



Theory Resurrected: An Essay Review

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David Geelan's (2006) recent book *Undead Theories: Constructivism, Eclecticism and Research in Education* is a collection and retrospective of the author's early writings, explorations, experiences and musings into issues surrounding the scope and nature of educational research and the job of teaching. The twelve chapter book focuses largely on science education, and it includes papers written and published by Geelan elsewhere over the past decade. Although there are four sections in the book, there is basically one major demarcation point that occurs at chapter six. The first five chapters of the book come together to provide an insightful exploration into the philosophy of science and philosophers such as Kuhn, Popper and Feyerabend are discussed in the context of educational theory and research. Geelan applies these philosophical perspectives, in one guise or another, to different problems and issues facing education such as the theory-

practice gap and the role of theory in educational research (including constructivist epistemologies and theories). Chapters 6-12 shift the focus of the book from philosophy of science toward the application of different and somewhat non-traditional methods and views of teacher training and educational research that Geelan admits might be a stretch even for the most liberal qualitative researchers—methods such as fictionalized teacher stories from the classroom, personal experience, narrative anecdotes, and the use of metaphor to explore theory.

However, it is the introduction (Undead Theories) and chapter one (The Death of Theory in Educational Research) that attempt to frame, contextualize, and organize the ensuing eleven chapters and which make a number of weighty assertions that are not well supported, somewhat decontextualized, and fundamentally inconsistent and contradictory, as well as incorrect. For example, if specific theories or types of theories are dead in education, as Geelan



David Geelan

asserts in chapter one, then it is logical to ask about which theories we are speaking, why they are dead (or dying), what killed them and whether we should do a “postmortem” exam, as well as whether they were actual theories to begin with in the modern sense and whether the deaths were real ones or of the Mark Twain kind.

Even if the claim “theory is dead” is hyperbole, it is substantial enough to warrant some orientation and justification versus the decision to unilaterally reject the “traditional” (i.e., scientific) role and application of theory in educational contexts. However, no such explanation is proffered and the purported failures of educational research and theory must be taken on faith—a rather difficult assumption to accept on face value considering that Geelan’s “overarching theme” in the book is to look at educational theory from a “different” vantage point and perhaps to redefine it (p.1). If we do not know exactly and specifically what educational theory is being referred to by Geelan (and that the educational theory in question is something more than the undefined “traditional approach” used in so many older educational studies) are we not doomed to repeat our uses of it in educating people (assuming it is not worth repeating)? And what foundational theories *exactly* are being redefined? Further, all of these points are extremely key points, since much of the foundation of this book, and its view of educational research and theory, are derived largely from the philosophy of science, where such questions and vagaries are not considered to be trivial in any way. Although

venerable researchers and scholars with major contributions to education are noted—such as Piaget, Kelly, and Bruner—other absolutely essential educational theorists are not mentioned in the book at all (e.g., Ausubel, 1968; Gagne et al., 1988; Lohman, 1991; Loftus, 1996; Mayer, 2003), nor is a single educational measurement theorist such as Cronbach incorporated into the analysis, nor is measurement theory addressed directly at all, given that it is considered to be “the heart of science” (but trivial to most constructivists). In many respects, the philosophy of science in this book is a surrogate for mainstream learning theory and learning theorists, which is odd, considering that the book is about educational research and theory and not about the philosophy of science per se. So when Geelan states that “theory is dead” and that theory “has done more harm than good in terms of serving the profession of learning” (p.1), one can reasonably question what theory (or theories) he is referring to and how appropriate his theoretical referents and frames are relative to the scope and aims of the book and its overarching themes.

However, reading between the lines and given the author’s affinity for educational constructivism in chapter five—which is completely different in most ways and forms from the form and types of constructivism in the primary psychological and learning theory literature (see Carifio & Perla, 2006) —one hears echoes of McKeachie’s (1974) famous essay *On the Decline and Fall of the Laws of Learning*, which was about the behaviorist laws of learning (but did not address neo-behaviorism). Behaviorism is the straw person, *bete noire*, and Aunt Sally of educational constructivists that they continually rail against, as if this issue of behaviorism in academic learning is not long settled and nothing has happened in the area of learning theory since 1980. This particular “lag” is quite common among educational constructivists and those in science education both in the United States and abroad. The key points here are that one cannot live on the Galapagos Islands forever, and much has happened in the field of learning theory since 1980 (see Carifio, 2005), and one does not have to adopt the “eclecticism” and “blind” (qualitative) empiricism educational constructivists recommend and be “theory-less” or “theory-lite” in the educational world.

