

Help: Toward a New Ethics-Centered Paradigm for Instructional Design and Technology

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Abstract

A first step in defining IDT would be to identify its central concern. Although some see science, design, or technology as central, IDT's actual center has always been to help learners. Because the aspiration to help people is by definition ethical, it follows that the central concern of IDT is ethical. Thus, science, design, and technology become means to an ethical end. They serve *praxis*, or practical action, and no longer belong only to the *episteme* of science, the *poiesis* of design, or the *episteme/poiesis* hybrid of modern technology. *Phronesis*, or practical wisdom, is the chief virtue of *praxis*, thus making ethical choice, sound judgment, and expert decision-making topics of paramount interest. Help at the center simplifies IDT and dissolves many long-standing anomalies. It suggests the possibility of a new ethics-centered paradigm. Selected implications for IDT, its profession, and its constituent subfields are explored.

“If the eye were not attuned to the sun, men could not see it.”

Johann Wolfgang von Goethe

Did Ptolemy and Copernicus see the same sun rising above the horizon at dawn? The answers are “Yes” and “No.” Yes, they saw the same shining orb. No, Ptolemy saw a sun that circled the earth; Copernicus saw a sun around which the planets revolved. What differed was not the sun they saw, but its meaning, (Hanson, 1958).

The Search for IDT’s Center

How should we define Instructional Design and Technology (IDT)? What is the meaning of our discipline? What is the meaning of our profession? A first step toward answering this question would be to determine which of our many goals and purposes is our central, or ultimate, end. What is our central mission and toward what should our efforts be directed? Until we could agree on a central concern, defining our field would be impossible. An inability to define IDT would be unfortunate, indeed, for no other success could compensate for a discipline’s failure to understand its fundamental nature and reason for existing. “If one does not know to which port one is sailing,” said Seneca, “no wind is favorable (1969).”

This article invites the discipline and its profession to consider a new alternative for the central concern of IDT. To establish a context, it first reviews three traditional centers of concern. It then proposes a fourth alternative so apt and so obvious that it is almost invisible. The article then uses Aristotle’s categories of the rational intellect to highlight the principled differences among the four centers; and finally, it explores some general and specific implications of the shift in focus for the discipline, the profession, and the constituent subfields of both.

Four Paradigmatic Centers

Three traditional centers

Three traditional centers of IDT have large numbers of advocates. Although seldom acknowledged as such, these traditional centers represent paradigmatic kinds of intellectual activity known from antiquity. These were summarized by Aristotle at least two millennia ago and have recently been re-appropriated by postmodern philosophy. (Aristotle, 350 B.C.E./1908; Heidegger, 1996; Arendt, 1955; Taminioux, 1991.)

The scientific paradigm. The first traditional center views IDT as a science, like geometry and physics, where invariant laws, relationships, or principles are sought for, discovered, and applied. IDT embodiments of this central concern are found in instructional research, theory, and measurement.

Aristotle used the term *theoresis* to refer to the activities of contemplation and observation that define this paradigmatic activity. Within the activities of *theoresis* were three virtues by which the soul could come to know the truth: *episteme*, or demonstrative knowledge; *nous*, or intuitive intellect; and *sophia*, or philosophical wisdom. True to his colors as a philosopher, Aristotle saw *sophia*, or philosophical wisdom, as the supreme virtue, of which *episteme* and *nous* were constitutive.

Episteme included the kind of knowing that is most like the science we know today. It refers to the contemplative and logically demonstrable knowledge of things that have “unvarying originative causes,” whose existence is “necessary,” “eternal,” and “ungenerated” and whose range of application is “universal.” The model of mathematics, especially geometry, was used to illustrate the indubitable certainty that is the ideal of *episteme*. In this article, the *episteme* of *theoresis* will be identified with scientific knowledge and with the scientific paradigm of IDT.

The design paradigm. A second paradigm sees design as central. IDT is a design discipline, like architecture or engineering, where more effective, efficient, and appealing instructional products are designed, developed, and delivered (Reigeluth, 1999). IDT embodiments of this central concern are instructional design and development.

Aristotle used the term *poiesis* to refer to the rational activities of “making” or “producing” which are constitutive of the design paradigm. *Poesis* was the work of poets, artists, and artisans. In contrast to *episteme*, it was characterized by “varying originative causes.” Indeed, the very nature of making was to bring something into existence through the productive activity of the individual artist or creator. The existence of these creations was contingent rather than necessary, and the range of application of artisanal knowledge was more idiographic, situated, and contextual than it was universal. The creations of *poiesis* were also a-telic, because they were not ends-in-themselves, but were instead created to serve other ends, usually those of their makers. *Poesis* is the term we will identify with the artistic production of artifacts and the design paradigm of IDT.

The technology paradigm. A third traditional view sees IDT as centered in modern technology, where the range of reference of technology varies from applied knowledge at one end of a continuum to hardware, software, and courseware at the other.

Technology, in this sense, is seen by its advocates as a complex of knowledge, artifacts, and technical skills that is essentially passive and neutral, waiting to be activated in order to accomplish the user’s purposes. Although this view of technology would benefit from further sophistication and refinement, there is no question of the importance to IDT of the technological. What is in question is, “Is it the central concern around which other concerns should be subordinated.”

Aristotle saw *techne*, or art or skill, (from which technology is derived), as the virtue of *poiesis*, or making. Modern technology, however, belongs not only to *poiesis*, but has evolved over the millennia to become a hybrid of both *poiesis* and *episteme*—of both making and science. So complete has been this hybridization that the poetical origins of modern technology have been lost from sight. In fact, most would see the solid-state micro-electronic systems that are the basis of the current digital revolution as more the results of science than the products of craftsmanship or art.

Heidegger (1997) saw this difference and held that whereas modern arts and craftsmanship have remained consistent with the ancient meaning of *techne*, (i.e., “bringing forth” in harmony with nature), modern technology operates at a different more advanced level which often redirects, challenges, and even supplants nature. . Consequently, we will present modern technology as a paradigm the combines attributes of both *episteme* and *poiesis*.

(For examples of the advocacy of these traditional paradigms IDT, see, for example, Bransford, Brown, & Cocking, 2000; Bunderson, 2000; Gibbons, 2000; Simon, 1997.)

Having identified three traditional views of the central concern of IDT, we are now prepared to suggest a fourth. Before presenting it, we acknowledge the importance of the three traditional centers, even as we suggest that they should be subordinated to a concern that is even more central and important. Indeed, this concern is the very reason for the existence of our field—the reason why we apply science, design artifacts, and use technology. Because it is the reason for all that we think about and do, acknowledging its proper place would revolutionize IDT: i.e., literally cause it to revolve around a new center.

Help: Toward an Ethics-Centered Paradigm

We suggest that help is the ultimate center of IDT’s concerns. Although rarely explicitly acknowledged as our center, helping learners learn always has been the reason for the existence of IDT. To see help, or helping, as our ultimate center is to see IDT in the realm of what Aristotle called *praxis*, the realm of political and ethical concerns of citizens in the *polis*, or city. To elaborate the notion of help and explain the differences among the four centers, we will present the discussion that follows in question and answer format. Q & A is colloquial and is thus appropriate to serve our ultimate purpose: the initiation of a field-wide conversation about the possibilities of IDT as a helping discipline and profession.

