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ABSTRACT

Four concepts are considered in light of their impact on instructional technology and design, i.e., the value status of technology, the proliferation of worldviews, equity in education, and the relationship of ethical issues to practice. The assumption that instructional technology is a value-neutral method of conveying instructional information is challenged by showing how instructional technology is value intensive in its support of a particular worldview, i.e., the scientific worldview. Heinich's definition of educational technology, with its emphasis on elements of replicability, reliability, communication, and control, is used as a framework to discuss: (1) the dichotomy between educational equity and educational excellence, i.e., provision of maximum access to educational resources for everyone vs. increased access to educational resources for those who excel; (2) current challenges to the scientific worldview from groups who hold alternative worldviews about the production and justification of knowledge; and (3) the challenge to the scientific worldview presented by the "new pragmatism," or "social construction," as it creates a void allowing for the empowerment of alternative "knowledge communities," e.g., religious and ethnic groups. The instructional design point of view, which embraces convergent and measurable responses pegged to carefully specified objectives in the transfer of a pre-selected, invariant body of knowledge, is called into question in light of the development of more fluid, multiple knowledge structures negotiated at the local level. (13 references) (EW)

Title:

SYMPOSIUM: Technological Equity: Issues in Ethics & Theory

Paper #5 Instructional Technology and Proliferating World Views

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Instructional Technology and Proliferating Worldviews

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This paper briefly explores four concepts that are beginning to receive sustained discussion by groups in a number of places, including the instructional design and technology program at our institution. These four notions are: the value status of technology, the proliferation of worldviews, equity in education, and the relationship of ethical issues to practice. These four notions are interrelated and collectively raise questions, we will suggest, that speak to the future uses of the products of instructional technology in public education. At the end of the paper, we will attempt to raise a few of those questions.

No claim is made here that these four points are somehow definitive in capturing all the forces that impinge upon an evolving instructional technology. They simply seem useful to us in discussing issues that we think important to the future of this field.

It has been commonly understood that instructional technology is a value-neutral method of conveying instructional information. We will want to challenge that assumption by showing throughout this paper how instructional technology is value intensive in its support of a particular worldview, what we will call the scientific worldview.

When we use the term instructional technology in this paper we will have in mind the definition of that term as provided by Heinich in his 1984 *ECTJ* paper, "The Proper Study of Instructional Technology." Heinich is concerned with studying instructional technology in a way that make clear its technological origins. He offers definitions of general technology then explores how these definitions might help guide the development of instructional technology. While drawing on the definitions of general technology offered by John Kenneth Galbraith and Daniel Bell, Heinich moves beyond these to provide a definition of general technology that he finds isomorphic with his vision of instructional technology. Heinich's definition emphasizes the elements of replicability, reliability, communication and control among others (Heinich, 1984).

We are using Heinich's definition because we agree that a study of the larger notion of technology adds clarity to our understanding of instructional technology. His definition also serves to bring into sharp relief the counter issues we seek to raise in this paper.

Within the scientific worldview the assumption seems to be that systematic processes, scientific methods and scientific knowledge were not arrived at through political, economic and cultural decisions. Even if they were, the discussion is now over. Today, we have a reliable, authoritative and stable store of knowledge that can be passed on to the next generation. Earlier, we mentioned that these assumptions are beginning to attract sustained debate among a number of groups. These groups do not necessarily repudiate the practice and the tenets of science, general technology or instructional technology; rather, their objection appears to be that such entities do not represent their worldview and attendant knowledge.

Science, technology and instructional technology, as traditionally conceived, have influenced the way we view many ethical issues. One such ethical issue, important in the 1980s, has been the national debate carried on in the various educational reform documents over the subject of educational equity vs. educational excellence. Equity in education may be understood as extending the available educational resources to all people in the name of "justice, fairness or even mercy" (Smith and Traver, 1984). Instructional technology seems to be a good choice to distribute educational resources because it uses replicable, well documented, reliable techniques to communicate information. For example, an instructional technology product that involves mathematics instruction for girls is a public document that can be inspected for potential biases and general appropriateness. This is seen as an advantage over a live teacher whose instruction may not be available for perusal. Also, special provisions can be made for handicapped students to assist them in gaining access to educational resources via instructional technology. On the other hand, instructional technology may be assumed to be equally effective while serving the opposing position of excellence in education. Excellence, in contrast to equity, seeks a higher degree of human perfection and emphasizes higher **individual** achievement as the goal of reform in American education. The excellence movement "assumes that the only way to produce a good person or a good society is to have high expectations and to demand that these expectations be met through independent, individual effort" (Smith and Traver, 1984).

