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RUNNING HEAD: PSYCHOLOGISM AND AMERICAN INSTRUCTIONAL TECHNOLOGY

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Abstract

The centrality of psychology in the field of instructional technology has never been comprehensively questioned; most instructional technologists have assumed that (behaviorist, cognitivist, constructivist, or another) psychology is the "natural" foundation for education and thus for instructional technology. The driving question of this article is: What are the problems of psychologism as found in the theories and practices of instructional technology? We present a brief genealogy of American instructional technology in relation to the influence of psychology; review critical psychology and discuss some problems of psychologism focusing on positivism, metaphysics, ecology and culture, and power; and provide a hermeneutical framework for the theory and practice of instructional technology.

Psychologism and American Instructional Technology

Introduction

Instructional technology has had an eclectic knowledge base including but not limited to psychology, system theory, audiovisual education, communication, engineering, and adult education; nonetheless, one cannot but notice the centrality of psychology in the theory base of the field in the United States. For many, instructional design is "applied educational psychology in the best sense of the term" (Dick, 1987, p. 183) and the goal of instructional technology, i.e. facilitating learning, is understood as a psychological goal (Winn, 1989). Reigeluth (1983) notes that instructional design has developed out of psychology (or learning-theory) and media/communications, and the major portion of instructional design comes from the tradition of learning theory; he also states that the birth of instructional design as a discipline must be credited to three psychologists (e.g. B. F. Skinner, Jerome Bruner, and David Ausubel). Similarly, Saetler (1990) argues that the recognition of instructional technology "as a distinct field and profession in its own right" (p. 501) was an outcome of behaviorism and cognitive psychology in that the applications of scientific research, primarily psychological, became the base of the process of instructional practice. This hegemony of psychology in instructional technology is not without its problems. Put broadly, instructional technology has failed to pay attention to political, ethical, cultural, and aesthetical issues (see, for instance, Carter, 1999; Hlynka & Belland, 1991; Nichols & Allen-Brown, 1996; Nichols, 1991; Noble, 1996, 1998; Nunan, 1983; Reeves, 1995; Subramony, 2004; Voithofer and

Foley, 2002; Yeaman, Koetting & Nichols, 1994). Wilson (2005) stressed the need to look beyond psychology-based learning theories and seek out perspectives from various theory bases (see also Wilson and Myers, 1999).

The centrality of psychology in the field has never been comprehensively questioned; most instructional technologists have assumed that (behaviorist, cognitivist or constructivist) psychology is the "natural" foundation for education and thus for instructional technology. The driving question of this article is: What are the problems of psychologism as found in the theories and practices of instructional technology? Psychologism refers to a theory that tends to give explanatory preeminence to psychological functioning; a theory or system is psychologistic "if it assumes that psychological states and experiences enjoy an autonomous existence and that they serve as the foundation of other experiences and human actions" (Williams, 1990, p. 141). Similarly, psychologization refers to the way in which psychological issues become centralized in theoretical discussions on instructional technology and thus critical (including political, philosophic, and societal) issues have been evacuated from theoretical discussions of instructional technology. Instructional technology (IT) refers to "the theory and practice of design, development, utilization, management, and evaluation of processes and resources for learning" (Seels and Richey, 1994, p. 1). The terms "instructional technology" and "educational technology" are used interchangeably throughout the article. We especially focus on instructional design (ID) as a subset of instructional technology because it is considered as "the hub around which everything else in our field revolves" (Winn, 1989, pp. 35-36). Instructional design is "an organized

procedure that includes the steps of analyzing, designing, developing, implementing and evaluating instruction" (Seels and Richey, 1994, p. 31).

We will start by presenting a brief genealogy of American instructional technology in relation to the influence of psychology, we will then review critical psychology and discuss some problems of psychologism focusing on positivism, metaphysics, ecology and culture, and power; and finally we will provide a hermeneutical framework for the theory and practice of instructional technology. Apart from the historical analysis, this study is a primarily philosophic investigation and does not aim to provide any design guidelines as is the tradition for instructional design research papers.

A Genealogy: Psychology as the "Savior" of Instructional Technology

Understanding psychologism in instructional technology as a present problem entails recognizing the development of instructional technology. As Foucault and many others have pointed out, history is never simply "the past"; history is always a product of the present. In other words, our investigation is motivated by the *present* issues; as it will be clear from the coming sections, it is geared towards an ontology of the present.[1] Then, prior to taking up a systematic critique of psychologism in instructional technology, we feel it is relevant to start by overviewing how instructional technology emerged; the focus is not to write a comprehensive history, but a genealogy, that is to say we have a certain problem in our mind (i.e. psychologism) and our perspective of historical investigation is

[1] An ontology of the present or a critical ontology of ourselves involves "the historical analysis of the limits that are imposed on us" and "an experiment with the possibility of going beyond them" (Foucault, 1984, p. 50). For Foucault, the role of intellectual is "not to shape others' political will;" it is "to question over and over again what is postulated as self-evident" as well as "to dissipate what is familiar and accepted" (Foucault, 1988, p. 265).

informed by this present problem. Needless to say, it is a very brief summary and necessarily distorts the very complex development of the field. Although genealogical histories do not strictly follow periodizations and paradigms, our investigation includes some conventional periodizations. This might be a limitation however for the purpose of this section, namely to show the centrality of psychology in the field, it is relevant to follow conventions. Nonetheless, people never neatly change their behaviors or approaches based on such things.

