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A Framework for Phronetic LDT Theory

Jason K. McDonald

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My purpose in this chapter is to offer a reimagined view of theory in the field of learning design and technology (LDT). I will call this the phronetic framework for LDT theory, taken from the Greek term for the capabilities exemplified by those considered excellent in a given domain (Dunne, 1997). To lay the ground for this, I first summarize historically dominant views of LDT theory and discuss challenges such views have presented to researchers attempting to develop theory that is useful to practice. In short, I will argue that historical views are limited by their assumption that a theory's purpose is to generate a body of objective, technical knowledge that, when properly applied, produces at least probable results (Reigeluth & Carr-Chellman, 2009b). Second, I outline a reconsidered perspective for how LDT theory can support practice, informed by a philosophy of practical action as articulated by thinkers such as Dunne (1997), Dreyfus (2014), Schön (1983), and Wrathall (2011). Central to this perspective is coming to see skillful performance within a field as a type of sensitivity one develops to affordances in one's environment, along with the ability to respond to those affordances in an intuitive way. This contrasts with viewing expertise as being built on one's intellectual mastery of discipline-specific information. Third, and aligned with this perspective, I sketch the framework itself. It describes types of theories that can help practitioners discern and respond to salient, situational affordances instead of relying upon rule-like systems of knowledge. Finally, I discuss implications of the framework for research and practice within the field.

Keywords: [Learning Design](#), [Phronesis](#), [Theory](#)

For the purposes of this chapter, I use the term *theory* in the same way as I did in McDonald and Yanchar (2020):

The term theory, as we use it here, is rather broad in meaning and scope. While theory in the social sciences and education often refers to formalisms that provide some kind of explanation—for example, causal accounts of the relation among variables—it is also generally used to refer to ideas that bring certain kinds of order and direction to practices, as in theories of instruction, theories of teaching, theories of design, and so on Literature within the social sciences and education commonly make reference to related terms, such as “conceptual frameworks,” “perspectives,” “models,” or “constructs,” all of which refer in some way to theoretical abstractions that clarify what a phenomenon might be, how it might be caused, or how it might be dealt with in practical ways to solve problems In the analysis we offer here, theory is used to refer to all of these varied formalisms, and possibly others, that are assumed to perform these kinds of functions. Thus, our use of the term theory is purposefully broad and inclusive. (pp. 633-634)

Historical Views of LDT Theory

The Strong View of LDT Theory

An influential position among certain LDT theorists has been that the field is a science, built on a systematic theory base technically rational enough to allow for prediction and control of phenomena associated with learning (Clark & Estes, 1998; Gilbert, 1971; Gropper, 2017). The practitioner’s primary role, therefore, is to properly apply the knowledge that researchers generate. This can be called the strong view of LDT theory. It was exemplified by Merrill et al. (1996), who claimed

Instructional science involves identifying the variables to consider (descriptive theory), identifying potential relationships between these variables (prescriptive theory), and then empirically testing these relationships in the laboratory and the field Instructional design procedures . . . must incorporate those scientific principles involved in instructional strategies, just as the invention of the airplane had to incorporate the discovered principles of lift, drag, and flight. (p. 5)

In the strong view, theory is maximally prescriptive, with some going so far as to claim it can “control and engineer quality and quantity of learning” if used correctly (Post, 1972, p. 14). Gilbert (1971) even asserted that if they are applying theory as they should, “two [practitioners] working independently on the same subject matter will produce lessons that are virtually identical in all essential respects” (p. 216). Although it may be tempting to consider statements like this to be historical relics, advocacy for the strong view is not

exclusively found in the past; renewed calls for it, or similar positions, can be found in the writings of 21st century theorists as well (diSessa & Cobb, 2004; Gropper, 2017; Merrill et al., 2007).

The claims of the strong view have not gone unchallenged, however. Because the critiques have been well-articulated elsewhere, here I only summarize a few notable points. Yanchar and South (2008) argued that the pursuit of scientific and technical rigor has led to “research . . . that is detached from the concerns and dynamics of actual practice. . . . [It] often results in abstract models and statistical patterns . . . that offer little insight to the practicing designer” (p. 85). Jonassen et al. (1997) pointed to the uncertainty inherent in human situations, and so the fundamental inadequacy of attempting to reduce complex systems to cause-and-effect relationships (cf. Honebein & Reigeluth, 2020; Wilson, 2013). McDonald et al. (2005) echoed this concern, while also pointing out the tendency in prescriptive models to reduce instruction to the manipulation of learners’ behavior while neglecting important “aspects of human action . . . such as creativity, freedom, and responsibility” (p. 92; cf. Gur & Wiley, 2007; Matthews & Yanchar, 2018a).

The Soft View of LDT Theory

For reasons such as these, many LDT theorists have come to regard the strong view as idealistic but overly simplistic. While often drawn towards the promise of prescriptive knowledge, they prefer to describe theory as either being “probabilistic . . . [since] the cause does not always result in the effect,” or as “[identifying] good methods for accomplishing goals” (Reigeluth & Carr-Chellman, 2009b, p. 7). This can be called a soft view of LDT theory. Proponents still assume a formalized body of rational, instrumental knowledge is foundational to good practice, but maintain that its role is to increase the likelihood of an outcome instead of truly guaranteeing any results (Jonassen et al., 1997; Reigeluth, 1997, 1999; Winn, 1997).