Equity seems to emphasize maximum access to educational resources for everyone while excellence seems to emphasize increased access to educational resources for those who excel. Here we have an example of how instructional technology becomes perceived as a value-neutral vehicle for the delivery of all knowledge. Within the scientific worldview, equity and excellence seem to be major opposing positions which can be served impartially via instructional technology when, in our view, these issues are primarily disagreements about how to distribute agreed upon, static information. That is, equity and excellence are part of a worldview that includes the notion that the established scientific knowledge base can be subdivided and redirected toward a pre-selected audience. This worldview does not assume a challengeable, fluid knowledge that requires constant review by different social groups with varying views as to what knowledge is pertinent to their world.

We want to provide here a brief sketch of one of the many ways the scientific worldview is being undermined today. It will hardly come as a surprise to people in this room when we note that something major has happened to the underpinnings of the human sciences during the past decade. Scientifically generated knowledge, once assumed to be unequivocal and atemporal, but open to accretionary growth like the Great Barrier Reef, has come under increasing attack. The presumed epistemologically privileged position of knowledge that results from rigorous application of the scientific method has been deeply--some would say, mortally--challenged. Clifford Geertz (1983) dramatically sums up the situation by saying, ". . . agreement on the foundations of scholarly authority . . . has disappeared" (p. 161). Extending this notion to professional practice, including theory and practice in our field, Donald Schon calls attention to "the crisis in confidence in professional knowledge" (Greene, p. 69).

This climate of crisis created by the challenge to a positive science worldview is allowing groups who hold alternative worldviews about the production and justification of knowledge, to take a greater forthrightness in the

assertion of their positions. Groups such as the religious fundamentalists, blacks and people of color, and women's groups are, with growing confidence, demanding a fair hearing for their knowledge claims at the public policy level and in the curriculum and instructional programs of the public schools. We think these demands will grow and eventually translate into a significantly altered common education for public school students.

While these groups struggle to occupy a space left open by a retreating scientific worldview, it is not the knowledge claims, *per se*, of these groups that challenges science nor opens the space for the advancement of their claims. For this is the project of yet another group that will concern us here. The term "group" is perhaps granting too great a measure of coherence for what really amounts to a broad movement with disparate and even contradictory elements. Currently, there is no label that adequately characterizes the range of work under way. Quentin Skinner (1985) in *The Return of Grand Theory in the Human Sciences,* speaks of the "invading hordes" of "hermeneuticists, structuralists, post-empiricists, deconstructionists, and other(s) . . ." (p. 6). A subset of the invading hordes that intrigues us most goes under the rubric of "new pragmatism" or "social construction." We will use the terms interchangeably, although we admit to a growing preference for the term new pragmatism because it reminds us that elements of this position have been around since the beginning of the twentieth century. Richard Rorty, more than anyone else, has carefully articulated the arguments of the new pragmatism; therefore, our discussion, in this section, will take up his major ideas.

As a preface to a discussion of Rorty's new pragmatism, we think it prudent to provide a framework for understanding his ideas. One approach is to begin with the work of Thomas Kuhn. In his book, *The Structure of Scientific Revolutions* (1970) Kuhn lays out a theory of change in scientific knowledge that has been widely discussed. Change in science occurs in a revolutionary rather than an evolutionary way. Scientific knowledge does not gradually grow into ever larger structures. Rather, current structures or paradigms are replaced by newer paradigms that answer a broader set of questions or interests. This revolutionary process resolves extant anomalies between competing paradigms. This is the familiar part of Kuhn's thesis. Less familiar is Kuhn's conception of the nature of scientific knowledge that undergirds paradigmatic change. "Kuhn's understanding of scientific knowledge assumes that knowledge is, as he puts it on the last page of his book, 'Intrinsically the common property of a group or else nothing at all'" (Bruffee, 1986 p. 774). In Lauden's (1977) review of Kuhn's conclusions about scientific decision making and the corpus of knowledge flowing from such decisions, he notes that the process for Kuhn ". . . is basically a political and propagandistic affair, in which prestige, power, age and polemics decisively determine the outcome of the struggle between competing theories and theorists" (p. 4). Kenneth Bruffee writes this about Kuhn's position:

> For most of us, the most seriously challenging aspect of Kuhn's work is its social constructionist epistemological assumptions. A social constructionist position in any discipline assumes that entities we normally call reality, knowledge, thought, facts, texts, selves, and so on are constructs generated by communities of like-minded peers. Social construction understands reality, knowledge, thought, facts, texts, selves, and so on as community-generated and community-maintained linguistic entities--or, more broadly speaking, symbolic entities--that define or "constitute" the communities that generate them, much as the language of the *United States Constitution*, the *Declaration of Independence*,

> and the "Gettysburg Address" in part constitutes the political, the legal, and to some extent the cultural community of Americans (p. 774).

