Engaging the World and Making the Self: A Primer on Evolving Complexity Theory (ECT) of Talent Development

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What Motivated ECT

Human accomplishments in the past 500 years (roughly since High Renaissance) surpass what had been accomplished in human history prior to that period. What accounts for such a rapid augmentation in creativity, innovation, and superior performance?

There are two levels of explanation. One is at the individual level, in terms of an accelerated rate of talent development; the human accomplishments can be largely credited to individuals and individual development. The other is at the social-historical level, in terms of rapid social transformations in education, technology, and opportunity structure that facilitated human development, as well as cultural values inherent in social practice. For real talent phenomena, these two explanations are so intertwined that it is only appropriate to make the argument that all talents and talent development (TD) are situated in their social-historical contexts and can only be understood as such. However, this does not prevent us from discussing a TD theory of some generality despite the heterogeneity of phenomena it attempts to explain. Evolving Complexity Theory is such an attempt.

There are two competing or contrasting approaches to theory building: one is deductive and nomothetic, starting with a set of universal assumptions and parameters, and then deriving and fleshing out more details and particulars of talent development from top down. Tannenbaum's (1983) socio-psychological theory or Simonton's (1999) emergenic-epigenetic model are such examples. The other approach is more idiographic and phenomenological, studying instances of talent and talent development as a basis for identifying developmental patterns and building theoretical arguments from bottom up. A case study of child prodigies by Feldman (1986) or a large-scale interview study led by Bloom (1985) is an example. Of course, there can be a third approach that integrating the above two through many rounds of data-theory coordination, what Miller (1993) called "functional approach," akin to bootstrapping a theoretical model in a bottom-up as well as top-down fashion. As an example, part of my work builds on Feldman and Bloom's tradition. As a matter of fact, ECT was initially inspired by my empirical research program on an early college entrance program in China (see Dai et al., 2015; Dai et al., 2016). Part of my work on ECT, however, is a follow-up on Simonton's (1999) approach by mapping out a bio-ecological foundation that harks back to formative years of human civilization (e.g., the hunter-gatherer society). Simonton postulated basic genetically based components of talent to be the source of talent in various domains. However, he did not specify what constitutes the basic forms of talent. In ECT, five forms of human effectivity are identified as basic manifestations and constituents of talent that can be observed when our ancestors still lived in caves. Each represents a distinct way we engage the world, model how things work, and act upon those situation models to build an ever more complex personal repertoire of skills and dispositions in culturally created and even institutionalized domains, leading to high human accomplishments as we know today. The notion of "evolving complexity" refers to this prolonged process, which often involves a lifespan endeavor, for sure, but can be several generations in the making as well. In this sense, great creators, be it Newton or Einstein, Da Vinci or Picasso, never started from scratch but always built on a rich legacy of what has been accomplished in early generations.

How Humans vs. Ants Engage and Act Upon the World

We can develop different visions of how we build and act upon the world. One views "evolving complexity" as fundamentally experience-based. For example, Herbert Simon, a Nobel laureate, saw ants and humans are alike in navigating and building up complex models of their world: "An ant [or a human], viewed as a behaving system, is quite simple. The apparent complexity of its behavior over time is largely a reflection of the complexity of the environment in which it finds itself" (Simon, 1969; p. 52). By implication, ants and humans both develop their mental models that mimic the complexity of the world. For example, with experience, ants would build a cognitive map of a terrain on which ants navigate to find food, just like humans, who with experience and knowledge of the world, envision a bridge that would allow them to cross a river. I don't take issue with the elegance of the analogy, except that "evolving complexity" for ants is fundamentally limited, presumably by its genetics (e.g., its brain size or muscle mass). In contrast, humans' "evolving complexity" in building a bridge involves not just an image of the overpass but the knowledge of material, spatial, and physical constraints for such a device. There is a fundamental creative aspect of bridge building that is not present in any animal behavior (let alone building a super collider that can fathom

deep to ever smaller particles that make up the physical universe). The intersection of the biological and cultural responsible for human agency and resultant evolving complexity is completely ignored by Simon's analogy.