The soft view offers a useful course correction to the extreme position taken by strong adherents. Nevertheless, it presents challenges of its own. Most significant for this chapter is that, as Wilson (1999) concluded, “too often . . . the knowledge and wisdom gained from years of practitioner experience is subordinated to the structured, formal knowledge of the university researcher or textbook.” This is related to one of the soft view’s central presumptions, shared with the strong view, that theory’s primary purpose is to turn data, experience, and insight into an “object of analysis” (Dunne, 1997, p. 5) that stands apart from any individual (cf. Bereiter, 2014). Knowledge is valued as it is transformed into an explicit, instrumental system that specifies context-independent properties of things, isolated apart from “the opportunities and possibilities for action that . . . are relative to the perspective or stance one adopts on [a] situation” (Dreyfus, 2014, p. 8).

This is not a critique of the intended practicality of LDT theories. Clearly the field's theorizing is appropriately focused on addressing practical issues. Rather, it is a claim about the assumed nature of what theorists develop. Both strong and soft views presume that theories are artifacts that sit independent of any researcher or practitioner, serving as external storehouses of knowledge and containing the power to solve problems of practice (Reigeluth & Carr-Chellman, 2009b). They reduce the complexity of the world, condensing it into technical models or techniques that attempt to eliminate, or at least minimize, the possibility of a misstep (Bednar et al., 1991; Elen & Clarebout, 2007). Ideally, theories are objective and so can be picked up and used by anyone (possibly with some level of intellectual preparation); they are meant to be tools that assist one in controlling or optimizing situations with some degree of precision (Honebein & Reigeluth, 2020; Reigeluth, 1997). When one views theory this way, it is logical to prioritize it over the seemingly less-dependable, idiosyncratic practitioner know-how that is taken to be the alternative (Clark & Estes, 1998; Klauer, 1997).

A Critique of Historical Views

Both the strong and soft views share a central presumption that grounds expertise in mastery of a body of decontextualized information. Despite the seeming logic of this position, Dreyfus (2014) argued it is too limited to support truly skillful performance in any domain. This is not an indiscriminate argument against the value of theory *in toto*. Instead, it pertains to perspectives that define expertise as some form of matching features in a situation with instructions provided by rules or rule-like information. Applying theory in this sense is simply too blunt an instrument to help people navigate the fluidity and intricacies found in most situations (Dunne, 1997). This can be seen in some of the observed tensions between theory and practice. Rowland (2017) critiqued some LDT theorizing for being too obvious, resulting in supposedly research-based findings that “do not go beyond what experienced designers would consider common sense” (p. 196). At the other extreme sits abstract theories that are too vague or imprecise to offer practitioners the concrete insights they are typically looking for (Honebein, 2019; McIntyre, 2005; Reigeluth & Carr-Chellman, 2009a; cf. Wilson, 2013; Yanchar & South, 2008). Reigeluth (1997) further noted that “the more we attempt to account for diverse conditions,” meaning the more researchers attempt to inject situational factors back into an abstract theory, “the more likely we are to be criticized for seeking to ‘micro-manage instruction’” (p. 45). Such theories can become unmanageable, imposing so many conditions and constraints that they tend to collapse under their own weight (Wilson, 2005).

Dreyfus (2014) further argued these types of challenges are inherent whenever knowledge is viewed as an external system for people to deliberately apply in a technical sense (cf. Dunne, 1997). More, or better, information will not fundamentally alter what practitioners are able to achieve when attempting to use it in rule-like ways. There “are just too many features [in any situation] . . . to determine which rule or concept should be applied”

(Dreyfus, 2014, pp. 231–232). As I have argued elsewhere, “skills . . . cannot rest on a foundation of technical rationality . . . any more than a conversation can be . . . carried out by using a flow-chart or decision tree” (McDonald & Michela, in press). So, if there is an alternative way to understand how theory can support practice, one that avoids the dilemmas of the strong and soft views, it begins by questioning this starting point about the role of decontextualized information in expert performance.

Reconsidering How Theory Supports Practice

The Nature of Expertise

If theory should not be thought of as an external, rule-like system that practitioners apply in an instrumental sense, what role should it play? Addressing this question begins by reconsidering the nature of disciplinary expertise. Thinkers like

Dunne (1997), Schön (1983), Dreyfus (2014), and Wrathall (2011) have persuasively argued that grounding expertise in people’s nonconceptual, embodied absorption in the world—and not their intellectual mastery of technical, procedural information—best explains the nature of skillful performance. It also provides a means for understanding how information, like theory, can support practice in ways other than those laid out in the strong and soft views. Expertise is exemplified by:

discerning and responding appropriately to the subtle features and specific requirements of each situation. . . . without any explicit sense of effort, responding intuitively to the unfolding of circumstances without having to stop and think about what we are trying to accomplish – or otherwise needing to represent the conditions of satisfaction of our activity. (Wrathall & Londen, 2019, p. 651)

Wrathall (2011) illustrated this by describing a person’s skillful use of kitchen equipment. One’s expertise with a knife is not based on knowing more facts about it than someone else. While explicit information about a knife may be useful for some purposes, anything an expert can say about it is secondary to the way he picks it up, wields it without thought towards certain ends, and uses it in relation to other kitchen equipment. He may or may not be able to articulate what he is doing at any moment, and, in fact, his thinking may be completely wrong in even important respects. Yet, proof of his expertise is still observable in his actions.