In a recent issue of Educational Technology Research and Development (ETR&D), a special forum is conducted on functional contextualism (see introduction by the editor, Ross, 2006). In addition to a leading piece on functional contextualism by Eric Fox, the reactions of several leading theorists including Michael Hannafin, David Jonassen, William Winn, and Charles Reigeluth are included in the issue. Fox (2006) presents functional contextualism as an alternative to constructivism: like constructivism, functional contextualism also rejects objectivist epistemology, but claims to provide a more solid philosophical position for an empirical science of learning and instruction. What is interesting from the scope of this article is that although functional contextualism is mainly a philosophical position by Fox's own admission, Fox (2006) presents it as "a new perspective emerging in psychology" (p. 5) and "a philosophical perspective emerging in behavioral psychology" (p. 7). After this introduction the scene is well known; whenever a "new best way" (Hannafin, 2006, p. 40) is emerging in psychology, proponents of it attempt to provide a new foundation for instructional technology. In Fox's case, "Functional contextualism seems to hold great promise for education and IDT [instructional design and technology]" (Fox, 2006, p. 7); "general rules and principles are

used to predict and influence events" (p. 12); knowledge constructed by functional contextualists is likely to be "applicable to all (or many) similar such events, regardless of time or place" (p. 12).[2] In his reaction to Fox, Winn (2006) suggests that experimental methods and quantitative data are essential for instructional design to be scientific. Reigeluth and An (2006) welcomes Fox's paper in that it encourages designers to produce "practical knowledge applicable to similar events regardless of time and place" (p. 49). Now, we are not interested in the specific promises or limitations of functional contextualism (see the coming sections for a critique of positivism in psychology and instructional technology, see also Jonassen [2006] and Hannafin [2006] for a critical appraisal of functional contextualism); all we want to point at is the *persistent* influence of psychology as a foundation for instructional technology, and the influence wielded by new psychological trends over instructional technology. Below we look at history in order to understand how psychology has become so central in the present. We will not be interested in specific media or technologies, but be more interested in the development of theoretical approaches.

Historically, instructional technology has been understood by many as having two fundamental components: (a) an instructional media or audio-visual component (e.g., a hardware or some physical means used to deliver or present instruction) and (b) an instructional design component (e.g., a process component that indicates how instruction will be prepared for delivery via some medium, Dick, 1987; Reiser, 2002). Both the hardware approach and process approach have a long history; however, the foundations

[2] It is interesting to see "usual suspects" of psychology in different approaches to instruction, let us note two of them: 1) Merrill and et al (1996) claimed: "The principles of biology do not change with changes in society; neither do the principles of learning and instruction." (p. 6-7). 2) Rourke and Friesen (in press) reveal how learning scientists' recent accounts of design-based research are mostly focused on the assertions of the generalizability, objectivity and scientific validity.

of the modern conception of instructional technology appeared as an early application of psychology to the process of instruction at the turn of 20th century, especially in the 1920s when psychology was making its impact on instruction regarding the sequencing of instruction, the organization of practice, the transfer of learning, and the testing of comprehension (Saettler, 1990). In other words, the seed of educational technology did not evolve out of the visual or audio-visual education movement, or the media approach of 1920s or earlier decades, but evolved out of the application of psychology to instructional processes. The application of psychology to the process of educational technology declined after 1930s and resurfaced with World War II (Saettler, 1990). As an academic field of study instructional design has been pioneered by educational psychologists after World War II (Dick, 1987). From the beginning, psychology has been so influential in instructional design that, as opposed to the hardware or software aspects of technology, the psychological conception of instructional technology is often referred to as instructional design (or instructional systems design) (see Ely, 1999). Similarly, as opposed to audio-visual instruction movement, a technology of instruction was based on "psychological principles and empirical data based on the total teaching-learning process" (Saettler, 1990, p. 169). Most of the major components of the instructional design process, such as Skinner's programmed instruction, Mager's popularization of behavioral objectives, Gagné's learning hierarchy, events of instruction, and conditions of learning, Glaser's criterion-referenced testing, and Scriven's formative evaluation emerged in the mid-1950s through the 1960s (Dick, 1987; Reiser, 2002). The original work of Skinner and Gagné, among others, focused on the application of psychological principles to the design of classroom instruction, and occurred before many graduate

programs in instructional design were created in the 1970s (Reiser, 2002). Additionally, many of those who have been instructional technology professors were originally trained in psychology departments and functioned as educational psychologists (Dick, 1987).

Instead of focusing on devices or media, the focus of communications approaches shifted to the process of communicating information from a source (a teacher or medium) to a receiver (the learner). It is often acknowledged that the communications approach to educational technology from the 1950s altered the traditional framework of educational technology, which was largely the media or hardware approach (such as using motion pictures, television, audio and video-discs) (Saettler, 1990). Some convergence of communication and educational technology took place between 1950s and 1980s including Pask's conversation theory that offered a model to explain construction of knowledge or interaction between two or more cognitive systems (such as a student and a teacher). Nonetheless, from the early 1960s the influence of behaviorism did not let educational technology incorporate communication within its conceptual framework to any great degree (Saettler, 1990). In the mid-1960s the communications paradigm moved closer to a systems approach (Saettler, 1990). For instructional design, the decade of the 1970s can best be represented as the decade of the systems approach (Dick, 1987). Typically, "rather than concentrating on analyzing the classroom environment or using concepts from general systems theory to gain a better understanding of why and how schools function as they do," instructional systems design models have focused on producing instructional products (Saettler, 1990; p. 354). This clearly shows the psychological focus of instructional systems design.