Q: What should be the central concern, or mission, of IDT?

A: The central concern should be to improve learning by providing help to learners and teachers. IDT is essentially a helping profession whose mission is to foster the growth of individuals in all of the important venues of their lives: i.e., the school, workplace, home, church, and community—the traditional locations of interest for education and the social sciences.

Q: Why do you use the word help?

A: Help expresses simply, yet accurately, what we mean. It also locates the discussion of help in the ordinary world of practical affairs rather than

in the world of the merely conceptual. Here, in the ordinary language of everyday life, are some typical definitions of help found in two typical dictionaries that ordinary people might use. Consider what they might mean in learning and teaching settings?

The first set of definitions is from the *Random House Webster's Unabridged Dictionary* (1998/1999):

- to give or provide what is necessary to accomplish a task or satisfy a need; contribute strength or means to; render assistance to; cooperate effectively with; aid; assist:
- to make easier or less difficult; contribute to; facilitate:
- to be useful or profitable to:
- to give aid; be of service or advantage:
- the act of helping; aid or assistance; relief or succor.

Similar definitions are found in the *Merriam Webster Collegiate Dictionary*, Tenth Edition (1831/1994):

- to give assistance or support to (~a child with homework)
- to make more pleasant or bearable: IMPROVE, RELIEVE...
- to be of use to; BENEFIT; to further the advancement of: PROMOTE
- to change for the better...

Additional meanings could be cited, but these ordinary definitions of help illustrate the meanings that we intend.

Q: Why do you call the aspiration to help “ethical”?

A: The aspiration to help people, to make a difference in their lives, is by definition “ethical,” involving questions about what is good and bad for humans and the nature of the good life—i.e., what the Greeks called *eudaemonia*. Although the terms ethical and moral are often used interchangeably, we use ethical to refer to the social relation, whereas moral often refers to more formal standards or codes of conduct. In this sense, ethics is more fundamental than, and logically prior to, morality because it refers to the responsibility, or obligation, to put the other first and to be-for-the-other, upon which the establishment of moral standards or codes of conduct depends.

Q: What are some examples of the ethical?

A: Two examples from Emmanuel Levinas, the philosopher of ethics, illustrate “putting the other first” and “being-for-the-other,” respectively. The first example is when we say, “After you,” to another when we approach a door at the same time. Levinas thinks putting the other first is just that simple. The second example is found in motherhood: the expression *par excellence* of sacrifice, or being-for-the-other. (Levinas and Kearney, 1986). When it is pointed out that a woman has given her last crust of bread to her young children without withholding any for herself, a sufficient explanation of why she did what she did in most cultures is simply to say, “Because she is their mother” (Victor Hugo, as quoted in Holland, 1997).

Q: Upon reflection, it seems inarguable that IDT is a helping profession. Why has so little been said and written about it before?

A: As the introductory superscription says, “If the eye were not attuned to the sun, men could not see it (Goethe, 1805).” Modernism, the Enlightenment, and the enormous prestige of science have attuned us not to see the primordial fundamentality of the ethical relation (Inouye, 1995, 2003; Levinas, 1969; MacIntyre, 1984; Wilson, 1995). Also, the very ubiquity of obligation and responsibility make them more difficult to see. “If men were fish,” says a quotation often attributed to Spinoza, “the last thing they would see is water.” Being-for-the-other is so fundamental to what it means to be human that we take it for granted. It lies in the tacit dimension, in what Polanyi (1968) called our subsidiary awareness. Without discussions like this one, it would not be brought into focal awareness, where it can be articulated.

Unfortunately, the relative invisibility of the ends of our profession has caused us to focus instead on its more readily visible means. Consequently, the curricula we use to train IDT professionals, the literature we have them read, and the specializations they enter upon graduation are heavily weighted in favor of the means of our field, i.e., the theories, techniques and technology which we use instrumentally to help learners to learn. Little training is offered concerning IDT’s ethical ends, and the prudent, practically wise considerations that members of a helping profession must be schooled in to help and safeguard those they serve.

Aristotle’s Activities of the Rational Intellect

Help as Praxis

Q: You have stated that the Greeks used the terms *theoresis* to refer to contemplative knowledge, *episteme* to refer to scientific knowledge, and *poiesis* to refer to the knowledge of making. In addition, you have used *episteme/poiesis* to refer to modern technology. How did the Greeks refer to help?

A: Aristotle used the term *praxis* to refer to the political and ethical actions of citizens in the *polis*. “The mode of being of humans,” said he, “does not consist in producing (*poiesis*), but in acting (*praxis*)” (Aristotle as cited in Taminiaux, 1991). To help is a form of *praxis*: “practical action” involving social or ethical relations among people. Because *praxis* involves choice that combines right desire with right reason, *praxis* inevitably requires *doxa*, or judgment. *Phronesis*—i.e., prudence or practical wisdom, is the chief virtue of *praxis* and the manifestation of excellence of *doxa*..

Episteme versus poiesis and praxis

Q: How does *episteme* differ from *praxis* and *poiesis*?

A: An initial difference is found in the fact that *poiesis* and *praxis* involve calculation and deliberation. *Episteme* does not deliberate because, “No one deliberates about the unvarying,” said Aristotle (350 B.C.E./1908).

Perhaps more fundamental is the difference between events or objects that arise naturally and those that arise through the exercise of human agency. The knowledge objects of *episteme* are eternal, occurring naturally, existing of necessity, and arising universally from the same invariant causes across all time and space. No amount of calculation or deliberation and no exercise of agency will change them. By contrast, the knowledge objects of *poiesis* and *praxis* are

temporal, brought into existence by choice, existing contingently, and arising uniquely from varying causes that typically vary from time to time and place. Because of this lack of universality, *poiesis* and *praxis* are situated and contextual.

One way to see this difference between *episteme* on the one hand and *poiesis* and *praxis* on the other is to highlight their difference with respect to is and ought. Aristotle saw that true and false were to *episteme* as approach and avoidance were to *poiesis* and *praxis*. True and false refer to a relation that either is or is not. Approach and avoidance, on the other hand, refer to two possible courses of action that either ought or ought not to be taken. This difference will be important in the discussion below of the is of research versus the ought of evaluation.

Some examples may help clarify the difference. An example of an invariant analytically true relationship in *episteme* would be: Triangles have three sides. An example of a relatively invariant synthetically true relationship would be: $E = MC^2$ —the universal conservation law. By contrast, an example of approach versus avoidance in *poiesis* would be choosing in a specific situation and context whether or not to use the ADDIE model in designing and developing an instructional unit. An example of approach versus avoidance in *praxis* would be choosing whether or not to use nationwide testing to improve accountability in education. What is good, better, or best in cases like the latter is contextually bound, situationally specific, and temporally dependent.

Poiesis versus praxis

Q: In what ways do *poiesis* and *praxis* differ?

A: *Poiesis* is about things; *praxis* is about people. As Taminiaux puts it, “For the Greeks, the verb *poiein* and the substantive *poiesis* designate an activity involving things rather than people, whereas the verb *prattein* and the substantive *praxis* designate an activity with the agents themselves” (1991).

