Intuiting the Cognitive Line in Developmental Assessment: Do Heart and Ego Develop Through Hierarchical Integration?

Tom Murray

Introduction

Numerous times in voice and in print I have heard people question whether Dawson and Stein's work using the Lectical Assessment System (LAS), and whether other developmental instruments, are only focused on the "cognitive line," as opposed to other instruments that are somehow broader. Stein has tried to clarify his perspective on this question in (Stein & Heikkinen, 2008), but the question seems far from settled. The issue came up again in the "meeting of developmentalists" hosted by Bill Torbert on October 3, 2009, which is reported on elsewhere in this issue(personal communication with Bill Torbert; I was not in attendance). Dialog about this issue seems confused by an assortment of assumptions, and the question itself of whether certain instruments measure only "the cognitive line" includes too many assumptions to allow for resolution without a deeper exploration of these assumptions.

Inspired by Stein and Heikkinen's (2009) paper in our last issue and the responses in this issue, I would like to take the opportunity to reflect on these assumptions, and on developmental assessment in general, with the hope that it will help in some small way to clarify or promote further dialog on the subject. As a Response essay, the arguments presented here are not backed up with numerous references to the literature that a scholarly article would be. My goal is not to enumerate, critique, or even adequately describe the assessment instruments currently in use in the community, nor is it to posit solutions to the complex problems of developmental assessment. My aim is to raise general questions, identify assumptions, and propose useful distinctions.

In particular, I take up several issues that I hope to be able to explore in more depth in a future academic article. First, I consider what it is that we are trying to measure in our assessments. Stein and Heikkinen (2008) approach this question productively from the perspective of the intuitive construct of "altitude," but here I approach it from the perspective of intuitions about wisdom.[1] Wisdom intuitively includes development of heart, soul, and ego, in addition to cognition. Second, I explore various definitions of "the cognitive line" and suggest that we keep in mind the limitations of even supposing that we can cleanly identify precise developmental lines independent of pre-defined tasks. I explore what we might actually be concerned with underneath the question of "is an assessment limited to the cognitive line"? Third, I discuss the limitations of models and relate that to hierarchically structured formal developmental models. Constructs such as reflective abstraction, hierarchical integration, subject-object transformations,

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[1] I am of course not alone in taking up the topic of development by referring to wisdom. For example see Cook-Greuter (2002).

and hierarchical complexity assume a particular (different, but similar for my purposes) "mathematics" of developmental growth.

Fourth, I ask whether the development of heart, soul, and/or ego might follow a type of mathematics (geometry or logic) that is different than that captured by existing formal theories of hierarchy. Finally, I question whether, until we have better theoretical and formal models, we might have to rely heavily on human gestalt capacities to recognize some aspects of the development of wisdom.

Development as Wisdom

As noted by Stein, Dawson, Cook-Greuter, O'Fallon, and many other developmentalists, development (and in particular so-called vertical development) is a construct that first and foremost points to a vague but definite shared intuition that people have about increasing adequacy and capacity to act skillfully in life situations.[2] Human development and learning happens in countless ways in response to countless life-based task demands, but within the field of adult development, and especially within the integral community, the kinds of development we tend to be interested in are captured by the concept of *wisdom*. In the domains we look at, including leadership, parenting, communication, collaboration, spiritual work, counseling, and teaching, our intuitions of higher stages of development correspond closely with our concept of wisdom.[3] The skills of ego-awareness (or ego development), construct-awareness (related to Basseches' (1984) dialectical intelligence), systems- or big-picture thinking, and social/emotional intelligence are all (and *together*) directly implicated (even synonymous with) modern day intuitions about wisdom. The usefulness of the construct of wisdom for the purpose of this essay is that it speaks to the strong interrelatedness of the various developmental lines that, in order to further our inquiry and understanding, we must also speak of separately. But these separate lines are somewhat arbitrary.

And along similar lines of reasoning, the developmental assessment instruments being used within the integral community (applied to leadership, coaching, communication, education, personal growth, civic engagement, etc.) can be seen as triangulating various aspects of wisdom.

