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FROM IQ TO IC: A DISPOSITIONAL VIEW OF INTELLIGENCE

Traditional psychometric views of intelligence tend to be ability-centric in nature, stressing the presence of a set of abilities, skills, knowledge, and/or processing capability. However, an alternative to this prevailing paradigm is possible. Specifically, intelligence might be construed as a collection of cognitive dispositions that capture one's tendency to engage in certain patterns of thinking. The author examines what such a characterological conception of intelligence might look like, reviewing the current thinking about the nature of dispositions and about which dispositions most influence good and productive thinking. The author concludes the examination with a discussion of what a characterological conception of intelligence might mean to education.

Walk into virtually any classroom and ask students who the smartest kid in the class is,

and, within seconds, one is likely to get a set of convergent answers. So ingrained and universal are Western culture's notions of what constitutes smart that it makes little difference whether one enters a history or a math class, an elementary school or a high school; the smartness sieve can be applied quickly by any member of the class to identify a particular member as being smart. Although who is considered smart may vary across contexts, the qualities being assessed tend to remain remarkably consistent.

Such consensus of assessment is due largely to the fact that the smartness sieve reflects a dominant cultural mindset about the set of attributes and qualities that make up intelligence. Chief among these qualities tends to be one's knowledge and skill level. Within a school context, grades often are used as a proxy for these qualities. Secondly, the ease with which one acquires new skills and knowledge, what Aristotle termed a quick wit, is considered a key factor in determining intelligence. These two factors, ability and speed, represent not only our everyday, implicit theories of intelligence (Siegler & Richards, 1982; Sternberg, Conway, Ketron, & Berstein, 1981) but also the most prominent paradigm within the field of intelligence as well (Sternberg, 1990). An examination of traditional theories of intelligence reveals that they tend towards an abilities-centric perspective, emphasizing the presence of overarching mental abilities (Guilford, 1982; Thurstone, 1938), general neural efficiency (Jensen, 1988; Spearman, 1973), and/or specific skills for thinking and learning (Campione & Brown, 1978). Even avant-garde theories of intelligence, such as Gardner's (1983) theory of multiple intelligences or emotional intelligence popularized by Goleman (1995), are revolutionary chiefly in terms of which abilities they recognize as important.

To be sure, this abilities-centric focus is not universal. Several recent theories of intelligence focus on the mental mechanisms and contexts that underlie intelligent behavior and avoid focusing exclusively on the set of skills or abilities one possesses. PASS theory (Das & Jarman, 1991) and Sternberg's (1985) triarchic theory of intelligence are two notable examples (for a review of other alternative theories, see Rowe, 1991). Likewise, recent advances in neuroscience are changing views of intelligence by expanding Western culture's understanding of how emotions shape thinking and influence behavior. Nonetheless, the abilities-centric view of intelligence is quite ingrained in Western culture and dominates much of the way intelligence is seen here--shaping the types of questions society asks about it, influencing attempts to try and measure it, and determining how teachers try to develop it in and out of the classroom.

In order to paint a fuller and more robust picture of intelligence, and one that can effectively speak to the practice of parents and teachers, this article explores the concept of intellectual character--what might good-naturedly be referred to as IC as opposed to IQ. Intellectual character is an overarching term describing a set of dispositions--such as curiosity, skepticism, or open-mindedness--that not only shape but also motivate intellectual behavior. This article begins by looking at what the concept of intellectual character offers that traditional abilities-centric views of intelligence do not. Then, as a means of gaining some perspective on the topic, the origins of the concept of thinking dispositions, which represent the constituent parts of intellectual character, are traced and located within the fields of psychology and philosophy. To make the concept of intellectual character more concrete and practically useful, various views regarding the dispositions

that might comprise and define one's intellectual character are also investigated. Finally, the implications of a dispositional view of intelligence for the education of students are explored.

Beyond Ability: The Idea of Intellectual Character and What It Offers
The abilities-centric mindset views intelligence as a bounded entity, capturable and measurable through a relatively small set of carefully identified questions. While intelligence tests made up of such questions may provide the necessary information for the ranking of individuals, their validity as predictors of intelligent behavior in situ--that is, in the real-life, day-to-day settings and contexts--is questionable (Felsman & Valiant, 1987; Gardner, 1983; Goleman, 1995; Gould, 1981; Sternberg, 1996). This is not to say that IQ measures are not in any way predictive on a gross level. In fact, they have proven to be rather good predictors of performance on similar tests of ability--such as those that might be found in school or on other measures of intelligence. In addition, these measures tend to be good predictors of overall occupational achievement, particularly when such achievement is tied to school performance. However, when one looks at non-school-based performance, the predictive value of traditional IQ measures becomes a bit murkier. And, when one looks at the performance of individuals, as opposed to group aggregates, murkier still.