Another important difference is that *poiesis* is a-telic—i.e., its artifacts are produced to serve ends other than themselves whereas *praxis* is telic—i.e., its actions are ends-in-themselves. In *poiesis*, the ends served by the product are typically those of the producer. Because *poiesis* is a-telic, the activities of *poiesis* would be more appropriate as means to ends rather than as ends-in-themselves.

A third difference is that *poiesis* is univocal, having one voice; *praxis* is equivocal, having two or more voices. Hannah Arendt (1958) writes that whereas *poiesis* is characterized by the univocity of its model, of its means and of its goal, the activities of *praxis* are thoroughly ambiguous, or equivocal, because they connect one or several individuals to others in and through the social relation.

This does not mean, for example, that a poem written by a poet can only have one meaning. The meaning of the univocity referred to is that the poem is the voice, or product, of a single maker, or a single will. *Praxis*, on the other hand, is equivocal because it arises from the interaction, or mutual interdependence, of individuals, or wills. Thus the activities of *praxis* are by definition equivocal because they arise from the multiple voices of a plurality of individuals.

Arendt further explains that the univocity of *poiesis*, or making, is defined by (a) its beginning, the producer's plan; (b) its goal, the completion of the product; (c) the means available for its implementation; (d) the capacities required of the producer, and beyond itself (e) a specific use of the product. These five standard elements, or causes, narrow the meaning of the thing that is made and show how the products of making are univocal, even when created by collaborators.

In *praxis*, such univocity cannot be found. The very life of someone in relation to and among others is inscribed within an existing network of relationships and of verbal exchanges of multiple voices which create multiple and constant factors of ambiguity.

After elaborating her teaching, Arendt concludes that *poiesis*, or the productive activity, is univocal, predictable, reversible, and often anonymous. *Praxis*, on the other hand, is characterized by relative ambiguity, unpredictability, irreversibility, and of individuality within plurality.

When activities combine

Q: In your view are there no forms of *episteme* legitimately present in what instructional designers do?

A: Aristotle taught that most activities in *poiesis* also involve *episteme*, so it follows that there may be many forms of *episteme* legitimately present in what instructional designers do. The involvements in *episteme* may, however, not be at the level that instructional designers expect and need. They may expect or need guidance at the level of laws or principles of learning that we have been socialized to believe come from *episteme*, but which is reality may actually belong instead to *praxis*. The authentic elements of *episteme* may be associated with the physical matter from which the artifact is made; or with the mathematical formalisms used to bring the artifact into existence. Although elements of *episteme* may be present, the overall making, *per se*, belongs to *poiesis*. Why? Because making the artifact is a "bringing forth into presence," whose existence is contingent rather than necessary, which arises from varying originative causes rather than unvarying causes, and whose coming into existence is the product of choice and calculation rather than of nature acting by itself.

Q: Do you have any general suggestions about how to classify those activities that combine two or more of the kinds of knowledge?

A: The rule of combination is to classify the activity according to the ultimate purpose of the constitutive activities involved. For example, if a generalization from *episteme* were used to design an instructional sequence (*poiesis*) in order to maximize the help given to learners (*praxis*), the overall combination of activities would be in *praxis*. Thus, helping learners is the final cause in *praxis* "for the sake of which" the activities of *episteme* and *poiesis* were contributive.

The postmodern relevance of Aristotle's categories

Q: Why are you taking Aristotle's activities of the rational intellect so seriously? Is this ancient classification still valid today?

A: Aristotle’s classification is still valid and the lack of understanding of it may be part of the reason that mainstream education and social science have been so unsuccessful in predicting and controlling the phenomena they study. If, for example, education and the social sciences belong to the *praxis* instead of *episteme* in *theoresis*, their missions, goals, and methods need to be rethought and reformed.

From Aristotle until Descartes—about 2000 years—the three activities of the rational intellect were as different, but legitimate. Because each was seen as independent of the others, the knowledge of one kind of activity could not be reduced to the others. With Descartes—who with Ockham initiates the modern period—the exercise of radical doubt with its insistence on knowing the mind through “clear and distinct ideas” and knowing the world through “rational inference” made *episteme*, or science, the primary and only legitimate way of knowing (Faulconer, 1992).

From Descartes on, *poiesis* and *praxis* could only gain legitimacy if and when they could be reduced to *episteme*. As a consequence, the study of *poiesis*, as found in the arts and crafts, and the study of *praxis*, as found in the social, political and ethical realm, became increasingly scientific (*epistemic*). The study of their subject matters, i.e., fine arts, engineering, architecture, education, and the social sciences became increasingly scientific, adopting the methods of inquiry and the use of scientific tools that we employ today. Successive generations of workers in these fields were socialized to believe that scientific knowledge was the highest, if not the only, legitimate kind of knowing.

So great has become the prestige of science that the epithet “unscientific” with its pejorative connotation is often sufficient to discredit any discipline, profession, product, or person. For most in the Academy, the canons of science have become the criteria for respectability. Modern science has thus assumed the role once played by God in society. It explains creation, provides authority, pronounces truth, mediates communication, etc.

In recent years postmodernism, with its critique and deconstruction of modernism, has returned to Aristotle in attempting to trace where the Western tradition had gone wrong. Heidegger, one of the philosophers that all postmodern thinkers have in common, in his *Project of Fundamental Ontology* reappropriates the Nicomachean Ethics and the categories of knowledge described above (Heidegger, 1996).

The Relevance of the Categories to IDT

Q: Why are Aristotle’s categories relevant to our attempts to define IDT?

A: Because the differences among the categories are also the differences among the paradigms of IDT, they can inform the defining process about what to include and what to exclude. Table 1 summarizes the discussion to this point. Table 1. Aristotle on the categories of the rational intellect.

Differentia:	Genera, or Categories, of The Rational Intellect		
1. Constituent faculties	The Scientific Faculty I.	The Calculative, or Deliberative Faculty II.	III.
2. Activities	Theoresis (contemplating or observing)	<i>Poiesis</i> (making)	<i>Praxis</i> (acting)
3. The virtues (<i>arête</i>) through which the soul comes to truth	<i>Episteme</i> (scientific knowledge.) <i>Nous</i> (intuition); & <i>Sophia</i> (philosophical wisdom).	<i>Techne</i> (art or skill) in making or producing art and artifacts	<i>Phronesis</i> (prudence or practical wisdom) in practical affairs.
4. Classical examples	Geometry, physics	Poetry, sculpture, architecture	Politics, ethics, social relations
5. IDT examples	Researching and measuring	Instructional designing and developing	Learning, teaching, judging, and evaluating
6. Originating causes	Unvarying	Varying as a function of time, space, purpose, and choice	
7. Ontology	Necessary, eternal, imperishable, ungenerated	Contingent, temporal, perishable, generated by deliberative choice	
8. Range of application	Universal, across time and space	Specific, depending on time, location and context	
9. Positive and negative states	Affirmation versus negation— <u>is</u> versus <u>is not</u>	Approach versus avoidance— <u>ought</u> versus <u>ought not</u>	
10. The good and bad of its virtue	<i>Episteme's</i> propositions are true or false.	<i>Techne</i> varies from good to bad.	<i>Phronesis</i> is always excellent.
11. Ends, or final causes	A-telic. Modern science has rejected final causes.	A-telic. <i>Poiesis</i> seeks ends other than itself.	Telic. Activities of <i>Praxis</i> are ends in themselves.
12. Characteristic properties of the activity	Invariant, quantitative, predictable	Univocal, quantitative, predictable, reversible, anonymous	Equivocal, qualitative, unpredictable, irreversible, individual

Although Table 1 can stand by itself as a catalogue of differences among the categories of the intellect, it may be pedagogically useful to review the systematic differences below in row by column order.