For Kuhn, scientific knowledge is a social construct. For Richard Rorty, all knowledge is a social construct. Rorty ". . . assumes that there is no such thing as a universal foundation, ground, framework, or structure of knowledge. There is only an agreement, a consensus arrived at for the time being by communities of knowledgeable peers. Concepts, ideas, theories, the world, reality, and facts are all language constructs generated by knowledge communities and used by them to maintain community coherence" (Bruffee, 1986, p. 177).

At least four ideas important to our discussion can be found above. Knowledge, for Rorty, is socially justified belief. Knowledge does not ground in universal principles. Truth is made, not discovered, and since truth is arrived at "only for the time being," truth is perishable. Therefore, truth is made in a community. It is not discovered, that is, it is not "out there" in the world waiting to be gradually uncovered through rigorous scientific investigation. According to Rorty, no single epistemology can lay claim to immutable truth that a second community is obliged to accept (Rorty, 1979).

For Rorty, truth and knowledge are no more or less than what someone wants them to be. Knowledge is words, metaphors offered by human wordmakers to describe how we might live (Rorty, 1986). Rorty invokes Nietzsche's concept that "Truth is a mobile army of metaphors."

The creation of worldviews or evolutionary change within a worldview results from the metaphors invented by the "strong poet." Strong poets created the two worldviews that have dominated Western culture over the past two millennia, namely the religious worldview and the scientific worldview. Rorty views religion and science as simply competing literatures. Literatures created by strong poets as to how we might obtain truth and use it as a standard to live by (Rorty, 1987). Religion and science are exclusionary literatures: only one way of knowing is to be sanctioned. Nonbelievers of the religious epistemology of divine revelation are considered "heretics;" claims of knowledge not validated by the epistemology of science are dismissed as "nonsense." Religion and science are prescriptive in terms of values. Similarly, technology is the embodiment of values that spring from the chosen literature. Technology, if not value saturated, does not exist at all.

Rorty's ideas, which for the sake of brevity we have admittedly simplified, we think will provide bases for the formation, in the years to come, of a large and powerful social group or coalition. Recruits for this group most likely will be made up of defectors from the scientific camp. It seems probable they will continue to translate their ideas into an educational agenda. At a minimum, the classroom will become a place where knowledge is created and recreated and where received knowledge, stripped of its epistemological authority, is closely criticized. To paraphrase an old line from Ted Rozack, received knowledge is not for the taking, but for the debunking.

Social change, even upheaval, would likely follow such a metamorphosis. As Ira Shor and Paulo Freire (1987) put it, "If teachers and students exercised the power to remake knowledge in the classroom, then they would be asserting their power to remake society. The structure of official knowledge is also the structure of social authority" (p. 10). Shor and Freire also foresee changes in the purpose and methods of instruction. Current instructional models, and we might include

standard instructional technology here, are viewed as being compatible with a static and passive curriculum that promotes the current dominant authority in society and disempowers non-dominant groups.

"New pragmatism" does not endorse any epistemology, but in its attack on science it creates a void allowing for the empowerment of alternative "knowledge communities." In terms of public schooling, for instance, religious fundamentalists will expect their divinely revealed knowledge to be taken seriously. They will assert that their knowledge allows access to the fundamental nature of the meaning of life—the very purpose of human existence. They claim their knowledge reveals human destiny beyond physical death. Religious fundamentalist knowledge purports to show how to achieve contact with the Divine and to derive tangible benefits from such contacts. If religious fundamentalists are to perceive the public school curriculum to be representative of their knowledge community, then they will expect their knowledge to be woven into the fabric of school knowledge.

People of color are also asserting their own notions about how their knowledge should be represented. Beverly Gordon (1987) foresees the coalescence of a powerful new educational agenda: "In the twenty-first century, the struggle will be for the hearts and minds of people of color within Western societies and the global community. The critical battle will be for control over who educates people of color and over the nature of that education" (p. 442).