It can be further argued that behaviors of ants or most animals (how they go about living their lives, even where they live) are largely pre-ordained or fixed by their genetics. The same cannot be said of humans; even two identical twins can live different lives, say, one becoming an artist, and the other an engineer. Humans are born with uncertainties with respect to what they will do and become. Framed more positively, humans are free to choose what they do and what they want to be. They gain this freedom mainly by their cognitive representation capability, or their ability to construct the world and the self. Thus, the analogy between ants and humans breaks down when we consider human individuals as more capable of actively and selective choosing their environments rather than being passively shaped either by their genes or by their environments. Let's assume that humans are capable of actively seeking ways to maximize their potential gains; this is a property of active adaptation that distinguishes humans from ants or other animals. However, I am also compelled to argue this human potential is not unconstrained. One's "natural" capacities and dispositions on the one side and environmental opportunities, experiences and support on the other jointly shape one's developmental trajectories. In the following sections, I will use three metaphors to present the gist of ECT: I will use the octopus metaphor to illustrate *what develops*, the onion metaphor to illustrate *how talent develops*, and the marathon metaphor to illustrate *when and for how long talent development takes place*.

Evolving Complexity Theory (ECT) as "One Long Argument"

A talent development theory has to satisfy three basic criteria of explanation. First, it can describe structural properties and structural changes responsible for talent emergence and evolution. Second, it can explain how related developmental processes take place, and what drive and regulate these processes. And third, it can predict temporal changes and transitions that mark major events of the evolving complexity of talent development stipulated by the above theoretical arguments and postulations. Just as the complex evolution of species delineated by Darwin as "one long argument," human talent development in all its various forms and ways must be equally complex. Thus the exposition of its structure and process entails a set of interrelated arguments at several levels of analysis.

1. The Octopus Metaphor: Five Basic Forms of Human Engagement and Effectivity

To answer the first question about the structural properties of talent, including how it unfolds, I was thinking of an octopus with its multiple "arms" (tentacles) reaching out to interact with its environment. Human senses and sensibilities might work just like those of an octopus (it is not trivial to mention that about two thirds of an octopus's neurons are located in the nerve cords of its arms!), with many aims (presumably serving differential functions), each functioning as a distinct way of building its *effectivity* in response to certain *affordances*, to use the terminology of ecological psychology (Gibson, 1977). Those tentacles constantly scan the surroundings to catch something of significance, sometimes visually pleasurable and other times intellectually exciting. ECT specifies five basic forms of human engagement, cognitive modeling, and effectivity vis-à-vis their corresponding affordances: a) psychomotor, b) technical, c) social, d) expressive, and e) intellectual, all of which were manifested when "human modernity" was solidly established roughly fifty thousand years ago.

The most common form of human engagement, modeling, and effectivity is probably *social and co-operative* in nature, enabled by empathy and sympathetic understanding, significantly enhanced by the invention of language (spoken and written). *Psychomotor* engagement, modeling, and effectivity, probably the most ancient, can be seen in hunting and handcrafts as well as most modern sports, and can even be traced to brain anatomy (e.g., cerebellum for motor control). *Technical* engagement, modeling, and effectivity can be observed in tool making and innovated procedures in ancient and modern times. Apparently some symbolic representation and manipulation (e.g., some means-ends causal schemas) is involved even in chimps' insight as to how to reach a dangling banana with a wooden box in Kohler's experiment. Human effectivity in *artistic* expressiveness can be witnessed in cave paintings, ancient ritualistic dances, and many other instances. Fundamentals of expressiveness never change despite increasingly sophisticated forms and styles of expression. Lastly, *intellectual* engagement, modeling, and effectivity can be observed in early human history as myths and religions and in modern ages as natural science and disciplinary understandings of human nature and the human past. What drives intellectual engagement is a desire for deep understanding of the world, physical, social, artificial, as well as human.