This skillful absorption is what Schön (1983) called “knowing-in-action” (p. 50), a practical know-how found in people’s capabilities or dispositions that cannot be detached from themselves as knowers or the practical situations in which they act:

A tightrope walker's know-how . . . lies in, and is revealed by, the way he takes his trip across the wire . . . [and] a big-league pitcher's know-how is in his way of pitching to a batter's weakness, changing his pace, or distributing his energies over the course of a game. (pp. 50-51)

Dunne (1997) offered further characteristics of knowing-in-action. It is an affective capacity, “available to one only as a person already committed to [an] activity – and never, therefore, as a detached ego” (pp. 358-359). It is characterized by “unpredictability, open-endedness, and frequent irreversibility,” being “a form of influence” people bring to bear within situations rather than being based in technical control (p. 359). It is informed by people’s pasts and their hopes for the future. It is also informed by the past and possibilities available through one’s culture, as exemplified by the way language “already [has] all kinds of tugging effects” (p. 360) that limit thought, but how it also offers a “kind of *buoyancy*” upon which people can draw to disclose previously unseen ways of experiencing the world (p. 361, emphasis in original). As opposed to the strong and soft views’ presumption that knowing-in-action is “primitive,” and “encourages fads, gurus, and magical thinking” (Clark & Estes, 1998, p. 7), proponents of knowing-in-action argue for nearly the opposite; “research-based suggestions tend to be relatively simple, impersonal and generalized, whereas the classroom craft [i.e., knowing-in-action] on which teachers depend is complex, personal, and contextualized” (McIntyre, 2005, pp. 365–366). I add that this is true not only for teachers, but LDT professionals as well.

Of course, the primary way one develops knowing-in-action is through practice. People become skilled LDT practitioners by practicing LDT (assuming, of course, their practice is effective). Consistent practice over extended periods of time, supported by helpful feedback, leads to people developing capabilities (e.g., knowledge and skills) recognized by a community as expert performance in that domain (Ericsson et al., 1993).

Expert performance is more than correctly executing a series of process steps, however. In addition, Wrathall (2019) explained that developing expertise in any domain also “brings [an] individual into a changed or more refined form of responding to his or her environment” (p. 26). People “develop a new attunement to the world” (p. 21), consisting of three forms of sensitivity:

- *“Discriminatory Capacities:* the ability to discern meaningful situations in the environment;”
- *“Dispositions:* the inclination and skill to respond to solicitations to which one was previously not responsive—that is, one experiences situations as calling on her or him to act or respond in particular ways;”
- *“Taste:* the ability to decide what is to be preferred or disfavored in any given situation” (p. 25, emphasis in original).

For instance, expert LDT professionals recognize cues that distinguish a situation as a candidate for applying a learning technology (Hoard et al., 2019), feel empathy for learner groups that demands their action (Matthews et al., 2017), and are drawn into situationally appropriate phases of the design process without deliberating on a rule that tells them it is time to start (Kirschner et al., 2002). Together, these kinds of affective responses help define the particular “style” (Wrathall, 2017, p. 22) of responding to situations that are recognizable as being LDT practice.

In this model of expertise, deliberation and forms of cognitive problem solving typically become useful when something does not go as planned or when people are inexperienced in navigating an environment on their own (Dreyfus, 2014). When such moments occur, someone might find explicit information, like traditional forms of theory, to be useful. But using them as rules, principles, or any strong or soft term that essentially means directions to follow, keeps people from elevating their performance to expert levels. Dreyfus illustrated this through describing a relatively common breakdown in expertise:

Most [expert] drivers have experienced the disconcerting breakdown that occurs when suddenly one reflects on the gear shifting process and tries to decide what to do. Suddenly the smooth, almost automatic, sequence of actions that results from the performer’s involved immersion in the world of his skill is disrupted. . . . He detachedly calculates his actions even more poorly than does the [less skilled driver] since he has forgotten many of the guiding rules that he knew and used when [learning], and his performance suddenly becomes halting, uncertain, and even inappropriate (p. 35).

So, there may be a place for novices, who are still in the realm of basic competence that is largely rule governed, to apply theory in the sense of acting in accordance with a set of instructions. But experts rely on their “resourcefulness,” and on forms of knowledge born out of their “character and dispositions”—none of which “can be made available in treatises or manuals” (Dunne, 1997, p. 228). Attempting to follow the rules often hinders instead of helps their ability to perform. It is not the right information that allows experts to successfully manage a situation, but their ability to perceive subtle details and grab ahold of relevant situational affordances (Wrathall & Londen, 2019).

Further, it is not warranted to describe experts as somehow unconsciously or tacitly applying theory, as some theorists have argued (Honebein & Honebein, 2014; Reigeluth, 1997). Assuming that because people *sometimes* deliberately and instrumentally apply information means that this is the paradigm of all performance is not only logically unjustified, it ignores considerable empirical evidence to the contrary (Dreyfus, 2014). It *a priori* presumes the primacy of theory over practice, and then tries to explain what professionals do in a manner that reinforces this priority (cf. Wilson, 1999). While it might be possible to restate what experts do so it retrospectively appears that they were applying a theory, doing so blinds one to most of what actually happens when skilled performers engage with a situation (McDonald, Bowman, et al., 2021).