Rows 1 and 2. Row 1 shows two major divisions of the rational intellect: the scientific faculty in column I, and the calculative or deliberative faculty in columns II and III. Row 2 shows that the activity of the scientific faculty was *theoresis*, or contemplation and observation (column I), while the activities of the calculative faculty were *poiesis*, or making (column II), and *praxis*, or practical action (column III), respectively. Because *theoresis* includes not only *episteme*, or scientific knowledge, but also *nous*, or intuitive intellect, and *sophia*, or

philosophical wisdom, it is overly broad for our present purpose. Accordingly, we have focused on *episteme*, that part of *theoresis* most akin to modern science.

Rows 3-12. The remaining rows represent dimensions that differentiate among the three activities: Row 3 contains the virtues, or ways in which the soul comes to know the truth, of *theoresis*, *poiesis*, and *praxis*. Row 3, column I, *theoresis*, contains three virtues, while column II, *poiesis*, and column III, *praxis*, contain one each. Row 4 shows classical examples of each of the activities; row 5 shows IDT examples.

Notice that each of the columns of row 5 contains a center of concern for IDT. Column I contains educational research and measurement; column II contains instructional design and development; and column III contains learning, teaching, and evaluation. Modern technology, a fourth traditional center, is not shown because it represents a hybrid combination of *episteme* and *poiesis*.

Rows 6 through 10 represent ways in which *episteme* differs from both *poiesis*, and *praxis*. If IDT's center of ultimate concern moves from *episteme* in the direction of *praxis*, then the following shifts are implied:

Row 6. Originating causes shift from unvarying to varying.

Row 7. Ontological status shifts from necessary, eternal, imperishable, and ungenerated, to contingent, temporal, perishable, and generated.

Row 8. Range of application shifts from universal across time and space to specific, depending on situation, context, and time.

Row 9. Positive and negative states shift from affirmation versus negation to approach versus avoidance: i.e., from "is versus is not" to "ought versus ought not."

If seeing help at the center implies a new paradigm, these shifts in foci could be decisively important in how our field defines itself. If the activities of *episteme* differ fundamentally from those of *poiesis* and *praxis*, and if the phenomena of IDT belong to *praxis*, then the methods used to find "is versus is not" in *episteme* might be wholly inappropriate to find "ought" versus "ought not" in *praxis*. Instead of looking for that which exists, our eyes should be attuned to looking for that which is wise and good to do. Seeing help at the center would put us in the business of seeking practical wisdom and helping people, the realm of ethics and choice, rather than in the business of just searching for what is objectively real, the realm of metaphysics and invariant determination.

Rows 10 through 12 show other similarities and differences among the three activities of the rational intellect.

Row 10. The good and the bad of the relevant virtue shifts from true versus false in the case of *episteme* and good versus bad in the case of *techne* to prudent versus not prudent in the case of *phronesis*.

Row 11. Ends or final causes shift from a-telic to telic. This shift is one reason why the ultimate purpose of IDT will be found in *praxis* instead of *poiesis*. Because the activities of *poiesis* are a-telic; they do not serve as ends-in-themselves, but are by definition only capable of being used as means toward other ends. This is why ultimate purposes will not be found in *episteme*. Although Aristotle's science included final causes, since the time of Galileo,

Bacon, and Descartes, modern science rejected them. It became unfashionable and illegitimate to personify nature as having final goals or purposes.

Row 12. Characteristics of the activity shift from univocity, predictability, reversibility, and anonymity that arise from the productive activities of a single or unified will in *poiesis*, to equivocality, quantitative indeterminacy, unpredictability, irreversibility, and individuality in the plurality of *praxis*. These characteristics arise from the dynamic interaction, or mutual interdependence, of the multiple wills, the multiple ends, and the multiple means found in the social relation.

Having reviewed the systematic differences between the *episteme*, *poesis*, and *praxis*, we are now prepared to consider implications of these shifts in emphasis for the discipline, the profession, and the constituent subfields of IDT.

Implications

If IDT's central concern is to help learners learn and if helping learners is inscribed in *praxis* and the domain of ethics, then what major implications follow? Perhaps the most important implication is that the properties of *praxis* should be the properties of IDT! As with the Copernican explanation of the apparent retrograde motion of the planets, many previous anomalies may be seen as part of a new, more coherent order. For example, the definition tangles that have plagued attempts to define IDT in terms of its many means and disciplines disappear when its ends are placed in the appropriate category. Listed below are some of the properties of *praxis* that are also implied properties of IDT:

General Implications for the Discipline

- IDT belongs to the realm of choice. As Table 1 shows, choice is the principal difference between *theoresis* on the one hand and *poesis* and *praxis* on the other. Choice can be exercised by agents who have the power to act; objects can only be acted upon. The laws that govern agents are prescriptive: They advise agents what to do; e.g., "Love thy neighbor." The laws that govern objects are descriptive. They describe causal circumstances that act upon objects; for example, "At 0 degrees Celsius and 760 mm of mercury, water freezes."

We understand the acts of agents by empathetically grasping the meaning of the act for the agents, e.g., Why did Jack and Jill begin to climb? They wanted to go up the hill. We explain the behavior of objects by giving a causal account of what produced them, e.g., How was Jack's crown broken? When Jack fell down, the impact of hitting the hill transferred momentum to his skull and cracked it.

Those who wanted IDT to be a science, i.e., in the realm of *episteme* in *theoresis*, often found choice to be anomalous because it could not be explained from a third person point of view; it could only be understood from a first person point of view, because only a first person account could empathetically grasp how agents saw their circumstances. Insofar as choice is a defining characteristic of *praxis* and therefore of IDT, instead of looking for explanation, we can look instead for understanding. This would imply that

- many new opportunities for research into the phenomenology, or lived experience, of learners and teachers could be profitably studied. For example, what is the lived experience of learners who are about to take a course of instruction: (1) who feel they are in competition with their classmates for grades; or (2) who learn so they can share what they learn with others?
- IDT's principal virtue is *phronesis*, i.e., prudence, or practical wisdom. The Oxford English Dictionary (1994) defines *practical* as "...consisting or exhibited in practice or action. Opp. to *speculative, theoretical, or ideal*." It defines *wisdom* as a "capacity of judging rightly in matters relating to life and conduct; soundness of judgment in the choice of means and ends; sometimes, less strictly, sound sense, esp. in practical affairs: opp. to *folly*."

Thus, the goal of IDT is to judge rightly, or exercise sound judgment about what to do to in order to optimally help individual learners in specific situational contexts. Because IDT involves agents in addition to objects, its practical wisdom must include the social, political, and ethical, too. Thus, our curricula, including courses and textbooks, must change to accommodate these new views of learners, our goals with respect to them, and the additional requirements of practical wisdom.

