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*Many people have been trying to come to grips with the new ways of learning that are supported by networked tools in recent years. These new ways feature distributed social networks at their core and are proving to be much more popular and often more effective than traditional schooling. Science communities such as [faulkes-telescope.com](#) and [labrats.org](#), and massive multiplayer games such as World of Warcraft, are in the vanguard.*

*John Seely Brown and Doug Thomas make an important contribution to understanding what makes these networks so powerful. They use the term *disposition* to refer to an attitude or stance toward the world that inclines the person toward effective practice. They find that a "questing disposition", which has always been important for inquiry and learning, is encouraged and supported in these vanguard social learning networks.*

*Their work will reward your time and attention.*

*Peter Denning*  
Editor

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## The Power of Dispositions<sup>1</sup>

In order to understand one of the critical changes happening in the educational landscape of the 21st century, particularly in relation to participatory culture and large scale social networks, we need to begin to develop a better understanding of how people attend to the world through network culture.<sup>2</sup> The term we use to understand this phenomenon is *disposition*. When we refer to dispositions, however, we are not simply describing attitudes, world views or even propensities to act in particular ways. Instead, we approach the term as a critical and analytic term which draws together three notions: Gilbert Ryle's notion of contingency and context, Michael Polanyi's idea of the tacit dimension (more specifically, what Polanyi described as "attending from" and "attending to"), and John Dewey's understanding of inquiry.<sup>3</sup>

### Toward a General Theory of Dispositions

For Ryle, the notion of a disposition is not predictive. It doesn't tell us what *will* happen, only what *may* happen in certain circumstances. Accordingly, the manifestations of dispositions are radically contingent. As an analogy, we can consider the example of a glass which can be described as having a brittle disposition. This does not mean the glass is likely to break. It means that the glass is likely to break *if it is dropped on a hard surface*.

When applied to people as opposed to objects, the idea of a disposition is more complicated. For Ryle, dispositions are statements about a person's relationship to the world. To say, for example, someone is an artist, is to make a dispositional claim. It simply means she has a tendency to engage in activities (practices, perspectives, and attitudes) that come together to constitute her "being an artist." Painting may or may not be included in that list of tendencies. Even if it is it is incidental. We would say the artist paints because she is an artist, not that she is an artist because she paints. That gets to a very important distinction for Ryle. Dispositions are not mental functions (like learning), they

are statements of propensity, what people are likely to do in particular situations. The key point for Ryle is that the disposition itself is in the person (or the object), but how it manifests is highly contingent on situation and context.

This helps to distinguish dispositions from skills and meta-skills. Skills, such as painting, are to be useful across a wide range of situations, relatively independent of context. Meta-skills tell one how and when to apply skills in a given context. Dispositions, by contrast, are deeply situated and responsive to context because they are tendencies, rather than responses. Our artist, for example, has tendencies and beliefs about aesthetics, lifestyle, and countless other things that all come together in that notion of being an artist. None of these things can properly be called a skill nor are they about the application of a skill in a given context. In that sense, the disposition of being an artist is more than we can possibly describe (attitudes, values, beliefs, worldview) and varies from artist to artist, even though we can describe very precisely the activities an artist engages in (e.g. painting in the cubist tradition, oil on canvas, etc).

Disposition are not consciously chosen and enacted (any more than a glass chooses to break when dropped on a hard surface). Dispositions are triggered because they are deeply embodied states of comprehension that we act upon at a tacit level. Dispositions are the means by which we make sense of our experiences, a "grasping of disjointed parts into a comprehensive whole."<sup>4</sup> It is critical to note, however, that we understand the parts and the whole in very different ways. We only know the distal parts insofar as we attend from them, to something else. In contrast, we attend to the whole focally, meaning we do it from within as an embodied and deeply situated phenomenon.<sup>5</sup>