The Role of Theory in Expertise

Recognizing that technical rules limit one's ability to rise to the level of expertise is not to argue that explicit information has no value. There is a way to conceptualize information use in a way that supports people in their attempts to improve performance after they have gained experience. But it requires theorists to understand the products of their work as being something other than "a static rule system that designers merely learn, then apply" (McDonald, Bowman, et al., 2021, p. 3). Instead, since what defines LDT as a field are disciplinary patterns that describe professionals' "skillful and improvisational engagement with each other and with the world" (p. 2), theory can be viewed as a partial and imperfect expression of what some experts have done, not a mandate about what all experts must do. In this view, theory does not govern good practice, but models some of the conditions under which it could occur. It is a facsimile of what skilled professionals (those who are attuned to their environment) are often able to achieve without formal, external supports. So, it can help draw practitioners' attention to what others have considered as part of their good practice (Dunne, 1997). It can also provide practitioners with a broadened perspective where researchers share the wisdom they have gained through their own engagement with educational issues. But it does this in the spirit of colleagues telling each other "war stories" (Orr, 1990, p. 175), instead of attempting to establish a comprehensive body of knowledge that sits underneath practice and forms "the intellectual foundations of [the field]" (Richey et al., 2011, p. 1). As Biesta (2022) stated, "the point of educational scholarship is not to tell educators what they should do, but to provide them with resources that may inform their . . . own educational judgment and inventiveness" (pp. vii-viii).

LDT theory can have this kind of impact if it is designed to help practitioners tune the discipline-specific, affective sensibilities that Wrathall (2019) described. Rather than having predictive or probabilistic power, and so being an instrument one can wield like any other, good theoretical accounts work on practitioners, catalyzing a change in how they experience situations, so they come to see and feel things the way experts do (Dunne, 1997; Wrathall, 2011). Theory can help practitioners discern fine-grained situational affordances and orient them towards previously unseen possibilities (Wrathall & Londen, 2019). It can also model the character of good practice (Yanchar & Faulconer, 2011). Finally, it can move practitioners' feelings, desires, and values, drawing them in towards a full, wholehearted commitment to the field and its practices (Wrathall, 2019). Theory is meant to be educative, and as is true for so many educational aids it should build practitioners' capacities so they can ultimately act independent of it (even though at one time it may have been an essential support). What LDT professionals practice seeing and feeling will, over time, become more see-able and feel-able to them on their own. Borrowing from Thomson's (2019) discussion about how certain styles of philosophical writing can achieve similar aims, "rather than [being] complete, self-contained [reports] in which all the important conclusions have been explicitly drawn," theory can "take . . . [practitioners] on a

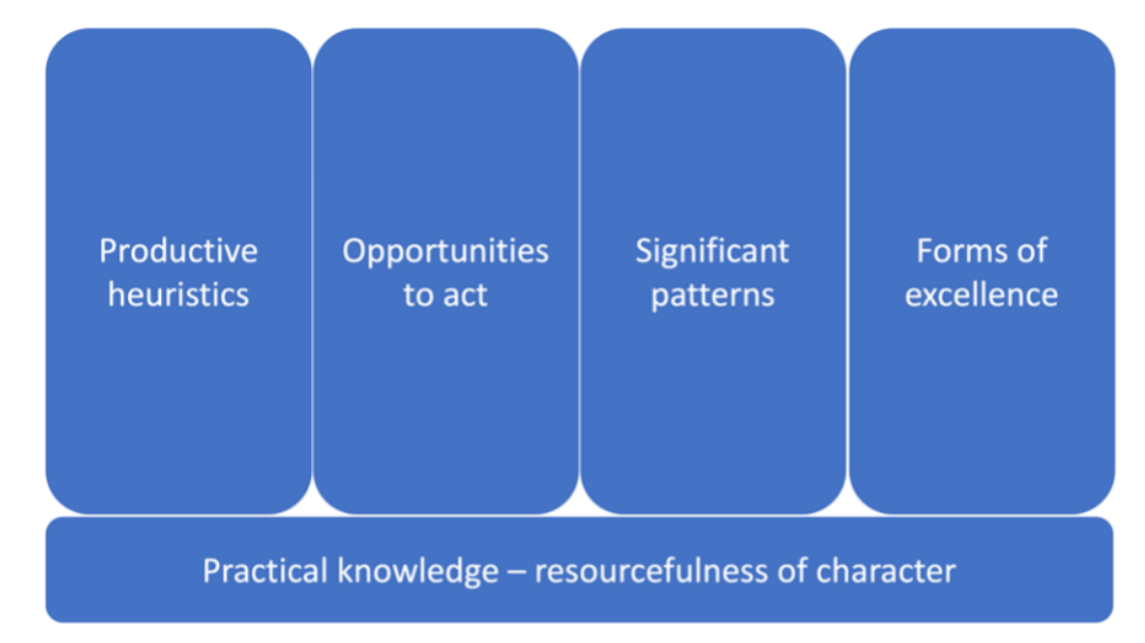
journey that helps [them] 'learn to learn,' that is, to learn how to see, encounter and understand the phenomena repeatedly at issue *for [themselves]*" (p. 186; emphasis in original).

The Phronetic Framework

For theory to have this impact, those who develop it must think differently about it. In his study of practical knowledge, Dunne (1997) articulated what's involved as one's knowing-in-action matures. His work can serve as a foundation for a framework for what LDT theory can be (Figure 1). Along with what Dunne provided, I further recognize the contributions of LDT theorists like Parrish (2014), Wilson (2013), and Yanchar (Yanchar & Faulconer, 2011; Yanchar & South, 2008). These scholars have also described ways to engage with theory that go beyond applying it in a limited sense, instead considering it to be a resource that practitioners actively interpret, revisit, extend, and remix to transform it into forms of knowledge or action the original researchers may have never anticipated. Their work helps clarify how theory can function like an orienting aid, supporting practitioners as they refine their personal capacities for perception, discrimination, and judgment, instead of being a set of rules that define good practice.