One of Geelan’s main points in the book is that educational researchers should adopt a “disciplined eclecticism” versus a limited repertoire of research methods and perspectives (p. 4). Yet in chapter one, Geelan notes the failures of a scientific/technical approach to research in education and argues that “these methods are still likely to yield unsatisfying results” (p. 9). Indeed, one of the main and recurrent themes in this book is the rejection of a scientific approach to educational research (which is a common implicit recommendation of many science educators currently). Evidently, a scientific approach to education is not part of the eclectic mix. The problems with traditional (“scientific and reductionist”) research

models in education, Geelan notes, is that they follow the (physical) scientific paradigm by aiming for well-founded generalizations and are simply too limited to address and account for the complexities of the classroom and human interaction (which incidentally is exactly why the field of educational measurement was developed, see Campbell & Stanley, 1966 and below). This situation, it is argued, tends to expand the theory-practice gap and, with little faith in the results of research, promotes ideological teaching methods and educational reform. In this context, Geelan notes “If the work that educational researchers do does not significantly and positively effect [sic] what happens in the classroom, then it is essentially unproductive” (p. 3). The alternative for Geelan is to reject a scientific approach to research in education on the above grounds in favor of more practical and “useful” models of inquiry that are written and introduced in a way that the everyday teacher can understand and relate to—what he refers to as “teacher language.” Again, the key points here are the same questions we asked initially about the “death of theory.” What exactly is the scientific approach being referred to and castigated here and would it be recognized and accepted by modern practicing scientists (in meteorology or fluid dynamics) or is it the scientific approach to education questions and problems that Dewey outlined at the turn of the last century? A decent answer of some kind is needed for this very key question.

We doubt any educator or educational researcher would disagree with Geelan’s view that learning environments are perhaps among the most complex environments to study and that much of the science-based research in education (as well as all other academic fields) is highly specialized and difficult to understand and put into practice in the classroom. And few would argue that the results of some types of experimental models are often disappointing, problematic, complete failures, and highly unproductive (as scientific experimentation fails far more often than it succeeds). However, Geelan appears to make no distinction between scientific research, say, in the physical sciences where we have a good deal of control over experimental variables, and scientific research *in education*, where we tend to have far less control over experimental variables and need differing strategies and models. Early educational researchers advocating experimental models were quick to point out that experimental methods used in education were not cast in the Fisher tradition where a high degree of experimental control was expected, but that depending on the research questions at hand and the degree of control anticipated, a continuum of models existed that ranged from the pre-experimental design to the true experimental design (Campbell & Stanley, 1966). The aim of the experimental models in educational research classically outlined by Campbell and Stanley, which are just as valid today as four decades ago, is to use the experiment “as the only means for settling disputes regarding educational practice, as the only way of verifying educational improvements, and as the only

way of establishing a cumulative tradition in which improvements can be introduced without the danger of a faddish discard of old wisdom in favor of inferior novelties” (p. 2). Although Geelan argues for a more practical, classroom-based, intuitive, and individualistic approach to improvements in educational research and practice, exactly how these improvements are to be determined is left largely unaddressed; and his research model, to the extent it can be called a model, would appear more susceptible to capricious human influences than the scientific models that have built-in (i.e., logically derived) controls and a system of checks and balances. But this subjectivism is consistent with Geelan’s educational constructivism and the implicit view that it is the collective beliefs of educational practitioners that establish and validate educational facts about effectiveness and success.

Geelan is certainly not the first person to point to the failings of the experimental tradition in educational research—which he does only in passing and without example—and then to use this information to suggest a different (less scientific and rigorous) way to conceptualize research in education, ways which are now in vogue in many academic circles. In fact, the cycle of disillusionment with experimentation in educational research and the retreat to exclusively narrative and non-experimental forms of inquiry and analysis is well described and hardly new (see Good & Scates, 1954, Campbell & Stanley, 1966). As Campbell and Stanley (1966) aptly pointed out, it is likely that there exist far more incorrect answers than correct answers in educational research, which is likely to lead to much experimental disappointment and failure. Therefore, “We must somehow inoculate young experimenters against this effect, and in general must justify experimentation on more pessimistic grounds—not as a panacea, but rather as the only available route to cumulative progress” (Campbell & Stanley, 1966, p. 3). Geelan’s main thesis in this book as it relates to redefining educational research is hardly novel; and his expectations and subsequent disillusionment with scientific research in education, although barely articulated, are likely unrealistic and unjustified (i.e., false expectations).