Because mankind has been learning and teaching for millennia, there are many nuggets of practical wisdom that IDT has yet to mine. Even the practical wisdom of old chestnuts like "Know your subject, know your students, and know how to teach;" and "I don't care how much you know, until I know how much you care;" have yet to be fully explored for their IDT implications.

Things are simpler than they may appear. To see that success in IDT is a matter of practical wisdom brings a new simplicity to our discipline. We need no longer complicate our profession, as the Oriental proverb puts it, "by looking for the wrong rabbit." Instead of looking for universally invariant relations that may not exist in a world of social choice, we can, instead, ask questions like the following: What choices account for the greatest variance in learning? How can we help learners and teachers make better choices, or decisions? How can we help learners learn for the right reasons and continue learning after formal instruction is over? What is the effect of pharisaism on learning? What is the effect of practices like grading on the pharisaism of students?

- IDT's phenomena arise from varying originative causes. Because many of the phenomena of IDT are equifinal, i.e., have the same end or result, there are many different ways to achieve our goals and there is often an elasticity of substitution among variables. Our phenomena are contingent, temporal, perishable, generated, specific, spatially located, and contextual. This explains why, if a law is an invariant one-to-one, one-to-many, or many-to-one relationship, such laws have been difficult, if not impossible, to find in psychology, the social sciences, and education (Havor-Teigen, 2002). This also means that learning theory prescriptions for instructional design may not be as definitive as instructional designers and past design models might have assumed them to be.

- IDT’s activities are ends-in-themselves and do not need to be justified as instrumental to ends-other-than-themselves. Although many theories of behavior appeal to self-interest in order to explain behavior, the pursuit of the good need not be justified by appeal to some other end, or benefit. Virtue can be seen as its own reward and does not have to be justified by an appeal to utility. If, indeed, help is the central concern of our profession, all and every theoretical construction and practical action in our field should be measured against the standard of helpfulness. Just what “helpfulness” means to persons—instead of how it is objectively operationalized—should be a central question for each of the constituent fields of IDT.
- IDT’s phenomena are characterized by equivocity, quantitative indeterminacy, unpredictability, irreversibility, and individuation, or lack of anonymity. These properties of *praxis* represent categories of the perplexities that often have troubled IDT in particular and education and the social sciences in general. Because mainstream social science assumed that its phenomena could be explained using the methods and the epistemology of science, i.e., of *episteme* in *theoresis*, the phenomena of *praxis* were refractory to understanding and explanation. Like the entomologist who found a bug he couldn’t classify and therefore stepped on it, instructional “scientists” often ignored equivocity, quantitative indeterminacy, unpredictability, and irreversibility, because their methods could not make them intelligible. They often used statistical techniques like averaging to rid themselves of this troublesome “noise” in their experiments. But this noise was not noise, but was actually the signal, or sign, of what it means to be human. Improving the signal-to-noise ratio of our discipline can only have salutary consequences for individuals, for institutions, and for nations.

General Implications for the Profession

Having discussed implications for IDT as a discipline, we are now prepared to discuss implications for our profession and its everyday work. In general, help-at-the center implies changes in what we *be*, *do*, and *know* as professionals.

Changes in what we be.

The perceived identities of professionals should change as the ultimate ends of IDT are recognized. Our perceived identity, our reason for being, should be to help learners learn. Like doctors, lawyers, and psychotherapists, we should see ourselves as belonging to a helping profession with an ultimately ethical central concern.

The recognition of the reason for our existence should restore our relationship with instruction as one of mankind’s oldest disciplines. We should stop telling people that our field originated during World War II. That was an important chapter in our history, but IDT’s point of origin can be traced to a period at least 5000 years earlier. The foundations of our discipline were laid during the earliest high civilizations of man, where the first teachers at the first temples and schools helped the first learners to understand more about the

meaning of their existence. Sumerian texts, dated as earlier as 3000 B.C.E., attest to the early practice of temple and school instruction (Kramer, 1963). Like philosophy, mathematics, and physics, instruction is one of the mother disciplines from which other disciplines have derived.

Restoring our reason for existing and remembering its long history helps us to avoid role confusion. For example, we need not see ourselves as technologists any more than doctors should see themselves as technologists merely because they use computers, electronic instruments, and pharmaceuticals. Just as doctors see themselves primarily as healers; so should we also see ourselves primarily as instructors and teachers. Practitioners of both medicine and instruction have in common their desire to use the best available technologies and techniques to help people.

Changes in what we do.

Changing what we be implies changes in what we do. The practices, competencies, and skills of mature members of the profession will change as we recognize our ethical end and the practical wisdom for which it calls. With the adoption of an ethics-centered paradigm, or world-view, IDT practitioners will continue to do many of the same things they are doing, using many of the same skills they now possess, but the meaning of what they do will be enhanced. We can now see our activities under the general rubric of *helping*, rather than just *researching, evaluating, measuring, designing, developing, or delivering*. Our ultimate ends can justify, and even hallow, these means.

Changes in what we know.

Changing what we be and do also implies changes in what we know. The knowledge base of IDT should become broader and deeper:

- It also should become more contextual rather than a-contextual. Why? Because phronesis, or practical wisdom, is about specific actions appropriate for a specific time in a specific context (Faulconer and Williams, 1986). This means that what is practically wise in one situation will not necessarily be practically wise in another.
- It should become more person-centered rather than environment-centered. The emphasis should shift from doing things to people to doing things with people. In future years, we should see the gradual, but inevitable, demise of treatment psychologies that view individuals as objects of efficient-causal forces. Why is such a change inevitable? Because we intuitively feel that it is wrong to make an it out of a I or a thou (Buber, 1970). To treat a person as an object is not only unhelpful and an infringement of agency, it is simply wrong.
- It should become more agent-centered rather than object-centered. Agents have the ability to act but objects can only be acted upon. Descriptive laws apply to objects, but prescriptive laws are more appropriate for agents. Will we discover that the laws of learning are actually prescriptive rather than descriptive? To the extent that we are agents, there is good reason to believe that the answer is, “Yes.”

- It should become more psychology-centered rather than technology-centered. Rather than searching for ends for our means, we can look for the appropriate means for our ends. Because we are trying to help people, their psychological processes become even more important. George Kelly, the personal construct theorist, states in his eleventh corollary to his fundamental postulate that to the extent that we can construe the construction processes of another, we can participate in a social role involving that person (Kelly, 1955). To the extent that we can understand how learners construe things, we can help them learn.
- It should become more learner-centered and less instruction-centered. Because the greater variance in learning is in the end more properly a function of the learner than the instruction presented to the learner, we should increase the responsibility of the learner to be active rather than passive. To train learners how to adapt their learning to different kinds of instruction may be more practical than individualizing instruction to the myriad differences in learners. Not only is individualizing learning more economical than individualizing instruction, it is ultimately more helpful when the learner later encounters sources of knowledge, like books, where individualization of presentation is no longer possible.
- It should become more general education-oriented in addition to being special education-oriented. Although the move toward expertise and specialization would seem inevitable in our time, there is much to be said for general education as a foundation for specialized training. Because our ability to help others will depend on a deep understanding of what it means to be human, a broadening of education to include the humanities and arts seem appropriate for a helping profession. Because what it means to be human includes the social, the political, the ethical, and even the cultural, we, as helping professionals, should continue to gain even deeper understanding of these important aspect of the learner's life.