Figure 1

The Phronetic Framework for LDT Theory



As I describe the framework, I emphasize that while I will provide examples of prior LDT research that function as suggestive possibilities to illustrate each category, what follows should not be viewed as merely new labels for the same theory the field has always produced (neither do I claim the original researchers' intent was aligned with my purposes). The framework is meant to facilitate a reimagining of what LDT theory could become. It provides a view into what kinds of theoretical contributions might be a refining influence that works on practitioners' dispositions, and discloses new ways of seeing the world, so they become more responsive and flexible when experiencing both common and unfamiliar situations. The examples are therefore provided to clarify each category, and to suggest how each might be empirically investigated.

LDT-Relevant Practical Knowledge

At the base of the framework sits the nature of practical knowledge as it is relevant to LDT practice. As with others cited throughout this chapter, Dunne (1997) argued that the knowledge upon which experts rely is more akin to a "resourcefulness of mind and character" (p. 312), instead of a technical information system that exists independent of their actions. The kinds of experiences LDT professionals tend to have, nurture their resourcefulness as members of the community of practice, resulting in a form of discipline-specific practical knowledge that cannot be wholly separated from the individual actor, nor from the field of practice out of which it was born (Lave & Wenger, 1991). This means that through their involvement with the field, practitioners come to see, feel, and discern things that are distinct to LDT as a domain, as "the result of the gradual refinement of responses that grows out of long experience acting within [their] shared cultural practices" (Dreyfus, 2017, p. 34).

A useful form LDT theory can draw attention to the types of dispositional resourcefulness relevant to disciplinary expertise. These theories act as a "kind of reinforcement" for practitioners, "contribut[ing] to a heightened awareness on [their] part" of attributes they can develop, and giving them insight into how to exercise and strengthen their own capabilities (Dunne, 1997, p. 160). Dunne further reasoned that offering practitioners this type of support can lead to levels of expert performance comparable to "the gifted carpenter who, when confronted with crooked walls and warped timber, contrives, nonetheless, to produce an excellent finished job" (p. 283). An equivalent situation in LDT might be a practitioner faced with out-of-date technology--constraints that restrict them to shallow forms of interactivity, and limited time and budget--yet nonetheless is able to facilitate a memorable and effective learning experience. Placing the nature of practical knowledge at the framework's base is meant to reinforce that what is achievable as one's knowing-in-action develops is foundational to any other accomplishment practitioners might pursue with theory's assistance.

Two forms of LDT theory could potentially play this role. The first is theory that offers compelling accounts of the types of dispositions associated with resourceful LDT practice. For instance, Belland (1991) articulated a notion of connoisseurship in educational technology that “attends to the affective needs of the learners” (p. 26) and qualitatively changes how practitioners appreciate, evaluate, and design new learning systems (cf. Parrish, 2012). He included knowing students “as people and not just as the ‘kid in station 86” (p. 27), and recognizing where “kindness leaves off and obsequiousness or patronizing begin” in the tone of an instructional text (p. 30), as examples of the kinds of traits LDT connoisseurs might develop.

The second form of LDT theory is theory found in design precedent that models how other practitioners have engaged their practical knowledge towards a particular end. Through the reports of concrete actions taken by specific designers in specific cases, precedent offers practitioners a “vicarious” experience that prompts their reflection on how they could act in ways appropriate for their own situation (Howard et al., 2012, p. 35). It serves as an aid that helps them focus on, and attend to, salient issues with a richness that is usually not available through conventional research reports (Boling, 2021).

Productive Heuristics

The framework takes further shape with four forms of theory built on the foundation of practical knowledge and character. The first is theory that supports the productive activities associated with LDT where one creates products, systems, services, or environments that have learning value. Dunne (1997) described theories that support productive work as knowledge of the affordances possessed by different kinds of material (what they offer towards the pursuit of certain ends), along with what kinds of work can draw out potentials a material offers. Such theories are heuristics that sensitize practitioners to the relevant field of forces involved when making something meant to serve a particular purpose (Gibbons, 2013). Many of the models, principles, frameworks, or guidelines common in LDT already describe or explain these kinds of issues. Consider Mayer’s (2014) multimedia principles of instruction that provide useful information about how one can take advantage of learning affordances offered by visual and aural media technology.

However, Dunne (1997) contended that such knowledge should not be treated as deterministic or probabilistic rules. Doing so lends the mistaken impression that productive heuristics have a fixed reliability on which practitioners can rely. It assumes a model of practice where one simply finds the right inputs associated with desired outputs--albeit inputs that may not be as dependable as one would want. But there is no static probability that a heuristic will work (see Wilson, 2013). Even if one were to account for situations and variables to a minute level of detail, as Reigeluth (1999) once speculated would be ideal if it were not impractical, learning environments are never stable. Arguing for a probabilistic model of theory assumes the value of a heuristic exists in the abstract, apart from practitioners’ skills or the needs of a situation, so it’s efficacy can be at least partially

determined before one has experienced a circumstance firsthand (see Dunne, 1997, pp. 128–130). As Honebein and Reigeluth (2020) have more recently concluded, practitioners should consider “all instructional methods as having unknown . . . usefulness *until* the instructional situation is known” (p. 14; emphasis in original).