During the 1980s and 1990s, several new trends emerged and affected instructional design, including cognitivism, using microcomputers, the performance technology movement, constructivism, electronic performance support systems, rapid prototyping, and using the Internet in distance education (Reiser, 2002). Among these trends cognitivism and later constructivism have been perceived by many as a new paradigm for instructional design. The cognitive approach to educational technology, unlike behaviorism, pays attention to internal processes of behavior and sees the role of the learner not as responding, but as active, constructive, and playful. By the late 1970s and early 1980s, the cognitive model of learning began to replace the behaviorist model in educational technology (Saettler, 1990). In a cognitive model of instructional design, the organization, processing, and storage of information by the learner constitute essential elements in instructional development. Many people have argued that the so-called "cognitive revolution" has great promises to educational technology (Saettler, 1990). A common perception seems to be that a "revolution" in psychology should bring a "revolution" in educational technology. Although claimed as a revolution, cognitivism did not bring any change with respect to the relationship between psychology and the field: psychology still was viewed as a foundation for the field, albeit a moving one. From this point of view, cognitivism was? a step in consolidating the foundational place of psychology in the field. Many works from 1980s bear witness to this consolidation of psychology. For instance, in *Instructional-Design Theories and Models: An Overview of Their Current Status*, all of the theories or models have grown out of the learning-theory tradition (Reigeluth, 1983).

In 1990s, the constructivist approach to instructional design was understood by many as a new paradigm. Constructivism holds that "knowing is a process of actively interpreting and constructing individual knowledge representations" (Jonassen, 1991, p. 5) and claims that "learners can only interpret information in the context of their own experiences, and that what they interpret will, to some extent, be individualistic" (p. 11). Similar to cognitivism, constructivism did not bring a major change with respect to the relationship between psychology and the field – it simply became yet another new foundation for the field. With the impact of constructivism, some have even argued that, unlike previous times, educational psychology and technology are "now engaged in an ongoing duet" (Salomon & Almog, 1998, p. 238). Some constructivists simply argue that they provide a better psychological theory for instructional practices (e.g. Duffy & Jonassen, 1991).

By now, it should be clear that psychology has played a foundational role in the mainstream of instructional technology. Nonetheless, as Hannafin (2006) points out, there have been multiple viewpoints, or a heteroglossia, in instructional technology. Seels and Ritchey (1994) mention three broad views as a growing body of alternative views in the field; these views are critical examinations of common position (such as criticism of the technology emphasis in the field by Striebel and Bowers), alternative theoretical orientations (such as the constructivism, situated learning, or the performance technology movement) or alternative foundational philosophies (such as the postmodernism of Hlynka and others). For the most part, critical examinations and postmodernism are non-psychologistic in intent. Some are articles have clearly taken their lead from humanities, including art, not psychology (see Hlynka and Belland, 1991). Constructivism seems to

be psychologistic to the extent that it confines itself to cognitive psychology. In contrast to psychologistic focus of Duffy and Jonassen, Wilson (1997a) provides a more multidisciplinary/postmodern framework of constructivism in which much of the objectivist/constructivist debate seems to be based on wrong questions (see also Wilson, 1997b; Wilson, Teslow & Osman-Jourchoux, 1995). Moreover, Duffy and Jonassen's (1991) understanding of situated cognition seems to be mainly psychologistic and epistemological; however, Striebel's (1991), Wilson's (1995), and Wilson and Myers' (1999) accounts of situated cognition is non-psychologistic in the sense that they explicitly discuss issues related to value and ideology.

To recapitulate our historical analysis, many psychological approaches have been considered as "foundation" to instructional design (Driscoll, 2002). The problem with the narratives on "cognitive revolution" or "constructivism" in instructional design is that they lack questioning of the centrality of psychology; rather each new approach in psychology is celebrated as —to paraphrase Richard (1998)— the new "Savior" of instructional technology. Educational psychology (EP) and instructional design (ID) have been considered so close that some universities have combined EP and ID programs, e.g. Florida State University's Department of Educational Psychology and Learning Systems or Brigham Young University's program of Instructional Psychology and Technology. Instructional design theories and learning theories have been considered as "a house and its foundation, they are closely related" (Reigeluth, 1999, p. 13). Some even argued that instructional design should be considered as neo-educational psychology in the sense that instructional systems design is a model or paradigm for conceptualizing educational problems (Dick, 1978, 1987). With respect to the aim of this paper, perhaps the most

important implication of this closeness between psychology and the field is that they must have similar problems! For this reason, it seems relevant to briefly review some of the problems associated with "psychologism in psychology" before analyzing the problems related to psychologism in instructional technology. We will first introduce critical psychology because instructional technologists seem to be largely unaware of it.

Critical Psychology

Before introducing critical psychology, we would like to say a few words on our methodology that we will follow in the remaining of the article. In order to present a critique of psychologism and psychologization, what we do is probably best captured by the term *bricolage*[3]. Briefly, *bricolage* refers to trans-disciplinarity, of which "the field" of cultural studies is a nice example. Nelson, Treichler, and Grossberg (1992) describe the methodology of cultural studies as a bricolage: "Its choice of practice, that is, is pragmatic, strategic and self-reflexive" (p. 2). Our choice has been strategic and self-reflexive in the sense that we would like to criticize the hegemony of psychology in instructional technology by overviewing the development of the field and by bringing multiple sources and forms of knowledge to the investigation. Our choice is pragmatic in the sense that we simply use the critical approaches at our disposal, our investigation does not claim to exhaust all the problems related to psychologism in the field, nor do we

[3] The term comes from the works of German sociologist Georg Simmel and French structuralist Claude Lévi-Strauss. The French word *bricoleur* describes a "handyman" who makes use of the tools available to complete a task. Our use of the term mainly comes from the work of Nelson, Treichler, and Grossberg (1992), Denzin and Lincoln (2000), Kincheloe (2001), McLaren (2001) and Kincheloe and Berry (2004).

claim that approaches that we use in this article should be privileged and others should be eliminated.