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[2] Cook-Greuter and Dawson both use an informal card-sorting activity to illustrate developmental intuitions. The audience (usually working in small groups) is asked to sequence a set of statements about a topic such as leadership or the good life. Invariably, on average people have surprising agreement about the hierarchical sequencing of the statements, pointing to a shared intuition. This is the core of Habermas' concept of *rational reconstruction,* or reconstructive science, in which the role of philosophy is seen as exposing the conditions and structures behind common intuitive constructs that are unconsciously or unreflectively used; and then to inform how inquiry in the empirical sciences is framed and conducted. Thus for constructs such as human development, freedom, respect, sincerity, and truth, the philosopher's role is to explore what is always already at their core, as they are actually used and experienced, rather than to uncover some platonic truth or reality about their nature.

[3] We can note that what counts for a wise action or a person one admires as wise depends upon one's developmental level, yet, as with other developmental phenomena, though one can't easily "see" phenomena at levels higher than one's own level in a particular skill domain, developmental growth trajectories can be empirically demonstrated.

Though some of the frameworks, especially those looking at deep structure, are applicable across many domains, I am interested here in the life/relationships/work domains mentioned above.

What is the Cognitive Line?

Is the LAS, or any other instrument, confined to measuring "the cognitive line?" First, we should understand that the "cognitive line" is a man made construct that correlates with and helps categorize certain types of behavior and mental processes, but does not represent any known distinct component or function in the brain (or mind/body).

Kurt Fischer's (1980) Skill Theory supports the assertion that the act of differentiating complex human capacities into separate skills or lines is largely artificial. Fischer claims that skills develop in response to the demands of real life task situations: "the skill level that a person displays…cannot be considered independently of the context in which that skill is assessed."[4] Some primitive human skills such as those dealing with reproduction, eating, and territory, seem to operate fairly *independently* because the task situations or life-needs they address are relatively independent. But the complex human social contexts of communication, decision making, and knowledge building have massively overlapping characteristics such that the skills developed to meet these needs should be expected to be equally *interdependent* and difficult to separate. Tobert and Livne-Tarandach (this issue) also describe evidence that as skills become more complex (i.e., at higher developmental levels) they become more entangled.

Often, measuring development involves creating tasks for people to do (e.g., respond to open-ended interview questions or sentence completions). These tasks are designed explicitly to be able to reveal developmental differences, so from the start they are based on some theory of development. In a sense the task itself defines a pseudo-line of development. This is not to say that the tests currently being used are not relevant to the real life skills we are concerned about (see Torbert & Livne-Tarandach for correlations with authentic outcomes). The point is that artificial tasks such as answering interview or assessment questions define their own quasi-artificial lines of development that seem distinct because the task is well-defined.[5]

Since an objective "cognitive line" function of the mind is not seen as an ontological reality, the question of "what is cognitive" reduces to what do we mean by cognitive in this context. It is beyond my scope here to explore the possible senses of the word, but we can pilot around the word to get a sense of what people are really pointing to when they refer to "the cognitive line." *Cognitive* can refer to the information processing part of the mind/body; to simply what we are

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[4] Fischer & Farrar, 1987, Page 647.

[5] As is always the case in measurement, there are tradeoffs between authenticity (ecological or external validity) and reliability (or internal validity). That is, to the extent that the task is similar to an authentic real life action situation, like participating in a job interview, the "line" that the task defines is more relevant to wisdom skills. Yet more authentic tasks are complex and may be difficult to measure and interpret. So it is more prevalent to use artificial tasks such as answering questions on a form or in a structured interview, which are easier to score, and also define "cleaner" lines, but these lines are less guaranteed to relate to real life. The artificiality of tasks varies among the currently used assessment instruments, and some methods do not involve "lines" at all. Also, in commercial (non academic) settings, the cost of coding or assessing authentic tasks can be prohibitive—another tradeoff.

aware of (in the conceptual and developmental sense) such that we can even think about it (process information about it); to the logical rational functions of thought closely related to the classic notion of "intelligence" (IQ), and to the aspect of thought that is interested in determining what is true about the objective world (for physical-plane survival and "thrival").

The question of what is cognitive can also be illuminated by looking at its complement— when we categorize something as cognitive we are categorizing other things as non-cognitive. This brings us to the related question that inevitably comes up about the limits of assessing exclusively language-based performances. When we say "cognitive" in the context of our focal question, we are pointing to that which we know explicitly and can speak about. So underlying questions about the limitations of cognitively-oriented or language-oriented assessments are likely to be concerns about activity in the following categories.[6]

1. *Action*. Human development might be best measured according to what we *do* and *can* do, rather than what we say, or what we think we can do. Assessment questions that ask one to reflect on oneself (which statement is most like you; do you agree with the following…; are/do you….) are clearly limited by self-knowledge and what one wished one was like. And even for accurate assessments of self, there can be large performance-competence gaps and context dependencies that lead to an unintentional focus on ideal situations.