Polanyi's work can help us understand this distinction a bit more deeply if we begin to think of dispositions as essentially tacit. In the opening of *The Tacit Dimension*, Polanyi introduces the concept by defining it as something about which "we know more than we can say." But for Polanyi, this is only a starting point.<sup>6</sup> The richness of this idea is developed through a careful discussion of the differences between "attending to" and "attending from." For example, as Polanyi tells us, humans have a very difficult time describing human faces. Even though we can easily recognize them and readily attach them to identities they have a quality that exceeds our ability to express them. As a result, we are only able to attend to them by naming and describing various features, much the way we might communicate to a police sketch artist drawing a composite. We attend to the face (something for which we have no vocabulary) *from* the features (which we can describe in much better detail). The same is true of dispositions, in that we can easily name it and even discuss various components of it, but as a whole dispositions go beyond our abilities to describe them. A disposition, like all that is tacit for Polanyi, is embodied, in the sense that we come to dwell in our dispositions and live through them. They represent *understanding* at the most basic level, the things we come to know the most deeply and that we often rely upon without conscious thought.<sup>7</sup> Third, and perhaps most important, some dispositions are directly tied to what Dewey described as "inquiry." Inquiry, for Dewey, is both a simple and incredibly rich term which may be best described as the processes by which we match the tools we have at hand to the work we need to do. But for Dewey, tools are never static, because the tools we have at hand will change from job to job, and that the process of solving one problem not only provides new tools to solve the next problem, but may in fact allow us to see new problems or view old problems in new ways. As a result, what Dewey means when he talks about inquiry is a wholesale shift in how we think about problem solving. The kinds of dispositions we want to focus on are never about means and ends. Instead, they view the knowing process as a cycle, where there is a constant enfolding of means and ends, with each solution providing an entry into more interesting questions and new tools for understanding and answering them.<sup>8</sup>

### Dispositions of Productive Inquiry

In this framework, dispositions that embrace this notion of inquiry tell us a lot about how one is likely to construct the problem as well as how one will view what resources are available to solve it. This category of dispositions we will call *dispositions of productive inquiry*. It is critical to note that by framing productive inquiry as a disposition, we are saying it is something more basic than a skill; it is an embodied element of how we understand and perceive the world. Our current emphasis on skills-based learning misses some vital elements for education in the 21<sup>st</sup> century, elements that a disposition of productive inquiry can bring into focus. Skills and dispositions of productive inquiry can be distinguished by one central principle: skills focus on knowledge, and dispositions of productive

inquiry focus on knowing. We learn skills to help us find answers to questions; they are means to achieving knowledge and getting things done. As a result, skill-based education treats knowledge as an endpoint, meaning that the process of skill building is designed to find answers to questions. The shift to dispositions of productive inquiry is subtle but critical. The point of knowing is not just to find the answer; it is to find the next question. Within the framework of knowing, knowledge itself is never stable because it is always understood and often only useful within a particular context. The knowledge of how something was done in the past is important as a resource, but it is no guarantee of success in the present. Within the framework of knowing, solved problems are not particularly interesting, other than as stepping stones to allow you to get to more difficult or unsolved ones. The emphasis on productive inquiry is on knowing how to use the answers one finds as resources in future contexts, often reshaping them to meet new demands or situations. The emphasis on the new, on the idea of knowing as a fluid construct, is one which is particularly important to embrace.

The need for a new perspective on inquiry, which harnesses the power of dispositions is tied directly to the speed of change brought about by networks and the publics that have formed within and around them. The speed at which information both travels and changes is remarkable. The communities that exist in these spaces are highly flexible, adaptive communities in which learning is a continuous process and change is taken as a given rather than something to be resisted. Education that stems from thinking about the connection between dispositions and the processes of inquiry is ideally suited for this rapidly changing environment.

What we envision is a perspective on education that values attending to problems from the materials at hand, giving rise to a cycle of inquiry which is continually folding back on itself, with each answer feeding a new set of questions. In such a context, teachers will increasingly become mentors, guiding learning in highly personal ways and peers will become an almost inexhaustible resource for learning, particularly as critique and commentary among peers emerge as part of the daily vernacular.

