmatic norms. This norm asks if the theory seems to work in practical application. Interestingly, he also notes, "From this standpoint, the value of a theory lies not only in the answers if gives but also in the new questions it raises."

For each of these three norms, Kaplan notes strengths and weakness - essentially suggesting that no one norm by itself is sufficient for judging the efficacy of a theory. These three norms may be understood as general categories for other forms of analysis.

Maturity

Another approach to critical evaluation suggests that a more effective model might be understood to be one that is more mature. (Commons, Trudeau, Stein, Richards, & Krause, 1998) develop innovative and useful insights into the structure of theoretical models. They accomplish this by drawing a parallel between the less-understood development of models and the better-understood development of individuals, organizations and cultures. In each area, the system that is understood as more evolved is the system that is more complex. In their maturation model of theory, the stages are:

1. Abstract Stage (stories become cases, events are abstracted to data).
2. Formal Stage (two or more Abstract Stage variables are related).
3. Systematic Stage (developing simple hypotheses from Formal Stage relationships).
4. Metasystematic Stage (creating models that account for all relevant relationships).

Importantly, in this maturation model, the “Systematic Stage” is one where there is a formal description of how variables interact in relation to one another. This stage requires “multiple input variables” and may suggest multiple outputs as well. This view stands in contrast to less complex (and so less mature) models that suggest simple, linear, causality. Creating a parallel between complexity and some sense of maturity seems to have validity – and is reflected across a broad section of literature.

Strong Actuarial Thesis

Yet another approach (or set of approaches) is suggested by the Faust-Meehl “strong actuarial thesis” which surfaces the difficulty of evaluating theories and asks, “What features of theories predict their long-term survival?” and, “To what extent are those features similar across disciplines and domains?” (Faust & Meehl, 2002, p. S186). Usefully, Meehl (1992, pp. 408-426) examines many forms of theory evaluation and describes the weaknesses of each (empirical studies, ceteris paribus, simplest explanation, aesthetic beauty, logical possibility, unconnected

postulates, reducibility, etc). And (Meehl, 1992, p. 438), suggests that logical-mathematical theories are more true/accurate/useful than explanatory theories.

Causal Structure

Stinchcombe (1987) suggests another form of analysis. Specifically, he investigates the causal structure between the concepts within a theory. These methods provide useful guidelines for graphically mapping the structure of a theory. Among his interesting insights, he explains how to critically analyze a theory to remove useless aspects – thus rendering the theory simpler, with little or no loss of explanatory power. For an abstract example, consider a theory that describes causal relationships between three observable things. Changes in A cause changes in B that cause changes in C. This theory has three concepts connected by two linkages. If we are using this theory to understand the end result "C," Than the intermediary "B" is extraneous. The theory might just as well say that, A causes C.

Propositional Analysis

A theory or metatheory may be understood as an "ordered set of assertions" (Southerland, 1975, p. 9). Yet, this begs the question of how well ordered these assertions actually are. One answer to this problem is seen in the use of propositional analysis (Wallis, 2008a) which appears to be the most rigorous method for analyzing a body of theory. This multi-step process begins by finding the propositions within the body of theory. Those propositions are then compared with one another to identify overlaps, and redundant concepts are dropped. Next, the propositions are investigated for conceptual relatedness. Those aspects that are causal in nature are linked with aspects of the theory that are resultant. Those concepts that are explained by or resultant from two or more other concepts are considered to be "concatenated."

Concatenated aspects are privileged because they are better explained than others – to the extent that the better understanding is transcendent. Bateson (1979) describes how two eyes are better than one because the two views combined also provide the viewer with depth perception – something neither eye alone could achieve. Similarly, it is generally accepted that when two people combine their views on a single topic, a new and more comprehensive view emerges. Or, from a metatheoretical perspective, two lenses of theory are better than one.

The formal "robustness" of the theory is then determined by dividing the number of concatenated aspects by the total number of aspects to provide a number between zero and one. A value of zero represents a theory with no robustness – as might be found in a bullet point list of concepts. A theory with a value of one suggests a tightly structured theory, such as Newton's F=ma. For an abstract example, lets say we have a theory consisting of the following propositions: A is true; B is true; A causes B; Changes in B cause changes in C; Changes in D and changes in C cause changes in E. There are five aspects (A, B, C, D, and E). Of those five, only E is concatenated (D and C cause E). This gives a ratio of well-integrated aspects to poorly integrated aspects of 0.20 (the result of one divided by five).

This represents an important advance in the critical evaluation of theory for at least three reasons. First, because it provides an alternative logic for understanding theories. Second,

because it provides a method for objectively delineating the structure of a theory. And, third, because progress in advancing theory toward a measurably higher level of structure seems to be related to advancing a theory toward revolutionary improvement in theory and practice (Wallis, 2009c).

Litmus Test

In conversations, some scholars have reported to me that they apply a "litmus test" to theories and metatheories as a way to determine validity. For example, one might say, "Any theory that purports to promote freedom is a good theory." While this appears to be a laudable goal, it is a weak scientific standard – primarily because it must fall back on other theories and other interpretations. It begs all sorts of questions such as, "What does it mean to promote?" or, "What is freedom?" and, "Freedom for whom? Or "Freedom for how long?" Further, it leaves unanswered questions about the actual efficacy of the theory or metatheory. A problem highlighted in the phrase, "freedom is slavery" (Orwell, 1949, p. 7). In short, simple litmus tests do not seem to be good science. They are essentially an act of faith or intuition.

When theorists and metatheorists resort to litmus tests or intuition in place of rigorous, repeatable, analysis, it may be because the more rigorous methods are not well understood, or there may be a cultural bias against their acceptance. Whatever the reasons for past analyses, our science would benefit from the continued development, articulation, and application of these methods in analyses of theories and metatheories, alike. These methods need to be developed both individually, and in comparison with one another. One pioneer in this area is the late Paul Meehl. Meehl found that parsimony is the most used, and most problematic of the claims for the validity of a theory (Meehl, 2002). More frequently used, though less specifically cited, is the test of "logic"(e.g., Wacker, 1998). This test is so common that it has faded into the background. It is simply assumed that each theory has some logic to it.

Indeed, it may be said that a theory is constructed of logical arguments (e.g., Gregor, 2006). And, that logic may be accepted as a routine test for theories undergoing peer review. However, that approach has proved insufficient to the task of advancing theory. Possibly because there is no clear demarcation for what Set of logical arguments is better than another. That is to say, the logical arguments need only be "good enough" (whatever is appropriate for the needs of the journal). One problem with logic is that it is often constructed in "chains" (A is true because of B, B is true because of C, etc) (Steiner, 1988). Steiner concludes that the last link of a chain remains undefined. So, although one may claim validity based on acceptable logic for a theory, there often lurks the unspoken method of intuition.