2. *Language skill*. We must ask whether we are in part measuring the ability to express oneself in language. Some of those we see as wise are rather quiet, speak in simple terms, or speak through action and non-reaction. And yet, if we evaluated how they responded to complex social, or interpersonal situations we might infer that choosing the one action among the infinite possible actions required a developmentally sophisticated understanding of the complexities, nuances, and dimensional levels of the situation. Perhaps a focus on speech-acts limits our exploration of wisdom (and related developmental lines) to those who are acculturated to be like us, who travel in academic (or organizational development, or upper middle class, or male-dominated, etc.) circles, and like to read and write and argue about their passions. Then again, communication is an action and skill in itself, as well as a medium, and certain aspects of what I am calling wisdom skills relate directly to communication skill.

3. *The non-conscious*. By far the bulk of who we are and what we do arises from non-conscious processes, including both repressed information in the Freudian sense, collective or archetypal patterning in the Jungian sense, social and historical conditioning, and the sorts of pre-conscious automatic processes that cognitive psychologists study (and described in Gladwell's *Blink*). These deep processes are mostly beyond our awareness and reflection, though they are evidenced in action, speech acts, and the conscious content of private thought processes.[7]

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[6] These questions are being addressed in the literature in various ways; I am not by any means the first to pose them, my goal is to summarize the main themes.
[7] Note that if our goal is to reflect upon and improve or transform human behaviors can capacities, then we must make efforts to expose and describe what is tacit, both to be able to reflect upon it, and to design educational/transformational tools.

4. *The non- or post-rational*. The wisdom-skills of life are clearly about more than logical rational thought or linguistic competence. Adult developmental research is illuminating post-rational forms of thought that understand the strengths and weaknesses of both logical/rational/categorical thought and non-rational modes (e.g., emotional and intuitive forms), and produce post-rational decisions about when and how to use these different modes. Though post-rational thought can be seen as imminently rational, the question remains as to whether combinatorial and integrative models can formally represent types of understanding that reflect upon what is unknown or paradoxical, or chaotic.[8]

The above does not answer the question of whether the LAS or any instrument is limited to the cognitive line, but provides some concepts to help clarify the question itself and perhaps to ask more productive questions.

Deep Structure and Hierarchical Development

The LAS, developed by Dawson, combines aspects of the Hierarchical Complexity Scoring System (developed by Commons and colleagues) and Skill Theory (developed by Kurt Fischer), which are both early members of the neo-Piagetian generation, building on Piaget's (2001) theory of reflective abstraction. Dawson was a primary student and co-researcher with both of these leading figures in adult development. All three of these systems are based on content-free developmental models that look (and make assumptions about) the deep structure of development, rather than surface elements.[9] A formal structural model is like a mathematics—like a type of logic or geometry, a formal system for representing how elements are combined and how new elements and patterns emerge from their combination and/or interaction.

Such formal systems representing growth, development, or learning use a variety of operators, including integration and differentiation, abstracting or generalizing common properties, and the coordination of lower schema. As one sees in all formal systems (including simple algebra and geometry and more elaborate systems in chaos and systems theory) very complex multi-layered structures can be built up from a few simple operators acting recursively. Also, since higher level schema are seen as single units abstracting or coordinating lower level ones, there can be a type of simplicity emerging from complexity as complexly-related units organize (or reorganize) into new wholes through successive differentiation and integration.[10]

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[8] Dawson (personal communication) argues that much of the territory of post-rational and non-rational reasoning can indeed be examined using hierarchical complexity: "The research clearly suggests that HC explains a great deal of what is going on here… One way to figure out what is NOT explained by HC is to parse out the HC dimension of performance. For that, you need a good HC ruler that goes straight to the core of HC… Once you have accounted for HC, then you can examine what's left—we find biases & preferences, temperament, affect, and dispositions when we do this exercise."

[9] The constructs of surface vs. deep are relative, and most developmental models claim to deal with elements that are deep and not on the surface, but the projects mentioned go the furthest in being based on deeper structures.