For example, Stanley (2000) reports that a common trait among highly successful entrepreneurs and businesspeople he interviewed turned out to be their history of mediocre school and test performance as opposed to their having a superior IQ. Similarly, success in the political arena seems not to be overly influenced by IQ, as can be seen in most recent crops of candidates for president. Even Herrnstein and Murray (1994) raise several examples of the failure of IQ to predict on-the-job performance in their controversial book, The Bell Curve. The case of Marines in technical jobs is but one example. While the low-IQ workers performed worse than their high-IQ counterparts on tests of job knowledge, their performance on actual work samples was indistinguishable. It is not that any of these individuals--entrepreneurs, presidential candidates, or Marine technicians--aren't intelligent, only that abilities-centric IQ measures fail to capture and predict their intelligence in the world.

An examination of the questions or tasks on a typical measure of intelligence indicates why this discrepancy between test and life performance might be the case. Most test items lack what Steinberg (1985) calls ecological validity or real-world authenticity. There is a gap between the kinds of mental moves called for in the context of everyday functioning and the thinking processes required for performance on the carefully circumscribed tasks of an intelligence test. The test items call for an extremely stripped-down version of mental functioning, often calling on the exercise of discrete skills in a decontextualized setting. This gap is a standard criticism of most intelligence tests and has led some critics to contend that test scores are highly influenced by one's test-taking competence and familiarity (Gould, 1981; McClelland, 1973). The testing situation itself produces a similar kind of ecological gap (Hutchins, 1996). Typically, in testing situations people are relatively free from distractions. Test takers tend to be motivated to try their best, and performance requires isolated concentration in solving fairly well defined and clearly articulated tasks. When these conditions are met, it is not

unreasonable to assume that differences in test performance do in fact reflect differences in the abilities being measured.

In contrast to the content and context of abilities-centric intelligence tests, intelligent functioning in the world tends to be messier. Not only is real-world problem solving more contextualized, it is more ambiguous in nature. In daily life, one does not so much encounter problems directly as one encounters problematic situations in which the actual problem(s) must be detected, framed, and understood. This kind of detection is more than recognition and identification, however. It involves spotting opportunities--what might be called an attitude of awareness or a sensitivity to occasions. In addition to the issue of detection of problems, one also has to deal with motivational issues since abilities do not necessarily activate themselves when presented with problem situations. Since this kind of intellectual functioning in the wild is clearly more than a simple application of requested abilities, skills, and knowledge; it is little wonder that performance under the artificial and controlled circumstances of a test would fail to serve as an adequate predictor of such performance.

As this brief comparison of test performance and in-the-world functioning demonstrates, intelligent performance is more than an exercise of ability. It is more dispositional and characterological in nature. Dispositions concern not only what one can do, one's abilities, but what one is disposed to do. Thus, dispositions address the often-noticed gap between our abilities and our actions. As Dewey (1933) noted in his observations of the poor thinking exhibited by well-educated persons, Knowledge of methods alone will not suffice; there must be the desire, the will to employ them. This desire is an affair of personal disposition. (p.30). This theme is picked up half a century later in Covey's (1989) popular book, The Seven Habits of Highly Effective People, when he talks about the inadequacy of training people in techniques while neglecting the development of the accompanying characterological traits.

A focus on thinking dispositions seeks to better explain intellectual performance by acknowledging the deep, attitudinal patterns of intellectual behavior. This attitudinal and characterological dimension of thinking, while not captured in traditional theories of intelligence, is well represented in the everyday vocabulary of thinking. Words such as curious, open-minded, decisive, systematic, skeptical, judicious, inquisitive, strategic, diligent, fair-minded, reflective, deliberative, and so on are used regularly to describe intelligent individuals and acknowledge the consistent deployment of their ability. Thus, the vernacular recognizes the body of habits, of active dispositions which makes a man do what he does. (Dewey, 1933, p.44).

Intellectual Character, a phrase borrowed from my colleague Shari Tishman, is used here as an umbrella term to cover those dispositions associated with good and productive thinking. The use of this term communicates a clear concern with broad-based characterological aspects of intelligence rather than skills, abilities, or specific behaviors. In speaking about character, one readily recognizes its multidimensional nature, which includes attitudes, beliefs, habits, sensitivities, inclinations, and dispositions. Character also implies depth and permanence rather than fleeting states. Most importantly, one has a natural sense of character as an animator of actions.

The Thinking on Thinking Dispositions
As an overarching construct, the notion of intellectual character can only be understood in terms of the thinking dispositions that give it shape and meaning. Therefore, it is necessary to clarify what the term disposition means. While a simple definition might seem sufficient, the task is complicated by the fact that the term has quite a long history of use and associations. Furthermore, because the scholarly terrain of thinking dispositions crosses several fields and includes a variety of related concepts, there is a proliferation of analogous terms. These terms include meta-abilities (Goleman, 1995), passions (Costa, 1991), rational passions (Paul, 1993; Scheffler, 1991), virtues (Paul, 1991; Schrag, 1988), and habits of mind (Costa & Kallick, 2000; Dewey, 1933; Marzano et al., 1988). Even when the term thinking dispositions is used, individuals define it differently and use it to refer to different constructs. For example, participants at the Sixth International Conference on Thinking defined thinking dispositions as: conditional tendencies, habits of mind, inclinations, characterological attributes, mindless reactions, response vehicles, skiltitude, a source of energy, attitudes, values, and behaviors (Tishman & Andrade, 1995).