Meehl (1992, p. 358) notes that there are few or no metatheoretical rules of what he calls "universal form." Therefore, metatheorists have nothing to guide them but their intuition. And, studies have shown intuition to be unreliable (Meehl, 1992, p. 370). Meehl (2002) also argues at some length against intuitive methods of evaluation because intuition has been shown to be a weak tool for evaluation – even among experts working within their own field.

To conclude this section on forms of critical analysis, we should note that some of these forms might be more useful than others, depending on the needs of the metatheoretician. For example,

if one is conducting a historical analysis of theory, the process of categorization might be more useful. If one is comparing theories to determine which might be best applied in practice, one may be better off choosing propositional analysis. There is a great opportunity for investigating these forms of analysis. They could, and should, be tested and compared with one another to identify the efficacy of each approach in various fields of study and for various purposes. Given the range of tools presented in this section for the metatheoretical analysis of theory, it should be apparent to the reader that she or he need not rely on weak tests of logic, litmus, or intuition for evaluating theory or metatheory.

G – Verification and Testing

It is absolutely imperative for the advancement of any science that the work be exposed to scrutiny; including peer review and assessment. Without the dissemination, comparison, and testing of theories and metatheories, one may become a lone hermit, talking to one's self and digging one's self deeper into some self-satisfying view of the world. It is much better for the science if we develop more useful, shared, understandings. Some metatheoretical models may be held and even used subconsciously – used, but never detected or explicated. In order for the theory to make sense to others, the theorist must surface tacit mental models for explanation and publication.

As analysts, we escape the trap of our own assumptions by making our theory and methodology explicit (Scheff, 1997, p. 142). Without that clarity, we incur at least two problems. First, we may be overwhelmed by data. Second, we are less able to perceive what is new or different. By having data, we might know *what* but not *why*. We become trapped by seemingly inescapable facts. With theory, we transcend – we gain a new perspective and are able to take action. This is the importance of metatheory – that starting assumption that we may understand the world (and ourselves) in a different way – that we may become more than we are. Following this path, we may more easily gain the ability to change our world and to change ourselves.

In *Cultures of Inquiry*, John Hall (1999) describes a "third path" of inquiry that is primarily neither objective nor subjective, rather is essentially reflexive where meaning is created in a socially constructed sense. Similarly, Ofori-Dankwa and Julian (2001) work to identify a bridge from the traditional notions of theory building, and novel, paradoxical approaches that reflect complexity and chaos theory. Where an individual metatheorists might build a metatheory from one of these, or another of many approaches, those approaches are still rooted in the individual – however carefully contemplative and reflexive that individual might be. In a science of metatheory, another level of reflection is gained by exposing a metatheory to social evaluation.

In the following section, I will investigate the arguments for a postmodern approach to science, review a range of postmodern approaches to scientific inquiry, and investigate how these approaches might be applied to the study of metatheory.

From Modern to Postmodern

Kitcher (1993, p. 7) notes how "there is no theory-neutral body of evidence to which scientific theories must conform." This, theory-laden nature of (so-called) facts is reflected in the study of

metatheory. That is to say, there is no metatheory-neutral body of theory. Each of us has a set of assumptions (a.k.a. models, mental models, schema) that shape the way we understand and engage. The same applies to the way we engage theory (and metatheory). This view appears to hold true for modern and postmodern approaches. Historically, "The postmodern period follows the supposed triumph of science and rationality, calls into question, and produces an array of diverse and divergent conceptions of knowledge" (Bentz & Shapiro, 1998, p. 1).

To understand something, one approach of modernist science is to idealize it. That is to say, to assume that everything behaves in a certain way. Applied to humans, one might assume that "all humans are rational decision makers." These kinds of assumptions may be useful in that they allow the researcher to have a set assumption upon which to build additional work. One problem with this approach is that those assumptions are always illusory. There is no way to be completely objective – to understand some absolute truth, because there are always assumptions.

There is no real way to avoid this. Modernist science tried very hard by differentiating scientific inquiry form political, artistic, and religious inquiry. As a result of those reductionist assumptions, fantastic advances were made. As another result, we are starting to see some of the weaknesses of those assumptions – including the weakness of reductionist thinking, itself. Kitcher (1993) engages this conversation at great length and depth. And, he concludes, that we should not attempt to rid ourselves of modernist science. Rather, we should seek to change it – to enrich it. One way to do that is to integrate modernist science with postmodern insights into the value of religion, art, human interaction, creativity, and values.

Objective truth does not seem to exist. And, if it does, we humans do not have access to it. What we do have is the ability to access multiple ways of understanding. We can sit in the presence of a person, we can admire the beauty of a work of art, and we can revel in the novelty of surprising insights. If we attempt to engage the world with a single method, we become guilty of methodolatry. To avoid this trap, "scholars have urged researchers to put aside their theoretical silos to uncover the potential of using interdisciplinary theoretical perspectives in research." Using, "border-crossing notion of bricolage," combines multiple methods as appropriate to the research context (Abes, 2009). This brings to mind Bateson's "double description" (Bateson, 1979). His essential idea is that we may reasonably ignore concerns for objectivity or ultimate reality and pragmatically accept that two descriptions of something are better than one.

Modernist approaches to science tend to seek an absolute truth about the nature of reality. This totalizing view discounts alternative views, approaches, and ways of knowing. Thus, modernist science serves as a point of view – a metatheory that both enables and restricts how a user of that view approaches the world and investigations of the world.

Postmodernism, on the other hand, stands in contrast to this monolithic view. Lyotard (1984), for example, suggests that it makes more sense to see society as a range of dualities and oppositions, rather than some undifferentiated whole. For Lyotard's postmodern view, science is about the process of conversation, not some pile of knowledge. Similarly, Shotter and Tsoukas (2007) decry the absolutist position and argue for its replacement with approaches that are intuitive and contextual. Calás and Smircich (2005), for example, question the faulty logic of

modern knowledge and suggest a range of new logics to support research that will foster change and emancipation.

Broadly, postmodernism suggests multiple paths for investigation and ways of knowing. There is not a single storehouse of well-ordered knowledge. Rather, "Knowledges are incomplete and disordered" (Law, 2010, p. 8). Therefore, it is useful to recognize that knowledge is always situated in a particular context. And, recognizing that there are multiple ways of knowing, we should learn to tolerate the differences between them so that we can explore those differences, rather than attempt to privilege one over the other. Deetz (1996, p. 191) seems to agree – exhorting readers to "Fight the tendency to reduce conceptions to categories or reduce sensitizing concepts to definitions." There are difficulties and dangers in categorization because that which reveals also conceals.

Specifically, Chia (2005) notes some contrasts between modern and postmodern approaches. Modernism emphasizes differentiation, simple-location, classification, and representation. And, in contrast, postmodernism is more about process, movement, interpretation, and change. The imperatives for postmodernity, he argues, are: (a) Change – that might be understood through history; (b) Workability or usefulness of a theory; (c) Attention to surprise – seeking what is not there and appreciating accidents and novelty.