### **The "Questing Disposition" as Productive Inquiry**

Examining the gaming world will provide us some leverage in teasing aspects of this apart. Within the gaming world, particular large scale multiplayer games, we can identify one particular disposition as a model for our notion of productive inquiry, one which we call the "questing" disposition. In these spaces, players are given quests as part of the game and these quests have particular properties that reoccur within and across games. Some of these basic properties of what players would identify as "good quests" include:

- That players will be able to find the resources required to complete the quest within the world
- That in the process of solving a problem they will learn something new (usually how to use a skill or talent)
- That quests may have recognizable end points but at the same time provide necessary, but incomplete, information for completing future quests
- That quests require players to have familiarity with a particular tool set and may challenge them to use old tools in new ways
- That there are always multiple solutions to every problem
- That everything in the world, no matter how unconventional or seemingly unrelated to the task at hand, are all potential resources for problem solving

While these elements may not be present in each and every quest a player encounters, as they aggregate across time and games, players develop a sense of what it means to "quest" in a game.

We would argue that the "questing disposition" manifests only:

1. Under certain conditions or contexts
2. In a way that allows the player to constantly draw upon his or her embodied experiences of the game more than explicit information or instructions about what to do or where to go.
3. In a way that allows the player to match his or her tools to the work that needs to be done to solve a particular problem or set of problems.

We do *not* mean to suggest that a person who has a questing disposition will necessarily approach

each and every problem as a quest, only that *when they do* they are likely to engage a problem in particular ways, perhaps bringing their experiences of play to the problem to imagine it as a game.

Players who spend time engaging with the core mechanics of questing do not choose to embody it nor do they choose to enact it. Because they become familiar with it, embody it and come to dwell in it within specific circumstances, they are likely to enact it when those circumstances are repeated inside or outside of the game space. Knowing (the creation of the whole) occurs through the practices that players engage in and through the process of using and embodying those practices over significant periods of time.<sup>9</sup>

Accordingly, in a game, such as *Grand Theft Auto*, which uses violence as a core game mechanic, we would expect to see a player use and explore violence as a tool to solve problems and achieve goals. We must, at all costs, resist the temptation to think of this as a *violent* disposition. It is a *questing* disposition, in that it uses the resources of the world *in a very particular context* to make decisions about matching tools to work. We might then think of dispositions of productive inquiry as an epistemological layer that governs inquiry and learning. To that end, these particular dispositions can be seen as facilitating and encouraging different styles of learning and inquiry. The dispositions we are describing here are *ways of knowing* more than they are skills for learning, though they may give certain learning practices greater value depending on the context.

### **New Frameworks for Learning in a Networked World**

Our example from games (i.e. the "questing" disposition) gives one particular example of a disposition of productive inquiry that we think meshes well with many of the demands of the 21<sup>st</sup> century workplace and educational environment. The particular disposition, though, is not uniquely important. What matters most, is the ability to see dispositions of productive inquiry as a framework that we can use to understand the process of inquiry in a networked world. We believe that education needs to respond to the ways in which the world is rapidly and continuously changing by rethinking the basic epistemological premises of how we learn in a networked world.<sup>10</sup>

At its base, the kinds of dispositions that give voice to productive inquiry will guide the process of learning. If we consider the challenges that change presents, we can see the benefits of harnessing the power of dispositions. A skill based approach means that change requires a constant upgrading of skills, in a word, retraining. Learning which begins with dispositions of productive inquiry already assumes change to be a part of the equation and, most important, because it is highly contextual, this kind of learning recognizes that the answers one arrives at will be highly contingent as well. The ends (what you learn) is far less important than the process (how you learned it). This, however, goes beyond process/product distinctions and begins to address inquiry as an ongoing way of being in the world. That process then results in endowing inquiry with a sense of wonder, a continuing ability to see things in fresh new ways and perceive the world as something to be explored. Thinking about education through the lens of dispositions of productive inquiry challenges us not to find the *final* answers, but instead to make the questions themselves personal and relevant and continue the process of inquiry. In that sense, answers are not end points but are tools to allow you to ask better and deeper questions.

