



Lukenchuk, A. (Ed.) (2013). *Paradigms of research for the 21<sup>st</sup> century: Perspectives and examples from practice*. New York, NY: Peter Lang Publishing.

Pp. xxxi + 274

ISBN 978-1-4331-1802-9

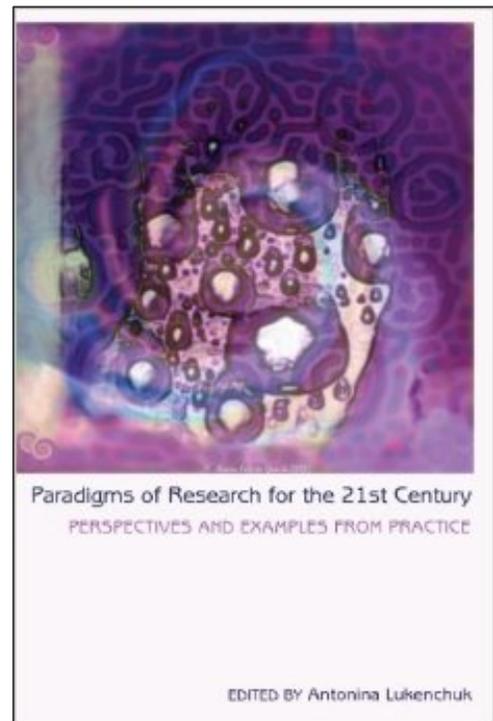
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*Differing weights and differing measures. Both of them are abominable to the LORD. (Proverbs 20:10, New American Standard Bible)*

Having spent over half a century involved in basic and applied research (both scientific and educational), I was intrigued by the title of this book. I looked forward to reading a compendium of “perspectives and examples from practice,” as indicated by the subtitle, that would be useful in my work as an educational evaluator.

The modern use of the term “paradigm” was popularized by Thomas Kuhn in his book, *The Structure of Scientific Revolutions* (Kuhn, 1996, p. 10). According to Wikipedia, “Kuhn gave [paradigm] its contemporary meaning when he adopted the word to refer to the set of practices that define a scientific discipline at any particular period of time.” (“Paradigm”, n.d.) Examples of “paradigm shifts” in science would include the revolutionary discoveries of Copernicus, Galileo, Newton, Einstein, and Heisenberg, each of whom demonstrated that the science of their day could not adequately explain the phenomena they observed.

This book emphasizes the philosophical aspects of contemporary social science research: epistemology,



hermeneutics, transformational leadership, sustainable employment, methodologies and scientific methods. They define research as the quest for reality, knowledge and values, practiced within a paradigm (i.e., a system of inquiry, model and way of knowing).

### **21<sup>st</sup> Century Research Paradigms**

The book begins with the observation that scientific research is no longer committed to positivism, a system in which knowledge is based on natural phenomena and their properties and relations as verified by the empirical sciences. It proceeds to offer six unique sets of assumptions and beliefs within which scientific inquiry can be practiced. These are presented as alternatives to the more common quantitative and qualitative models. They are:

1. Empirical-Analytic
2. Pragmatic
3. Interpretive
4. Critical
5. Poststructuralist
6. Transcendental

Of the six, the empirical-analytic and pragmatic models are roughly quantitative and qualitative.

The six alternative paradigms are described in the paragraphs that follow. Each description includes the authors' choices of main concepts, types of knowledge, methodologies and methods.

- Empirical-Analytic: This paradigm is rational and empirical. The knowledge is probabilistic, and is studied using quantitative methods (experimental, correlational and causal).
- Pragmatic: This paradigm is also rational and empirical. The knowledge is provisional and fallible. The methods are both quantitative and qualitative, including action and practitioner analysis and case studies.
- Interpretive: The interpretive paradigm is based on constructivism, with descriptive and interpretive knowledge. The methods are qualitative, including case studies, and are visual- and arts-based.
- Critical: Examples of critical research include neo-Marxism, theoretical categories, and queer and feminist studies. The knowledge is oriented toward advocacy and consciousness-raising. The methods are qualitative and mixed, grounded in constructs of

gender, ethnicity, national identity and sexual orientation.

- Poststructuralist: Poststructuralism involves a complete rejection of foundational knowledge, substituting postmodernism, chaos theory, political activism, and anarchism – no “true” knowledge. The methodologies are qualitative and critical, and the methods textual and visual representations.
- Transcendental: This paradigm is esoteric and spiritual, indigenous and aboriginal. It posits the existence of the ultimate reality and Truth (capitalized in the original), reason, intuition and revelation (both physical and metaphysical). The knowledge is intuitive and emotive, based on the unity of body-mind-soul. The methods are purely qualitative.

Generally, research in the physical sciences is conducted using the “Scientific Method,” in which observations lead to hypotheses, and experiments are conducted to test the hypotheses. In the social sciences, however, this kind of research would require setting up experimental and control groups, which is generally regarded to be unethical. Most educational research has been conducted using convenience samples, rather than by randomly-assigned groups of experimental and control subjects.