From another postmodern approach, Law (2009) talks about performativity – how we can enact realities. Generally, he suggests that good postmodern research includes: (a) Looking at our practices - what is being done and how it is being done, (b) Avoiding the assumption that there is an absolute reality beyond what we experience, (c) Asking about how processes turn representations into "windows on the world" (d) There is no way to escape from practice, (e) Look for gaps between practices and realities.

However, postmodern inquiry is not entirely about practice. For example, Rosenau notes how, "For these [skeptical] post-modernists, theory is reduced in stature, but they neither reject it altogether nor call for an absolute equality of all theories" (Rosenau, 1992, p. 22). Which is a fortunate because if postmodernism did not recognize the legitimacy of theory, there would be no opportunity to write about postmodernity (as every form of writing is a form of theory as well as a form of practice). Shotter and Tsoukas (2007) similarly decry the absolutist position that science should replace our intuitive understanding of a situation. Instead, they suggest that reflective conversation within a specific context (rich in description) and everyday use of language should be applied. However, their description of the process seems remarkably like the process of induction - as such talk may lead easily to theories and practices. So, again, we find ourselves back in the realm of theory.

There are (appropriately) a wide variety of postmodern approaches to inquiry and so science. The following table provides a distillation of some approaches by a dozen authors. From this, I hope the reader will gain an appreciation of the vast range of possibilities for postmodern scientific exploration. And, I hope, be encouraged to develop more approaches.

Table 2. Aspects of postmodernity as defined by various authors

Author/s	Year	Anything goes	Avoid categorization & definition	Avoid Ontological arrogance	Deconstruction (includes undercutting privileged texts)	Contextual nature of knowledge	Narrative	Hermeneutic	Paradox	Complexity	Uncertainty / unpredictability / ambiguity	Change	Critical	Reflexive	Interpretation	Introspection	Artistic	Intuition	Humanistic	Awareness of human condition	Emancipation – Who benefits - Justice	Values	Naturalistic / Feminist / NeoMarxist	Educative	Action-Research	Praxis-oriented / Experimentation (usefulness)	Phenomenological	Observe & communicate with others	Practical / Workable	Constructivist	Develop underlying rules for understanding
Rosenau	1992	X			X		X								X	X													X		
Deetz	1996		X																												
Critchley	2001							X																							
Argyris	2005																								X						
Murray	2006								X	X	X																				
Lyotard	1984							X					X	X								X									
Smith	1999				X			X					X		X						X		X	X	X	X		X		X	
Kofman	2010			X																											
Chia	2005										X	X						X		X						X					
Law	2010					X				X	X															X					
Bentz & Shapiro	1998							X							X	X										X		X			X
Kitcher	1993																X		X									X			

From a postmodern perspective, as you may infer from the above table, there are more than a few ways to conduct scientific inquiry, "So, it is not at all the case that there is something like a unified "scientific method" that governs all intellectual inquiry" (Bentz & Shapiro, 1998, p. 86). Inherent in this diversity is that idea that we can continue to develop new (and more diverse) approaches that may have some validity and usefulness in a postmodern context. And, to a greater or lesser extent (as with modernist approaches), these postmodern approaches might serve as useful indicators of progress for a science of metatheory. In the remainder of this section, I will investigate some potential benefits and limitations of these postmodern concepts as they relate to metatheory.

Anything goes is a difficult thing to measure. In the present context, it seems related to the idea that we should *avoid ontological arrogance*; and, in that process, strive toward more creative approaches to analysis. Indeed, we are not restricted to a single mode of analysis, rather we have a range of possible methods – and that range continues to expand. When applied to metatheoretical analysis, this suggests that it is valid to develop new methods of validation. Although, it should not be seen as ruling out existing approaches.

Deconstructing existing texts (especially those that appear to be privileged) is a process that is inherent to metatheory. Because those texts are the subject of analysis, it is difficult to avoid some form of deconstruction! There is also an important piece of recursion here because metatheoretical methods are themselves theories. Therefore, it is possible to use metatheory to deconstruct metatheory. We might measure the rate of deconstruction by tracking the level at which the deconstruction of a theory occurs. For example, a postmodern researcher might write in general terms about a theory (as a whole) – and that might represent an engagement on one level. If the researcher analyzes the propositions of a theory, that is another level. Then too, if the researcher investigates individual words - that is still another level. Deconstructing on all three of these levels (or any two) would be more effective than using any one.

In contrast to the modernist desire for objective knowledge, the postmodern approach recognizes the *contextual nature of knowledge*. For an analysis of theory, a metatheoretical approach might simply accept and appreciate all theory as providing useful material. Or, it might be said (for example) that a particular analysis will investigate theory from a specific context, perspective, or draw on theory from a specific source (e.g., theories of the 21st century). Identifying the context may be a form of categorization. For example, only theories made in the 20th century would be considered valid in a study of 20th century theory. It is also useful to recall that a process of social construction may serve to create new contexts. For example, Lyotard (1984) explains:

> From this point of view, an institution differs from a conversation in that it always requires supplementary constraints for statements to be declared admissible within its bounds. The constraints function to filter discursive potentials, interrupting possible connections in the communication networks: there are things that should not be said. They also privilege certain classes of statements (sometimes only one) whose predominance characterizes the discourse of the particular institution: there are things that should be said, and there are ways of saving them. Thus: orders in the army, prayer in church, denotation in the schools,

> narration in families, questions in philosophy, performativity in businesses. Bureaucratization is the outer limit of this tendency. (Lyotard, 1984, p. 14)

The *hermeneutic* nature of metatheory also lends itself to the postmodern perspective. That is because theories, the subject of investigation, are inherently textual. Here again, it is important to qualify and quantify the range and number of theories that are involved in an analysis. It would not be good science to say (for example), "I developed a metatheory based on some theories." The sources of those theories should be clearly articulated. A good practice for our nascent field of study might be to include our data – either in quotations within the text or in an appendix. That way, it is easier for other members of the metatheory community to evaluate the process and the results.

When one is exploring existing theory, the postmodern perspective offers an important, and interrelated set of relationships to look out for. Within one theory, or between two theories, one might seek to identify instances of *paradox*. This offers opportunities for finding new insights when the paradox is appreciated (perhaps experienced and embodied) and resolved. Galileo's experience provides one example of this approach. In ancient times, the prevailing theory of downward motion was that small objects fell slowly while large objects fell quickly. Galileo wondered what would happen if a small object were connected to a large object. And, through that thought experiment, recognized a paradox of the prevailing theory. That recognition impelled him to drop objects from tall buildings and so develop better theories of gravity. We might, enumerate the number of paradoxes found within a between theories as a simple path to evaluation.

Similarly, in studies of theory, we have the opportunity to investigate the *complexity* of theories and bodies of theory. Indeed, the complexity of a theory may be an indicator of that theory's maturity – suggesting a useful way to measure the potential usefulness of that theory (Ross & Glock-Grueneich, 2008). This approach may be easily employed by enumerating the concepts and/or connections within a theory. Theories may then be easily compared on at least one dimension. An opportunity exists here for a metatheorist to enumerate all the forms of enumeration within theory.