[10] Neurons seem to build structure upon structure in a way that could explain reflective abstraction (or hierarchical integration, subject-object transformations, etc.), or at least act as a metaphorical bridge. Developing the ability to be aware of and reflect upon—or combine and coordinate, or generalize or

The exact structures, logic, or geometry of such theories does not matter for my purposes here. What does matter is that such theories explain development of all types, including the development of physical skills, communication skills, self-knowledge, social skills, linguistic skills, intellectual skills, domain-specific knowledge, through the lens of such formal models. Not only cognitive skills, but sensory-motor and social skills such as playing tennis or leading teams, and even the behavior of non-human animals, can be modeled using such processes. Such deep-structure theories can rightfully say that that they are not limited to the cognitive, or any other line, or to linguistic behavior, in their most general form (i.e., as domain independent theories).

On the Limits of Models and Formal Systems

Next I would like to move into questions about the limitations that formal models, and all models, possess, as another way to approach questions that come up about various developmental models and assessment tools. I want to ask how explicit we can be about the limitations of our tools, both conceptual (as in models) and instrumental (as in metrics and assessment instruments). As those familiar with my writings on integral themes may know, I have a fascination with the limits of knowledge and thought, and touch on themes of indeterminacy (including uncertainty, ambiguity, and paradox) in most of my articles.[11] A minor concern is with the epistemic or ontological humility of acknowledging that a particular claim, model, theory, concept, or method has indeterminacies or limitations. We do often see this sort of humility in scholarly works. But what is of most interest are the possibilities that become available when we study the indeterminacies and limitations enough to be able to characterize them and to explicitly work *with* uncertainty, not just *within* it.

This is just the sort of thing that error bars or confidence intervals do in statistics. Statistics has studied the nature of uncertainty to a point where, along with the main truth claims made from data, we can also make definitive claims about the *limitations* of the main claim.[12] Statistics does this from a right-hand-side perspective (being about measurable objective realities), and what I am interested in (and I must admit that I am an amateur in this area, which goes deeply into psychological and philosophical territory) is taking this approach into the left-hand or interior realms—the realm of concepts, language, beliefs, models, and theories.[13]

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abstract—existing cognitive content, is easily pictured as adding a new layer of neurons or connections that sense, measure, react to, coordinate or regulate a prior or "lower" layer.

[11] I spent decades working in areas of applied artificial intelligence where I was exposed to many theories of formalizing human knowledge, skill, and behavior; and to the progression of academic expectations in these areas as scholars became ever more aware of the true complexities of human behavior (and living systems in general, including animal behavior and social systems). This, in addition to my own work in "knowledge representation" and "knowledge acquisition," plus studies in psychology and philosophy, have made me acutely aware (overly sensitive?!) of the limitations in our attempts to formalize complex natural systems.

[12] Of course, there are uncertainties in our claims about statistical uncertainty, and the issue is recursive in a never-ending way. But just going this one level deeper provides significant value (going two or three levels deeper becomes so difficult to conceptualize that there are diminishing returns).

[13] Lakoff and Johnson (1999) maintain that the constructs available to us from which to build our models (abstract concepts, structures, operators, etc.) are deeply metaphorical. These metaphorical building

That is, we know that conceptual categories and the models and theories that are build from them inevitably have fuzzy boundaries and diverse interpretations, and we know that our perceptions, abstractions, and generalizations are limited by various sorts of biases and distortions; lenses and filters. But we often share claims as if we did not know about these limitations. Indeed, in abstract (conceptual and non-measurable) domains it is not an easy thing to do—it takes tools we are historically just beginning to become acquainted with and effort that is in short supply to step back and evaluate the limits of one's claims with any sort of rigor. And the norms of modern scholarly discourse give little incentive to do so. But I propose that as we become more comfortable and familiar with the *nature* of various sorts of indeterminacy (including what Fisher and Stein (2008) have called "dark knowledge"), through findings in psychology and philosophy, and increase our familiarity with this terrain, we can expand meaning-generation potential and efficiency in a community of inquiry.

This allows for more nuanced dialog. For example, the concepts of mind and consciousness are quite problematic in their definition, yielding various types of arguments about their nature which are highly fallible and vulnerable to counterargument. Perusing the debated claims and counterclaims in the literature is dizzying. From the perspective of am interested reader not attached to a particular answer (i.e., myself) it seems as though so much ink is wasted when authors hold onto a particular definition and do not yield to the possibility of alternate perspectives.[14] Another example is in the use of theoretical models such as AQAL.

