

Essay Review

Education and Psychology: Plato, Piaget, and Scientific Psychology

by Kieran Egan

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This latest and most provocative book by Kieran Egan takes on two important tasks: to distinguish *bona fide* "educational theories" from "psychological theories" which purport to be *about* education; and to present a sustained and critical attack on the damaging effects which scientific psychology has had on educational progress. Indeed, the greater portion of this book consists of showing the many and varied ways in which psychology has bamboozled educators (and the public) into taking seriously claims, and alleged "findings," which have no legitimate consequences for education whatever. As Egan says: "The argument of this book is that no psychological theory has, or can have, legitimate implications for educational practice ... I hope to show that the notion that one can move, however cautiously, along a line of implications from psychological – or other human or social science – theories to educational practice is mistaken, and in practice damaging to education" (pp. ix, x). On balance, I do not think Egan achieves this sweeping objective, for reasons which I will explain later, but there remains at least as much to heed and to savour from Egan's attack as there is to criticize.

In broad outline, the book basically argues that an *educational* theory consists in a set of normative prescriptions which answer the questions "What should we teach? How should we teach those things? When should we teach them? What should our end-product be like?" (p. 1) A *psychological* theory, by contrast, consists of trying to describe (scientifically) *what is the case* with respect to necessary "constraints on our nature." That is, insofar as psychology is a science it must seek natural *laws* about our nature and not content itself with describing contingent and changing facts formed by culture. And since, the argument continues, psychology has not discovered any laws constraining our nature, it has no valid implications nor suggestions to make about how we ought to

educate. Egan sets out his general argument in the form of a syllogism: *Major premise.* Psychological theories can have implications for education only if they describe constraints on our nature.

Minor premise. No psychological theory at present describes constraints on our nature.

Conclusion. Psychological theories at present have no implications for education. (p. 125)

Four of the five chapters of the book are spent defending the premises of this argument in very interesting and illuminating ways. In fact, a portion of this treatment defends a stronger, more sweeping, version of the above argument, replacing the phrase “at present describes” with “can describe,” thus rendering the alleged sterility of psychological theories a matter of principle, not merely of fact.

To those who might argue that psychology is not restricted to describing or explaining phenomena which are “natural and necessary” (as Piaget tried to do), but rather can also discover regularities found in contingent social settings and derive educational implications from *these*, Egan charges commission of “the psychological fallacy” – which is closely akin to the naturalistic fallacy. In Egan’s words: “If we allow [culture-specific regularities] to suggest implications for educational practice we commit the psychological fallacy – allowing a description of something contingent on past forms of cultural initiation to constrain our prescriptions for the future” (p. 137). His argument for this, which is also his defense of the major premise of his syllogism, is that not only do culture-specific regularities change from time to time and place to place, but that educators have the capability (and often the responsibility) to intentionally change these cultural regularities; hence, educators need not and should not be constrained by them.

Aside from one chapter extolling the virtues of Plato’s educational theory, the greater part of the book defends the second, or minor, premise of his syllogism. Most of the major paradigms in educational psychology are discussed and criticized by Egan in this sustained defense. However, the most thorough defense of his premise appears in a brilliantly argued chapter which criticizes the putative “findings” of Jean Piaget. Using arguments of his own and other empirical studies, Egan attempts to show that the so-called “stages of cognitive development” come nowhere close to describing “constraints on our nature.” According to Egan, whatever appears true in Piagetian theory does so because many of the theory’s claims are tautological (e.g., children develop in stages). And those claims in the theory which are not tautologies are unsupported by the available empirical evidence. Moreover, Piaget and his followers have introduced so many ad hoc hypotheses (e.g., the notion of a “*décalage*”) in order to save the theory that it is now unfalsifiable and untestable. Add to this the fact that the theory results in contradictory

prescriptions of various kinds (e.g., “the stages develop naturally” yet we should “teach for higher development”) which render its continued use in education pernicious. Apparently, the only thing Piaget had right was that he was at least *trying* to discover “constraints on our nature,” which, in Egan’s view, is what psychology should be doing. But Egan’s chapter succeeds, I think, in demonstrating that Piaget’s theory has failed to discover such constraints.