The key point here is the kind of “new” educational research (and “experiment”) Geelan is implicitly talking about is an old version of the scientific experiment, and one that does not require falsification and other factors to qualify as meaningful and legitimate. Once one makes falsification a non-negotiable requirement of an experiment, everything changes because the construction of falsification conditions and tests requires that the experiment have a theory to falsify. Falsification allows knowledge and theories to be viewed as “selectively retained tentatives,” which allows for the growth and expansion of our collective understanding, which, like learning itself, is a slow and often frustrating process.

So what, then, is “dead theory”? Is it a theory that has been “disproved” or one that has been “completely proven” and had all its assertions validated and has

“gone to education to die,” as Whitehead pointed out in 1908. In a word, a “dead” theory might not be what many think it is or what Geelan claims it to be. Moreover, Geelan’s version of “theory reform,” as one might call it, is very appealing to many researchers, since it is so vacuous and subjective that it is virtually guaranteed immortality because it is untestable.

Here again, Campbell & Stanley (1966) anticipated this point in their discussion of avoidance conditioning of experimentation by researchers based on the fact that “the nonconfirmation of a cherished hypothesis is actively painful” (p. 3) and likely to lead (perhaps unconsciously) “to the avoidance or rejection of the experimental process” (p.5). As Campbell and Stanley suggested, experimental failures are often associated most vigorously with the experimental process itself versus the true source of frustration and disappointment: *the inadequate theory*.

What Geelan fails to address in his book and what lies at the heart of the tension he describes between different approaches to research in education as well as the ones we have introduced above, is the distinction between the *context of discovery* and the *context of justification*—two foundational concepts in philosophy of science and epistemology conspicuously absent in this book. Geelan’s book (indeed each chapter) clearly demonstrates a preference for the context of discovery. It is hard to read each of the chapters and not recognize some extremely important and interesting ideas and concepts. In the lexicon of scientific research (specifically the field of data analysis), much of Geelan’s work aligns itself with what is known as exploratory data analysis versus descriptive and explanatory data analyses, which are more consistent with the context of justification. Since discovery and justification are two sides of the same (research) coin, it is difficult, if not impossible, to imagine how one side could be rejected without rejecting the other side. In fact, there are many ideas suggested in this book where experiments are easily conceived, the data of which could add to our collective understanding of science in a more meaningful (and, yes, possibly generalizable) way. In listing some of the problems associated with the disillusionment of experimental research in education, Campbell and Stanley (1966) seemed to recognize the context of discovery and justification all too well:

First, the claims made for the rate and degree of progress which would result from experiment were grandiosely overoptimistic and were accompanied by an unjustified depreciation of nonexperimental wisdom. The initial advocates assumed that progress in the technology of teaching had been slow *just because* scientific method had not been applied: they assumed traditional practice was incompetent, just because it had not been produced by experimentation. When, in fact, experiments often proved to be tedious, equivocal, of undependable replicability, and to conform to pre-scientific

wisdom, the overoptimistic grounds upon which experimentation had been justified were undercut, and a disillusioned rejection or neglect took place. (p. 3)

Terms such as “nonexperimental wisdom” and “pre-scientific wisdom” are consistent with the context of discovery and, as Campbell and Stanley point out, need not and should not be eliminated from a scientific and rigorous approach to educational research. Further, these same types of issues and failures are not restricted to scientific research in education, but to scientific research in all fields of study. A careful analysis of the theses of postpositive philosophers of science from Fleck (1935) to Feyerabend (1981) and beyond clearly demonstrates concern with both the less formal, generative, metaphoric, and nonexperimental thoughts and wisdoms (i.e. context of discovery) and the need (in one form or another) to test, weed out and refine these elements (i.e., the context of justification). Suffice it to say that stories, metaphors, analogies, superstitions, and other less formal and rigorous forms of thought are *starting points* in research (not end points). Using metaphors and experiences to explore theories, for example, may be a highly productive and generative endeavor. However, until we somehow test our theories and rule out competing views, we are blind to the level and degree of confidence we can have in our theories and their generalizability, and we lose any hope of cumulative progress.