Some clarifications should be made up-front. First, the five forms of engagement can be intertwined in real-life functioning rather than mutually exclusive. For instance, team sports are by nature psychomotor and social; music and dance are expressive in nature but both involve high levels of technicality. Second, some forms of engagement were initially intended for practical or symbolic functions (e.g., dance for the ritual of burial) and later gained "functional autonomy" as an independent domain of practice (e.g., dance becoming a major art form refined for its own sake). Third, highly developed forms of human activy and talent in terms of more formal, institutional strivings (theology, crafts, and arts) are cultural creations that

occurred much later in history, likely due to the wealth, leisure, and education, to be sure, related to the rise of middle class, as in the case of Renaissance.

Whenever we discuss talent, we should be aware of the distinction between more "natural" talent and significantly "cultured" or nurtured talent; the former can be observed in more natural, informal settings and the latter systematically developed, often involving institutional training and support (Dai, 2020). Simonton (1999) defined talent along a continuity of simplicity and complexity. According to ECT, the complexity of talent is determined by how many forms of effectivity are involved. A talent can be considered "simple" in the sense it only involves the execution of simple performance components, for example, perfect pitch. Writing a play for theater is more complex than writing a poem simply because poetry only involves crafting expressive languages and images, whereas writing a play goes beyond expressiveness to involve intellectual modeling to build a web of fictional characters and relationships that logically and temporally unfold over time. Being a lawyer involves exercising social, expressive, technical, and intellectual forms of effectivity, whereas being a golfer mainly involve psychomotor and technical ones.

This complexity of talent and talent development have implications for developmental timing. For example, poets appear at much younger ages than playwrights, because developmentally more components need to develop and get self-organized for creative productivity (Simonton, 1999). Regardless of complexity, all culturally created talent as we know is not innate (i.e., genetically pre-programmed) but a new machine made of old parts, that is, the ancient parts of bio-ecological effectivity that can be traced all the way to our ancestry or even our neural and physical anatomy. All new inventions of talent domains, F-1 car race, video game competition, E-business, or all works of Elon Musk involve various forms of human activity in the service of crafting a more powerful way to deal with new challenges and stretch our limits to a new height.

2. The Onion Metaphor: Unfolding Layers and Processes of Talent Development

The octopus metaphor is meant to demonstrate some structural properties of talent and talent development that are situated in human functional contexts and deeply rooted in human evolution in terms of "natural" human capabilities that set us apart from the rest of life forms, hence bio-ecological in nature (Gould, 1991). However, in terms of the genesis of talent, namely, the question of how, we still encounter the problem of locus of human agency; that is, the identification of five forms of engagement, modeling, and effectivity in the preceding section clearly implies that agency is localized in terms of specific dispositions and sensibilities. Indeed, many of our spontaneous responses and acts are driven by situational affordances that evoke our responses; at this level, individual differences emerge as a significant factor to be reckoned with.

However, every time we respond to a situation, there is a subjective sensation of some sort that informs us of the significance of this encounter in terms of valence (i.e., positive or negative affect) and meaning (significant relationships) at the reflective conscious and personal level, which is retained in memory as such. This indicates an organismic principle: human beings function as a whole when dealing with their environments; thus the five forms of effectivity are not modular in terms of impenetrable to central control (cf. multiple intelligences; Gardner, 1983). To push the octopus metaphor further, the "arms" (tactile) of an octopus should coordinate with one another in achieving a personal goal. In this sense we might say that selective attention may be spontaneous and local but, selective action is fundamentally deliberate and reflects a centralized decision. Here we are getting close to the heart of the matter: individuals are increasingly capable of self-direction and their behaviors become more purposive. Consequently, ECT makes three assumptions: 1) individuals selectively attend to and engage certain aspects of the world given a wide range of exposure and experience; this selective attention and engagement is adaptive in terms of long-term gains as an effective individual; 2) individual development follows a trajectory of being increasingly integrative (effectivities and personal goals more coordinated and coupled) and purposive (from playful engagement to serious work); 3) the process of individual development is mediated by cultural values, resources, and tools available to enhance chances of success. These assumptions lead to two central concepts regarding the underlying regulatory forces that propel talent development: *characteristic and maximal adaptations*.