In a later chapter entitled “Psychology and Education” Egan continues the defense of his syllogism by attacking more than a half dozen other major paradigms of psychological research including: teaching effectiveness research (Gage et al.), Robert Gagné’s learning hierarchies, Bruner’s theory of instruction, Skinner’s radical behaviourism, Bandura’s version of behaviour modification, behavioural objectives, and Aptitude-Treatment-Interaction (ATI) research à la Cronbach et al. Egan’s point, again, is to show that none of this research has any implications for nor valid applications to education. Space does not permit treatment of these discussions here, but it’s fair to say that Egan marshals some very formidable criticisms against each of these research traditions and his treatment of them goes a long way toward making plausible his general negative conclusion.

It goes without saying that most educational psychologists, and very many educationists, will find Egan’s conclusions disconcerting, since they go to the heart of many widely-held beliefs. But this is precisely what makes this book so worthwhile. There is something usefully therapeutic, and educationally valuable, in taking seriously such head-on criticisms of these research paradigms, and then following the discussion to wherever it leads. It may be that some of his arguments will be found wanting, but the effort to determine precisely why this is so should still have a salutary effect on this research. For this reason, I recommend this book without qualification to both researchers and graduate students in education because it challenges the underlying assumptions of what now passes for educational research. It is much harder to come by good sources which point out the limitations of our research methods than it is those which promote them. This is one such source. Indeed, courses in educational psychology, in particular, should consider it for “required reading.”

Having said this, however, it must also be pointed out that among the many convincing criticisms presented by Egan, there are also a number of weak, and at times, inconsistent arguments. Indeed, if we consider the book as defending a *major* thesis (described in Egan’s syllogism) and a series of *minor* theses which attack particular research paradigms, I find his defense of the major thesis far less convincing than his critique of particular research paradigms. To begin with, Egan’s initial statement of his major thesis contains some important confusions which are never satisfactorily resolved. On the first page he says, for example:

The argument of this book is that no psychological theory has, or *can have*, legitimate implications for educational practice; or, to continue the metaphor of the previous paragraph, that we lack the materials to build a bridge of implications from psychological theories *as they presently exist* to educational practice. (emphasis added)

This statement, however, contains a crucial confusion which is pervasive throughout the book, namely, it moves from the (arguably) *contingent* matter of fact that no present theories have had implications for education to the *a priori* claim that no theories *could have* implications for education. Moreover, here, as in many other places, is the implicit move from *some* psychological theories to *all* psychological theories. Both claims, however, are unwarranted “hasty generalizations.” Egan does admit in the last chapter that he believes at least the weaker of these claims to have been established and the stronger claim made plausible, but this qualification does not absolve him from a confusing text that leaves the reader to draw his own conclusions. In addition, in numerous places Egan explicitly contradicts his opening statement quoted above. For example:

So I am not arguing that all empirical research in education has no implications for education, nor that all empirical research conducted by psychologists of education has no implication for education. I am arguing that all empirical research based on any psychological theory has no implications for education – research that poses questions and uses methods based on the presuppositions of scientific psychology about the nature of its phenomenon of interest – whether “basic” or “applied” research. (p. 139)

And elsewhere:

So while education does not require a psychological theory of development on which to articulate a curriculum, it does need as a part of an educational theory some characterization of the developing psyche. (p. 122)

Are we to conclude from all of this that psychology *does* or *does not* have a role to play in education or educational theorizing? I submit that Egan is, at best, ambiguous about this, his major thesis!

But quite apart from the ambiguities in Egan’s central claim, it is far from obvious how the claim could be true, however one interprets it. Clearly a bibliography of valid psychological research in education would contain the studies of hundreds of competent researchers, even after one discarded those who would fall victim to Egan’s criticisms. That is, the elimination of a dozen or more major studies does not suffice to establish Egan’s claim. Are we to conclude therefore that all the work of Guilford or Ausubel, to mention two, is similarly irrelevant to education simply because a handful of research traditions might be? Moreover, some psychological research, in particular, Arthur Jensen’s work on IQ, stands as a clear counter-example to Egan’s major claim insofar as it has clear

implications for such things as compensatory education programs, streaming, and the like, and in the very real sense it may be described as studying “constraints on our nature.”