As Wilber is quick to note, AQAL is a map and not the territory itself—it is a particular way of cutting up the infinitely complex, nuanced, and ineffable territory(s) of reality, useful for a particular set of purposes. This noting constitutes the type of humility I mentioned above. But the next step, not so often taken, is to say as much as one can about the nature of this way of slicing up the "pie" such that we can understand the limitations of this powerful conceptual tool. What does it assume that might not be true? What admits to alternative views? What types of phenomena are not adequately captured using this lens? What things fall into the fuzzy or gray areas between the crisp conceptual lines of the four quadrants (and the other categories such as states vs. stages)? My argument is that all models and theories would be more adequate if they were described and "delivered" with a meta-wrapper or boundary analysis explaining some of what is known about the limitations of the "map."

How does this relate to our current topic of developmental assessment? Developmental assessments, if approached from the perspective of pure metrics, are subject to uncertainties akin to the right-hand-side realm of statistics, and their indeterminacy is thus more understood and less problematic. But to relate a pure metric to anything of relevance, to say what its results *mean,* we rely on models (or other tools of interpretation).[15] So we are back to the limitations of models.

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blocks are both tools and lenses that reflect the sensory-motor (and other) primitive elements of our experience, as much as they reflect truths about the world.

[14] For example, rather than "you are wrong" the dialog becomes more like "if one interprets the concepts [e.g., consciousness] in […this…] way there is validity to what you say, but my focus leads me to interpret it [consciousness] in […this…] way, which I claim is more useful."

[15] Also, assessments are designed in the first place to serve the needs of a model or theory, so reevaluation of the nature of a model may lead to reevaluation of the nature of a related metric.

The models being developed using constructs such as hierarchical complexity and hierarchical integration are proving to be extremely powerful in uncovering deep structure, and helping explain and perhaps even predict developmental phenomena. This is in part due to their additional levels of formality. Increasing theoretical formality involves, among other things, making sharper conceptual cuts in the fabric of observed reality. The benefits of doing so are clear, as can be seen in the contributions of modern science and technology. However, in this post (or post-post) modern era, we are also increasingly aware of the limitations of formal systems to capture truths about reality. And, importantly, are beginning to become aware of the shape of or *nature of* these limitations (as in the uncertainty principle and Gödel's incompleteness theorem), in such a way that we can work *with* the uncertainty, not just be helplessly subject to it.[16]

Though I have some incompletely-worked-out ideas about what this might look like, for this informal article I will simply suggestion that we put more effort into such "boundary analysis" as a way to compare, contrast, and combine the best of the current developmental models and assessment methods. Also, I should note that, though each formal model has its limitations, particular practitioners or projects sometimes use a combination of tools, each of which may compensate for the limitations of the others. For example, Dawson's (Dawson & Stein, 2008) "developmental maieutics" is about embracing multiple approaches.

The Landscape of Assessment Tools

Up to here my discussion has brought together ideas seen elsewhere in an attempt to help clarify and promote dialog and meta-reflection on the practices of making and using developmental models and instruments. Next I will slip into much more speculative territory, with the hopes that my intuitions and musings will lead to productive dialog rather than simply expose the limits of my experience in this domain (!).

The current landscape of developmental tools includes those that seem to have had very little if any assessment of validity,[17] those, such as Cook-Greuter's and Torbert's LDP-related instruments, that have shown some validity (but perhaps do not raise to the standard of calibrated measures, as called for by Stein and Heikkinen), and those, including the LAS, that have shown

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[16] Of course, within the power of this new type of knowledge we are best maintain humility, as the recursive questions about indeterminacy have never ending depth.

[17] These include many that are used in leadership and organizational development, too numerous to list here or single any out (but see Stein and Heikkinen's article in IR's prior issue). Presumably those using them believe that the value added in terms of generating meaning for clients outweighs the problems inherent in their lack of validity. I am very sympathetic with the cautions brought out by Stein and Heikkinen (prior issue), but hold out the possibility that in some cases soft metrics can be used in such a way that there is overall value added, for example in guided self-evaluation (and see the discussion of first, second and third person methods in Torbert, this issue). I am also sympathetic to the pragmatic reality that if an organization has found benefit for self and client in a "tried-and-true" instrument, there may be little incentive, nor even the realistic possibility, for them to fund the type of large scale research project needed to sufficiently validate the instrument. The potential to harm clients is very real and must be looked at squarely in each case. But it would be an overstatement to say that all non-validated instruments are harmful.

strong (calibrated) validity and are also based on a deep/formal developmental theory. It is the latter two categories that I am concerned with here.