As various political responses to mainstream psychology, critical psychology is an umbrella term. It includes the left, feminism, ethnic and anti-racist politics, ecological movements and new forms of spirituality (Walkerdine, 2002). Critical psychology questions the psychology's "methods (too experimental and oriented to experimenter-defined laboratory rather than real-life tasks); its samples (limited mostly to young college students, primarily from the United States); its choice of research problems (driven by momentary fads, governmental financing priorities, and the need to fit a quantified lab paradigm); its evaluations of its findings (typically fails to examine the social and political implications of its work)" (Sampson, 2000, p. 1). Reflecting the situation in early 1980's, O'Sullivan (2000) comments that psychology "as a profession was unique in its absence of a critical viewpoint, contrasting with other fields as sociology, theology, philosophy, anthropology, political science and so on, which had well-developed critical viewpoints" (p. 137).

Critical psychology also refers to the value commitments of psychologists who are concerned with human betterments. Critical psychologists aim to help give voice for those persons (e.g. people of color, women, gays and lesbians) who have been denied voice so far (Sampson, 2000; Ussher, 2000). Since psychology tends to individualize its understanding of the roots of social problems, it cannot understand the socio-cultural context needed to identify and solve the problems (Sampson, 2000). With its non-critical stance, psychology has failed to rise to sociopolitical challenges (Sloan, 2000). Many societal issues such as racial prejudice and exploitation cannot be adequately addressed

by the current mainstream psychological inquiry (Sampson, 2000). In her award-winning article, Strickland (2000) reveals the tragic historical episodes of misuse of psychological concepts and methods and notes how some these misassumptions continue to influence the psychology of today. Strickland (2001) suggests that psychology will be better served ethically when psychologists recognize the biases of the discipline and give credence to the values of cultures of *the others* (i.e. women, immigrants, people of color, and minorities).

Before pointing our critical viewpoints in educational psychology, let us first note the place of psychology in education. Richards (1998) argued that: "Almost without exception, to speak of American educational theory of the 20th century is to refer to the application of some psychological learning theory, especially: behaviorism (Skinner, Mager, Gagne, etc.), cognitivism (Piaget, Kohlberg, Bruner), and humanism (Maslow, Rogers, Glasser)." Franklin's (1986) history of social control and curriculum in the United States shows how a *psychology* of social control had replaced a *sociology* of social control in intellectual discussion about schooling in early twentieth century. Popkewitz (1991) also notes the increasing importance of educational psychology in American education from early 20th century. Egan (2002) shows how, from Spencer and Dewey to Piaget, psychology has been central in education and argues that educational psychology has increasingly focused on topics and issues that are different from what really matter in education. Apple (1996) notes the problems associated with psychologization of educational theory and practice; through this psychologization, most of the critical cultural, sociologic, political, and philosophic (such as ethical) aspects of education have been evacuated from the theoretical discussions of education. In

educational theory, it is well-known that Piaget theorized formal thinking as the highest order of human thought; the problems with such formal understandings of human thought have been described by Kincheloe (1999) as follows: "Unconcerned with questions of power relations and the way they structure our consciousness, formal operational thinkers accept an objectified, unpoliticized way of knowing that breaks an economic or educational system down into its basic parts in order to understand how it works" (p. 19). Post-formal educational psychologists emphasize that mainstream cognitive psychology often confuses socio-economic privilege with high intelligence. They accept identity and personal competence with its social, power-related, and linguistic situatedness.

Psychologism in Instructional Technology

Little of the work in critical theory (especially critical psychology and hermeneutics) has been linked to instructional technology. In the following, we provide a discussion in order to fill the gap in this direction. We limit our discussion to the issues related to positivism, metaphysics, ecology and culture, and power. In criticizing psychologism, we are not against using psychology as a foundation in instructional technology as long as they have a critical perspective.

Positivism, control, and prescription

Following the model of natural sciences, the goal of positivistic psychology is to predict and control behavior. With its positivist tenets, educational psychology is

considered to be neutral, objective, scientifically validated body of knowledge (Gallagher, 2003). Historically, instructional technology has been deeply influenced by various forms of positivism (Seels and Richey, 1994; Carter, 1999; Hannafin & Hill, 2002; Muffoletto, 2001; Muffoletto, 2003). To a large extent, instructional technology as such has not deal with critical issues such as political (power), ontological, and ethical ones. With the influence of positivism, most of the questions have been asked on the epistemological and instrumental level, e. g. "Which learning theory/design works best?" We have seen almost complete absence of articles that employ critical theory as a methodology in the mainstream journals (see, Driscoll, 1991; Reeves, 1995). In such non-critical or positivist view of the field, the examination of power, freedom, privilege, equality and social justice seems to be irrelevant in instructional design (Carter, 1999). In the following, we attempt to show that the lack of critical perspectives in instructional technology is related to psychologism of which positivism is a leading symptom. Indeed, perhaps the most important characteristic of psychologism for our analysis is the adoption of the metaphysics and methods of the natural sciences as appropriate for the study of human beings (Williams, 1990). We first deal with positivism and then with metaphysics in the next section.

From the outset, it is noteworthy that some versions of constructivism (e.g. Jonassen, 1991; Hannafin & Hill, 2002) collapse the issue of positivism to only a matter of epistemology (e.g. objectivism versus constructivism).[4] In understanding positivism, we depart from such approaches because they do not deal with the issues of power.