Understandably, most of the space in Egan’s book is spent defending the minor premise of the syllogism, since this is where he attacks various individual (or extant) research paradigms. And it is here, I believe, that Egan is at his best. But it is the major premise of his syllogism which strikes me as not only odd but patently false. In fact one cannot help but think, in his defense of this premise, that Egan unwittingly fixates on Piaget’s peculiar (and unusual) epistemological approach to child development to the extent that he takes it as the archetype for all psychological research. It is quite true that Piaget happened to be looking for things which might be described as “constraints on our nature,” just as Kant was looking for the limitations of pure reason, but this was an interest peculiar to Piaget and does nothing to circumscribe the legitimate problems (nor approaches) in this domain. It is this unusually narrow view of what constitutes legitimate educational psychology that I find so odd in Egan’s major premise. But let me explain why I believe that the premise is also false.

To begin with, what Egan seems to mean by “nature” or “natural” in his major premise is anything but clear. In several places he tries to explain his meaning thus: “Only if forces are natural, and thus necessary, does the educator have to be constrained by them.” However, quite apart from the fact that cultures too are “natural” (just as we can speak of certain languages as being natural), it does not follow that *because* something is “natural” it is therefore “necessary.” For example, it is natural though not necessary that Mussolini spoke Italian, and that I do not. Just as it is natural though not necessary that some children are raised in large cities and others are not. Perhaps, however, what Egan means by “nature” or “natural” is: *that which is universal* (though Egan never says so). In this case, is it not universal that children are reared in cultures of some sort? And would it not be reasonable therefore to consider man a “cultural animal,” whose behaviour is largely shaped by this culture? Indeed, B. F. Skinner for one, is quite explicit about conceiving of man as almost entirely shaped by his culture, and that it is of comparatively little interest what man has in common universally. (We might, in fact, view Skinner’s approach as just the opposite from Piaget’s.) Similarly, Karl Marx argued that man’s mental life was determined by his material conditions, and as the material conditions change so then will his mental life. This is not to defend Skinner or Marx, but merely to point out that what one takes to be “natural” is itself problematic, and that Egan has done nothing to clarify this problem beyond demanding that educational psychology study only that which is “natural.” In fact, Egan seems to have become stuck on one side of the “nature *vs.* nurture” (or “nativist *vs.* empiricist”) controversy, opting for “nature” exclusively, without arguing the point directly, nor recognising that the controversy exists. Indeed, one gets the uneasy feeling in Egan’s

book that he has put educational psychology in an impossible dilemma: they are damned if they *do* take culture into account (because then it is not “natural”) and they are damned if they *don’t* because it’s then educationally irrelevant.

What does the phrase “constraints on our nature” actually mean? On one interpretation it could mean “*S* will (must?) behave like *Y* whenever *Z*, no matter what social conditions prevail.” Or it could mean “*Under conditions C* a person *S* is likely to behave like *Y* whenever *Z*.” The former interpretation seems to be what Egan demands educational psychology discover and restrict itself to. However, I submit that not only is the latter interpretation potentially more useful for educators, since their clientele are always in contingent contexts, but the latter interpretation is what most of the social sciences are legitimately engaged in studying. This is perhaps most obvious in sociology and in economics where they are trying to develop statistical models which will enable them to predict and to “statistically explain” different kinds of *contingent* social behaviour in differing social contexts. And for many kinds of behaviour, such as voting or spending, these disciplines are remarkably successful. Their endeavour is not unlike the agriculturist studying the growing of different kinds of corn in different soils, with different fertilizers, and getting different results. Gathering statistical and/or correlational knowledge about apparently contingent relationships is not only useful for prediction and control, but it is the most common type of explanation for things in the physical sciences as well. It is known as “statistical-nomological” explanation, and it is the only type of explanation possible in many domains of science (e.g., the laws of thermodynamics). However, Egan does not countenance this type of explanation because it merely reports “contingent regularities,” and contingent regularities can often be changed. While this latter point can be granted, it does not gainsay the legitimacy nor the usefulness of this type of statistical knowledge and prediction about culturally contingent social phenomena.