Characteristic adaptation (CA). An engagement reflects CA when it indicates a dynamic fit that enhances one's chance of surviving and thriving, and when it shows distinct individuality in specific contexts (McAdams & Pal, 2006). To use a colloquial term, a variety of niche-picking behaviors reflect CA, for instance, the kind of books one is eager to read, the kind of persons one emulates, the kind of activities one is interested in. Niche-picking behaviors may be initially spontaneous and sporadic but getting more purposive and systematic by which all five forms of effectivity are harnessed, developed, and integrated. When we marvel at a manifestation of talent in children and adolescents, what we did not directly observe are many instances of niche-picking behaviors in environments (often socially facilitated or supported), leading to a transformation of the person: someone seen as talented in chess or art, someone who is tuned into a domain of science, or someone who is aspiring to be an astronaut.

We might consider Renzulli's (1986) three-ring theory of giftedness as featuring CA prominently. While above-average abilities are manifested in a variety of performance settings as CA, task commitment and creative potential are by nature contextually and temporally emergent (e.g., through a project), showing a distinct, characteristic way in which one engages and represents the world motivationally as well as cognitively. Here we witness the process of self-organization of components necessary for an effective act in response to opportunities and challenges presented by the impinging environment. Any talent we observe in children or adolescents is indicative of such characteristic adaptations that integrate one's intelligence and personality, cognitive and affective-motivational characteristics in achieving an instrumental feat. Presented more formally, CA has two properties: strengths and directions.

Strengths of CA are mainly indicated in (a) the ease of learning in specific contexts, and distinct representations of the world, (b) some affective-conative characteristics manifested in situ, such as levels of interest, achievement motivation (e.g., "the rage to master" in arts; Winner, 1996), and selective affinity toward a particular class of activities, and (c) some favorable social conditions such as opportunity structure that facilitate self-exploration, and comparative advantages demonstrated among peer groups. **Directions** of CA are indicated by distinct talent trajectories manifested in childhood and adolescence, and by the exploration and expansion of one's contextually bound Personal Action Space (skill set, personal projects, life themes, aspirations, etc.).

To carry out the metaphor of an octopus further, to understand how an octopus grows to be talented, I use another metaphor to characterize the unfolding of the evolving complexity over time through development, the onion model.

For the purpose of exposition, consider the case of intellectual engagement and effectivity. We can think of (a) *intellectual aptitudes* as consisting of cognitive characteristics such as memory, reasoning, and intellectual insight, (b) *intellectual dispositions* as consisting of more affective-conative characteristics such as curiosity, independence, and persistence, (c) *intellectual directions* as preferences for natural vs. social phenomena, and (d) *intellectual media or modes of processing* in terms of using mathematical, verbal, spatial manipulations, or using logic and analytic means vs. narrative, experiential means.

As children and adolescents engage the world extensively, aptitudes and dispositions toward the five forms of engagement will manifest themselves, and eventually show distinct self-organization through differentiation and integration, which is CA for excellence. With further development, the issue of the self and future will come to sight, in terms of what kind of person one wants to be, and what is worth dedicated work and striving, leading to a more purposive talent pathway. Thus the talent development truly resembles that of an onion, with many layers of agency developing over time in forming a distinct trajectory and pathway.

Social-cultural mediation of Maximal Adaptation (MA). Maximal adaptation implies dedicated effort and devoted strivings. The very notion of deliberate practice (Ericsson, 2006) or maximal performance (Ackerman & Kanfer, 2004) suggests MA or *maximal grip* (Dai & Renzulli, 2008). While CA is characterizing an individual trajectory of harnessing one's strengths and directions for effectivity, MA highlights the force of social-cultural mediation that cultivates and strengthens one's talent in the service of the common good (i.e., what is deemed as enhancing social vitality and cultural identity). Specific to talent development, MA is manifested in a variety of ways institutions (guilds, academies, universities, incubators, social networks) are established, and tools and technologies (symbol systems, equipment, training regiments) are invented, and resources (museums and libraries, field trips, science labs, makerspaces) are developed to sharpen the mind and develop expertise in many valued areas of human activity. Without these social-cultural provisions, even "highly talented" individuals cannot go very far. Thus MA with the social-cultural support is the only way of perfecting one's trade and surpassing oneself.