This proliferation of terms and interpretations makes it difficult to arrive at a clear definition of thinking dispositions and hampers the field's ability to establish the usefulness of the concept, critique and build off of one another's research, and communicate effectively with practitioners, policy makers, and other scholars. Furthermore, serious debate exists regarding the learnability of dispositions, the difference between habits and dispositions, the descriptive versus explanatory nature of dispositions, and the volitional nature of dispositions. In order to integrate these diverse perspectives and clarify the construct of thinking dispositions, this section provides an overview of the intellectual work being done in the area of dispositions by philosophers, psychologists, and practitioners. Based on this examination, a stipulated definition of thinking dispositions is then presented.

Philosophical Perspectives

The term disposition, and in particular thinking disposition, has its roots in philosophy and the field of critical thinking. In The Oxford Companion to Philosophy (Honderich, 1995), one finds a formal definition of a disposition as "a capacity, tendency, potentiality, or power to act or be acted on in a certain way" (p.203). Philosophers hold that any capacity relying on voluntary control, as opposed to being automatically conditioned by external stimuli, is not strictly a disposition. One of the strictest adherents to this formal philosophical definition is Ryle (1949), whose influential and classic work, The Concept of Mind, draws a fundamental contrast between actions as concrete events and dispositions as latent tendencies. Ryle states that to possess a dispositional property is not to be in a particular state, or to undergo a particular change; it is to be bound or liable to be in a particular state, or undergo a particular change, when a particular condition is realized (p.43). Ryle's example of glass having a brittle disposition when struck is often cited. Other philosophers working in the critical-thinking field also adhere to this traditional analytic stance, though modifying it slightly. Siegel (1997) expands the concept of latency by arguing that dispositions are counter-factual properties, existing independently of any action, as tendencies that need never be realized. Ennis (1996), who has done much to popularize the idea of thinking dispositions, views dispositions as latent tendencies that

are exercised reflectively rather than automatically. Furthermore, Ennis believes that dispositions can be acquired but may also exist divorced from any associated ability.

Strict adherence to the inherent-properties conception of dispositions put forth in philosophy is ultimately quite unsatisfying for understanding behavior, intellectual or otherwise. This traditional definition effectively divorces dispositions from voluntary action, internal control, regulation, and acquisition while making them distinct and uninfluenced by attitude and beliefs. The consequence is to reduce dispositions to a fixed trait or attribute. Furthermore, it makes little sense to say, as Ennis does, that one can have a disposition--to evaluate reasons, for example--without having the necessary ability to exercise it. Such a position creates a logical incompatibility with the idea that dispositions are conditional tendencies only in need of an external trigger, while having the effect of reducing dispositions to mere desires.

These practical shortcomings have led many to depart from Ryle's inherent-properties definition of dispositions and posit a less restricted and ultimately more useful definition. For example, Norris (1995) softens the conditional view of dispositions by adding a volitional component. In Norris's view, individuals must either have formed habits to use certain abilities, or overtly think and choose to use the abilities they possess (p.4). While external conditions set the circumstance, they do not provide the trigger. Facione, Sanchez, Facione, and Gainen (1995) also take a more characterological view of dispositions, characterizing them as consisting of both behavior and beliefs. Viewing dispositions in this way makes it possible to connect thinking dispositions with the work of educational philosophers exploring the role of beliefs, virtues, passions, character, and attitudes in shaping thinking (e.g., Paul, 1993; Scheffler, 1991; Schrag, 1988).

Psychological Perspectives

The concept of thinking dispositions is as much of interest to cognitive psychologists as it is to philosophers.[1] However, in their use of the term dispositions, psychologists tend to reject the idea of dispositions as involuntary, latent tendencies, defining them instead as voluntary elicitors rather than automatic emitters of behavior (English & English, 1958). Thus, while the environment may prompt dispositions, dispositions represent a consciously controllable response rather than a completely unconscious or automatic response. From the psychological perspective, dispositions are thought of as general in nature rather than specific, making them useful in accounting for the sameness of behavior. This aspect of dispositions distinguishes them from specific habits. For example, a disposition toward open-mindedness can account for a whole range of behaviors while at the same time not implicating any single behavior--such as, examining one's own bias. Conversely, the cultivation of a disposition, such as open-mindedness, requires its operationalization as a full and robust range of behaviors. This distinguishes dispositions from habits, which tend to be quite narrowly defined.