Furthermore, consider how ludicrous it would be for an educator to disregard such statistical knowledge (about “contingent regularities”) when it is available. Say, for example, the educator intended to introduce French into the early primary grades of an urban middle-class school with the hope that his students will have become bilingual upon graduation. Clearly, the available research on the effects of early second-language learning would have a direct and poignant bearing not only on the wisdom of such a plan, but on precisely how and when it should be introduced. To disregard such evidence (about “contingent regularities”) would be irrational. Countless other examples are not difficult to imagine. It might well be true, as Egan says: “Such regularities discovered by psychologists are products of the kinds of forces that it is the educator’s job to shape” (p. 135). But it does not follow from this, as Egan claims that it does: “only if the forces are natural, and thus necessary, does the

educator have to be constrained by them“ (p. 135). An educator who was not at least temporarily “guided” by known regularities, contingent or otherwise, would be irrational. What Egan’s argument (for his major premise) overlooks is that education is just *one* among *many* forces which “shape” the individual – and arguably a comparatively minor one. Real teachers in real schools have to teach students who are the products of many contingent social forces, their education being just one such force; an enlightened teacher must take heed of these other forces in order to be educationally effective. At best, education can only repair (or “shape”) a sailing ship one plank at a time, and during the process we must be cautiously aware of the work that the other planks are doing. Egan’s major premise seems to assume that the ship is in dry-dock, and that there is only one plank (i.e., education) which is responsible for all the rest. I therefore think that Egan’s major premise is not only unclear, because what “natural” means is systematically problematic, but his premise is also false under any reasonable interpretation of its meaning. It is simply not true that a rational educator can disregard known statistical regularities about contingent social forces – even though *some* of those forces might be amenable to change with time. Nor can Egan legitimately claim that known statistical regularities do not amount to a “theory” as such, because many testable and valid theories in the so-called “hard” sciences are likewise little more than collections of known statistical regularities (e.g., “statistical-nomological” theories). One need not be in possession of *ultimate first causes* – even if one ever *could* be – in order to have useful and valid theories about things.

Add to this, that Egan’s restricted view of what a “theory” is, does not seem to recognise, as did Charles Darwin, N. R. Hanson, T. Kuhn and others, that any empirical investigation worthy of the name *presupposes* a theory. How else is one to know what kind of data is relevant? Theories provide the selection criteria for investigation in all empirical enquiries, including the kind of empirical investigations which Egan himself embraces to criticise other psychological theories. This general point, which Egan fails to see, is nicely illustrated in the correspondence of Charles Darwin:

Almost thirty years ago there was much talk that geologists ought only to observe and not theorize; and I well remember someone saying that at this rate a man might as well go into a gravel pit and count the pebbles and describe the colours. How odd it is that anyone should not see that all observation must be for or against some view if it’s to be of any service. (Quoted from Peter Medawar’s *Induction and Intuition in Scientific Thought*, 1969, p. 11)

Thus, even what appears to be neutral scientific investigation is itself guided by a theory, or theoretical perspective, and cannot be divorced from it. Therefore, Egan cannot accept some scientific studies and reject others quite as facilely as he does. Empiricism is not that simple.

Let us look again at Egan's so-called "psychological fallacy," which he describes thus:

If we allow [culture-specific regularities] to suggest implications for educational practice we commit the psychological fallacy – allowing a description of something contingent on past forms of cultural initiation to constrain our prescriptions for the future. (p. 137)

We can now see, however, that this could only be regarded as a "fallacy," as such, if one accepts the truth of Egan's major premise – which is at best dubious. Moreover, this argument (i.e., the charge of "fallacy") is used by Egan to support the plausibility of the major premise, but this is a viciously circular argument. That is, the charge of "fallacy" supports the major premise, but the major premise is what enables him to charge "fallacy." It is, therefore, not only contentious, but premature and unfair of Egan to condemn opposition to his premise with the charge of "fallacy." Reasonable people can rationally disagree with this premise, and even if one view should turn out to be more compelling in the long run, the charge of "fallacy" is hardly apt. For a bit of reasoning to be "fallacious" it must be *clearly* and *archetypally* wrong. We do not have such a case here.