According to ECT, *the transition from CA to MA* involves several psychosocial conditions that can engender and sustain MA in a challenging condition; they include a) increasingly challenging task demands (cognitive, sometimes social, such as high professional standards); b) the commitment to a line of talent development, which always involves identity development; and c) institutional recognitions (recognition of achievements, admissions to graduate schools, etc.). In addition, for some, CA incorporates MA (Dai & Li, 2020), and when one operates in the mode of MA, there are still distinct individual characteristics. For example, niche-picking continues at a higher level of professional endeavor: finding one's voice and niche for contributions (Dai. 2015; Dai & Li, 2020).

3. The Marathon Metaphor: Talent Achievements, Milestones, and Turning Points

If the octopus metaphor reveals the structural properties of talent and talent development (addressing the question of what develops), and the onion metaphor reveals the developmental processes involved (CA and MA, addressing the question of how it develops), the marathon metaphor introduces a temporal dimension (addressing the question of when and how long): it not only stresses the importance of timing of talent development, but also reveals the prolonged nature of talent development (it is more like a marathon run, rather than a 100-meter sprint).

Like other talent development models (e.g., Simonton, 1999; Subotnik et al., 2011), ECT postulates that timing of talent development varies as a function of domains involved and maturity (or precocity). Talent development is fundamentally constrained by biology and life cycle; physical, cognitive, emotional, and social maturity (or for that matter precocity) are likely to determine the proper timing of exposures and specific experiences and related developmental payoff. For example, for certain sports such as gymnastics, early onset is very important as the peak performance is also highly constrained by body development. However, for other sports, such as soccer, it is not the case that the earlier the onset, the better off one's later development, presumably because some features important for soccer only manifest themselves during adolescence. As I mentioned earlier, the timing issues can also be determined by the complexity of the domain in question; it takes more time to bootstrap a system capable of handling the challenges presented in a complex domain. Domains also differ in terms of specific kind of essential mental processes involved. The spurt of creativity in a hypothetical-deductive manner seems more important in math and physics, wherein peak productivity tends to be achieved at a quite young age (e.g., making a Nobel-caliber discovery in one's 20s). In comparison, accumulation of facts, concepts, and insights from bottom up (inductively) seems more important for biology and sociology, and more seasoned scholars seem to have a distinct advantage.

Regardless of variations discussed above, what ECT postulates still holds in terms of a developmental sequence from CA to MA. In this regard, three principles for timely interventions can still be formulated. The first principle is timely exposure to enriched environments (Renzulli & Reis, 1997), typically in preschool and early school years for playful engagement of self-initiated or adult-structured activities that involve a combination of the five domains of effectivity stipulated by ECT. The second principle is the timely offerings of serious learning activities (e.g., project-based learning, makerspaces) that engender deep experience (Barron, 2006; Dai et al., 2015). These activities can be designed and provided, typically during adolescence; only deep experiences, not the kind produced in the conventional classroom, can provide positive affective experiences as well as insight into the nature of a particular human endeavor. The third principle is the timely transition from CA and MA (Bloom, 1985), which can be accelerated for talented adolescents (Dai et al., 2015). My research shows that an early onset of maximal adaptation contributes to a much earlier onset of creative career in STEM domains (Dai & Li, 2020, in preparation).