My understanding is that Stein and Heikkinen (and others in the neo-Piagetian line) hypothesize that their formal frameworks could measure much of what the LDP and related frameworks are measuring, and do so in a more rigorous fashion; and that some of those using LDP-related tools believe that they are able to assess something that the more formal models do not (or cannot). Both "camps" if I can call them such, agree that the ultimate answer to these questions will come only through empirical work in comparing the systems (as Heikkinen (this issue) is doing now between the LAS and Kegan's SOI instrument). Such comparisons will be important and revealing, and I hope that resources become available to facilitate this happening.

In the meantime, I will speculate that it *may* be possible that the less formal frameworks may be looking at a wider range of phenomena than the LAS (paired with a developmental model) can easily accommodate (a counter argument would be that multiple domain-implementations of the LAS could cover the same territory—see footnote 5). There is often a tradeoff in assessment between rigor (precision, internal validity) and scope and real-life relevance (including ecological validity). This may or may not pertain to the differences in these methods, as future analysis will reveal.

The above discussion has laid groundwork for me to bring forth a question of whether assessments relevant to matters of heart, spirit, self, and relationship might have a different underlying structure or mode of development that is not captured by current hierarchical theories or assessment tools.

The Geometry of Growth of Compassion and Negative Capability

Consider again some common intuitions about the development of wisdom. Think about wise people and wise actions, and what it takes for any one of us to grow in wisdom. In addition to the accumulation of complexity and the concurrent simplicity that comes from combining elements into new wholes, there are elements of un-learning (subtracting), of letting go and emptying, and of opening. Some would say that the wise heart is spacious and non-attached. What kind of structural transformation does it take to achieve this type of skill? It may need to be explained with something other than hierarchical processes.[18]

Imagine a conversation with someone who you know to be quite intelligent but in this context is just not able to release his grip on a belief, or is not able to see a part of himself that all of his friends see clear as day and have been gently trying to point out, but he struggles with internal resistance. There is an insight available to him about himself, about others, or about life, that he will surely grasp as soon as he lets go. He has shown in other situations that he is capable of stepping back and reflecting upon himself, of seeing the larger picture, the complexities and nuances. He has already developed the capacity to do these things, so what is called for is not so much a building up but a letting go, a type of healing, or a moment of grace. The article by Sofia

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[18] Ross (personal communication) says that hierarchical models can in fact account for these types of phenomena. The issue may come down not to the limitations of models, but current limitations in the assessment tools, metrics, and observable tasks that we use in conjunction with our models.

Kjellström in this issue talks about Kegan & Lahey's Immunity to Change Process, which directly highlights the fact that the release of resistance, unconscious motives, and psychological "baggage" may be as strong a determinant of the speed of developmental growth in adults as the gradual processes of hierarchical and additive growth.

Or imagine the proverbial seeker who goes into a guided contemplative seclusion and emerges with a new radiance and lightness (and, yes, in this imaginary case, *can* hold onto these qualities when she descends the mountain and enters the "market place"). Take a moment to feel what it feels like to be in a place of compassion with others. To develop in compassion is to very literally feel a sensation of expansion or lightness within the heart-space. Growth in heart and spirit reveal a phenomenologically different space than cognitive growth, and it seems possible that the structural transformations happening inside the body (or body/mind/soul) happens according to a different type of mathematics or logic or geometry.[19] It may be possible that this type of change calls for different mechanisms and metaphors than are currently employed by hierarchical models.

Another element of the growth of wisdom is our ability to deal with dissonance, uncertainty, ambiguity, and paradox. Such dialectical intelligence (see Basseches contribution in this issue), vision logic, or "negative capability" may also imply a different set of metaphors and formal operators than we are currently using. Though, this type of growth is much closer to the domains that hierarchical methods have been used to explore.