Most psychologists stick closely to this basic definition while adapting and expanding on it. Baron (1988) acknowledges the volitional aspect of dispositions while stressing their acquired nature. He states that in contrast to capacities, which are fixed, dispositions are learned tendencies or cognitive styles under our control (p. 112). Elsewhere, Baron (1985)

refers to dispositions as parameters in a psychological theory that affect success in tasks (p.14)--thus, making clear the projective role dispositions play in human behavior. This theme of dispositions as predictive is central to the definitions offered by Salomon as well as the MacArthur Project team at Harvard Project Zero.[2] Salomon (1994) emphasizes that dispositions are more than a summary label for a cluster of interrelated and relatively stable behaviors (p.1) but play a causal role and have explanatory status. Likewise, Perkins, Jay, and Tishman (1993a) see dispositions as the mainspring that puts all this [ability] in motion and represent "behavioral tendencies" (p. 2). Elsewhere Tishman, Perkins, and Jay (1995) define dispositions as: inclinations and habits of mind that benefit productive thinking (p. 37).

Perkins et al (1993a) go on to elaborate on the place of dispositions in the affective domain of cognition. It would be easy to see dispositions mainly us an effort to honor the role of motivation in complex cognition, and certainly this is one of the objectives. However, to treat dispositions as solely about motivation would be to take too narrow a view. Instead, we propose a conception of dispositions that includes attention to habits, perceptual sensitivities, and even abilities themselves. This conception puts forth dispositions as a unit of analysis for a broad and fruitful conception of mind (pp. 3&4). In order to better account for thinking behavior, this conception stretches the definition of dispositions much further than previous conceptions. While some argue against the inclusion of ability as a component of dispositions (see, for example, Ennis, 1996), excluding ability totally from the picture makes little sense if behavior is to be used as an indicator of a disposition. If behavior is the identifying marker of a disposition, then ability must at least be a precondition. Considering this perspective in light of the previous critique of abilities-centric models of intelligence, it may seem that the argument has come full circle. However, it is not necessary that conceptions of intelligence completely avoid the inclusion of ability, only that ability be kept in perspective and not viewed as the sole indicator of intelligence.

Thinking Dispositions and Habits of Mind

Within the literature of educational practice, the phrase habits of mind enjoys wide usage, though it can be used to denote quite different constructs. While some educators use the term in the more characterological sense of a thinking disposition (Barell, 1991; Costa & Kallick, 2000; Kallick, 1989), others use it to denote general-level abilities (Marzano, 1992; Meier, 1995) or disciplinary process skills that students should routinely use.[3] However, the chief originator of the term, John Dewey (1922; 1933), clearly sought to describe a construct quite similar to the one being explored here under the name thinking disposition. Dewey's writings address some of the common themes and tensions already noted within psychology and philosophy--such as, the learnability of dispositions, the tension between habits and traits, the descriptive versus explanatory nature of the concept, and the volitional nature of dispositions. Therefore, it is appropriate to close this discussion of thinking dispositions by briefly reviewing his perspective.

Dewey (1922) defends and defines his use of the word habit--habit of mind, habits of thought, intellectual habits, mental habits, and habits of thinking--in the following passage:

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But we need a word to express the kind of human activity
which is influenced by prior activity and in that sense
acquired; which contains within itself a certain ordering
or systematization of minor elements of action; which is
projective, dynamic in quality, ready for overt
manifestation; and which is operative in some subdued
subordinate form even when not obviously dominating
activity. Habit even in its ordinary usage comes nearer to
denoting these facts than any other word. If the facts are
recognized we may also use the words attitude and
disposition. (p.41)
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Dewey (1922) goes on to state that if the term disposition is to be used, it must be understood as "readiness to act overtly in a specific fashion whenever opportunity is presented" (p.41), as a predisposition, and not as a latent potential.

In his stipulated definition of the word habit, Dewey emphasizes the importance of acquisition and development, thus separating habits/dispositions from innate qualities such as capacities, traits, or temperament. This is a distinction that is lost when dispositions are defined as innate properties of people or objects. Furthermore, Dewey's definition makes it clear that his purpose is to explain and predict intellectual behavior. It [common sense] understands the body of habits, of active dispositions which makes a man do what he does (1933,p. 44). In Dewey's sense, habits have projective power-- forming our desires, furnishing our capacities, and ruling our thoughts. Habits are active, energetic means. Habit is energy organized in certain channels (1922,p. 76). Finally, Dewey connects habit or disposition to the larger picture of intellectual character. The dynamic force of habit taken in connection with the continuity of habits with one another explains the unity of character and conduct, or speaking more concretely of motive and act, will and deed (1922,p.43).

A Stipulated Definition of Dispositions

As this brief tour through the various perspectives on dispositions reveals, there is not a clear consensus about what a disposition is. Nonetheless, one does find a fair amount of agreement between the psychological perspective and that represented in the Deweyan perspective. In addition, there is a growing tendency by some philosophers to move away from the classic definition of dispositions towards a more facilitative and colloquial stance. Based on this convergence and a need to integrate everyday conceptions of what is meant by the term disposition, the following stipulated definition of thinking dispositions and intellectual character is offered:

Thinking dispositions represent characteristics that animate, motivate, and direct abilities toward good and productive thinking and are recognized in the patterns of one's frequently exhibited, voluntary behavior. Dispositions not only direct one's strategic abilities, but they help to activate relevant content knowledge as well, bringing that knowledge to the forefront to better illuminate the situation at hand. Unlike desire, dispositions are accompanied by behavior and thus assume the requisite ability to carry out that behavior. In contrast to habitual routines, dispositions invoke a general class of responses rather than specific actions. Collectively, the presence and force of these

dispositions make up our intellectual character.