Further, the probabilistic model ignores that “affordances, the way things in the world offer themselves to be used by us, are contextually determined” (Wrathall, 2014, p. 210). For instance, to a hungry person, a table affords itself as something that facilitates his sitting and eating. But these affordances recede for a person looking for something to help them change a lightbulb. In their case, the table affords itself as a steady structure on which they can stand. Similarly, the learning affordances of materials LDT practitioners work with will shift and adjust depending on their current purposes. One implication of this is that some productive heuristics associated with a type of material may not be relevant to certain practitioners’ aims (Dreyfus, 2017). Those whose purposes are similar to what Mayer (2014) assumed when he conducted his research could reasonably find his multimedia principles to offer valuable insight. But practitioners who use media technologies for different purposes might find them to be less germane (see Koumi, 2013, for a critique of Mayer along these lines). Further, attempting to attribute causal power to productive heuristics, such as assuming they describe invariant facts (or even probabilistic principles) about how learning must work, is also unwarranted. Doing so ignores the “concernful involvement” of learners in their own learning, meaning certain heuristics could be more or less relevant in a given case depending on how learners themselves find artifacts they are interacting with to “matter” within their overall life story (Yanchar, 2021, p. 28; see also Yanchar et al., 2013).

This is not to argue that “the expert [exists] in a special, privileged position outside the principles of [science]” (Benner, 1984, p. xix). Clearly, at least some productive heuristics are based on biological or similar constraints on human capacity for instance how the physiology of the human eye has led to principles of contrast that allow visual elements on a computer screen to be as readable as possible (Mithun et al., 2019). But such scientific knowledge alone is insufficient to guide expert performance. There is no “fixed and identifiable behavior [that] constitutes the excellence in excellent practice” (Gottlieb, 2012, p. 505; emphasis removed), meaning that there is no decontextualized standard or outcome that exists isolated from situational realities that defines expertise. So when, how, or even if well-established scientific principles apply in a given situation are decisions that theorists cannot make for practitioners in advance (Dreyfus, 2017). Nor can the quality of an instructional system be determined in advance of its use based on how well it adheres to the specifications that productive heuristics provide (McDonald et al., 2005; McDonald & Gibbons, 2009). The practitioner themselves must weigh the considerations offered by productive heuristics (or any theoretical construct) with the indeterminate number of other situationally relevant issues that affect the aim she is pursuing; “to be [an expert] *now* calls for a unique modification [of relevant principles], unspecifiable in advance, and by no means easy to determine in the situation itself” (Dunne, 1997, p. 311).

The alternative to a rule-based model, according to Dunne (1997), is for practitioners to enter into a “conversation” (p. 117) with forms of knowledge like productive heuristics (see also Schön, 1983). Since the world of practice is too complex to be managed through technical information alone, the value of heuristics is found in the dialogue in which one can engage with them, where they draw attention to relevant forces, help one question their assumptions, explore possibilities, reconsider their aims, or take a step towards something useful. In this view, a practitioner recognizes that productive heuristics often contain wise advice that can inform one’s situational understanding, even if they do not represent universal mandates.

Many researchers in the field already have experience investigating and generating productive heuristics (with the qualifications just noted about how they should think about what they develop). Such heuristics are often what Reigeluth and Carr-Chellman (2009b) called “design theory,” meaning theory that “identifies good methods for accomplishing goals” (p. 7). Along with the examples discussed earlier, another example is human factors research as related to LDT that describes how the form and substance of artifacts with learning purposes can align with the constraints and capacities of the human body (Gruber et al., 2019).

Opportunities to Act

Another form of theory draws practitioners’ attention to opportunities for action, or openings in a situation, so they can take advantage of suitable moments when they appear. Dunne’s (1997) argument for this type of knowledge began by recognizing that in many practical situations “success is . . . not so much . . . keeping one’s gaze fixed on the preconceived form which one will impose on the material,” as would typically be the case when one is building durable good (or when one is designing an instructional product for a predetermined outcome). Instead, success is “a flexible kind of responsiveness.” It is being able to recognize situational factors one can take advantage of to move one closer to a desirable state (p. 256). A common analogy Dunne used was of a sailor who could recognize that when the waves break in a certain way it is his best chance to cut across them safely. In contrast to the forms of knowledge discussed to this point that drew attention to practitioners’ dispositional traits, or to features of their materials that are useful for certain purposes, opportunities for action focus on the attributes of the circumstances in which practitioners find themselves. They sensitize people to those sometimes-momentary occasions that provide an advantage within “a continually changing complex of developing possibilities” (Lieberman, 2013, p. 21). As with the other framework categories, opportunities to act are not formulas for practitioners to follow. They function more like a focusing device—sharpening one’s view, and accentuating what it might look like when a useful opening appears.

Within the field of LDT, these types of theories are often an outgrowth of research focused on understanding the dynamics of the situations in which practitioners find themselves. For instance, Richardson et al. (2019) studied the perceptions of university faculty and instructional designers on the nature of their working relationships. Their research uncovered several factors that indicate the faculty-designer collaboration was going well, such as when relationships are “egalitarian” (p. 862), and when the parties involved had clear expectations about what to expect from each other. Such conditions do not guarantee success in any collaborative effort. But where they exist (or when one can arrange a situation to bring them about), they can legitimately be viewed as creating a more fruitful opportunity in which to act, allowing practitioners a space in which they can attempt further actions that move them and their collaborators towards ends they find mutually desirable.

Significant Patterns

Theory can also describe patterns for how environments can be organized, or significant relationships and structures between situationally relevant people, resources, activities, and events. These describe another form of influence LDT practitioners can have, where they enable or facilitate certain kinds of activities based on how they arrange a setting (or, alternatively, prevent or discourage other kinds of activities). Dunne (1997) offered an example:

[A] teacher . . . will have a whole stock of largely unformulated knowledge about the kind of pedagogical aids . . . that, in general, tend to work well, the typical difficulties to be anticipated or pitfalls to be avoided, [and] the sorts of questions and promptings that in the past have tended to work. (p. 368)

Many of these patterns also likely qualify as a type of design theory, as described by Reigeluth and Carr-Chellman (2009b).