If talent development is like a marathon, what kind of milestone events, transition points, make-or-break moments should we pay attention to? We should note that, except for child prodigies or for some sports and arts domains, children in formative years are still exploring their world; that is, their development agendas are not yet set, and their developmental trajectories have yet to unfold over time. In this sense, running a marathon may not be the best metaphor (any metaphor is imperfect after all). We can think of early explorations as a phase of navigation to find one's niche. At least the following talent milestone events or achievements can be used to track one's talent development:

- Early playful activities and interests (e.g., readings, gadgets) in formative years
- Early achievement (e.g., performing, carrying out projects, presenting a report)
- Recognized talent (in any of the five forms of effectivity) in childhood and adolescence
- Recognized achievement by parents and teachers in middle or high school
- High aspirations revealed as teenagers
- Recognized talent in arts, sports, and academics in and outside of school
- Recognized talent in professional or leisure endeavors (game playing, cooking, etc.)

These milestone events and transition points serve as important landmarks that guide interventions and education agendas. From a research point of view, these events can serve as predictors as to how likely one will move further to a higher level or how far one can go in a proverbial marathon.

Sum-Up

The above delineation of talent development in terms of "what, how, and when" with the help of three metaphors provide an overview of ECT in a nutshell. I hope I have made the case that ECT presents a vision of evolving complexity that is closer than Simon's (1969) version to the realities of how humans develop their talent to handle complexities as compared to how ants manage to do it. Although how ants manage to develop their tricks apparently reveals more preordained genetic certainties than humans, that does not mean that human biology, including human biological diversity, is trivial. On the contrary, precisely because of the complexities of interaction of the biological and environmental factors, high human accomplishments are made possible.

Back to the topic of this essay, when I say "engaging the world," I am for the most part focusing on how a unique individual perspective, a distinct skill set, and a powerful modus operandi are developed along the way, which accounts for what we view as talent or talent development. It might leave an impression that I forget the other part, "making the self," which may be more interesting to some readers. I hope I have already alluded to the point that engaging the world and making the self are just two sides of

the same coin. Everything we do eventually leaves a personal mark on the person and becomes part of one's life. In the following section and the last part of this article, I will make this point clearer.

Engaging the World and Making the Self: The Personal Side of Talent Development According to ECT

Talent development is sometimes viewed as merely a technical issue of digging deeper in a domain or developing high-level problem solving skills. In the expertise research, it is acknowledged that deliberate practice involves a special kind of temperament, a disposition to work hard and endure difficulties and setbacks (Ericsson, 2006). Other than that, no special attention seems warranted to the issue of personal connections one makes with the work one invested in, and domains one has worked in for decades, or for that matter, how one comes to appreciate the value of their work and contributions, how one derives intrinsic enjoyment from their work. I would venture to argue that although several researchers pointed out the importance of this personal side of talent development many decades ago (Bloom, 1985, Gruber, 1986), it is still a neglected aspect of talent development.

There are two ways in which we can think of such personal connections or affective significance of talent development. First, all forms of human engagement and effectivity I delineated carry adaptive value, allowing us to gain control over the world and ourselves in some way, which in itself is a meaningful personal endeavor. Thus, we develop a sense of accomplishment whenever we overcome a seemingly insurmountable hurdle. Second, our individual work on talent development has socially shared significance, which in turn makes our effort worthwhile. Thus, a musician is not just enjoying music for herself, but affirming the value and significance of emotions conveyed and aesthetic beauty in music with a human audience. Edelman (1995), a neuroscientist, the 1972 Nobel Prize winner in Physiology or Medicine, argued that a unique characteristic of human beings is their ability to model the past and the future. He particularly stressed the role of emergence of selfhood:

> "By selfhood, I mean not just the individuality that emerges from genetics or immunology, but the personal individuality that emerges from developmental and social interactions." (Edelman, 1995, p. 201)

How does talent development help build such selfhood, or perhaps more pertinent, how does talent development emanate from evolving individuality? In my early exposition, I highlight characteristic adaptation as revealing an early emergence of individuality. The very notion of *selective affinity* points to the nature of talent development as affective and personal in nature. One tends to gravitate toward things that bring one positive self-affect. Long-term developmental patterns often reveal such a self-organizing principle (Fischer & Connell, 2003). However, this does not reveal a dynamic emergent process of how it works. My argument is that building and harnessing one's talent for important work is always an active learning and productive process, which is, with few exceptions, more rewarding than a passive, do-nothing life style. In the following, I will discuss three phases of talent development and their ramifications in terms of positive self-affect and personal happiness.

