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## **Reexamining the Role of Gifted Education and Talent Development for the 21st Century: A Four-Part Theoretical Approach**

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### **Abstract**

Why and how should a society devote special resources to the development of giftedness in young people for the twenty-first century? If we agree that the goals of gifted education and talent development are to maximize young people's opportunities for self-fulfillment and increase society's reservoir of creative problem solvers and producers of knowledge, then it would seem wise that programming and services enhance students' capacity for creative productivity, not just content acquisition. This general theory for the development of human potential is discussed through an exploration of four research-based subtheories: the Three-Ring Conception of Giftedness, the Enrichment Triad Model, Operation Houndstooth, and Executive Functions. In this article, a reexamination of current gifted and talented programming is intended to generate future research, extend dialogue among scholars, and inspire continued support for programming based on theory and related research.

He who loves practice without theory is like the sailor who boards a ship without a rudder and compass, and never knows where he may land.

—Leonardo da Vinci

The field of gifted education is based on the almost universally accepted reality that some learners demonstrate outstanding performance or potential for superior performance in academic, creative, leadership, or artistic domains when compared with their peers. From preschool through college and even at graduate and professional school levels, a range of learning potentials justifies an examination of differentiated opportunities and services. As the quotation above points out, if we are not guided by a unified theory when choosing options we are likely to fall for anything! Theory is, indeed, the rudder and compass that should guide us toward practices that avoid randomness in the goals we pursue.

Absence of theory in educational practice usually results in services comprising piecemeal, fragmented, and loosely related activities rather than integrated theory-driven programs characterized by internal consistency from goal setting to services and evaluation. Without sound underlying theory—and the will to stick to the charted course—what happens in

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classrooms is often a reaction to political or commercial interests or the whims of bureaucratic policy makers far removed from classrooms; or can be based on questionable research and scholarship or the latest fads or flavor-of-the-month “innovation” devised by gurus without credential, or well-intentioned but unapprised local sages; or a combination of the above. But theory alone will not make substantial differences unless it has generated a strong research base, is translated into logically derivative practices that are relatively easy for practitioners to understand and implement, and has the flexibility for those practices to be adapted to variations in local demographics and resources (Ambrose, Cohen, & Tannenbaum, 2003; Ambrose, VanTassel-Baska, Coleman, & Cross, 2010; Cohen, 1988; Renzulli, 2011).

Effective theories for educating gifted and talented students require two additional and related characteristics. First, the theory should exhibit a logical relationship between the theory-guided services provided to students and the conception of giftedness that serves as a rationale for the development of that theory. An acceleration-based theory that recommends the use of advanced mathematics courses, for example, should obviously be related to a conception of gifted that targets students with high aptitudes in math. Second, and particularly relevant to the enrichment-based theory presented in this article, services should be provided for both advanced cognitive development and what are referred to below to as “intelligences outside the normal curve.” A rationale for this requirement and an accompanying conception of giftedness has evolved over the past three decades as a guide for the implementation of school programs designed to develop giftedness and talents in young people.

The overall theory is composed of four interrelated subtheories and is based on the belief that when one is reexamining the role of theory in gifted education we should always begin with the why question—Why should a society devote special resources to the development of giftedness in young people? Although there are two generally accepted purposes for providing special education for young people with high potential, these two purposes in combination give rise to a third purpose that is intimately related to the conception of giftedness question. The first purpose of gifted education is to provide young people with maximum opportunities for self-fulfillment through the development and expression of one or a combination of performance areas where superior potential may be present. The second purpose is to increase society’s reservoir of persons who will help solve the problems of contemporary civilization by becoming producers of knowledge and art rather than mere consumers of existing information. Although there may be some arguments for and against both of the above purposes, most people would agree that goals related to self-fulfillment and/or societal contributions are generally consistent with democratic philosophies of education. What is even more important is that the two goals are highly interactive and mutually supportive of each other. In other words, self-satisfying work of scientists, artists, writers, entrepreneurs, and leaders in all walks of life has the potential to produce results that are valuable contributions to society. If, as I have argued, the purpose of gifted programs is to increase the size of society’s supply of potentially creative and productive adults, then the argument for special education programs that focus on creative productivity (rather than lesson-learning giftedness) is a very simple one.

If we agree with these two goals of gifted education, and if we believe that our programs should produce the next generation of leaders, problem solvers, and persons who will make important contributions to all areas of human productivity, then the third purpose of gifted

education is to show the sensibility in modeling special programs and services after the modus operandi of these persons rather than after those of good lesson learners. This view is not an argument against good lesson learning and high levels of achievement and text consumption. But good lesson learning should be the province of the best-quality general education that schooling can provide to all students according to their individual needs and aptitudes. A focus on creative productivity, however, is especially important because the most efficient lesson learners are not necessarily those persons who go on to make important contributions to knowledge. And in this day and age of exponential knowledge expansion, it would seem wise to consider a model that focuses on how our most able students access and make use of information rather than merely on how they accumulate, store, and retrieve it.