[4] This is not surprising because constructivism itself is seen mainly as an epistemological approach (see also Bednar, Cunningham, Duffy, and Perry, 1992); moreover, "the focus of radical constructivism is solely on epistemology" (Sharma, Anderson, Mao, Hsieh & Xie, 2005, p. 25), that is to say radical constructivists *claim* that they do not presuppose any ontological assumptions.

Positivism is a nexus of knowledge, power, and control, not simply an epistemological issue. Although most psychologists reject to be positivists; some critical psychologists have found the strong influences of positivism in contemporary (cognitive) psychology (e.g. Faulconer & Williams, 1985; Tolman, 1991; Chow, 1991; Smythe, 1991; Paranjepe, 1991). The critiques of positivism in psychology should be considered very important because they may weaken the epistemological basis of psychology (Chow, 1991). Chow (1991) argues that the way psychologists talk about their experimentations especially in textbooks is positivistic, while in fact the practice of psychologists and their experimentations are best represented by what Popper (1965) called "conjectures and refutations". In other words, cognitive psychologists are trained as if they were conducting *atheoretical* experiments in order to make empirical predictions, control or form casual links. However, in practice, cognitive psychologists conduct "*theory-corroboration* experiments", the purpose of such experiments is "to ascertain the tenability of theories that implicate casually efficacious hypothetical mechanisms" (p. 142). Therefore, positivism fails to capture the practice of psychologists. Smythe (1991) has argued that if positivistic conception of science fails to capture practice of science, then cognitivism must fail as an approach to human cognition.

Excommunicating those who question the "scientific method" or "empirical science" as the only method from the field is a simple example of positivism (cf. Merrill, Drake, Lacy, Pratt and the ID2 research group, 1996). Merrill's acceptance of the "science" of instruction is typical of positivism and fundamentally ignores the limitations of "empirical data." Feminist psychologists, for instance, have argued that empirical methods of cognitive psychology cannot entirely capture women's experiences (see, for

instance, Ussher, 2000). As so-called "cognitive revolution" in education was felt more and more, there has been what American educational philosopher Maxine Greene (1994) noted as "a restiveness with regard to educational research" (p. 424). In her review of educational research, she also noted that there has been "a growing disenchantment with technicism and bland objectivist assumptions" (p. 424) as there has been more acknowledgement of the importance of perspective in inquiry (e.g. gender, class, ethnic, etc.). Moreover, the attention attracted by Schön's work on reflection-in-action and reflective practitioner may have been an indication of perceived deficiencies in positivism both in educational community (Greene, 1994) and instructional technology community (e.g. Winn & Snyder, 1996; Wilson, 1997; Coleman, Perry, & Schwen, 1997).

Additionally, the drive for control over teaching activities through "scientific principles" is also positivistic. Perhaps the drive for control is the most evident in Heinich's (1991) enthusiasm toward replacing teachers with instructional technology through its replicability and reliability. Heinich's goal is to exert complete control over instruction. As Nunan (1983) argues such instructional designers always justify this goal by appealing to theories and techniques which are 'superior' to those possessed by teachers; we may add that psychology with its positivistic premises plays an important role in this alleged superiority. This (positivistic) approach to instructional design devalues the intuitive, unorganized, ineffective, personalized and subjective aspects of teaching (Nunan, 1983). Perhaps Heinich's positivistic approach does not represent the mainstream; the drive for control was popular in the first generation of instructional designers in 1960s as it is evident in the first definition of the field, prepared by AECT in

1963, which included the term "control". The term was later removed from the 1972 definition (for a historical analysis, see Januszewski, 2001). Nonetheless, although the term control was removed from the definition, the term prescription has been in currency among designers. For many, instructional design is a prescriptive science "because its primary purpose is to *prescribe* optimal methods of science" (Reigeluth, 1983, pp. 21-22) and in the sense that design theories "offer guidelines as to what method(s) to use best attain a given goal" (Reigeluth, 1999, p. 7). The aim to prescribe instruction and predict results is clearly an outcome of positivist psychology. Note that we are interested in prescription as long as it is related to the separation of design and implementation of instruction; in other words, as long as design *prescribes* implementation of teachers. Conventionally, instructional designers hand down the end-products (e.g. content, strategies, evaluations, etc.) to be implemented by teachers (Nunan, 1983, p. 3). From a cognitive perspective, Winn (1990) acknowledges that human behavior is unpredictable and indeterminate, the "predictability of human learning, upon which instructional design has always relied, cannot be relied upon" (Winn, 1989, p. 40).[5]

By their own admission, some of the leading constructivists (e.g. Duffy & Jonassen, 1991) did not dispute the need for prescriptions for instruction, they simply argued that their hope is "to establish an important link between prescriptive instructional theory and descriptive learning theory" (p. 10). Such constructivist line of argument, then, does not unequivocally aim to modify prescriptive instructional design. Nonetheless, learning in constructivist learning environments are less prescriptive

[5] Winn (1990) points out difficulties in accommodating cognitive perspective in instructional design (see also Winn & Snyder, 1996). Winn (1990) links the separation of design and implementation with behaviorism and acknowledge its problematic nature (see also Winn, 1989) along with Nunan (1983) and Streibel (1991); however, he notes that such a behavioral approach continues to influence (cognitivist) instructional design.

(Hannafin & Hill, 2002); Bonner (1990) stated that cognitive psychologists object the prescriptive instructional design in which the instruction is acting upon the learner. Nonetheless, such cognitive (or constructivist) accounts do not explicitly account for power/control. As long as cognitivism or constructivism is seen an epistemological matter, it cannot properly deal with the issues of power including control/prescription. We think the issue of control/prescription is deeply political and ethical; exerting control over teachers' activities through prescriptive design requires political and ethical justifications, not epistemological ones (e.g. a better link "between prescriptive instructional theory and descriptive learning theory").