Women's groups are another instance of a knowledge community, historically ignored, that is now demanding recognition. The form this recognition will take, in the public school classroom, is still evolving. A major struggle of the past decade was to establish a place for women's work, both past and present, within the knowledge communities of the existing physical and human sciences and the humanities. This amounts to an adjustment in the literary canon of the existing disciplines. More recently there is talk of parallel disciplines, space that encourages women to create knowledge that is consonant with their deeply-felt values.

In the past women, and people of color have been typically characterized as gender and ethnic groups rather than knowledge communities with distinct worldviews. This reflects their traditional lack of power. This is likely to change. Women and people of color want students representing their constituencies to be able to make their own knowledge in schools instead of simply receiving and digesting knowledge supplied by the dominant worldview. They expect school to be a place where knowledge is produced rather than merely reproduced.

With these converging claims, the classroom is likely to become contested turf. Knowledge from conflicting worldviews will need to be honored. No longer will the knowledge of the scientific worldview be considered sufficient to animate classroom life.

We think that the classroom interplay of competing worldviews will be characterized in ethical terms. Major ethical issues seldom arise when a single monolithic world view holds sway over what counts as legitimate knowledge. Ethical issues within a single worldview tend to be relatively trivial since they involve matters of style or interpretations of the canon. Ethical questions are more likely to become central when competing worldviews clash over matters of substance and practice. When adherents of one worldview take positions based on perceived foundational principles that are idiosyncratic to their worldview, they are likely to view as unethical, demands for change originating from other worldviews.

Overarching agreement on a theory of ethical error seems unlikely since consensus itself might be viewed as unethical.

From this particular ethical perspective, educational equity might be viewed as something other than a simple exercise in altruism. Equity can be offered by members of the dominant worldview to members of other worldviews it deems inferior as a ploy to eliminate competing worldviews. Is equity a device for enforcing conformity? This question in a variety of forms is often raised today as a basic element in the revisionist critique of the Western liberal tradition.

Deconstructionists would raise similar questions. Their work seeks to demonstrate that our most cherished ideas, ideas such as equity, or justice, or even mercy, do not exist "out there" in the universe in some sort of ahistorical limbo waiting to be discovered and pressed into the service of humankind. Ideas, as such, have no existence apart from the individuals and groups who propose them. Michel Foucault constructs histories which describe how such ideas come to be proposed, how they are justified in a knowledge community and what use is made of them. In Foucault's dark formulations, the invention of such ideas--or knowledge--is inseparable from power. Knowledge and power are mutually reinforcing. Ideas are created to extend the power of a group already powerful enough to judge and punish a second group they label as deficient or deviant (Foucault, 1982, 1975).

In the public school classroom, the question is being raised as to whose knowledge is to count. Is it possible that at some future time knowledge from all knowledge communities or worldviews can be equally honored? How would the difficult ethical issues be negotiated? How can we hope to even hold open the conversation? As Richard Bernstein (1983) observes when writing about the work of Rorty: "We must appreciate the extent to which our sense of community is threatened . . . by the faulty epistemological doctrines that fill our heads. The moral task of the philosopher or cultural critic is to defend the openness of human conversation against all those temptations and real threats that seek closure" (p. 205).

If the common school classroom is to offer a space for the "great human conversation," where values, knowledge and action are guided by ethical negotiations and where knowledge groups are equally empowered, what might this mean for an evolving instructional technology? Instructional technology, as it has been thought of, has supported the delivery of an authoritative and relatively fixed knowledge base across time and space. Heinich holds that ". . . the basic premise of instructional technology is that all instructional contingencies can be managed through space and time . . ." (p. 68). The phrase "through space and time" means that the same static knowledge is delivered to the client group no matter where they reside, Malibu or Harlem, and, because that knowledge is locked into a software "time capsule," it can be opened when needed by the client group, tomorrow, six months or six years from now.

Replicability , alluded to earlier in Heinich's definition, means sameness: the same product once designed can be reproduced endlessly and used repeatedly. Reliability, as used in the definition, means the results or outcomes for the groups using the product are the same no matter where or when they use it. From an instructional design point of view, convergent and measurable responses pegged to carefully specified objectives make sense when attempting to transfer a pre-selected, invariant body of knowledge. Instructional designers use formative evaluation

procedures to vouchsafe reliability; that is, to ensure the pre-selected knowledge is reproduced by the learner.

All this has served the field well. But how well will it serve the members of alternative knowledge communities who expect their young people to collectively engage in the creation of knowledge, or people who think knowledge, like bread, is best made at the local level? In the future, how will instructional technology respond to the requirements of fluid, multiple knowledge structures negotiated at the local level?

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