Understanding significant patterns primes practitioners. Being prepared with a repertoire of patterns allows them to move swiftly and take advantage of opportunities to act as soon as the favorable circumstance is recognized. However, Dreyfus (2017) emphasized that even here, one is not relying on instructions for managing a situation. Doing so would suggest that the purpose of significant patterns is to provide intellectual content on which practitioners can deliberate when making decisions. Instead, this form of knowledge should develop people’s capacity for intuitive action; it provides cues for how one might get started, with the presumption that the fully appropriate response will not emerge until the practitioner is fully engaged with the situation and is able to shape their actions to the needs and demands of what they find (Dreyfus, 2014; Dunne, 1997).

While there are some similarities between significant patterns and productive heuristics (here I note there is no need to be overly prescriptive in how boundaries are drawn between framework categories), there are important differences as well. Productive heuristics focus

on how to get the most out of the materials LDT practitioners use to develop artifacts with learning affordances. Significant patterns describe how those artifacts—along with other events, activities, and people—can be organized for a given purpose. Further, because other people are often involved when a pattern is used, practitioners have even fewer assurances that they will be able to manage, control, or optimize the situation according to a predetermined plan. As I have written elsewhere (McDonald, in press-a), “what an [LDT practitioner] begins is fragile Others may pick it up or not, and even if they accept it, they may divert it into directions the original actor did not anticipate or may not agree with” (see also Biesta, 2013; Dunne, 1997).

For example, consider the patterns definitive of problem-based learning. This approach is characterized by students who have responsibility for their learning, collaboration between participants, ill-structured problems as the basis of inquiry, a tutor (or facilitator) who guides students through the learning process, and informational, spatial, and/or technological resources that facilitate participants’ free interactions (Savery, 2009). While LDT professionals can prepare a problem-based situation in such a way as to encourage the kinds of outcomes for which it is known, once a situation is given over to the participants, they will shape it to their own ends—which may or may not match those of other stakeholders (Hung, 2011).

Many of the instructional strategies or other techniques the field has developed throughout its history describe significant patterns in the sense outlined here. Design precedent can also play this role by providing concrete examples of how other designers have organized situations to facilitate certain aims (Howard et al., 2012). I offer a similar qualification as I have previously made about avoiding the tendency to see significant patterns as having deterministic or probabilistic power in the abstract.

Forms of Excellence

Finally, theory can articulate forms of excellent practice that LDT as a field strives towards. Yanchar and Slife (2017) defined these as the sense practitioners have of “what is good or right to do in relevant situations, [and] what counts as satisfactory or unsatisfactory conduct” (p. 154). Forms of excellence are usually tacit. They are the values and related considerations that inform good practice, but that are often in the background and so one is only implicitly aware of their influence most of the time. But Dunne (1997) emphasized how much they matter, nonetheless. He noted that the excellences one pursues in a field refine and shape one’s sensibilities, leading to a person being able to discriminate between options with more sensitivity and nuance. Because the person is so attuned to the outcomes both she and the field at large desire, they can discern how an alternative either does or does not move them towards those ends. Gray and Boling (2016) illustrated this through their study of design case reports, where they showed how the way both

researchers and practitioners wrote about their work revealed their commitment to various field-specific ideals, such as a concern for equality of access, or promoting learners' agency and autonomy.

But articulating forms of excellence as one might do in a theory not only calls practitioners' attention to what matters to the field. It can also change the experience they have with those values:

Articulations are an attempt to formulate what is initially inchoate. . . . But this kind of formation or reformulation does not leave its object unchanged. To give a certain articulation is to shape our sense of what we desire or what we hold important.
(Taylor, 1985, p. 36)

Dunne (1997) indicated that one way articulating forms of excellence can change what someone desires is that doing so can help clarify the types of actions that can lead to valuable ends. This is more than only revealing an alternative means for achieving a goal. As part of articulating the connection, one can come to affectively appreciate the new method in a way one did not before. Practitioners can come to see the alternative as appealing and alluring, which will help them more skillfully put it to use (Wrathall, 2019).

Forms of excellence have not traditionally been a focused topic of inquiry within LDT research. While there are some exceptions, including the Gray and Boling (2016) study referred to above as well as others (Matthews & Yanchar, 2018b; McDonald, Jackson, et al., 2021), forms of excellence are often revealed as one pays attention to the standards, statements of value, or competencies championed either by individual researchers or by institutions within the field (for an example, see Yanchar, 2018). However, it would be to the field's advantage if researchers more intentionally studied such topics. Research approaches have recently been developed to facilitate this (Yanchar & Gong, 2019; Yanchar & Slife, 2017).

Implications and Concluding Thoughts

The phronetic framework offers several implications for LDT research and practice. First, the framework categories better describe theory's contribution to practice than those borrowed from other enterprises, such as the traditional classifications of descriptive and prescriptive (or design-oriented) theory (Reigeluth, 1999; Reigeluth & Carr-Chellman, 2009b). Traditional categories do not draw distinctions between the differing forms of knowledge involved in practice as in the phronetic framework. So, they are blunter instruments when it comes to guiding practitioners to select theory that is useful for a particular circumstance. Terms more tailored to the types of needs practitioners encounter can better inform them of the value a theoretical report is meant to provide. Knowing what to reasonably expect from it can help avoid a person becoming dissatisfied because they misunderstood what that theory offered.