Because theory may be generally understood as a tool for reducing uncertainty (by providing an explanation of events), the idea of investigating the *uncertainty* within a theory bears a certain intriguing recursion. Often, we are able (by experiment or practical application) to test how well a theory works. The extent to which one's use of the theory enables one to predict future events may be regarded as a test of that theory's effectiveness. And, as a result, it is possible to compare two theories. However, postmodernism (along with complexity theory) holds that nothing is completely predictable. Therefore, if one finds a theory works 'perfectly' one may also be sure that one has fooled one's self.

In such situations, it is important to seek and appreciate the *ambiguity* of a situation. To purposefully seek out those events that are not predicted by the theory – those experimental anomalies that we know must exist, even though they may not be evident at the moment. This leads to a most important, difficult, and subtle postmodern technique – looking for things that are not there. In the analysis of theory, the discovery of a "missing link" can be an exciting find. As

an example, from my personal experience, I am usually unimpressed by computer modeling experiments where the experiment merely confirms the researcher's expectations. Instead, I appreciate results that the researcher finds surprising.

Change is also a useful "thing" to look for in the study of theory. One might note, for example, that certain theories of physics have remained unchanged for hundreds of years… and wonder why. One might also investigate the great rapidity with which theories change and evolve as they are adapted by various authors over time, or as they change between the contexts of differing publications. One way to measure this is to determine the "dynamic robustness" of the theories (Wallis, 2008a).

One point of congruence between modernist and postmodernist approaches is the need for *critical analysis*. This has been addressed above in some detail. In contrast, *reflexive* approaches are more postmodern in nature – involving forms of social construction. To make these approaches more valid, it is useful for the metatheoretical researcher to describe the process by which the original theory was created, and/or the process by which the new metatheory or metatheoretical perspective was developed. A more rigorous quantification of the reflexive approach may be difficult because of the inherent complexity of the process. Here, again, is an opportunity for a deeper more comprehensive exploration of reflexive approaches to metatheory.

Far from understanding such indeterminacies as an impediment, the postmodern perspective sees such looseness as an opening for *interpretation* by the researcher. To provide some sense of validation, some *introspection* is useful. Here, the researcher should provide readers with some indication of that introspective process. This may include surfacing one's inspirations, concerns, and excitements. The process of introspection may lead to spiritual insight. This is, as history has shown, rather difficult to validate from an outside perspective. And, from the inside view (one's own sense of spirituality) may not make a great difference to the larger community. If the researcher avoids such self-revelation, the analysis might be seen as primarily intuitive or artistic.

In the postmodern world, the prevailing view is that we should appreciate the *artistic* and the *intuitive* in all sciences – including theory and metatheory. We are also encouraged to recognize that each work of art has more validity in some contexts, than in others. So, for validating a theory or metatheory as an art form, it is important to consider the artistic tradition from which it emerged and the context in which it is being used. I find an example in my own experience as a life and business coach. To me, the process side of coaching follows a series of questions such as: What worked well? What might you do differently next time? The artistic aspect, to me, comes in my ability to engage the client in a way that makes him or her feel that this is all part of a very natural conversation and leads to profound revelations of self and life. If other members of that community share my view of the art of coaching, they can evaluate the extent to which my coaching was artistic, or merely mechanically following a set of rote questions. For evaluative purposes, it seems that the analyst should describe the artistic standards to which the theory conforms (or creates).

The modern view of science is further enhanced by the postmodern ideas of *humanistic* inquiry, which calls for an increased *awareness of the human condition*. These include a range of

value-based inquiry including *naturalist, feminist*, and *neo-Marxist* approaches that seek to *educate, emancipate*, and improve the human condition. These approaches may be evaluated from a number of directions – most or all of which are useful for "decolonizing" or de-emphasizing privileged texts in favor of more localized insights (Smith, 1999).

One might ask of one's self, "What is my intention in this investigation?" Or, we might ask, "Who benefits from this research?" Or, from the perspective of the possible participants, "To what extent does this research address our concerns?" These are, of course, a few of the many possible questions. Recursing briefly, it seems important to ask those who might be impacted about their opinions! Calás and Smircich (2005), for example, question the faulty logic of modern knowledge and suggest a range of new logics to support research that will foster change and emancipation. When applied in practice, one effective approach was to avoid the idea of expert knowledge, and to engage co-researchers in our collective experiments of all kinds. Generally, we may consider theories more valid to the extent that they are more able to raise awareness, educate, and emancipate. Thus, again, two theories may be compared and the more preferable one advanced.

One problem with soft sciences is abduction without critical examination (Hammersley, 2003). A reader may be "taken" with an idea; and, as a result, may feel that a theory appears "too good to be false." As a result, researchers might believe their theories or values are of the highest importance because, perhaps, those values have not been examined or deconstructed. Susan Haack (2001) seeks to differentiate truth and meaning by investigating four possible relationships between the two. She accepts the idea that there is an overlap between the two – that sometimes truth and ethics are one and the same, while other times that does not appear to be the case. Here, however, she relies on that elusive idea of truth. In a brilliant work (that includes a thoughtful conversation on Haack's paper), Martyn Hammersley notes, "I am not convinced that the distinction between what is morally wrong and what is epistemologically wrong can be sustained" (Hammersley, 2003). Rather than recounting millennia of thought, suffice to say that "truth" is an illusion that is sought by modernists and postmodernists alike. However, as "truth" seems so elusive, it seems an unlikely measure for validity and progress of metatheory.

Instead of a narrow, modernist science, Hammersley (2003) argues for link between epistemology, and morals, and calls for validation by a research community. This, in turn, seems to suggest that each and every paper should receive a thorough review by a close circle of readers. How do we accomplish such a thing? With all that is being written, who has time to do all that reading? Do we raise funds to pay for a large cadre of readers? It is an interesting possibility. Without funding, we might work to encourage readers to become more involved in the process – providing feedback to the authors and discussing the material more among themselves.

Then too, if knowledge is only valid if collaborative, should we require all that papers be co-authored? Or, is the act of learning, writing, review, reading, and conversation a sufficient level of collaboration? One might be tempted to say yes – it would certainly be easier to continue as we have – and to follow the traditions of modern academia. However, I feel that we are looking for something more. Instead of drawing a line and saying, "that side represents an unacceptable

level of collaboration and this side is acceptable," we can pass beyond that dialectic and recognize that each written work may be represented on a scale of collaboration, And, reviewers, editors, and readers may rate that level of collaboration as a partial indicator for the collaborative-validity of the text.

For example, a book written by a single author would have a relatively low level of collaborative-validity compared with a paper written by two authors who received feedback from two reviewers. A book could claim a higher degree of validity where, for example, a team of authors determined among themselves the focus of the book, the focus of their individual chapters, and how those chapters would be linked, and where those authors spent a month sitting around a table co-authoring and co-editing one another's work.

