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**Abstract:** *This paper first describes three different views of instrumentalism, discusses the appropriateness of each in the context of adult education, then concludes with the author's position that instrumental approaches are sometimes appropriate and should not be dismissed out of hand.*

As so often happens, the issue of instrumentalism is confounded by the fact that different authors from different traditions use the term in different ways, leading to a degenerating "yes it is ... no it isn't" argument.  In this paper, I wish to describe three different views of the concept of instrumentalism: the view of Lukács and Habermas, the view ascribed to Dewey, and one version from the philosophy of science.  After the review of these various concepts of instrumentalism, I review the work of various authors who lay out some of the issues of instrumentalism as it applies to education and end with my own convictions on this subject.

## Review of the literature

Habermas sees instrumentalism as the result of the "reification of consciousness"; *reification* refers to "the structural process whereby the commodity form permeates life in capitalist society ... (critical theorists are) especially concerned with how reification makes human beings 'seem like mere things obeying the inexorable laws of the marketplace'" (Zuidervaart, 2003).  According to Lukács, reification, "the assumption of man as he exists and an empirical world whose structure is unalterable" (Lukács, 1967) is a fundamental problem.  This leads to an implicit, uncritical support of bourgeois society. "Reification is, then, the necessary, immediate reality of every person living in capitalist society. It can be overcome only by *constant and constantly renewed efforts to disrupt the reified structure of existence by concretely relating to the concretely manifested contradictions of the total development, by becoming conscious of the immanent meanings of these contradictions for the total development*" (Lukács, 1967, italics in original).  According to Habermas, this leads to a dehumanization of the proletariat. "The critique of instrumental reason aims at being critique in the sense that the reconstruction of instrumental reason's incessant operation reminds us of what has been sacrificed, of the mimetic impulses of a suppressed nature – of external nature, but, above all, of subjective nature" (Habermas, 1984, p. 383).

The second notion of instrumentalism that I wish to discuss is the way that Dewey used the term, i.e.: "the belief that makes knowledge merely a means to a practical end, or the satisfaction of practical needs" (Prawat, 2002, 868).  Although there is some controversy over whether this is always what Dewey meant when he used the term, this is the meaning which I want to analyze here.   In this sense, instrumentalism states that knowledge is useful, especially as a means of adjusting to an environmental situation; in this sense Dewey may have been influenced by Darwin. This is a sense of instrumentalism which is fundamentally *pragmatic* and *individualistic* – individuals use knowledge for their own purposes.  We will return to this position in the discussion of Blacker (below).

The third view of instrumentalism comes from the philosophy of science.  According to Mattessich (1978),  "pure science" is interested in *truths* but not necessarily *usefulness*; applied sciences are interested in statements which are assumed to be useful, but without a high enough reliability so as to count them as truths.  In addition, applied sciences always ask fairly specific questions and usually include (at least implicitly) an interest in cost-benefit analysis.  One can

see the difference between pure and applied science as similar to the distinction between theory and process – for example, one does not need to know why a car needs oil in order to learn that changing the oil frequently will result in longer engine life (the latter is called an *instrumental hypothesis*).  Mattessich states that "an instrumental hypothesis is acceptable because the assumption that it is 'goal attaining' is supported by stronger evidence than that of any alternative available" (Mattessich, 1980, p. 15). This is similar to, but not the same as, an epistemic pragmatism: "the pragmatic view that something is true because it is useful, must not be confused with the belief that truth in the long-run may prove useful, and that the relation between truth and usefulness requires further exploration" (ibid, p. 16).

Sorber offers his own succinct definition of scientific instrumentalism: "the point of science is to provide accurate predictions, not to tell us what theories are true" (Sorber, 2002, p. 113).  He outlines an approach to verifying models, based on the work of Akaike, which combines maximum data fitting with the principle of parsimony.   In order to create an hypothesis, factors can be combined in a number of ways, setting some coefficients to zero in order to remove them from the analysis entirely.  The NULL hypothesis is the well-known, simple hypothesis that that there is no relationship.  There are at least three different ways that such an hypothesis can be interpreted: "Bayesians assess which hypotheses are most probable, frequentists evaluate which hypotheses should be rejected, and likelihoodists say which hypothesis is best supported" (Sorber, 2002, p. 112).  Akaike's method allows one to estimate a model's *predictive accuracy*, using an iterative method which is structurally very similar to the notion of coherence described by the present author in a forthcoming paper.  Sober's article demonstrates the possibility of a computational model of instrumentalism, at least in the sense that it is used in the philosophy of science.

## Comparisons of positions

It is possible to see the previous three notions of instrumentalism as intertwined and differentiated; a discussion of how these are similar and dissimilar should suffice for an explication of the issues involved.