Play and work as characteristic adaptation. According to ECT, a play activity can be turned work with some guidance from parents and teachers. For example, an interest in Legos can be easily converted into a design project with some levels of challenge appropriate to the age of a child. Csikszentmihalyi (1990) advocated building talent in early years starting with the work of some challenge to children. When sufficient effort is invested in such a goal-directed activity, children are more likely to experience "flow" and enjoyment. Although no instant gratification can be gained, children will learn to appreciate the payoff of their effort and the accomplishment they made (No pain no gain!). Talent development in the spirit of ECT is an adaptative effort of some sort, therefore involving "doing" rather than merely "being." In early exploratory years, the productive experiences that help build confidence, interest, perseverance, and resilience are always more important than a particular skill itself. The process can produce positive self-affect that makes a difference in children's short-term engagement and long-term development.

Self-identity as a pivotal point. As adolescence kicks in, individuals will be increasingly aware of their selves and future. This is what ECT calls "construction of self and future." Developing a sense of purpose becomes a central task no matter what kind of talent one demonstrates. Earlier I mentioned the importance of deep experiences. The reason is that deep experiences are more likely to induce "*crystalizing experiences*" (Walter & Gardner, 1986), those important moments of life that are transformational in nature and can be life-changing. Only when one engages the world with certain depth can one truly appreciate what the world means to them and what they can do as a person to make a positive difference. Maximal adaptation in talent development entails a level of commitment enabled by a strong sense of identity, something sufficiently important and worth the dedicated effort. It is in this sense that we might argue that talent development, instead of being treated as a technical matter of skill improvement, is fundamentally part of positive psychology, promoting self-direction and self-actualization.

Why talent accomplishments matter. Although there is some truism about hard-earned success leading to a deep sense of accomplishment and personal satisfaction, a

potential counter-argument is that we might feel happier by enjoying the moment rather than striving for long-term success or fame. In other words, a lifestyle that does not involve arduous talent development may serve us just as well or better. For that argument I don't have objection. Indeed, Sternberg (personal communication) recently argued that it boils down to a personal decision as to how one uses or not uses one's talent, or whether a life ambition serves one well or not. My only reservation is that arduous but purposive work can bring personal satisfaction, even when eminence may not be the goal of one's endeavor. Self-actualization has a component not often recognized by the admirers of Maslow: a desire for surpassing oneself (Bereiter & Scardamalia, 1993), or a sheer desire for creating something new either to benefit others or to satisfy one's own deep curiosity can be sufficient reason for commitment to a line of work. John Goodenough received his Nobel Prize in chemistry in 2019 when he was 97, and he was still antsy about going back to his lab to continue his work. Why? He is unlikely to be motivated by the prospects of getting another Nobel Prize. The more likely reason is that he enjoys his work. He is a textbook example of how talent development does not have to been seen as motivated by fame and money but more likely driven by enjoyment and flow induced by his insatiable desire for satisfying his need for discovery and making a difference.

Conclusion

Evolving Complexity Theory (ECT) of talent development was initially developed for practical purposes of guiding gifted and talented education as an alternative to "Gifted Child Paradigm" (Dai, 2017). It is more of a process rather than component or trait theory. As I have argued for many years now, a more contextual, dynamic, developmental view of talent is a better alternative to a decontextualized, static, trait view, simply because of "evolving complexity" or individuality, which cannot be reduced to simple traits, or even genetics. My hope is that this introduction to ECT not only provokes new ideas about how we engage the world, but also helps us appreciate how we make the self.

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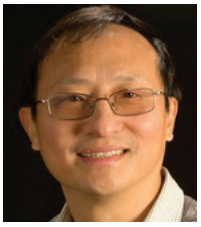

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