Changes in what Professionals Learn.

Not only should we broaden and deepen general education, we should also revise the specialized training of IDT professionals. What we teach and how we teach it should change.

What we teach should be less epistemic as in *theoresis*, less technical as in *poiesis*, but more practically wise (i.e., *phronesis*) as would be appropriate in *praxis*. Although the theoretical and the technical will remain important, their ultimate value will depend on how helpful they are. This shift does not represent a new pragmatism based on utility or benefit, it is merely the recognition that the ultimate criterion for decision-making in an ethically based system is whether it is responsible or not. We do not do things we ought to do because of some cold-blooded calculation of benefit, either for ourselves or others; we do them because we feel we ought to do them. We are subject to a pre-existing bond or obligation.

If ethics is at the center of our discipline, so must it be at the center of our professional education. Remember, we use “ethics” here to refer to the social relationship, not to morality, or formal codes of moral conduct.

New educational methods also should be introduced. Because the meaning of many practices will change, it follows that the educational methods used to teach them should also change. We anticipate a greater role for narratives and case studies that encapsulate practical wisdom within stories that occur in a given time, place, and situational context.

Other professions like law, medicine, and psychotherapy—our sister helping professions—often use the case method in their training programs to teach the practical wisdom necessary for helping people when and where they need help (Smith, 1987; Stolovitch, 1990). What is there about narrative approaches that make them superior for the teaching of practical wisdom? What is there about the development of helping skills that requires their personal transmission? Why do doctors say that in order to learn a surgical operation, you need “to see one, do one, and teach one” under the direction of a master? Would it be helpful to use case studies to teach instructional design, evaluation, research, and measurement? Although it is beyond the scope of this article to address these questions, they will become increasingly important to IDT as a helping profession.

Because agents have the power to act and not just be acted upon, their judgment; their decision-making; and their evaluative choices should assume greater importance in preparing our professional curriculum. Important for us to study would be the dramatic arts, especially the subject of how good novelists and playwrights engage their audiences and make their narratives interesting. It is not at all inconceivable that great instructional designers will one day have “best selling” instructional units. We see the day when learners will be able to choose from easily accessible and inexpensive courses, or study aids, whose instruction is so helpful that learners will be willing to pay extra for them as supplements, or replacements, for courses in which they are enrolled. “Why,” they will ask, “should we waste our time on poorly designed, or delivered, instruction.”

Specific Implications for Constituent Subfields of IDT

In addition to these general shifts in emphasis, the recognition of help as the central concern of our discipline and its profession implies specific shifts in the missions of the constituent subfields of IDT. Because each of these subfields should be subordinated to help as IDT’s ultimate end, their missions, core activities, and criteria for excellence should undergo “Copernican” shifts away from the “Ptolemaic” centers of their individual traditions. The prefix sub-, in subfield and subordinated, implies that the missions of the subfields of IDT should be adjusted to reflect their supportive roles. This will not demote them in importance. Their real importance can only increase as their services become increasingly useful to the experiences of learning.

Here are some of the more important and obvious implications for the subfields that will benefit from refinement in greater detail by specialists. Because of the presumed readership of the *IDT Record*, we have discussed implications for instructional design and technology in more detail than for instructional evaluation, research, and measurement.

Instructional Design.

The mission of instructional design should shift from designing and producing instructional artifacts and materials—a physical and material making in the realm of *poiesis*—to designing help and organizing the resources to provide it—a more social and ethical mission in the realm of *praxis*. The core activities of instructional design should be to orchestrate learning resources in arrangements that optimize help for learners. Accordingly, the criteria for excellence in instructional design should be the net added difference that instruction makes in the lives of individual learners. The more helpful that instruction is to an individual or group, the more excellent it should be.

As consumers of instruction become more sophisticated and as competition among designers increases, it seems reasonable that learner demand for instruction will eventually hinge on its helpfulness. The best instruction will optimize access to help and the power of help when resources like money, time, and personnel are limited.

Seeing instructional design as a servant of educational *praxis* will entail a rethinking of how we see and define this important activity. Mainstream definitions of instructional design, like those found in textbooks, often stress the close connection between *theoresis* and *poiesis*, between theories of learning and instructional design. According to one current textbook, “The term instructional design refers to the systematic and reflective process of translating principles of learning and instruction into plans for instructional materials, activities, information resources, and evaluation.” The textbook continues by referring to the familiar analogy between instructional designers and architects: “Both plan their work based upon principles that have been successful in the past—the engineer on the laws of physics, and the designer on the basic principles of instruction and learning. Both try to design solutions that are not only functional but also attractive or appealing to the end-user” (Smith and Ragan, 1999).

The problem with such traditional formulations is that they assume a degree of prediction and control in learning that rarely occurs—that may, in fact, never have existed, at least as far as empirical studies have shown. Unlike the laws of physics used by engineers, the principles of learning used by the instructional designers do not exhibit “unvarying originative causes (Aristotle, 350 B.C.E./1908).” Instead, they are subject to many situational and contextual factors that may change the course of learning or the aptitude by treatment interaction upon which learning depends (Cronbach, 1975). Because the ability of learning theories to predict and control is so limited, designers, like artisans and crafts persons, are often forced to rely upon their refined intuitions instead of on a catalog of empirically established principles and laws.

Also relevant to the learning theory-instructional design connection is an observation of William James. James saw that the psychology of learning, by itself, may be a poor guide to teaching. His conclusion may also be valid for instruction. “Many diverse methods of teaching may equally well agree with psychological laws. To know psychology, therefore, is absolutely no guarantee that we shall be good teachers. To advance to that result, we must have an additional endowment altogether, a happy tact and ingenuity to tell us what

definite things to say and do when the pupil is before us. That ingenuity in meeting and pursuing the pupil, that tact for the concrete situation, though they are the *alpha* and *omega* of the teacher's art, are things to which psychology cannot help us in the least"(James, 1885/2001).

An alternative definition for instructional design that explicitly recognizes the role of help might be something like: "Instructional designers apply practical wisdom to create experiences that optimize help to learners when resources are limited. These experiences increase engagement, provide rapid access to learning resources, and help the learner to avoid or surmount obstacles that may impede progress. The ideal learning experience would help the learners make such valuable improvements in what they *be, do, know, feel, or think* that they would want to share similar improvements with others."

As this formulation implies, the designer is doing more than just making materials and instruction. The designer is attempting to apply practical wisdom to create an ethically founded and socially responsible experience. It is ethically founded because its fundamental purpose is to help learners by providing learning resources in an optimally helpful way. It is socially responsible because it places an expectation on the designer to provide such valuable content that the learner would want to share it with others. Notice also that the phrase "practical wisdom" is a synonym for *phronesis* and the locution "apply practical wisdom" is one of the traditional, classical definitions of technology.