Perhaps the most significant critique of positivistic cognitive psychology in instructional design has been provided by Streibel (1991) from a situated cognition perspective. Streibel (1991) argues that discrepancy between instructional design theories and instructional design practice cannot be resolved because design activities are situated activities, i.e. depending on specific and unique circumstances of the activities. According to Streibel, instructional strategies should *orient* future teachers and learners for situated activities, not *prescribe* how to teach or how to learn. In contrast to controlling instruction, we should aim to provide recourses to teachers and students. An implication of this re-orientation is described by Streibel (1993) as follows:

> Because right action in a given situation cannot be prescribed but only worked out by the participants, instructional designers will have to create learning resources and learning environments that have some space for teachers and learners to work out their own sense of the good. Hence, instructional designers will have to give up the notion of designing 'teacher-proof' instruction and 'idiot-proof' learning resources. (p. 159)

Winn (1989) points out that making instruction "teacher-proof" has also made it student proof, students are also decontextualized along with instruction. Wilson (1997) also criticized formal and decontextualized instructional design models, which are largely products of 1970s psychology, and emphasized the importance of the practice (see also Wilson and Myers, 1999; Winn, 1995). AECT's 1994 definition of the field, that we mentioned in the beginning of the article, includes the term "resources," however as seen from Seels' and Richey's (1994, p. 12) clarification (i.e. "[r]esources are sources of support for learning, including support systems and instructional materials and environments"), it does not specifically question prescriptive instructional design. Situated instructional design evidently does not aim to prescribe or control instruction. As opposed to prescriptivist instructional design, a better strategy to improve instruction would be that teachers should be well schooled in instructional design in order to modify and invent instructional strategies (see Winn, 1990). Instructional designers should not remove "choice" on the classroom floor by "superior" or "scientific" management processes. This is not a technical issue but an ethical one; namely, teachers and learners *should* be able to do what they value most within their classroom. Nichols (1991) argues that beyond most conceptions of ethics in the field of educational technology, which deal predominantly *how* to insure privacy, ownership, or equality, but "we should be asking *if* our current conceptions of educational technology are ethical at all" (p. 134). Indeed, it is impossible to deal with such fundamental ethical issues when the educational technology is reduced to controlling or providing prescriptions for instruction. Between technical considerations and ethical ones, ethics should have a primal position. Instructional

designers should take a humble role in providing resources for educators and not take precedence over teacher's authority. Knowing learners and working with them closely, teachers are in the best position to modify, prescribe and implement instruction. The essential role of instructional design should be seen as providing "resources" for teachers and learners. In the case of resource, teachers (and learners) select among various materials and still control instruction (Nunan, 1983); teachers are largely responsible for making decisions on the classroom floor or online space.

Metaphysics

Most designers probably think that instructional technology has nothing to do with metaphysics. In "The Contribution of Metaphysics to Instructional Technology: An Existentialist Perspective Based on Sartre's *Being and Nothingness*", Moore and Garrison (1988) produced an interesting parody. The whole article is blank except a quotation from Shakespeare: "Much ado About Nothing." At face value, Moore and Garrison do not think metaphysics could contribute to instructional technology; they do not even feel a need to justify the claim.

We believe that metaphysics, as the study of being and the nature of reality, can help us see the problems inherent in attempting to find "atemporal principles" in instructional technology. Atemporal principles supposedly exist naturally and could be applied to any instructional situation without any historical or cultural specificity. Many instructional technologists have mistakenly devoted themselves to finding these principles. Such an approach is inherently metaphysical and should be discarded because

human being and understanding lie in temporality (Heidegger, 1962). As Rorty (1995) notes, pragmatists aren't "very big on principles"; it is then ironic that although many instructional designers like to be pragmatists (e.g. Reigeluth, 1992), "principles" seem to be very popular (see Reigeluth, 1983). According to Reigeluth (1983), instructional principles exist naturally and are discovered by educational researchers. More recently, functional contextualists have shown an interest in principles "applicable to all (or many) similar such events, regardless of time or place" (Fox, 2006, p. 12).[6]

Metaphysics has "pointed to something constant and absolute" in order to account for the world (Faulconer & Williams, 1990, p. 51). As Heidegger's ontological investigations showed, attempting to found truth on atemporal and absolute ground makes impossible for temporal and situated human beings (*Dasein*) to understand anything. The temporality of human beings means that they "can be understood only in relation to its own time and future" (Gadamer, 1975, p. 89). As opposed to temporal nature of human understanding, metaphysical understanding gives primacy to abstraction, generalization, and *theoria*. Heidegger (2002) argues that since Plato "there has been a fatal relocation of truth away from concrete things themselves as they naturally show and reveal themselves in the richness of our vernaculars toward the idea of the exchange of equivalents" (p. 36). By exchange of equivalents, Heidegger meant the exchange between representation and what is represented; this is correspondence theory of truth. The problem with this correspondence theory of truth is that it is "abstract, one-sided, and fragmented truth of general equivalence" (p. 36). In contrast to such abstract conception of theory, Heidegger proposes truth as *aletheia* or disclosure; this truth is concrete truth

[6] Fox (2006) explicitly states that functional contextualism is not based on positivism. Considering his enthusiasm toward control, prediction, and atemporality Fox's rejection is purely verbal. Fox's denial is ironic because even Skinner denied being a positivist (Paranjpe, 1991).

as world disclosure. Instructional theory should not aim to grasp things as *sub specie aeternitatis*, i.e. "under the aspect of eternity." Following Heidegger's critique of metaphysics, we should value human beings' primordial and concrete and situated dealings with things.