Many concerns of validity are absorbed in another postmodern approach, which is more closely related to practice than to theory. Specifically, *praxis-oriented* methods that develop and show the usefulness of specific practices and points of view, within a specific context have shown themselves to be fairly effective. For example, the *Action-Research* approach. These methods, it seems may best be evaluated from within the group that develops and applies them. One such approach is the Future Search process (Weisbord & Janoff, 2000) which includes the creation of a mind map – a shared sense of the situation. This mind map may be understood as a form of theory, because it may be used to improve understanding and guide action. This approach suggests we may evaluate theory creation, at least in part, by the level of collaboration involved in the construction process. We might say that having more people involved indicates a quantitative measure of collaboration, while their satisfaction with the mind map indicates a qualitative measure of success.

These approaches to evaluation suggest that the only one who can truly evaluate the success of one's own method is the person who employs it. This *phenomenological* approach has its own limits. For example, one person might believe that plants grow better with fertilizer, while another believes that music is more conducive to plant growth. If, as outside observers, a community sees these two people growing food in their gardens, and one is more successful than the other, we might take that success as an indicator of a more effective underlying theory. We might (and probably should) also inquire about the details of those methods. For example, are they sustainable? Do they lead to negative environmental impacts? And, importantly, is there another, as yet undiscovered explanation for the differences observed?

In the academic review process, one author might develop and apply a method which he or she sees as very effective. Yet, the larger community might find very different results. One test of many is to determine if a theory is *practical / workable*. This might include purposeful experiments or simply some application in daily life. A strict postmodern stance might give equal validity to all theories that are applied because each one seems workable to the person who is employing it. And, the simple fact that a person is using the theory and finding it workable is certainly one level of validation. Also, the more people who find a theory workable might lend another level of validity.

This leads to at least two other extensions. First, that within one's own mind, an individual should seek to evaluate multiple theories to find if one is more workable than another. This

might be seen as similar to an individual seeking a religion or spiritual practice that works best for him or her. Second, is the idea that the practicality or workability of a theory might be evaluated through the lenses of other postmodern approaches. For example, We might look at two theories and determine that one is more workable than the other based on the amount of change or the amount of emancipation is provides.

Over the course of time and communication, the above methods of investigation, communication and participation may be broadly understood as a form of **social construction**. That perspective suggests rich and complex interactions that include theory, practice, intuition, art and inspiration. This opens yet another interesting recursion because, "the theory itself creates—it socially constructs—the terrain. A theory entails imposing interpretations (definitions, categories, and understandings) on behavior. Once we have a theory in mind, we pose questions that take those definitions, categories, and understandings for granted" (Landreine & Klonoff, 2001, p. 103).

This perspective points to a strength and limitation of the postmodern perspective. First, we are looking at mirrors through mirrors – so we can never be certain about what we see. This may cause difficulty for those who seek some absolutist foundation upon which they can rest. This difficulty may even impel some to a useless level of skepticism where they believe that nothing is real (and, in consequence, nothing has meaning). It is unfortunate that one result of this stance is that some abandon the search for new and more wonderful insights. Instead, this constructionist perspective also indicates that we recognize our limitations. And, from there, we can go on to transcend them.

Implicit in many of these approaches is the idea that the development and/or assessment of theory and metatheory are part of a process. In the field of metatheory, the development of a specific theory or metatheory is (from one perspective) understood to occur through the iterative process of induction and deduction (e.g., Hitt & Smith, 2005, p. 2). And, there are many other process-based perspectives to suggest paths for creating and evaluating theory. These process-based approaches may also be applied to a science of metatheory – suggesting an iterative process of creation and testing. It seems important to the science of metatheory that we develop new tests and test those tests. Further, there is a great opportunity to identify the processes by which each of these methods of creation and validation lead to one another.

An important tool for building and evaluating theory and metatheory is creativity. Because, if we are stuck within the map of our theory, no matter what the apparent efficacy of that theory, no matter what level of validation it exceeds, we know that we will always benefit from new and more creative approaches. Each new approach adds to the existing range of approaches; and, suggests ways to integrate and extend them. Despite (or, perhaps, because of) the range of options reflected upon in this section,

> It is far from evident that replacing conventional social science methodology with post-modern methods of interpretation and deconstruction constitutes any improvement in the social sciences. If adopted without modification, post-modern methodology leaves social science with no basis for knowledge claims and no rationale for choosing between conflicting interpretations. (Rosenau, 1992, p. 124)

Kitcher (1993) makes the important point that postmodern views, such as those presented in this section, should not be seen as existing in opposition to the views of modernity with the goal of eliminating the modernist view. Rather that these humanistic, artistic, and other diverse approaches actually serve to expand and change the modernist approaches. Changing the overall understanding of science to make it more rich, full, and inclusive. In the next section, I will investigate how we might understand a combination of modern and postmodern approaches. Not as a longer list of potential methodologies, but instead as existing in a carefully integrated relationship – an integral approach to science.

Integral Approaches to Metatheory

In moving metatheory toward a more scientific practice that includes modern and postmodern approaches, many forms of scholarship are possible. First, one might use any of the methods suggested here for creating and evaluating theory and metatheory. Another, more comprehensive approach, would be to use multiple methods. A more nuanced and sophisticated scholarship would involve a combination of methods that are mutually supporting – that is to say, integrated. This perspective is, in part, an answer to Fred Kofman's (2010) call to avoid ontological arrogance with our underlying ideology, and so encouraged us to accept alternative views. This approach is postmodern; and, the call also holds true for our ideology about postmodernism. We should be on the lookout for what is missing and how postmodernism might be improved. This is especially important as there is a lack of agreement on key issues – even within the postmodern community (Rosenau, 1992).

Between modern and postmodern there are many disconnects. For example, Critchley (2001) tells how the Vienna Circle sought a science free of emotion, religion, and metaphysics. While, in contrast, an integral approach is about exploring how they might be rejoined as in *The Marriage of Sense and Soul* (Wilber, 1999). There, Wilber explores in some depth the importance of integrating science and religion. This is an appealing perspective because the traditional role of science is to find truth, while the traditional role of religion is to find meaning. This kind of integrative approach suggests that we are creating something that is more than the sum of the parts.