Which Dispositions?

Having arrived at a working definition of intellectual character and thinking dispositions, it is necessary to consider both how many thinking dispositions there are and which thinking dispositions are deemed most important. A number of investigators have put forth lists of key dispositions. Some of these lists strive to be comprehensive while others seek practical utility. Before examining the lists proposed from the various perspectives of philosophy, psychology, and practice, readers may want to take a minute to consider their own feelings about the dispositions that support good and effective thinking[4] and note their ideas about the characteristics, dispositions, or general attitudes that a good thinker possesses. From this initial list, it is then possible to identify one's personal set of the most important four or five dispositions for supporting good thinking.

Work with numerous groups of teaches and parents reveals that in completing this task most people initially include some dispositions not directly related to intelligent behavior but which are well prized and encouraged both within school settings and the broader culture. For example, perseverance is often one of the primary characteristics teachers and parents want children to develop. It is a highly valued trait, but is it a characteristic directly related to thinking? Perseverance is a trait valued in all kinds of contexts, such as, completing a task, dealing with adversity, or achieving one's goals. Perseverance can be useful in problem-solving situations as well, but it may not always constitute an approach to good thinking as there are times when it is more fruitful to abandon ideas or approaches rather than stick doggedly by them.

Issues such as these make it challenging to arrive at a list of pure thinking dispositions, but the issues are important to consider. Strictly speaking, a thinking disposition, at least the positive ones that one would like to cultivate, should always lead in the direction of better and more powerful thinking.[5] If the candidate disposition is something whose value can only be determined situationally, it becomes more of a heuristic or useful back-pocket strategy than a thinking disposition. An example might be planning backwards or brainstorming. These are potentially useful types of thinking, but only in specific situations. In contrast, something like open-mindedness is more broadly applicable. Of course, one still must employ some judgment in the application of a thinking disposition--one doesn't want students to be so open that they can never make a decision. The important point here is that dispositions generally have broad applicability rather than being confined to a narrow set of situations. Still, the application shouldn't be too diffuse. If the proposed disposition has broad application outside the range of thinking, it may be an attribute of general rather than intellectual character. Attributes such as honesty, integrity, civility, and cooperativeness would be examples.

Another important issue to consider is that of grain size. Since dispositions were defined as broad general categories that can manifest themselves in a variety of behaviors, it is important that one not be too narrow in identifying potential dispositions. For example, looking at more than one source of information is much narrower than considering multiple perspectives. It is important to keep these caveats in mind in examining and evaluating the lists others have put forth as key thinking dispositions.

Within the critical thinking domain of philosophy, the Facione group (1992; 1995) and Ennis (1987; 1991; 1996) have concerned themselves with the formulation of lists of thinking dispositions while Paul (1991; 1993) has developed a list of intellectual virtues or traits of mind[6] (see Table 1). The Faciones, working with a cross-disciplinary panel of scholars, propose an overall disposition toward critical thinking that consists of seven sub-dispositions (1995,p.3).[7] Ennis's list of dispositions of the ideal critical thinker totals twelve. However, in seeking to address shortcomings and criticism of critical-thinking programs through his list, Ennis winds up including several non-thinking dispositions, such as, endorse a position. Furthermore, one finds maxims, be well informed and outright directives, be concerned about others welfare, which tend to make his list a set of useful rules of thumb rather than true thinking dispositions.[8] Likewise, Paul (1991; 1993), in seeking to reflect both the affective and moral dimension of critical thinking, proposes traits--such as, intellectual humility--that might not strictly be thinking dispositions.

Among psychologists discussing dispositional constructs (e.g., Brown & DeLoache, 1978; Kruglanski & Freund, 1983; Langer, 1989; Salomon, 1994), only Perkins et al (1993a) propose a specific list of thinking dispositions. In developing their list, the Perkins group set themselves four criteria: individually necessary to a conception of good thinking, collectively comprehensive, normatively appropriate in that it fits with cultural intuitions about good thinking, and functionally balanced so as to create a supportive network. Application of these criteria result in the identification of seven dispositions, which include the dispositions: to be broad and adventurous, to intellectual curiosity, to clarify and seek understanding, to be planful and strategic, to be intellectually careful, to seek and evaluate reasons, and to be metacognitive.