Second, the framework can broaden LDT researchers' views about the types of research they can conduct. Instead of solely, or even primarily, focusing on instructional strategies, processes, and the like (which are only a subset of the needs of practice), the framework's categories draw researchers' attention to needs that may be more foundational, but that are often neglected in the literature. I noted earlier this is the case with research focused on forms of excellence the field strives towards. The same is likely true for LDT-relevant practical knowledge and character.

A third implication is that the framework helps legitimize any communicative artifact that discloses opportunities or sensitizes practitioners to salient affordances. It does not prioritize the traditional research report, but allows for alternative forms of knowledge like that communicated through design precedent. Still, other forms of knowledge could be explored that can also play this role. For instance, consider Wrathall's (2011) explanation of the value of poetic language, that has a "productive ambiguity" (p. 139), meaning it can "oscillate productively between several different possible interpretations" (p. 140). Perhaps LDT theory could take inspiration from poetic forms of discourse. This does not mean it should be poetry in a formal sense, but that it might be designed so that it affords multiple interpretations based on practitioners' experience or need—even if one interpretation is in tension with, or creates an inconsistency when compared to, another. For instance, take the term *reflective practice*. In one sense reflective connotes how practitioners can "pause and examine (or reflect) on their options for moving forward." It also carries the sense of reflection akin to how "a [jazz] musician [is] reflective," where the term "does not mean they stop and think about what note to play next. It means they are in tune with the situation, reflecting back through their music the opportunities their collaborators offer" (McDonald, in press-b). Both senses of *reflective* are true to how Schön (1983) described the term. Even though they do not perfectly align with each other, both can highlight how one might experience reflection in different circumstances.

As another example, Redström (2017) argued that designed artifacts can disclose new definitions for what counts as a defensible end for a discipline to pursue, or what counts as legitimate phenomena within a domain. In his view, artifacts often do this better than do expository descriptions, and so should be seen as a legitimate form of theorizing. Future research can explore how Redström's work might apply to LDT, perhaps using the affordances of newly designed objects to uncover innovative theoretical constructs related to what counts as a learning technology, instructional strategy, or even learning itself.

Fourth, the framework helps legitimize the value of alternative theoretical conceptions of the same phenomena. Since it is not theory's role to describe a set of rules that define what learning or instruction must be, but rather to disclose possibilities or to refine practitioners' palates, there is advantage to providing many views that highlight different aspects of the same issue (Wenger-Trayner, 2013). Different viewpoints support flexible expressions of practice useful for different situations. As Yanchar and Faulconer (2011) concluded, "there would always be more that could be said about the concepts involved, alternative

interpretations to consider, further implications to explore, and new ideas to entertain” (p. 28). This implies that theorists should be responsive to the practical world as they encounter it in all its inherent paradoxes and inconsistencies, not attempting to artificially harmonize individual cases into generalizable laws, nor disregarding unusual or unique findings in a search for patterns and regularities (cf. Yanchar, 2015). What determines whether a theory is useful is not necessarily the degree to which it accords with [certain] facts. It is better because either (a) it makes the interpreter more flexible and open to dialogues with other interpretations . . . or (b) it focuses and make more sense of what is at issue in a current [situation]. (Dreyfus, 2014, p. 18)

Finally, the framework not only allows for theory that has affective impact on researchers and practitioners, but also values a theory’s emotional component. Since theory has more purposes than only informing people about relevant information, its usefulness is partly found in how well it also moves their feelings and sensibilities. “One’s perception of and response to situations is ‘aesthetic’ in that it is mediated through feelings” (Dunne, 1997, p. 358), and so this should be a legitimate component of how researchers draw attention to important possibilities they hope practitioners will consider. Dispassionate, technical reports will continue to have a place in LDT theorizing, but should exist alongside moving accounts that touch practitioners’ emotions, as well.

In conclusion, the central message of the phronetic framework is that instead of reducing the world of practice into abstract models or techniques, theory takes its proper place when it supports practitioners as they learn how to cope with practice in all its color, vibrancy, and liveliness. As a field, LDT is in a strong position to produce this kind of theory, perhaps more so than other fields that are not as tightly connected to practice or that have more direct interest in scientific forms of theorizing (as is often the case in fields like psychology or the learning sciences; cf. Wilson, 2005). The advantage of a practice-oriented discipline like LDT should be that it develops the theories that practitioners find most useful and applicable. I urge researchers within the field to consider how this framework for phronetic LDT theory can improve their work to support practitioners. By so doing, they are meaningfully contributing to the field’s core purpose of creating excellent learning experiences—experiences that target “both intellectual and emotional” outcomes (Gibbons, 2016, p. 34), and that are unconstrained by time or place.




















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












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Dr. Jason K. McDonald is a Professor of Instructional Psychology & Technology at Brigham Young University. He brings over twenty years of experience in industry and academia, with a career spanning a wide-variety of roles connected to instructional design: face-to-face training; faculty development; corporate eLearning; story development for instructional films; and museum/exhibit design. He gained this experience as a university instructional designer; an executive for a large, international non-profit; a digital product director for a publishing company; and as an independent consultant.

Dr. McDonald's research focuses around advancing design practice and design education. He studies design as an expression of certain types of relationships with others and with the world, how designers experience rich and authentic ways of being human, the contingent and changeable nature of design, and design as a human accomplishment (meaning how design is not a natural process but is created by designers and so is open to continually being recreated by designers).

At BYU, Dr. McDonald has taught courses in instructional design, media and culture change, project management, learning psychology, and design theory. His work can be found at his website: <http://jkmcDonald.com/>.

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