There are also overlaps between modern and postmodern approaches. Both seek knowledge and understanding, both call for critical analysis, and both appreciate the benefits applying theory ("testing" for modernists and "usefulness" or "workable" in postmodern terminology). What is missing between the two versions of science is a focus on how they might work together. This is an integral approach, which recognizes the benefits of both and seeks to bring them together to create a more complete and effective understanding. Kitcher (1993) suggests the need for overlapping and interlinked methods for measurement and Murray states:

> Integral approaches give equal importance to the subjective and objective aspects of world. Seen through this lens science and technology are not divorced from questions of meaning, identify, aesthetics, and ethics. . . . It does so not mere by critiquing other theories but my proposing an integrative framework that coordinates these theories and also by incorporating subjective and Intersubjective matters of self, culture, and spirit. (Murray, 2006, p. 215)

Let us move now to an exploration of approaches for a scientific advancement of metatheory that interlinks the best of modern and postmodern worlds. This approach is called triangulation which works under the assumption that it is desirable, to use a mix of approaches. This process is supported by a growing number of scholars (e.g., Edwards & Volkmann, 2008; Lewis & Grimes, 1999; Roe, 1998). An excellent application of this approach may be found in Lewis who notes in an introductory explanation of her study:

> The strategy—Metatriangulation (Lewis & Grimes, 1999) —entailed using paradigm lenses to construct alternative accounts of AMT implementation. The second section summarizes these accounts, which highlight varied vicious cycles during the change process. Third, I use paradox literature to build a metaframework, depicting change as a multidimensional cycle, swirling around cognitive, action and institutional paradoxes. Paradigm lenses detail each paradox, revealing complex, systemic tensions between stability and change. The conclusion addresses implications for managing change paradoxes and future research. (Lewis, 2009, p. 109)

A reading of Lyotard (1984) suggests triangulation using a combination of categorization, critical evaluation, and application. Koller (2006) suggests using a purposeful blend of approaches including contemplation (sprit), reason (mind), and body (senses). These kinds of triangulation suggest more than a range of coverage within a single sphere of thought, they also suggest an interrelationship between worlds. To expound on one such relationship, I draw on my recent work from the *Integral Review* (Wallis, 2008b).

Briefly, one may usefully and effectively view theory validation from three general points of view – or three worlds. Those three worlds are summed up as Theory, Facts/Data, and Meaning/Emotions. Within each world there are (at least) three levels of validation – with each level having more validity than the one below it. From an "outside" view, each theory may be seen to have greater or lesser validity within any one of the three worlds (see Table 3).

Table 3. Dimensions of Validity (Wallis, 2008b)

	Level 1	Level 2	Level 3
World One (Facts or data)	Uses objective data.	Uses objective data from multiple sources.	Future facts are predicted.
World Two (Meaning, emotions)	Makes sense to author.	Makes sense to editor, reviewers, and readers.	Consensus of expert opinion (this theory is preferred over other theoretical options).
World Three (Theory)	Includes logical arguments.	Theory is constructed of specific propositions.	Theory is constructed of co-causal propositions.

Another point is that there are two general ways to evaluate a theory or metatheory. One is to evaluate it from "within" one of the worlds; the other is to evaluate it from two or more perspectives "between" worlds. From an "outside" view, we can look at validation between the worlds. "Significantly, this distribution of worlds creates the opportunity to understand each of the three worlds in integral, co-causal relationship to one another" (Wallis, 2008b, p. 78). For

example, a theory that is essentially a metaphor might have little or no validity in the world of theory. It might, if it were a compelling metaphor, have greater emotional/spiritual validity. If that metaphor were applied successfully to an organizational change effort, it might be seen to have greater perception/data based validity.

On another part of the spectrum, a theory from physics might have a high level of validity on the world of theory – and on the world of facts/data may prove very effective. On the other hand, on the world of meaning, the theory may be entirely uninspiring. One might see a well-written or inspirational, book as having great validity in the world of feeling and spirit, yet have little validity as a theory or in practical application. In contrast, a profundity of raw data might have great validity within its own world, but without a theory to make sense of it, it is merely noise – so has no validity within the world of feeling/spirit.

In the same way that great art calls for great reflection, a high level of validity in any one world seems to call for the generation of new understandings in each of the other worlds. And, we might imagine that a high level of validity in two worlds might create a very strong pull for increased validation in the third world. For example, having a great amount of data seems to call for a theory to make sense of it. Then too, a great deal of data also has a sensory component, so it calls for reflection and appreciation.

Popper's (2002) famous (and famously modernist) work suggests the best way to validate a theory is in the way it allows for predictions in perceptual data. A theory of physics, which fails to predict change, should be rejected. However, in the social sciences, the process is a highly complex issue of recursion. Changes in theory might cause changes in productivity but they may also alter an individual's values (e.g., one's personal feeling about what is important). So, an individual may no longer place the same value on the items being produced. Indeed, "individuals working on an assembly line might (based on an emerging mindset) change their minds and decide that the human producer is more important than the objects on the conveyor belt"(Wallis, 2008b, pp. 80-81). There is a great opportunity for scholars to investigate the potential interrelationship of the many approaches presented in this article and this special issue, as a whole.

Advancing the Field

In *The Trouble With Physics: The Rise of String Theory, the Fall of Science and What Comes Next*, Lee Smolin (2006) reflects on his experiences as a physicist who was dedicated to the development of string theory – the creation of a single one, best, totalizing theory of physics. Smolin concluded that such a development is impractical and perhaps impossible. His experience turned him away from a staunch modernist perspective (and, may provide some insights for our exploration here). Smolin found that progress in science seems to take two forms – innovation and consensus. The two seem closely interrelated – we need both to advance.

This article has presented some basic ideas to clarify and encourage the continued emergence of metatheory as a science. To the extent that metatheoretical methodologies and processes seem to fit a fairly specific definition of science, it seems that we have the basic pieces in place to conduct a legitimate science of metatheory; although, more development and clarification of

methodologies appears to be required. Further, if we are to be a science, we must also apply these rigorous methodologies – something the broader field of the social sciences has mainly avoided. There is reason to hope that we are moving toward a change – an improvement – including a more purposeful application of metatheoretical principles.

One may anticipate that metatheory, as a science, will not be immediately adapted by all social scientists. First, some may too deeply invested in the present paradigm. They might, for example, be interested in creating theory for publication instead of application. Second, by their seemingly successful experience, these academics may believe that they "know" how to create good theory – and so do not need to change their approaches. We might liken their theory-creation ability to the ability of a cook to bake a cake. They need no recipe because they have a great deal of experience in this department. Their students, however, have not yet learned the knack. And, the students may benefit most from learning how to follow a recipe. In short, we might achieve some success in advancing the practice of theorizing by developing and implementing a cross-disciplinary program to teach metatheory to graduate students. After all, they have not "grown up" with the fragmented fields of social theory, so may need additional tools to cope with the plethora of theories.

In the above sections, I have noted many opportunities and directions for future studies to advance scientific metatheory. Meehl (2002, p. 343) states, "I view this disparity between a (purported) logical truism and scientific practice to be one of the most important and badly neglected metatheoretical puzzles." A great opportunity exists for metatheorists to conduct cliometric analyses and so advance our understanding of theory, metatheory, and more. Another important opportunity exists for advancing the metatheory conversation through the application of metatheory. One place that this can occur with some ease is in the classroom. For example, professors could assign students to conduct purposefully metatheoretical analyses. Combined in a public database, the results might provide a useful source for metatheoretical analyses.

Reviewers of academic journals could aid in advancing the field by applying clear metatheoretical metrics when evaluating submissions. This way, each pass through the review process would result in better theory (rather than the creation of theory that is simply different). Similarly, those who review research proposals could also apply metrics to determine which theories are more likely to be effective than others.