As a means of informing curriculum and instruction, lists of habits of mind have been developed by Central Park East Secondary School (CPESS) (Meier, 1995), Project 2061 (AAAS, 1989), and Costa and Kallick (1992) (see Table 2). While making no claims as to the list's comprehensiveness, the educators at CPESS developed a list of five habits of mind, often expressed as key questions, that have withstood the test of time at that school. Seeking to identify core attributes of intelligent behavior, Costa and Kallick (2000) identify sixteen habits of mind. As a policy document, Project 2061: Science for All Americans (AAAS, 1989) seeks to provide a national direction for science curricula. It identifies seven scientific habits of mind that the Project feels reflect a systematic application of highly-regarded everyday values.

In comparing these seven lists, one is immediately struck by the large degree of overlap. Across the lists, one sees a general concern with promoting creativity, encouraging curiosity, and developing deep understanding. In seeking to synthesize these seven lists, six broad categories of dispositions can be discerned: the disposition to be open-minded, to be curious, to be metacognitive, to be strategic, and to be investigative and inquiring, and to reason and use evidence. By examining the behaviors and products each of these disposition engenders, the purpose of these behaviors, and the focal point of the thinking involved, three super ordinate categories emerge: creative thinking, looking out; mental management and awareness, looking in; and critical thinking, looking at. Table 3 provides a visual display of these relationships.

The question of which dispositions are most productive and crucial to the promotion of good thinking is necessarily value laden. As such, the lists of dispositions discussed above represent not only the points of view of their respective authors, but they represent a cultural point of view as well. The lists discussed here are all representative of a Western tradition and approach to intelligence and thinking. Consequently, there is an implicit valuing of investigation, challenging of ideas, and novelty. However, the values and intellectual traditions of other cultures are likely to have a slightly different focus. For example, whereas Westerners often focus on testing the limits of an idea in developing understanding, other cultures may stress the importance of recognizing the history and lineage of ideas and expressing appropriate appreciation and reverence for that history.[9]

The Educational Implications of Intellectual Character
Theories of intelligence rarely speak to educational practice directly. The theoretical models of cognitive processes and mental organization about which most theories of intelligence concern themselves generally are quite removed from the daily demands of curriculum and instruction. Nonetheless, the mental models educators hold about intelligence do affect how they see and respond to the world, shaping what gets measured, cultivated, and rewarded. When intelligence and being smart are viewed primarily as a matter of ability, the natural consequence is to seek to cultivate the knowledge and skills seen to comprise that ability. When intelligence is viewed more about how information is processed, as in the triarchic theory of intelligence, then the cultivation of processes becomes more important. The development of intellectual character points in yet another direction.

As has already been stated, dispositions depend on the requisite skills and abilities to carry them out. This means that dispositions must be fleshed out and operationalized as sets of skills. For example, open-mindedness can take the form of generating alternatives, considering other points of view, or looking for bias in oneself and others. To cultivate the ability to be open-minded necessitates development of these and many other associated skills. However, to give these skills life and make them true dispositions means that the development of inclination and sensitivity must be attended to as well. On this topic, it is important to keep Dewey's words in mind, When the teacher fixes his attention exclusively on sack matters as these [content knowledge and skill development], the process of forming underlying and permanent habits, attitudes, and interest is overlooked. Yet the formation of the latter is the more important for the future (1933,p.58). What this suggests is a mode of teaching in which teachers do not neglect skill development, but they do look beyond it.

Thus, to effectively develop intellectual character, it is necessary for instruction to proceed on many fronts simultaneously. To be sure, the abilities and skills of good and productive thinking must be developed and practiced to ensure the presence of ability. However, for our abilities to become consistent patterns of action, those skills and abilities must be valued, nurtured, and deemed useful across a variety of setting and occasions. In this regard, the development of intellectual character only beings with the fostering of ability. It also is necessary that the environments students encounter carry expectations for good thinking and provide ample modeling of thinking. As the old adage--children learn what they live with--suggests, much of the development of inclination resides in the

well-established routines, cues, and structures of the cultural settings with which students come in contact. Consequently, the implicit curriculum of the classroom must be examined to understand what patterns of thinking are being developed and then to refocus it as might be needed. Even though schools themselves may not be set up or structured in such a way as to promote all of the values associated with intellectual character (e.g. Brown, 1993; Kohn, 1999; Langer, 1997; Sizer, 1984), individual teachers, nonetheless, can affect many powerful changes within their own classrooms when it comes to providing models and values.

Perhaps the most difficult aspect of developing intellectual character centers around the cultivation of students' sensitivity to or awareness of occasions for employing their thinking skills. Research indicates that it is precisely in this area where people's performance breaks down (Perkins et al., 2000). While more research is needed to fully understand the nature of this kind of sensitivity and its development, a few potential strategies exists. For example, in the modeling of thinking, teachers can pay particular attention to pointing out and elaborating on their own occasions of sensitivity, explaining why they detected this instance as an occasion to engage in a certain form of thinking. Teachers also can highlight and draw students' attention to high-incident contexts for certain types of thinking; for instance, the importance of being open-minded in new situations or considering alternatives when one feels stuck.