Geelan clearly makes the case that he is an educational practitioner with primary concerns for practical situations encountered in the classroom and with “serving the field” of education in the most direct and practical sense. Geelan notes that this emphasis and commitment to education *in practice* also defined much of his graduate studies and early career. Despite this *practical* (practitioner-based) focus and interest, Geelan feels comfortable and qualified to appraise the status of educational research and theory and to possibly redefine both. However, he is more a practitioner than researcher by his own accounts in this book, and he has unsuccessfully and only trivially attempted to redefine with slogans research from the perspective of practice and to close the theory-practice gap. The theory-practice gap is real (and not necessarily a “bad” thing), and addressing this gap and other related issues by suggesting the elimination of traditional educational theory (however Geelan defines it) and practice is tantamount to throwing the baby out with the bathwater.

Indeed, Geelan’s view and thesis that we consider rejecting science-based theory and research in education is misguided and ultimately confused and a clear example of why leading educational scholars, administrators, graduate schools, and institutes are calling for the urgent realignment of the education doctorate that recognizes key differences in scope, purpose, and approach between the research-

based doctorate (with its strong links to practice) and the practice-based doctorate (with a distinct scholarly base) (see Shulman et al., 2006). As Shulman et al. argued “The problems of the education doctorate are chronic and crippling. The purposes of preparing scholars and practitioners are confused; as a result, neither is done well” (p. 25). There is, of course, a natural and logical relationship between research and practice, but it is likely that many of the recent problems in education, the perceived widening of the theory-practice gap, and the failings of science-based research in education are a product of how the research is executed, who is doing the research, inadequate theoretical perspectives, and a lack of clear and reasonable understanding of the expectations and limitations of the models being used. The thrust of Shulman et al.’s article, however, is that we desperately need to draw better and more distinct lines between practitioners and researchers in education in order to improve most effectively the practice of education (somewhat analogous to the MD and PhD degrees in medicine with their extremely different yet fundamentally related aims of helping patients). In other words, we need to strengthen the traditional (science-based) research arm in education, and not eliminate it as Geelan is suggesting! Taking a slightly different yet related position to that of Shulman et al., other leading educationists have argued that graduate science education programs (and education programs in general) need more representation from foundations disciplines (e.g., psychology, philosophy, linguistics, history) in order to increase the quality of research in education (e.g., Fensham, 2004). None of these issues and concerns, which directly relate to the quality of educational research, theory and methodology, is mentioned by Geelan in this book; and one has to wonder if he is aware of this crisis.

Geelan’s book provides some interesting ideas and concepts; however, its main thesis never materializes substantively. Moreover, it is written with an appeal to the antiscientific “left wing,” who do not appear to have a theory to stand on let alone an intellectual leg. As we have pointed out here, there is what could be called “dead theory” everywhere in science and in education; it is used everyday by practitioners and is very valuable. There is more to and in the world of learning than behaviorism (a useful dead theory in many instances), and once one makes falsification a non-negotiable requirement of experiments, quasi-experiments, and qualitative studies, everything changes radically and (scientific) theory will once again (as always) avert death if not rise from the ashes like the Phoenix.

One cannot simply exclude or throw (formal) theory out of education and educational research. Nor can one propose or be satisfied with nothing more than the “theory-less” experiment—which is really a fiction as both Hanson (1958) and Suppe (1974) have so thoroughly demonstrated. Without the constrained and disciplined explanatory component theory provides to all practitioner activities as well as research, one is left with blind empirical and correlational shotgun

engineering with serendipitous post hoc armchair speculations and rear-view mirror “constructions.” Theory, at least, moderately constrains discourse, speculation, analysis, experimentation (of any kind), and interpretation of results, and particularly research or scholarship and experimentation of any kind that includes falsification as a non-negotiable requirement, even if only a logical one of the work being done and the conclusions being drawn. Otherwise, unconstrained and shotgun post hoc “but grounded” speculations and constructions of alleged meanings, and untested in fact but accepted beliefs, become the dominant practice of both the discipline and the profession. Theory, dead or otherwise, is the ineluctable modality of reality, as Stephen Daedalus was prone to say. We actually need more theory of the modern kind in education and science education in particular and not less of it as well as more modern experimentation.

Note. This work is a collaborative work to which each author has contributed equally.

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