The study of theory is appropriately referred to as metatheory (or metatheorizing) where, "The problem lies in how we differentiate between these different kinds of big pictures and the various ways of creating them. We have almost no way of formally distinguishing between metatheory as a scientific process of building metalevel conceptual frameworks or metatheory as grand storytelling or metatheory as philosophical musing. For the sake of all different forms of creating grand narratives this situation needs to change" (Edwards, personal communication, October 18, 2009). In this article, I hope that I have created a framework that we may use to address these issues.

Our nascent science is not at a point where we can apply labels with great confidence (although many have tried). It may be that we need to do some experimenting – we need to try out various methods of metatheorizing in quasi-controlled experimental settings and decide from

the results what is our best tool for a particular project. We might find, in time, that certain metatheoretical approaches are useful for creating theory, while others are more useful for evaluating theory. Specifically, we need to have and to use a rigorous, scientific, and repeatable approach to metatheory if this field is to have any legitimacy; and, of greater importance, if we are to develop effective theories for addressing the many personal and societal issues of our age.

There are, of course, limits to the emerging science that I have sketched in this paper. I do not intend this to be the "last word" so much as a preliminary investigation of relevant components. My hope is not to be seen as some "absolute expert" so much as a "conversation-starter." As noted above, there are many opportunities presented in this paper for additional exploration. These include more nuanced investigations into each of the above-mentioned building blocks of modernist science, as well as investigations into how those blocks might be more carefully integrated with one another. Additionally, there are alternative definitions of science that might be explored and contrasted with the one presented above.

Reflections

In the development of this paper, I received a strong call from one reviewer to conform to the dictates of postmodernism, rather than modernism. Due to many personal stresses, I initially resisted that call. Taking time to breathe, and be more open, I worked to answer the call towards greater inclusiveness; I also worked to avoid the totalizing call of postmodernity and modernity, both. As a result, I was impelled on to a more integral approach that combines modernity and postmodernity.

It occurred to me that there is a key distinction between modernity and postmodernity. First, modern science sees progress as an accumulation of knowledge. Second, postmodernity seems to loosen the "direction" of what constitutes valid knowledge by accepting multiple forms of knowledge. Yet, postmodernity seems also to retain the idea that accumulation is important. This should come as no surprise, as accumulation serve to immediately validate any and every insight. It cannot be discarded without reducing the storehouse of knowledge – be it a modern or postmodern storehouse. What remains is the question of what to do with that storehouse of knowledge.

Integral approaches suggest that identifying interrelationships between existing forms of knowledge may create new knowledge. This takes us beyond simple accumulation and moves toward more effective approaches. This, in turn, implies the need for methods for creating theory and metatheory – where they are understood to be integrated knowledge, rather than simple accumulations. When one identifies relationships between previously unconnected bits of knowledge one tends to experience a sudden, perhaps spiritual, sense of wonderment or awakening. And, one is on the path to the creation of theory and metatheory.

Conclusion

It may be true, from a modern perspective, that we will benefit from validating theory and metatheory. It may be true, from a postmodern view, that there is no single approach to validating theory and metatheory. From an integral perspective, it seems reasonable that these

forms of validation must be interrelated. In creating a science of metatheory, it seems we must recreate what it means to have a science.

At the risk of creating another layer of "meta-ness" it seems that the most useful approach will be to validate each theory and metatheory by using at least three forms of evaluation. And, importantly, those forms should be as different as possible. For example, it might be useful to evaluate a theory using a combination of spiritual, creative, and aesthetic measures. However, a more effective (and more challenging) approach would integrate more diverse points of view to provide very different measures (e.g., artistic, structural, and practical). In this, it may be seen that the greater diversity will lead to greater strength and the many will lead to the one – just as the success of one theory leads to greater diversity in application.

In this article, I have identified and investigated a variety of components needed for recognizing metatheory as a rigorous, and legitimate science from modern, postmodern, and integral perspectives. Those methods should be reflected, as rigorously as possible, in the multiple building blocks of science that point the way to advancement. Our ability to advance metatheory is founded on our ability to meet multiple requirements in an integrated way – not simply one or two. Implicit in this article is that idea that metatheoreticians must be rigorous in their pursuit and application of these scientific ideals. We don't want metatheory to be flapping around in circles.

As metatheoreticians strive to meet these goals, we will strengthen the withered wing of theory and so enable the bird of science to fly. Extending that metaphor slightly, we may recognize the need for a body – that connects those wings and provides a sense of purpose for that flight. For this body, we need to develop research communities whose members agree to conduct careful, rigorous, repeats of experiments and studies in metatheory (including building, testing, identifying the range of metatheories).

This new community will be reflected in our journals. This, in turn, implies that editors who are interested in supporting the emergence of a new science should stand ready to publish works that do not meet the more traditional "literary" standard of innovation, but instead rise to meet the equally high (and possibly more important) standard of scientific repetition. An interesting and useful collaborative effort might begin with a single metatheory, and ask seven authors to address that metatheory – each from the perspective of a single building block of science.

This article serves as a starting point for conversations on metatheory as a rigorous science, and how that science (as a process) might be improved for the development of better metatheory. Improvements in this field will improve our ability to advance our effectiveness as scholars working within and between other branches of the social sciences. In turn, those advances will have a profound effect on our ability to work for the betterment of our world.

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Appendix: Definitions of Metatheory

Dominic Abrams and Michael Hogg (2004)

A metatheory is like a good travel guide - it tells you where to go and where not to go, what is worthwhile and what is not, the best way to get to a destination, and where it is best to rest a while. Metatheoretical conviction provides structure and direction, it informs the sorts of questions one asks and does not ask, and it furnishes a passion that makes the quest exciting and buffers one from disappointments along the way. (p. 98)

A metatheory should provide an alternative framework for asking particular questions, not a complete explanation for all phenomena. The appropriate mission is not to convince others that the metatheory is right and that others are wrong, but to show how a particular metatheory can be useful to account for a specific class and range of phenomena. (p. 100)

A strong metatheory helps to put the body parts together in a meaningful structure and then to theorize the links between those parts. In addition, identifying the metatheory behind a particular theory helps reveal potentially interesting and useful links to other theories. (p. 100)

[Metatheory] encourages the integration of concepts across contexts. (p. 100)

Jack Anchin (2008b)

Unifying knowledge in any field of endeavor requires metatheory comprising a conceptual scaffolding that is sufficiently broad to encompass all of the specific knowledge domains distinctly pertinent to the field under consideration, that can serve as a coherent framework for systematically interrelating the essential knowledge elements within and among those domains, and that extends conceptual tendrils into other fields of study. (p. 235)

Jack Anchin (2008a)

Among vital purposes served by metatheory is its function as scaffolding for integrating more specific theories that conceptually and empirically map different aspects of the phenomena under study. (p. 804)

Terese Bondas & Elisabeth O. C. Hall (2007)

Metatheory analysis is an examination of theories to determine the link between the theoretical perspective that frames each primary study and the methods, findings, and conclusions of the research. (p. 115)

Richard Clarke (2010)

Metatheory is the 'theory of theory,' to be precise, the study of those underlying assumptions which shape particular theoretical perspectives.