This view is consistent with Reigeluth's (1997) view that instruction is "anything that is done to help someone learn," and that instructional design theories are "anything that offers guidance for improving the quality of that help," but it includes additional content beyond Reigeluth's insightful definition. It adds a dimension of social responsibility to Reigeluth's view; it also acknowledges the need for helping professionals to optimize help where resources like money, time, and personnel are limited. The latter is an ethical as well as economic consideration that should be considered in almost every instructional design.

As implied in the foregoing, some new forms of instruction that conform to this definition may not conform to traditional definitions. For example, a so-called "job aid" might provide only one of Gagne's (1985) nine events of instruction—i.e., presentation of information, but there are times when one event may be all that is needed to help a learner learn. Anything more might be too much; anything less might not be enough.

Another example of the new scope of meanings for instruction may be found in "help systems," like those offered in customer service and technical assistance "helplines." These systems are designed to help individuals who need specific information. They include teaching, training, and tutoring and other traditional forms, but also include the use of job aids and agents, customer service telephone lines and e-mail, etc. In sum, anything that provides assistance in learning is by definition a learning aid, or part of a help system.

Educational technology.

In an ethical paradigm, providing help should be the mission and the

principal reason for technology's existence. It should also be the focus of its core activities, and the chief criterion for its evaluation.

The mission of educational technology should be to serve learning, i.e., to place *techne* in the service of *praxis*. Far from being a new mission; it would be an explicit restoration of its oldest one. From its beginning, when the ancients inscribed cuneiform on clay to record information, to the present, when learners and teachers create, record, transmit, search for, and retrieve information with computers, the role of educational technology has been the same: to help learners. The use of technology as tools and equipment are ways of being-in-the-world and being-with-others (Heidegger, 1953/1996).

How could educational technology optimally help, or serve, learning? The answer is found in the wise use of the bonuses that are the reason for technology's existence. The term bonus is derived from the Latin *bonum* meaning good. It usually means something good given over and beyond what is due. We shall use the terms technological bonus to mean, "the help given by technology over and beyond what the unaided person could normally receive." Modern technology can serve learning by exponentially increasing the amount of help available to the learner. Five of its many potentially helpful bonuses are: (1) the access/delivery of connectivity, (2) the exponential multiplication of work, (3) the availability of knowledge, or expertise, (4) the increase in affordable storage capacity, and (5) the availability of information searching and finding tools. Further clarification of the meaning of these abstract properties may be helpful.

The access/delivery bonus is the exponentially greater amounts of access/delivery we have in virtue of the fact that we are all connected. Access/delivery, as we all know, are two sides of the same connectivity coin. The work bonus is the exponentially greater amounts of work that technology can do for us. The knowledge, or expertise, bonus is the exponentially greater amount of information, expertise, and wisdom that modern technology can make available to learners and teachers. The storage capacity bonus is the exponentially increasing amount of information that technology can shift or store for use at other times. The searching and finding information tools bonus is the exponentially greater ability that a person aided by technology has to search for and find information.

These bonuses portend a revolution in the world we know. Their social, political, economic and educational implications beggar our ability to imagine or prophesy. If mankind were socially responsible, they might be harbingers of a golden age. Connectivity could in principle connect all people on earth for the first time. Access/delivery could make the cultural and educational bounties of the most advanced segments of our society the common possession of all people. Work at electronic speeds could multiply productivity and accomplishment. Knowledge in an age of information could provide for all the information, expertise, and wisdom restricted until now for use by our elites. Storage, time shifting, and connectivity could provide on demand access/delivery of help whenever and wherever it is needed. Finally, on the assumption that the value of information, knowledge, or wisdom is directly proportional to our ability to find

it, new searching and finding tools enhance the value of all potentially useful information in the Information Age.

The concurrent availability of these five bonuses could do much to enlighten the world if the darkness of selfishness did not obtrude. Consider the single effects of some of their historical counterparts, e.g., (a) access/delivery from the telephone and telegraph; (b) work from the steam engine, (d) knowledge from printing, (e) storage from hydroelectric dams, and (f) information indexing from systems like the Dewey Decimal, or Library of Congress, cataloguing systems. Each played important roles in changing our world. How much more will their joint and several effects, at low cost per capita, transform the world we have known.

These developments will certainly change the form, function, and operational context of education at every level. It is only a matter of time before they transform instructional design, technology, evaluation, research and measurement as well. Given the benefits of its bonuses, the question of technology becomes: How can we optimize help to learners where resources like money, personnel, and time are limited (Inouye and Oveson, 1983)? Here, learning, or the helpful facilitation of learning, is the experience to be desired and the bonuses may do much to facilitate those experiences. Thus, although technology by itself cannot produce learning, it can help it in increasingly powerful ways.

To summarize this section in terms of its consequences for help, modern technological bonuses can now provide an individual learner with almost instantaneous access/delivery to the expertise (including personal assistance), work-power, storage, and information search tools that he or she would need in order to facilitate learning. Because it can provide access to help and the delivery of help in ways that are both timely and powerful, it can become an instrument for access/delivery to what researchers like Noddings (1992) have called “care.” When technology is made to be-for-the-other, it can facilitate and even exponentially increase the amount of “care” available to learners and teachers. Thus, instead of reducing care, it may actually become an instrument of care (Heuston, 1984). Thus, through the wise use of its bonuses, technology can multiply the good that IDT can do.

Educational evaluation. Educational evaluation is a paradigmatic form of *praxis* whose mission should be to inform judgment, or *doxa*, about best practice, or *phronesis*. Because *phronesis* is the chief virtue of *praxis*, the preponderance of evaluation activities should be in the domain of *praxis*. In accordance therefore with its mission, we suggest that its principal criterion for quality, or excellence, should be “helpfulness,” or “usefulness” to individual learners and educators.

To accommodate this shift in emphasis, the standards of the evaluation profession might benefit from a re-centering around helpfulness so that evaluation will be more the study of ought and less the study of is, more the study of worth or merit in the lived experience of learners and educators, and less the study of worth or merit according to scientific, or *epistemic*, standards.

Although both formative evaluation and summative evaluation are helpful, a shift toward formative self-evaluation and toward teaching people how to do such self-evaluation should become even more important in the future.

Why are self-evaluation and teaching learners to do self-evaluation so important? The simple answer is that self-evaluation is something that every agent should know in order to fulfill his or her potential. Furthermore, evaluation for improvement, and not judgment, bridges the private/public and formative/summative barriers to evaluation that cause practitioners to avoid or resist the evaluative process. In order to help learners, we should help them become more expert at evaluating how they can improve how they be, do, know, feel, and think. Because they are agents who are capable of independent action, no one could better use the information that evaluation offers.

Some may object that this may make evaluation less of a science and more of a practice. Such a shift would be good news, indeed, for insofar as evaluation belongs in the realm of deliberative choice, it belongs to *praxis* and not to *theoresis*. Instead of stripping evaluation of the personal and subjective which makes relative worth, merit, and standards possible, why not expand it to include the realm of personal judgment and evaluation. Wouldn't teaching learners to continually evaluate their own learning for improvement help to bring about the desired ends of evaluation? Schwandt's (2000) recommendation that evaluation be viewed as a hermeneutic and ethical enterprise would be appropriate in a help-centered environment. Such evaluation could be seen as a less formal and more dialogical process of learning and teaching about what is practically wise and good to do. Re-visioning evaluation in ways like these would make it an even more helpful enterprise.