### **The Positivist Paradigm**

Historically, considerable controversy has surrounded educational research as to which measures are acceptable indicators of “success” and “failure” of various instructional and curricular approaches. Most practical research has involved various kinds of academic tests and/or survey instruments, which are considered by researchers to be reliable and valid indicators of student achievement. When jobs are not at risk, these measures are generally acceptable, but when educators’ futures are on the line, resistance is certain to follow.

Tests and surveys are part of what is roughly a positivist paradigm. Positivism is predicated on three presuppositions:

1. There is an objective reality
2. People can know this reality
3. Symbols can accurately describe and explain this objective reality (Nightingale 2012)

Under positivism, there is an assumption that it is possible to measure patterns of cause and effect that can be used to

predict and control natural phenomena. The role of measurement is to quantify these patterns in order to reduce the variance (or uncertainty) and to guide positive improvement. When one is able to quantify the pertinent variables, the resulting evaluation can be considered objective and relatively free from observer bias.

Many educators have criticized the use of quantitative methods in educational research and evaluation. As a result, there has been a growth of more subjective and qualitative measures, which have often leaned more toward advocacy than on unbiased evaluation. The reading and math wars over school curricula, for example, are largely a result of differences of viewpoint in how to assess the efficacy of various course content and teaching methods. For instance, is reading a natural process, like speaking and listening, which requires little adult intervention? Or is it something that would benefit from drill and practice? How can we know? Can multiple-choice tests accurately measure reading achievement? This has been a topic of much controversy.

The continuing battle over the use of standardized tests to measure student growth is related directly to skepticism among teachers regarding the role of quantitative research and evaluation approaches in determining the outcomes of curriculum and instruction. The Vygotsky premise, that students socially construct their own knowledge rather than being taught it by experts, has been popular in colleges of education for several decades. The thought that young children can recapitulate the wisdom of the ages during their limited number of years in school has been accompanied by a general decline in student achievement, but it does not diminish the popularity of constructivism among today's educators.

Is it really possible that there could be "multiple realities" that depend on the viewpoints, or paradigms, of the observers? Frequently, Einstein's Theory of Relativity and Heisenberg's Uncertainty Principle have been used to suggest that there is no such thing as value-free, unbiased measurement. Yet, neither of these scientific principles has suggested anything of the kind. The terms "relative" and "uncertain" have been used in ways that were never intended by the scientists who applied them to the physical world.

### **Applications of the 21<sup>st</sup> Century Research Paradigms**

A recent paper on social science research by Butler and Muhlhausen (2014) raises some important points:

It is not always evident that a program has, in fact, succeeded in a meaningful way. It is not especially hard to measure good policy outcomes like higher test scores, fewer shootings, or increasing incomes. Rather, the challenge lies in showing that the policy in question is truly responsible for those improvements and then figuring out exactly how it worked. Policymakers cannot conduct controlled experiments with the ease and precision of laboratory science. Even when there relatively well-isolated control and treatment groups and an array of metrics, and even when the most advanced evaluation techniques are put to use, it is terribly difficult to figure out which policy inputs lead to which social outputs. (p. 26)

Frustration over the limitations of inferences from social science research has led to heightened interest in developing new ways of conducting the research. There are several chapters in this book that provide examples of applications of the 21<sup>st</sup> century paradigms. One is a study of the career decision-making processes of first-year college students, where the researchers applied cognitive therapy to monitor and restructure negative thoughts of the students as they approached their decisions on what majors to pursue. Another involved a study of Greek parents' perceptions and experiences regarding their children's learning and social-emotional difficulties. Both of these projects used research approaches that are "outside the box" of most of what goes on in educational research and evaluation as it is generally practiced.

### **Conclusion**

I searched this book in vain to find any treatment of the concepts of validity and reliability. Understanding that a given researcher may be coming at a research question from one of six different approaches leads to an obvious question: If different scientists study an issue from different assumptions and beliefs, would they reach the same conclusion? If not, which result would be accepted and which would be rejected? Or, if the measures lack validity or reliability, should any of the conclusions be accepted?

As an evaluator, I was taught to approach an evaluation with an eye on the needs and wants of the client. Does the customer want quantitative (closed-ended) data illustrating that a particular goal was achieved? Or, would a

more qualitative (open-ended) approach (one that seeks to tease out information that may not have been predicted in advance) provide a better analysis? In practice, I have used both of these more positivist approaches to provide services to my clients.

This book is highly theoretical and philosophical, providing an overview of the thinking that is going on in higher education regarding what's important to professors of educational research and evaluation. I commend the editors for compiling a comprehensive overview of the epistemology and philosophy of scientific research. Yet I would be surprised if many of the current practitioners of educational research and evaluation found in it much of practical value that could be utilized in their lines of work.

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Dr. William L. Brown is an independent consultant providing research and evaluation services for several educational agencies. Prior to retiring from full-time employment, he served five years as Coordinator of Test Development for Michigan's Office of Educational Assessment and Accountability, leading the development of the Elementary and Middle School Michigan Educational Assessment Program (MEAP) tests, the Michigan components of the Michigan Merit Examination, and the Secondary Credit Assessments. Previously, he served seven years as Director of Institutional Research and Assessment at Lansing Community College and five years as Director of Research, Evaluation and Assessment at

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**Supported by the Mary Lou Fulton Teachers College, Arizona State University**

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