Robert T. Craig (2009)

Metatheory is theory about theory.

Brenda Dervin (1999)

One major point here is that metatheory can be used in such a way that it releases research in always partial but still significant ways from implicit assumptions and draws these assumptions out into the light of day where they can be examined, interrogated and tested. (P. 748)

Metatheory must be an inherently deconstructive enterprise.

David Faust (2005)

As data form the subject matter for theories, theories and other scientific products form a key subject matter for metatheory or meta-science, organized and directed by methods that, in large part, remain to be developed.

Deborah L. Finfgeld (2003)

[Metatheory is the] Analysis and interpretation of theoretical, philosophical, and cognitive perspectives; sources and assumptions; and contexts across multiple qualitative studies. (p. 895)

Adam Maria Gadomski (2001)

A meta-theory M may represent the specific point of view on a certain class or set of theories T and this viewpoint generates meta-properties of T. Meta-properties are the consequence of the relation between M and T, but they are not the properties of any T application domain. More formally speaking, a theory T of the domain D is a meta-theory if D is a theory or a set of theories. For example, in computer science, the Theory of Data Bases Organization is a meta-theory for every specific (domain-dependent) theory of the data organization/structuring and management.

Willis Overton (2007)

A metatheory is a coherent set of interlocking principles that both describes and prescribes what is meaningful and meaning-less, acceptable and unacceptable, central and peripheral, as theory – the means of conceptual exploration – and as method – the means of observational exploration . . . a metatheory entails standards of judgment and evaluation. Scientific metatheory transcend . . . theories and methods in the sense that they define the context in which theoretical and methodological concepts are constructed. Theories and methods refer directly to the empirical world, while metatheories refer to methods themselves. There are many important features of metatheories, including the fact that they are ubiquitous – all theories and methods are formulated and operate within some metatheory – and the fact that they often reside quietly and unrecognized in the background of our day-to-day empirical science." (p. 154)

A metatheory is a coherent set of interlocking principles that both describes and prescribes what is meaningful and meaningless, acceptable and unacceptable, central and peripheral, as theory – the means of conceptual exploration – and as method – the means of observational exploration – in a scientific discipline. In other words, a metatheory entails standards of judgment and evaluation. Scientific metatheories transcend (i.e. 'meta') theories and methods in the sense that they define the context in which theoretical and methodological concepts are constructed. Theories and methods refer directly to the empirical world, while metatheories refer to the theories and methods themselves. (p. 155)

Barbara Paterson, Sally Thorne, Connie Canam and Carol Jillings (2001)

Meta-theory is a critical exploration of the theoretical frameworks or lenses that have provided direction to research and to researchers, as well as the theory that has arisen from research in a particular field of study.

Meta-theory involves the analysis of primary studies for the implications of their theoretical orientations. (p. 92)

George Ritzer (1988)

Metatheory is concerned . . . with the study of theories, theorists, communities of theorists, as well as with the larger intellectual and social context of theories and theorists. (p. 188)

A metatheory is a broad perspective that overarches two, or more, theories (Ritzer, 2009).

Leslie Sklair (1988)

A metatheory is a set of assumptions about the constituent parts of the world and about the possibility of knowledge of them. The distinguishing characteristic of a metatheory is that it refuses to accept any burden of empirical proof by displacing the burden of empirical proof onto the theories that are logically deducible from it. An effective metatheory is one which manages to create a high degree of coherence between epistemology and the objects of knowledge (roughly, abstractions). . . . The hallmark of a metatheory in science is that it invites empirical proof (or, in some versions, refutation) by producing theories and hypotheses that can be tested.

Tendzin Takla and Whitney Pape (1985)

By metatheory we refer to the cluster of fundamental, but often implicit, presuppositions that underlie or embed a theory.

Sally Thorne, Louise Jensen, Margaret H. Kearney, George Noblit & Margarete Sandelowski (2004)

Metatheory [is] the study of the frames of reference used in a set of primary studies. (p. 1357)

Jonathan Turner (1990)

. . . it is reasonable to conclude that metatheory should come after we have produced some theory. Metatheory is not about what assumptions and presuppositions sociology should have, but about the structure and implications of existent theories. (p. 38)

. . . let me offer some proscriptions and prescriptions about how best to perform metatheorizing.

First, here are some proscriptions or metatheoretical taboos (p. 39):

1. Avoid talking about theorists; instead, talk about theories.
2. Avoid discussions of intellectual context, place, and time; instead, discuss social processes denoted by concepts, models, and propositions.
3. Avoid debates over philosophical issues; instead, commit one's energies to the simple assumptions that there is a world out there and that it can be understood with concepts, models, and propositions.
4. Avoid commitments to ideologies; instead, develop concepts, models, and propositions that denote operative processes in the universe (there will always be someone to expose ideological biases without your help).
5. Ignore the particulars of history; instead, examine those more general and generic processes that cut across time and place (leave something for historians to do; or, if history is used, let it involve an empirical test or assessment of a theory or model).

Here is my list of prescriptions (pp. 40-41):

1. Evaluate the clarity and adequacy of concepts, propositions, and models.
2. Suggest points of similarity, convergence, or divergence with other theories.
3. Pull together existing empirical (including historical) studies to access the plausibility of a theory.
4. Extract what is viewed as useful and plausible in a theory from what is considered less so.
5. Synthesize a theory, or portions thereof, with other theories.
6. Rewrite a theory in light of empirical or conceptual considerations.
7. Formalize a theory by stating it more precisely.
8. Restate a theory in better language.
9. Make deductions from a theory so as to facilitate empirical assessment.

Walter Wallace (1992)

Synthetic metatheory sorts whole theories into two or more overarching categories. Analytic metatheory parses each theory into two or more components and then sorts these components into categories representing various types of assumptions, observable variables and causal relations among such variables. (p. 53)

Deena Weinstein and Michael Weinstein (1991)

Metatheory treats the multiplicity of theorizations as an opportunity for multiple operations of analysis and synthesis (p.140).

[Metatheory] has a concrete empirical referent, sociological theory, and studies its 'underlying structures' . . . As a . . . theory of theory, metatheory is simply that part of a general sociology of knowledge which happens to take sociology and sociological knowledge as its empirical referents. From the critic's perspective, there can be nothing objectionable about this kind of metatheory, for it opens up a substantive and empirical research agenda" (pp. 287-288).

Wikipedia (2009)

A metatheory or meta-theory is a theory whose subject matter is some other theory. In other words it is a theory about a theory. Statements made in the metatheory about the theory are called metatheorems.

Shanyang Zhao (2010)

Metatheory is a subtype of metastudy that focuses on the examination of theory and theorizing.