Dispositions of productive inquiry allow us to understand how learning might function in a world of rapidly accelerating change. At the center of that notion of change is the participatory nature of our new communication networks. Whether it be in worldwide multiplayer games like *World of Warcraft* or new online tools such as *Wikipedia* or *Facebook*, the similarity among all of these spaces is the ability of people to create, shape, and produce knowledge on a constant basis. New approaches to education can help us think about how we learn, understand, and create knowledge in this network based culture. As we think through the process of what it means to learn in the 21<sup>st</sup> century, we believe that dispositions of productive inquiry provide a new paradigm for thinking through the implications of theorizing (and potentially problematizing) learning in these new environments, of identifying what the "hard problems" are they need to be solved for education and learning, and of implementing solutions within and across networks for revolutionizing the process of education.

We see the need for a fundamental shift in perspective for 21<sup>st</sup> century learning. The shift requires a new emphasis, focusing on context and inquiry, rather than content and results. In a world where

things change at breakneck speed, we need to be able to focus on means rather than ends and understand both the need to (and the ways that we can) re-invent our approaches every time things change. These changes need not be monumental, even small shifts can generate new ideas and open new vistas for understanding. If we focus, instead, on understanding how to match our tools to our work (i.e. knowing), we find ourselves prepared to address any challenge. Most important, the answers we find to questions and the solutions we find to problems are not static and frozen; they are resources we bring with us and which we continuously reform and refine. But those resources only become available when we cease to considering them as end points and realize that all of the answers we find, no matter how significant or trivial, add to our way of thinking about the world and offer us new tools for facing challenges.

The challenge of the 21<sup>st</sup> century is not adapting to change, it is embracing it. Harnessing the power of dispositions of productive inquiry to promote new forms of learning may be our best hope for meeting that challenge and transforming education to meet the needs of a constantly changing and evolving world.

<sup>1</sup> This paper is the first of three introducing a framework for learning in the context of digital media. Each of these papers develops a new set of analytic categories that helps to uncover how learning is being transformed by digital media. This paper presents dispositions as a key factor in forwarding productive inquiry as a key facet of 21st century learning. Additional papers document a shift in learning from the explicit to the tacit and lay out a model for understanding how large scale participatory environments are beginning to constitute a "networked imagination."

<sup>2</sup> The notion of the value of networks has been explored at length in much of the literature about "netpublics" and approaches such as Yochai Benkler's *The Wealth of Networks* and Manuel Castells's three volume *Network Society* collection. We want to focus attention, specifically, on the ways in which the cultures produced by networks can transform learning and education.

<sup>3</sup> See for example Gilbert Ryle's *The Concept of Mind* (Chicago: University of Chicago Press, 1949), Michael Polanyi's *The Tacit Dimension* (NY: Doubleday, 1967), and John Dewey *Experience and Education* (NY: Collier Books, 1938).

<sup>4</sup> Michael Polanyi, *The Study of Man*, p. 80

<sup>5</sup> Yu Zhenhua, "Two Cultures Revisited" *Tradition & Discovery*, vol XXVIII, no 3, 2002, pp. 9-10.

<sup>6</sup> Unfortunately for many this is seen as the conclusion of the book, rather than its opening line.

<sup>7</sup> This idea is grounded in Polanyi's notion of "indwelling," a concept that unites notions of attending to and attending from through embodiment.

<sup>8</sup> Tools in this sense can be both physical tools and mental tools such as concepts, models and ideas.

<sup>9</sup> This notion of embodied practice is at the core of Polanyi's notion of indwelling, however a more substantial discussion of this concept is beyond the scope of this paper.

<sup>10</sup> The accelerated pace of change in network culture is due to at least two factors. First, the network infrastructure is increasing in power exponentially, making it possible to process and send increasingly large amounts of information faster and faster. Secondly, today's networks are not simply sites of reception, but are contexts in which participants produce the majority of the content, particular in peer driven environments. As a result, the volume and speed of information produced, and therefore the rate of change, also scales with the number of participants.

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