Conclusion

At the most basic level, all theories of intelligence are about values. Before the processes of identifying, measuring, and evaluating can begin, every theory of intelligence first must put forth a list of what qualities it feels represent the best indicators of intelligence. With regards to the concept of intellectual character presented here, it is the individual's intelligent performance over time and in diverse circumstances that is held up as being of greatest import. From this perspective, one sees that ability alone will not suffice as an indicator of intelligence. An examination of individuals' consistent intelligent performance in non-academic settings reveals that it has a dispositional quality that is somewhat characterological in nature.

Admittedly, this characterological view of intelligence is based more on observations done in the world than in the lab. While less formal and technical in nature, the grounded and intuitive quality of the concept of intellectual character lends it an easier resonance in educational contexts than more formal theories. This it not meant to suggest that the development of intellectual character is an easy or straightforward process. However, by first recognizing how abilities-centric views of intelligence shape the curriculum offered, determine the types of opportunities created, and influence one's responses to students, educators can begin the process of creating environments that go beyond the cultivation of ability and begin a process of developing the inclination and awareness needed to nurture the intellectual character of their students.

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1. In addition to the sub-field of cognitive psychology, researchers in the field of

personality and social psychology also concern themselves with the understanding and assessment of disposition-like traits. These might be characterized as attitudes, needs, temperament, or beliefs. Their research goal is often to identify situational and individual difference variables affecting people's behavior--thinking and otherwise. While this line of inquiry is related to the Idea of thinking dispositions generally and certain types of dispositions specifically, it tends to be of less use in understanding what is meant by the term "thinking dispositions." For that reason, this particular work is not elaborated on here. On the connection between thinking dispositions and such psychological constructs as the "need for cognitive closure," "need for cognition," and "mindfulness," see, (Perkins, Tishman, Ritchhart, Donis, & Andrade, in press). Readers Interested in exploring dispositional aspects of personality should see; for example, (Hogan, 1983; Kagan, 1989; McCrae & Jr., 1987).

2. The Mac, Arthur Patterns of Thinking Project was a multi-year investigation into the nature and assessment of thinking dispositions. David Perkins and Shari Tishman were principal investigators for the project. Other project members included Eileen Jay, Al Andrade, Kiki Donis, and Ron Ritchhart. For examples of the early theoretical and conceptual writings of the group, see, (Perkins, Jay, & Tishman, 1993a; Perkins, Jay, & Tishman, 1993b; Tishman, Perkins, & Jay, 1993).

3. The term "habits of mind" appears Increasingly In curricular frameworks and assessment materials. On the use of habits of mind in curricular frameworks, see, for example, (AAAS, 1989; Goldenberg, 1996; Massachusetts Department of Education, 1995). These documents tend to present habits of mind as process skills that students should be able to call on and use In a variety of situations. For example, Cuoco et al 1996 state that "we are after mental habits that allow students to develop a repertoire of general heuristics and approaches that can be applied in many different situations" p. 378, Similarly, Project 2061 AAAS, 1989 states that "taken together, these values, attitudes and skills [in disciplinary thinking] can be thought of as habits of mind" p. 133. Their list of skills includes both basic skills in computation and "critical-response skills" p.139. On the use of habits of mind in assessment materials, see; (Baron, 1987; Jorgensen, 1994).

4. I use an informal, working definition of good thinking that has found a broad consensus in the critical-thinking community: good thinking is thinking that is reasonably flexible, reflective, and productive in achieving its ends or goals with regard to making decisions or solving problems. See, for example, Baron, 1985; Ennis, 1987; Perkins et al., 1993b.

5. Throughout this discussion, thinking dispositions have been portrayed as good and positive forces. However, dispositions can certainly be negative, debilitating, of inhibiting forces. The disposition to jump to conclusions and seek early closure is a common example. At the same time, it is possible to over apply or carry a positive disposition to an extreme. For example, considering alternative options, choices, and perspectives could load one to never make a decision, skepticism can turn Into cynicism, and perseverance can lead to preservation. Clearly these types of thinking are no longer productive in nature. By implication, if not definition, those who concern themselves with thinking dispositions and intellectual character are concerned with the positive and productive end of thinking, just as those concerned

with developing moral character are concerned with promoting the positive rather than negative sides of morality as they see it. This is not to imply that one can attend only to the positive while ignoring the negative. In cultivating intellectual character attention must be made to developing positive dispositions while combating and reigning In negative dispositions.

6. Other philosophers discuss dispositional related constructs but have not sought to develop comprehensive lists of dispositions. See, for example, Norris, 1995; Scheffler, 1991; Siegel, 1988.

7. The Faciones wore members of a group of philosophers brought together by the American Philosophical Association as part of the Delphi Project. Reports of the project and how this has shaped the Facione's subsequent work on thinking dispositions can be found in Facione et al., 1992; Facione et al., 1995.