Educational research. If help is the central concern of IDT, then the mission of educational research should shift from the iterative search for invariance to the iterative search for the helpful, useful, engaging, and edifying. It should be less a search for is than a search for ought. It should be less a search for the objectively real and more a search for the subjectively helpful. Its criteria for excellence should shift from concerns about the internal and external validity of inference to include concerns about the more inclusive validity of use or consequence. It should shift also from an emphasis on cross-situational reliability to the accumulation of knowledge of helpful practices in functionally similar situations. It should be less method-driven and more problem-driven, less for populations in general and more for individuals, or groups, in particular.

The concern for external validity, or the validity of inferring that the results of a study apply to the world outside of the study, while fundamental to *episteme* is less relevant to both *poiesis*, and *praxis*. Table 1 shows that the activities of *poiesis* and *praxis* are characterized by contingent existence, varying originative causes, situational specificity, and dependence on temporal and spatial context, etc. Thus, threats to the external validity of experimental activities are logically inevitable, and empirically probable. Results of research in *praxis* will be contextually bound and therefore not strictly generalizable in the traditional sense, although some, e.g., Eisner, 1991; Lincoln and Guba, 1985.,

have suggested strategies of anticipation and transferability to replace traditional conceptions of generalizability.

In this connection, standards and methods of research will, of course, need to be revised to reflect the shift from *episteme* to *praxis*. More phronetic research, like design research, action research, qualitative praxis inquiry, naturalistic studies, and case studies might be appropriate for the realm of *praxis*.

Although pockets of phronetic research already exist in the social sciences, if the central concern of IDT is in the realm of *praxis*, phronetic research will occupy an ever-increasing proportion of the research that is conducted in IDT. In this connection, it should be remembered that interpretive research is not necessarily synonymous with phronetic research. Although the growth in interpretive research should be applauded and encouraged, the interpretive turn, while providing resources for the work, as Schram (2003) has noted, does not constitute the work itself. Sooner or later, research should help us do the work, or advance the dialog, of *praxis*.

Educational measurement. The mission of educational measurement should be to optimize help, or service, to educational stakeholders when resources like money, time, and personnel are limited. To be maximally helpful, the focus of activity for the measurement industry should shift from more expensive, high stakes measurement toward less expensive, diagnostic measurement that is more helpful to learners. Excellence in educational measurement, after such a shift, would consist in the degree to which the optimization of helpfulness is achieved, where helpfulness includes shortening the mean time to help, increasing the power of help, increasing the equity of measurement, and making measurements of appropriate precision, i.e., measurements that are neither too precise nor imprecise.

This definition of quality is consistent with the newer conceptions of validity that emphasizes the consequential uses of measurement (Messick, 1995), but it adds practical considerations of optimization, cost, equity, appropriate accuracy and the necessary identification of for whom and to whom measures should be helpful. This means that the relative quality of a measure can only be estimated when its helpfulness to a stakeholder or group of stakeholders has been identified. Because few stakeholders have infinite resources, it is useful and ethically appropriate to add considerations of optimization under local resource constraint.

Gilbert's (1978, p. 71) comparison of the relative usefulness of measures of IQ versus measures of the potential for improving performance, or PIP, may be apt in this context. Gilbert shows that for a given person, IQ tests measure behavioral means while the use of the PIP measures worthy performance ends. A low IQ calculated by comparing a person with an average performer might be interpreted as a limitation on potential, whereas a high PIP calculated by comparing the person performance with an exemplary performer would be typically interpreted as an indication of high potential. Furthermore, the IQ has little or no use in what Gilbert calls performance engineering while the PIP can be a very useful diagnostic tool.

Measurements are most helpful to learners when they not only tell them what is, but also tell them what ought and, most importantly, what they could do to improve. An example of helpful measurement combined with instruction is found in Lytle's (2005) *Internet Writing Lab*, <http://68.104.118.126/>. When students submit writing samples to the Lab, they are given an overall score from 1 to 6, as on the SAT or the GRE, but then the students are allowed to view as many as 10 reports on specific aspects of their writing. These aspects include: punctuation, spelling, syntax, style, usage, big words, etc. Reports flag areas of potential improvement. When the student clicks on a flag, the principles guiding that aspect of writing are explained and possible ways of correcting the problem are suggested. Thus, learners who get an initial 2 on their writing sample know from the reports what they need to do to get a 6 and are therefore encouraged rather than discouraged. Furthermore, their weaknesses are flagged in such a way that they can summon immediate help to see the principles that govern improvement. Notice how much more helpful to the learner measurements of the *Internet Writing Lab* are when compared to a summative measurements of "2," even if the measurement of 2 were arrived at according to the highest psychometric standards. This suggests the standards should be modified to include the new conceptions of validity and helpfulness.

Summary and Conclusions

We have seen that a first step in defining IDT would be to identify its central concern. Although some see science, design, or technology as central, IDT's actual center has always been to help learners. Because the aspiration to help people is by definition ethical, it follows that the central concern of IDT is ethical. Science, design, and technology are therefore means to an ethical end. They serve *praxis*, or practical action, and no longer belong only to the *episteme* of science, the *poiesis* of design, or the *episteme/poiesis* hybrid of modern technology.

Using Aristotle's categories of the rational intellect, the principled differences among *theoresis*, *poiesis*, and *praxis* were highlighted. The properties of *praxis* were then shown to be the properties of IDT. The chief virtue of *praxis* and therefore of IDT is *phronesis*, or practical wisdom. As a consequence, evaluative choice, sound judgment, and expert decision-making become topics of paramount interest.

Is the Aristotelian categorization the only acceptable approach to defining the differences among science, design, technology, and ethics? The answer is, "No." Just as there is more than one way to show that the planets revolve around the sun, there are manifold ways to show that the ethical aspiration is at the center of IDT. For example, Emmanuel Levinas's hypostasis of the instant shows that being-for-the-other is not only central, it also fundamental, i.e., it founds, or makes real, both being and time (Inouye, 2003).

Is IDT an art (*poiesis*) or a science (*theoresis*)? It is neither. Like medicine, law, and psychotherapy, it is a practice (*praxis*) whose central concern

is to help people. As in the other helping professions, art (*poiesis*), science (*theoresis*), and modern technology (a *poiesis/theoresis* hybrid), serve as means to ethical ends. How optimally to help people learn is both the highest good and the reason for existing of IDT.

If providing help to learners is the ultimate end of IDT, does it lessen the importance of science, design, and technology? No, the real importance to IDT of science, design, and technology can only be enhanced when they are seen as means to more important human ends, for as prestigious, as interesting, and as powerful as they might be, they do not by themselves have the teleological gravity, or centripetal attraction, necessary to hold the many parts of IDT together. Disciplines and their professions should be defined in terms of their enduring ends, not their more fleeting, evanescent, and contextually determined means.

How should we define IDT? What is the meaning of our discipline and profession? If this article helps the IDT community to think anew about these questions, then our purpose in writing this invited article will have been fulfilled. We thank the editor, editorial board, and reviewers of the *IDT Record* for providing this forum for the definition, advancement, and further elaboration of our field.

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