Ecology and Culture

Since psychology lacks indigenous concepts and tools to capture local knowledge and points of view adequately; psychologists in non-Western world cannot do meaningful social and cultural contribution to their societies (Nsamenang, 1995; Adair & Kagitcibasi, 1995). One of the disturbing problems with psychological discourse as such, including constructivism, is that it is completely inadequate to deal with ecological disaster. Bowers (2005) vigorously argued that constructivist approaches (including Dewey's and Freire's approaches) lead to the form of individualism and the destruction of community that is required by the spread of technology/consumer-dependent lifestyle. Similarly, child-centered education, e.g. Piaget's, tends to abstract child's personal biography and local context from his cultural biography and institutional context (Bernstein, 1977). Using a psychological and epistemological discourse and stressing the learner's construction of knowledge, constructivism ignores that human existence is part of larger ecology of interdependent relationships and deemphasizes the role of intergenerational knowledge that sustains a viable cultural and environmental commons (Bowers, 2005). It is hard, if not impossible, to find writings in instructional technology which emphasizes the importance of intergenerational knowledge which are less detrimental to ecology.

Although Vygotsky's understanding of cultural/historical basis of learning and Bruner's understanding of mediating role of language may receive a very brief mention in some constructivist writings, the deeper implication of their efforts to give culture a more central role in learning is ignored (Bowers, 2005). In instructional design, the small amount of the appropriation of the psychology of Vygotsky is largely limited to "zone of proximal development" (ZPD).[7] In other words, Vygotksy's psychology is stripped of its cultural-historical aspects in instructional design; this is nothing but psychologism. We have still yet to come to terms with cultural/historical psychology in instructional technology.

Power

There are some promising works that are done by instructional designers who are sensitive to privilege and power; some instructional designers who are dealing with open education and courseware specifically aim to create educational opportunities for underserved populations. Nonetheless, many instructional designers appear to be unwilling to pursue a dialogue about why power and privilege would be considered a part of instructional design projects (see Carter's [1999] distressing experiences as an instructional designer). This is surely an effect of positivism in that the issues related to power seem to be irrelevant to what instructional designers do. For instance, a good deal of post-Vygotskian research has focused on "the effects of interaction at the interpersonal

[7] See for instance a few mention of Vygotsky in various articles in *Instructional Development Paradigms*, edited by Dills and Romiszowski (1997); *Instructional-Design Theories and Models: A New Paradigm of Instructional Theory*, edited by Reigeluth (1999); and *Constructivism and the Technology of Instruction: A Conversation*, edited by Duffy and Jonassen (1992).

level, with insufficient attention paid to the interpersonal and socio-cultural levels" (Daniels, 1995, p. 517). Since such a research does not aim to understand power structures beyond *immediate* context of classroom, personal competence in stripped of its situatedness and power-relatedness (Kincheloe, 1999); in other words, research and practice tend to psychologize failure within classroom, and not strive to understand the *real* cultural and socio-institutional context of failure.[8] Failure is more than a psychological or individual deficiency; pyschologizing student failure is ideological in the sense that it blames the student while it protects the establishment from criticism (McLaren, 1998).

In most of the constructivist writings, including what Reigeluth (1999) celebrated as the new "learning-focused paradigm of instruction" (p. 19), power is seen as a fixed possession of the "oppressive" teacher, liberty became synonymous with lifting of that repression (see Walkerdine, 1992). Such understanding of power fails to understand modern forms of power (and thus oppression); according to which, power is a relation (between forces) not a possession (Foucault, 1980; see also Deleuze's [1988] study on Foucault). Despite their claim contrary, both teacher-centered instruction and learner-centered instruction do not eliminate the reproduction of inequalities (Sadovnik, 1991). From a post-structural feminist perspective, Walkerdine (1984, 1992) showed how progressivism is oppressive and makes oppression invisible. Similarly, critical sociologists have showed that educational domination functions more effectively when it is invisible (e.g. "implicit hierarchy masks the power relationships," Bernstein, 1977, p. 118; see also Bourdieu, 1986); educators tend to psychologize the failure (psychologizing

[8] We take this distinction between immediate and real from Marcuse (1964), who used immediate and real interests in another context.

here means a complete focus on cognitive aspects of the individual learner as if the failure was only a matter of individual aptitude) and misread or ignore the cultural and cognitive significance of the children of disadvantaged groups in more flexible instructional environments (Bernstein, 1990; Sadovnik, 1991). Despite the rhetoric of "progressivism" about valuing each child, the child-centered education "fails to acknowledge the embeddedness of pedagogic practices in their institutional contexts, with their own power structures and culture-specific values and practices" (Chouliaraki, 1996, p. 105). Progressive instructional designers, including constructivists and the advocates of "learning-focused paradigm of instruction", should go beyond epistemological and pragmatic issues (e.g. objectivism versus constructivism & what works) that are blind to the new active forms of "invisible" power in flexible environments.