Perhaps a critical theorist would say that the the notions attributed to Dewey and the concept as described by  Mattessich and Sorber are aspects of the same mistaken notion of objective reality.  "When the individual confronts objective reality he is faced by a complex of ready-made and unalterable objects which allow him only the subjective responses of recognition or rejection. Only the class can relate to the whole of reality in a practical revolutionary way ... And the class, too, can only manage it when it can see through the reified objectivity of the given world to the process that is also its own fate" (Lukács, 1967).   In this view, Dewey's individual decision maker can only see the reality that has been created for him; in fact, focusing on the individual is inherently doomed:  "Thus for reified man a robust causal determinism is more accessible than those mediations that could lead him out of his reified existence. But to posit the individual man as the measure of all things is to lead thought into the labyrinths of mythology" (Lukács, 1967). In a similar manner, one might argue that the approaches of Mattessich and Sorber are simply perpetuating the myth of a static, fixed reality which can be codified.

In proposing that these three forms of instrumentalism are different from one another, one could focus on what is the referent of the instrumentation.  The position of  Lukács and Habermas, one might argue, is oriented toward the social/political/economic aspect of human existence, while the position attributed to Dewey focuses on an individualistic view of life, and Mattessich and Sorber are discussing aspects of the universe which do not specifically require human beings-in-the-loop (i.e., what we generally refer to as objective phenomena).  Of course, a critical theorist might argue that the other two positions are mere fantasy, but this is an

ideological / theoretical position and not necessarily the case.

## Blended views of instrumentalism in education

Perhaps the most succinct statement of an anti-instrumentalist perspective that I have read is from Foley (1993): "Adult education, through its instrumentalist, professionalised and decontextualised practices and discourses, is implicated in processes of capitalist domination and capitalist reorganisation. Adult educators who wish to contribute to struggles against capitalist domination must stop seeing adult learning and education as purely technical, interpersonal and institutionalised activities. They must recognize that adult education and learning are also complex, and contested, social, cultural and historical processes."

Amartya Sen, winner of the Nobel Prize in economics, proposes a "human capability" model which illuminates "the concept that education involves both intrinsic and instrumental values" (Saito, 2003, p. 24). According to Saito (2003), Sen's theory stands in contrast to the human capital model in that, although it includes human roles in economic production (as does human capital theory), it also incorporates human capabilities as they directly relate to the well-being and freedom of people, and also to their indirect role in social change (ibid). This approach comes close to incorporating all three types of instrumentalism described above. "In short, on the one hand, education is an important factor in broadening human capabilities, which include human capacities. On the other hand, human capabilities play a role in influencing both intrinsic and instrumental values. Therefore, it seems appropriate to say that education plays a role in influencing both intrinsic and instrumental values. What the concept of human capabilities has contributed to this discussion is to clarify the process of influencing intrinsic and instrumental values through education. Clarifying this process helps to show education as concerned with both intrinsic and instrumental value" (ibid).

Blacker (2000) lays out aspects of the arguments for and against instrumentalism in education, claims it is a false dilemma, then seeks to repair this dichotomy by positing a non-foundationalist contextualism. The author describes one non-instrumentalist viewpoint as "a conviction that there is something to education that is not reducible to its serviceability to allegedly higher aims" and the instrumentalist retort that "non-instrumental conceptions are usually held to be overly aloof, if not elitist and therefore complicit in perpetuating societal inequalities". He then lays out the various sides of the debate, concluding that neither position is tenable: any attempt at grounding a justification is necessarily thwarted, depending as it does on a foundationalistic account.

The second part of Blacker's article describes a model wherein education exists in a dynamic tension with other social institutions and, as such, is both dependent on these social tensions and yet autonomous from them. This is a systems-theoretic approach, viewing education not so much as a thing-in-itself, but instead as a dynamic balancing act: "liberal democratic educational institutions ought to be understood as strongly ensconced within a justificatory network of distinct and sometimes conflicting nodes of obligation" (Blacker, 2000, p. 230). This leads to a pragmatic autonomy, since "if there are enough of these mutually canceling forces and they are positioned properly, there arises a kind of autonomy – relative autonomy – wherein it is possible to imagine a kind of self-standing freedom that is not obviously dependent upon any metaphysical buoy" (Blacker, 2000, p. 238). One potential issue with this model is the role of temporality; it is not clear whether the dynamic tension between elements of the system is a static tension (as in a coherence network) or a dynamic settling-out (as in a von Bertalanffy-type system).