8. Ennis has proposed a number of different lists with the number of thinking dispositions varying in number from three to fourteen (cf. Ennis, 1987; 1991; 1996). The list presented here is used since it is the most current in print. It should be noted that in developing these lists Ennis has sought explicitly to address criticism about lack of content in the critical thinking movement, counter public perception that critical thinkers are just skeptics, and ensure that critical thinkers are listened to.

9. To read more about non-Western thinking; see, for example, Horton, 1973.

Dispositional lists from the philosophical perspective
Table 1

```
The Faciones 7 Sub-dispositions of a Critical Thinker

     * Inquisitiveness

     * Open-mindedness

     * Systematicity

     * Analyticity

     * Truth-seeking

     * Critical thinking self-confidence

     * Maturity

Ennis 12 Dispositions of the Ideal Critical Thinker

     * To seek alternatives & be open to them

     * To endorse a position to the extent justified

     * To be well Informed

     * To consider points of view other than one's own

     * To be clear & seek precision as required
```

```
        * To maintain focus

        * To seek and offer masons

        * To take the total situation into account

        * To be aware of one's own basic beliefs

        * To discover & listen to other points of view

        * To take into account others' feelings and level of
          understanding

        * To be concerned with others' welfare

    Paul 10 Traits of Mind

        * Independence of mind

        * Intellectual curiosity

        * Courage

        * Humility

        * Empathy

        * Integrity

        * Perseverance

        * Faith in mason

        * Fair-mindedness

        * Exploring thoughts underlying feelings and
          feelings underlying thoughts.
```

Dispositional list from the perspective of educational practice
Table 2

```
    CPESS/Meler 5 Habits of Mind

        * Evidence:
          "How do we know?"

        * Viewpoint:
          "Who's speaking?"

        * Connections:
          "What causes what?"
        * Supposition:
          "How might things be different?

        * Meaningfulness:
          "What's the point, why does it matter?"

    Costa & Kallick 16 Habits of Mind
```

        * Persisting

        * Managing impulsivity

        * Listening with understanding and empathy

        * Thinking flexibly

        * Thinking about thinking (metacognition)

        * Striving for accuracy

        * Questioning and posing problems

        * Applying past knowledge to new situations

        * Thinking and communicating with clarity and precision

        * Gathering data through all senses

        * Creating, imagining, innovating

        * Responding with wonderment and awe

        * Taking responsible risks

        * Finding humor

        * Thinking interdependently

        * Remaining open to continuous learning

Project 2061 7 Habits of Mind

        * Integrity

        * Diligence

        * Fairness

        * Curiosity

        * Openness to new ideas
        * Skepticism

        * Imagination

A comparative analysis of seven thinking-dispositions lists
Table 3

```
Legend for Chart:
A - The disposition to ...
B - LOOKING OUT (Creative Thinking): Openminded
C - LOOKING OUT (Creative Thinking): Curious
D - LOOKING IN (Reflective Thinking): Metacognitive
E - LOOKING IN (Reflective Thinking): A Truth Seeker
F - LOOKING AT (Critical Thinking): Strategic
G - LOOKING AT (Critical Thinking): Skeptical
```

A

    B

    C

    D

    E

    F

    G

ENNIS

* Be openminded
* Seek alternatives
* Withhold judgement

--

* Be aware of one's beliefs

* Be well informed
* Seek alternatives
* Take a position
* Withhold judgement

* Clear about meanings
* Maintain focus
* Take total situation
* Seek precision

* Seek reasons
* Seek alternatives

FACIONE

* Open-mindedness
* Inquisitive

--

* Truth-seeking

* Systematicity
* Analyticity

PAUL

* Intellectual empathy
* Fair-mindedness

* Intellectual curiosity

* Intellectual humility
* Explore thoughts about feelings

* Intellectual courage
* intellectual humility

```
              * Perseverance

              * Intellectual integrity

              * Independence of mind

     PERKINS et al.

              * Broad and adventurous thinking

              * Wondering, problem finding & investigating

              * Be metacognitive

              * Build explanations and understanding

              * Make plans and be strategic

              * Be intellectually careful
              * Evaluate reasons

     CPESS/MEIER

              * Viewpoint

              * Supposition

              --

              * Connections
              * Meaningfulness

              --
              * Evidence

     MARZANO

              * View situations in new ways

              * Push limits of your knowledge/ability
              * Generate & maintain your own standards
              * Be aware of thinking
              * Evaluate actions

              * Push limits of your knowledge/ability
              * Engage even when answer aren't apparent

              * Planning
              * Awareness of resources
              * Sensitive to feedback

              --

     PROJECT 2061

              * Openness to new ideas

              * Curiosity
              * Imagination
```

```
        --

    * Integrity
    * Diligence
    * Fairness


    --

    * Skepticism
```

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By Ron Ritchhart

Ron Ritchhart a research associate at Harvard Project Zero where his work focuses on understanding transformative teaching and learning. His most recent book, Intellectual Character, moves the theoretical ideas presented in this article into the practical world of the classroom, examining how effective teachers actually create classroom environments and design instruction that supports students' dispositional development.

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