Finally, in his critique of "behavioural objectives," Egan presents a rather elaborate metaphor of a "hologram" vs. a "two-dimensional picture" in order to articulate the sterility of "behavioural objectives" in education. Before examining this metaphor, however, I would like to make a rather bland point about behavioural objectives which is overlooked by Egan. This is simply that one can define a behavioural objective as reaching some determinate level on (say) a national examination such as "O levels" or "A levels" in Great Britain, or a Graduate Record Examination in the U.S. When such examinations are set intelligently (as they often are) they can be regarded as fairly reliable indicators of a candidate's level of educational achievement; indeed there is data to support this. What should be noticed about such exams, however, is that insofar as they require written essays of the candidate's point of view about things, they are not merely memory exams. They can be taken as evidence of the candidates' *educational* achievement in the most honest sense of the phrase. And performance on such exams can be regarded as "behaviour." I see no reason, therefore, why they cannot be classified as "behavioural objectives" which measure *educational* behaviour. (In fairness to Egan, however, I also do not see what is to be gained by such talk!)

But Egan's major criticism of behavioural objectives is that they emasculate education by construing it as the accumulation of distinct bits (e.g., facts) which can then be put together much like the constituent pieces of a two-dimensional picture. Egan argues, however, that education is not like this, but is rather like a "hologram" where each bit contains an entire image of the whole.

If the photographic plate containing the interference pattern of the holographic image is broken into bits and pieces, each piece contains, in however blurred a form, the image of the whole. The ear of the Mona Lisa tells nothing of the lady's smile. A small section of the holographic image of a modern enigmatic lady would, with the laser's light, reveal, however vaguely, the bewitching smile and ear and chin and whatever else. An educational objective, I am suggesting by this metaphor, is like a piece of a hologram rather than a piece of a two-dimensional picture. (pp. 154–155)

He continues:

My metaphor is intended to point toward the answer that what makes a set of facts and concepts educational units is that they contain in their organization an image of the whole of which they are units. (p. 155)

... Why is not "the fact" a proper unit of education? Well, clearly because accumulating lots of facts does not add up to being educated We all recognize that mere information does not make a person educated. (p. 158)

Egan employs this suggestive metaphor to criticize radical behaviourism, and other forms of "instructional technology" (p. 169) as well as behavioural objectives, as such. While the metaphor is suggestive, and at times illuminating, I find the argument to which it is put fundamentally flawed in at least two ways. First, it seems to me (without being unfair, I hope) that the argument is a flagrant case of what is known as "the Fallacy of Division." Let me quote Irving Copi's *Introduction to Logic* for a description of this fallacy:

The Fallacy of Division consists in arguing fallaciously that what is true of the whole must also be true of its parts. To argue that since a certain corporation is very important and Mr. Doe works for that corporation, therefore Mr. Doe is very important, is to commit the Fallacy of Division. [Similarly] to argue from the premise that a certain machine is heavy, or complicated, or valuable, to the conclusion that *this* or any other part of the machine must be heavy, or complicated, or valuable [commits the] Fallacy of Division. (Copi, 1982, p. 126)

In this case, Egan's hologram metaphor merely suggests or asserts that each part (i.e., "fact," "concept," or "information") contains "an entire image of the whole." But we are not provided with any corroborative argument why this must be so. Simply because facts and concepts are to be organized for a larger educational purpose will not yield the conclusion that each fact or concept taken singularly must reflect the entire educational purpose (or "image"). The argument appears simply fallacious.

Second, when considering the hologram metaphor, one wants to ask: In whose eyes must the "entire image" be *during* the instruction? The teacher's or the student's eyes? If the image is in the teacher's eyes, then what we would want to know is how a given fact or concept is substantively different from those same facts or concepts when they are not being used

for an educational purpose? If, on the other hand, Egan intends that the “entire image” be in the student’s eyes during the instruction, it is difficult to see how a regress can be avoided here since the student would have to understand the end (or whole) before he or she had mastered the constituent parts. In either case, I fail to see how the hologram metaphor alters our usual view of *educational* facts or concepts. Changing the purpose to which they are put does not change their nature.

It is doubtless easier to criticize even good books than it is to constructively praise them. Despite my criticisms, as I said earlier, there is much in this book that is illuminating and worthwhile. I think others will find it so also. Egan’s critique of Piaget is arguably the most comprehensive and convincing available in one volume. Similarly, his pointed criticisms of several widely accepted research paradigms (e.g., against Gage, Gagné, Bandura, and ATI research) are well written and persuasive. The onus is now on these researchers to vindicate themselves; in the meantime, educators should be properly sceptical. For these reasons, I think the book makes a genuine contribution to education. In the end, however, I think Egan has overstated his case, and has failed to sustain his major conclusion. But as often as not, his arrows are right on target. You should read it.