Intuition vs. Formality in Assessment Methods

Another issue brought up in comparing developmental assessment methods used in the integral community is the more holistic and hands-on process used by those who use scoring rubrics vs. the more formal methods used with the LAS. Does the subjective role or innate intelligence of the human rater have a positive or negative effect on validity and usefulness? The LAS method purports to be more rigorous in that it uses a more formal approach to skill representation, requires less subjective interpretation, and has less reliance on surface meaning than other methods. This would indicate that it may be more reliable in measuring the aspects of wisdom-skill that are structured according to hierarchical models. It also indicates that the LAS is stronger for measuring specific well-defined lines.

However, above I ask whether there are important elements of wisdom that are not so structured; that are structured in ways that we do not yet have adequate conceptual tools (concepts or metaphors) to formally represent. To the extent that we lack the formal tools to represent these aspects of development, we may need to rely more on human gestalt reasoning, which can recognize more complex or subtle patterns than current mathematical and computational tools can assess.[20]

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[19] See the "The Coherent Heart" by McCraty et al. in this issue for research on the neurophysiology of the heart.

[20] My own work in artificial intelligence (backed up by many scholarly sources) has made me aware that in certain pattern recognition tasks the human mind far exceeds what we have been able to do with machines and formal algorithms (and vice versa, computers are better at some things).

The LDP-like tools used by Cook-Greuter and Torbert are sometimes said to measure the "ego development" line, but are actually measuring some combination of three or more quasi-lines (behavioral, cognitive, and affective-relational).[21] Thus they are assessing some of the wisdom skills that I argue may have elements that do not develop according to hierarchical logics. It is possible that human gestalt capacities can evaluate development in these areas better than the more formal systems, given our current state of the art. The LAS is designed to measure one developmental "line" at a time, as opposed to the more holistic combination of quasi-lines assessed in the LDP. The LAS may not be able to assess certain aspects of wisdom that a more holistic method could. However, it should prove to be more rigorous at assessing the lines that it can measure.

Dawson's approach to developmental maieutics is not limited to the LAS. Importantly, the LAS can be used to measure the aspects of development that do grow through hierarchical complexity, and can thus reveal the outline of what remains with particular clarity (see footnote 8). And what remains can be analyzed using different methods.

Conclusions

Constructs such as reflective abstraction and hierarchical integration point to deep structural properties of learned behavior that have proven to be extremely useful for understanding human (and animal) learning of many types. I have focused on a particular set of human capacities that seem highly valued in the integral community—framed under the umbrella of wisdom skills. These include what has been called ego awareness, construct awareness, socio-emotional-relational skills, dialectical intelligence, negative capability, empathy, and compassion.

There is no doubt that much of what we observe as development in these skills can be described in terms of formal hierarchical models. It is also possible that growth in wisdom (not simply individual differences, but growth or transformation) in these ways can *not* be adequately described using current hierarchical models, and that this possibility is what is being referred to when people ask about whether certain assessments are too limited to the cognitive line. Alternative and complementary models or modes may need to be developed. In particular we may need to more fully articulate models that account for aspects of wisdom growth that involve letting go, unlearning, healing, or non-hierarchical expansion or enfoldment. I also suggest that, at the least, we would benefit from putting more effort into articulating the boundary conditions and indeterminacies of the models in use.

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[21] Cook-Greuter (2002) mentions behavioral, cognitive and affective-relational lines. In some of my writings I have described this terrain in terms of ego-awareness, construct-awareness, and interpersonal-awareness, and systems-awareness.

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Thomas J. Murray *is an independent scholar, consultant, and research scientist in the areas of Cognitive Tools, Adaptive Computer Learning Environments, Online Collaboration, Ethics, and Knowledge Engineering. His research and teaching work are primarily at Hampshire College (Schools of Cognitive Science and Natural Science) and the University of Massachusetts (Adjunct Faculty member of the School of Education and R&D in the Computer Science Department and the Center for Knowledge Communication.) He is currently an independent consultant working on projects with several organizations. Recent interests and work on aspects of the Perspegrity project include, on the practical side: supporting higher quality communication, collaboration, and decision making in online communities (see Perspegrity project), and on the theoretical side: studies in areas of applied philosophy, related to "epistemological indeterminacy" and cognitive tools supporting metacognition and ethics-oriented reflective dialog. Murray has degrees in educational technology (Ed.D., MEd), computer science (MS), and physics (BS). He is on the editorial review boards of two international journals, the International Journal of Artificial Intelligence in Education, and at Integral Review as an Associate Editor.*
Email: tmurray@cs.umass.edu