Similar to Sen and Saito, Blacker claims that some educational moments are valued in-and-of-themselves, while others have merely instrumentalist value, what Blacker calls value

from the 'inside' versus the 'outside.' He continues: "There seem to be inescapably purposive practices that cannot truly be understood in isolation from the external goods they generate. Clear examples would include agriculture and medicine, where the generation of external goods is necessary to the meaning of the practice itself... Only trivially would one be farming if one's crops were perpetually so horrid as to be unusable by anyone. In extreme cases, they might even become hopelessly deformed via a sort of spherical involution, where practitioners become overly immersed in purely internal imperatives that occlude the just-as-necessary externalities... (this) is commonly found among certain segments of the humanities faculties of US research universities, where devotion to increasingly inbred forms of scholarship proportionately inhibits the achievement of externalities long popularly associated with the humanities" (Blacker, 2000, pgs. 234-235).

The notion of instrumentalism seems to come complete with a notion of goals; these goals might be ethical, they might not, they might be conscious or unconscious. One way of viewing the situation is to say that we can separate the goals from the methods of achieving them; others would argue that this was the same "logic" that allowed Auschwitz to happen. Is it possible to separate goals from methods? One might point to the example Wernher von Braun, who at least declared that he was "apolitical." Whether this is a tenable position is arguable on two fronts: (1) is it ethical to separate these notions this way? and (2) is it possible to, or is this an illusion on the part of von Braun?

## Goals and purposes in Adult Education

Some people (as discussed by Blacker) might propose that education is a good-in-itself, and therefore no further explanation is needed. However, this position seems to beg several key questions: what is to be learned? who (if anyone) will teach? is it true that any learning, no matter the content, is good? All that we need is one counter-example in which this is an unjustifiable position, and they are easy to come by. If we are unwilling to accept education as its own justification, then what *are* we willing to accept?

It seems to me that we must take a position as to our goals as adult educators. If we take the position of negation, we risk falling into a radical skepticism which obviates any attempt at achieving our goals. Another possibility is that we might fall back to a world-denying mysticism and become totally inner-directed. In contrast to this, I believe it is possible to improve the lives of real people, and some of this improvement can be attained through appropriate uses of educational techniques in the course of learning appropriate material. The choice of what is *appropriate* is necessarily a judgment call on the part of the educator in concert with the adult student; however, just because this judgment has the risk of being faulty does not mean we should never take a step forward.

Thus, I believe that any workable theory of adult education must incorporate the complexity of interaction and structural supports between all of the "players" in the system: students, instructors, institutions, employers, governments, economies, etc. It is almost a surety that some of the movements within such a complex will support the system itself; something that critical educators are often loath to do. However, chaos theory tells us that the very complexity of the relationships means that small movements can cause large changes, if properly timed and executed. Lao Tsu wrote that "In the universe great acts are made up of small deeds" and Lukacs writes that "decisive actions can involve an - apparently - trivial matter" (Lukacs, 1967).

Frick (1995) discusses a plan to develop educational theory in a simulation environment. Drawing from the work of Maccia & Maccia, who propose 201 hypotheses concerning relationships among properties of educational systems, Frick proposes to build software simulations of the complex interrelations within an educational system, and to use these

simulations to help educators and administrators to propose innovations within their systems. (See also King & Frick, 1999). If even mildly successful, such a tool would allow educational theorists and policy-makers to test out the results of their theories in a way which is (a) deeper than can be done via an "armchair" analysis alone and (b) safer than testing theories on humans as a first draft. Such an approach has been taken in the pharmaceutical industry for years; *it can never replace actual implementation with humans*, but it can at least help the researcher to focus on those ideas which have a higher potential for success. Frick proposes that the reason this approach has not been developed in education thus far is that most people do not think in a systems manner; he contends that a shift in thinking must occur before an approach such as his will gain general acceptance.

It is important to note that Frick (and my) invocations of systems theory refer to rigorously developed models, not the "vague and superficial analogies" (von Bertalanffy, 1968, p. 35) which are often mistaken for a fully worked-out theories. Systems theory, system dynamics, and similar phrases are often found in the literature of education (in general); e.g., Sterman (1994) offers an excellent, detailed introduction to the use of systems theory in education. However, a review of the literature shows a wide divergence in understanding of the subject. Systems theory was initially developed by biologist Ludwig von Bertalanffy as a rigorous method of describing the structure and mechanisms of biological systems. He was very concerned about "the danger that general system theory may end up in meaningless analogies" (von Bertalanffy, 1968, p. 35). Many of the references to systems theory in the education literature are, unfortunately, of this type (Shaffer, 2004). This does not mean, however, that all uses of systems theory in educational contexts are naïve or trivial.

In summary, if we are to have goals as adult educators, and if we wish to fulfill our goals, it seems to me that we must try to develop workable theories. Even the absence of a theory is, in effect, a theory. Instrumentalism, in one way of looking at it, is simply the choices that we make with the expectation (or hope) of achieving our goals.

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