Toward a Hermeneutical Psychology and Instructional Technology

Now, as a completive our former critiques and in accord with practical/situated nature of instructional design, we focus on the practical philosophy and hermeneutics of German philosopher Hans-Georg Gadamer.[9] We do not aim to propose a new foundation for instructional design; rather, we think a psychology informed by hermeneutics provides a rich language in order to understand human learning properly; moreover, it helps us to capture the *praxis* of instructional designers. (Note that *praxis* is much

[9] Hermeneutics is the study of interpretation (and understanding). Gadamer's approach to hermeneutics is often called as philosophical hermeneutics. Gadamer's philosophy is considerably affected by his teacher, Martin Heidegger. Practical philosophy is used in Aristotelian sense and as such practical philosophy and hermeneutics cannot be separated; in other words, in our practical affairs we depend on our ability to arrive at understanding and thus we must to interpret (see Gadamer, 2001).

broader than the sense that one makes practical applications of scientific theories [Gadamer, 1981]. The term *praxis* "points to the totality of our practical life, all our human action and behavior, the self-adaptation of the human being as a whole in this world" [Gadamer, 2001, p. 78]). Our preference of hermeneutical informed psychology is motivated by that it is non-positivistic and at the same time critical of strong relativistic aspects of postmodern social constructionism as it has been developed by some psychologists (Martin, Sugarman, 2001). From such a perspective, human psychological being is emergent within particular socio-cultural contexts, but, once emergent, is not reducible to those contexts. Methodologically, hermeneutics represents a modest third way and is an example of "beyond objectivism and relativism" (Bernstein, 1983). Thus, in *Truth and Method,* Gadamer (1975) claims that understanding or interpretation cannot be found on any method—understood as a set of rules in natural sciences. This is not a rejection of the importance of methodological concerns in human sciences, but rather as insistence on the role of method and the priority of understanding as a dialogic, practical, situated activity (Malpas, 2005). In understanding human beings, psychology (and instructional design) should not devote itself to the methods of natural sciences; since every human observation is a situated interpretation (or understanding) the naturalist approach to psychological inquiry cannot work.

Our prior involvement, partiality, prejudgments, and even prejudices are not a barrier to understanding, but rather a condition to understanding and experience (Gadamer, 1976). The rationality, that guides our practice as a whole, was called *phronesis* (or practical wisdom) by Aristotle: "*Phronesis* is something that proves itself only in the concrete situation and stands always already within a living network of

common convictions, habits, and values—that is to say, within an *ethos*" (Gadamer, 2001, p. 79). Kuhn (1970) showed the inevitability of received beliefs or traditions in the practice of scientific communities. *Phronesis* (and of *praxis*, method) nicely captures the instructional designer's working life in practice; it also helps to restore education as *praxis* and *phronesis* (Böhm, 1994; Rourke & Friesen, in press). Indeed, it is not possible for practical knowledge (e.g., education and instructional design) to proceed like mathematics or metaphysics, where necessarily valid conclusions can be derived through logical deduction; human action lacks the necessary constancy and continuity for such a process, and because of its basically situational nature, it lacks that which applies universally (Böhm, 1994). Instructional designers should not simply follow disembodied and decontextualized prescriptive principles or carefully articulated decision-making procedures (Winn, 1989). They make judgments in the concrete situation based on their experience, preferences, values, and traditions; such judgments could be understood as *phronesis*. At this point, we should understand that in instructional design activities, aesthetics play a greater role than we conventionally assign to it. Following Heidegger's criticism of metaphysics, we can say that our relationships with the world and our practical judgments are a result of our concrete dealings. As such aesthetics lies in the heart of any design activity because the "aesthetic experience is not just one kind of experience among others, but represents the essence of experience itself" (Gadamer, 1975, p. 63). In other words, instead of setting general or abstract relationships with the world, we set concrete relations which are nothing but aesthetic relations. (An example is a concrete relationship of an individual teacher with an individual student). Moreover, in our preference among various design options aesthetics plays an important role in the

sense that we do not make judgments based solely on technical functionalities but on our sense of attractiveness in them. In the quarrel between instructivism and constructivism, perhaps aesthetics plays a greater role than epistemological issues. Arrow's 'impossibility theorem,' which demonstrates that it is impossible to make a purely rational choice between even a limited number of alternatives when considering only a limited number of criteria, suggests that extra-rational (as Arrow defines rationality) considerations, like aesthetical ones, actually do come to bear more frequently that we realize. Thus, instructional designers should give more focus to the aesthetical aspects of design (see also Parrish, 2005; Wilson, 2005).

Conclusion

Instructional design is often referred by "linking science," a metaphor taken from John Dewey. What is problematical with this metaphor is that instructional design is understood as a linking science between learning theory (or psychology) and educational practice (see Reigeluth, 1983; Bednar, et al, 1992). We have attempted to show that such a conception leads to psychologism and is blind to the issues of power, ethics, ecology, etc. Instead, we would like to propose that instructional design should be seen as a linking science between various educational studies and educational practice. We should stop what Wilson (2005) properly called "psychology envy;" rather than accepting psychology as a source of "truth" for the field, we should interrogate it as a "regime of truth" (Foucault, 1980), that is, a nexus of power and knowledge. We do not need to despise psychology as foundation for the field, but rather we should embrace a critical

psychology in which socio-cultural and historical issues are intrinsic to psychological ones. As a more proper position toward *practical* (praxis) nature of education, we should go beyond the aim of "control", which we have taken from psychology. Instructional technology should not be viewed as "foundational" or "prescriptive" but more of a "resource" for teaching activities. Since early 1990s, there is some accommodation of critical perspectives in the field, at least in AECT community (see Seels and Richey, 1994). We think this critical line of inquiry should be valued if we do not see instructional designers as mere technicians. It is imperative for instructional designers to understand more than cognitive psychology, as cultural workers they must seek to understand the political and ethical issues inherent within their activities (Carter, 1999). With the increase use of technology in rapidly changing the educational settings, instructional designers face more ethical, cultural, aesthetical, and political issues. That is why it is imperative to go beyond uncritical acceptance of psychology; being faithful to the eclectic nature of instructional design, we should continue to expand our knowledge base in order to properly understand the totality of our human practice.

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