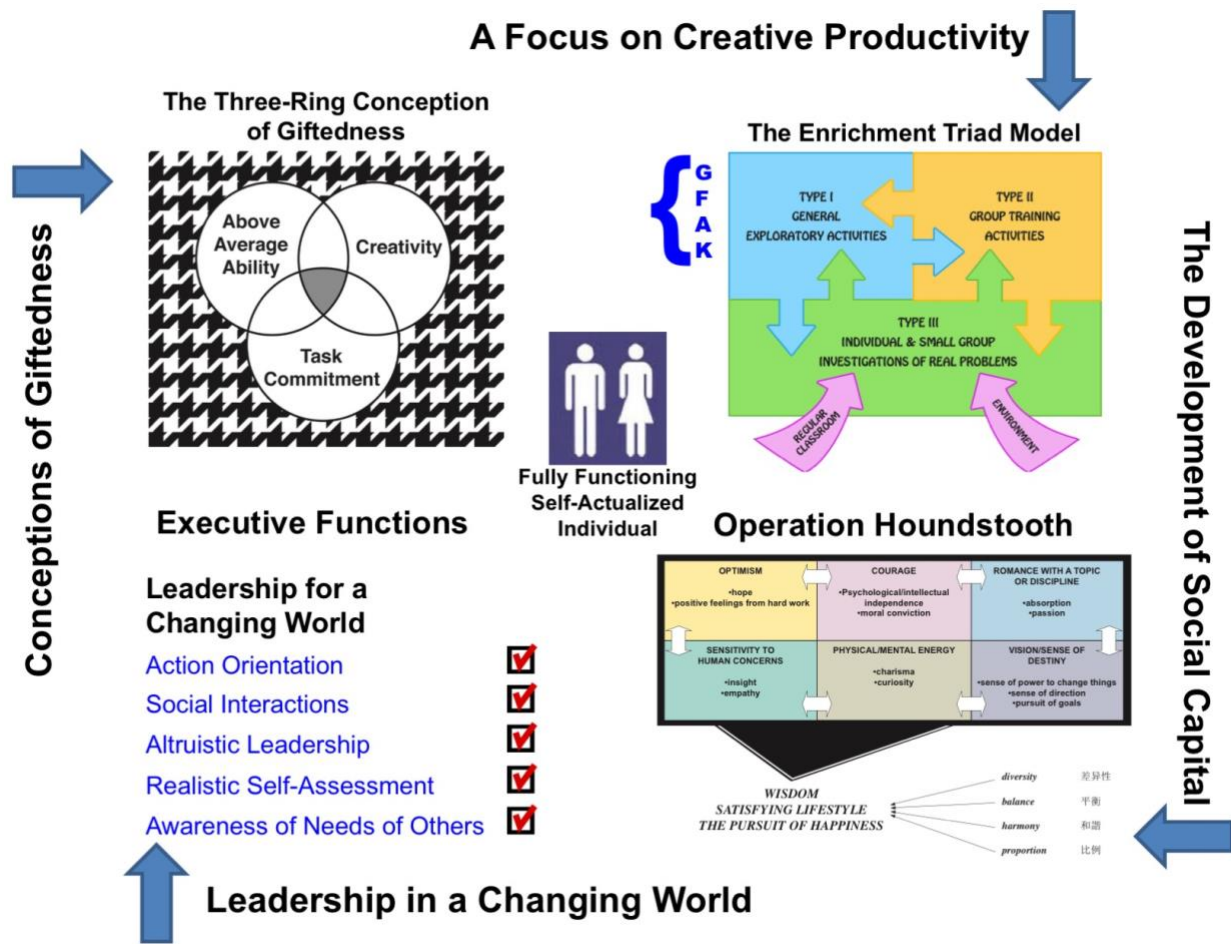
This general theory draws on the work of several researchers and scholars, and like any other theory, it is intended to synthesize accumulated knowledge and hopefully motivate further research. And, of course, the final outcome for theory in an applied field is not only an effective practice for targeted audiences, which in our field are mainly teachers and students, but also include administrators and policy makers.

### **A Few Words About Terminology**

In both education and psychology the term *giftedness* has evolved into a theoretical construct (something to be studied). Although most writers use the word *gifted* as a noun, I have consistently used the term *gifted* as an adjective (e.g., gifted behaviors, a gifted writer) rather than a noun (e.g., referring to an individual or group as “the gifted”). And when I refer to gifted education or gifted programs, the adjective is in the context of the root meaning of the word—that which is given. Thus, I have consistently argued (e.g., Renzulli 1998, 2005) that we should label the services necessary to develop high potentials rather than labeling the students as gifted or not gifted. Accordingly, when we identify traits or aptitudes in students, we should focus on specific behavioral manifestations (e.g., superior memory for important dates in history, ability to generate creative ideas, high task commitment in film making, advanced analytic abilities in mathematics).

I have also purposely made a distinction between two types of giftedness. The first is called high achieving or schoolhouse giftedness, referring to students who are good lesson learners in traditional school achievement. The second is creative productive giftedness, referring to the traits that inventors, designers, authors, artists, and others *apply* to selected areas of economic, cultural, and social capital. These two types of giftedness are not mutually exclusive, but the distinction is important because of the implications for the ways in which we develop gifted behaviors in educational settings. The four parts of my work that contribute to the overall theory are depicted in Figure 1. These subtheories, taken collectively, are designed to point out both the ways in which we can identify talent potential in young people, how we can develop both academic talent, and what I refer to as “intelligences outside the normal curve.” These nonintellectual traits are as important in promoting the development of fully functioning high potential individuals as are traditionally measured cognitive traits. Furthermore, the theories are based on several years of research that has been summarized by Gubbins (1995), Renzulli and Reis (1994), Reis and Renzulli (2003), and Reis et al. (2005). Also included in the development of the theories is the work of others who have conducted research related to the underlying

concepts and constructs that make up the theory (Duckworth, 2009; Duckworth & Quinn, 2009; Sytsma, 2003).



**Figure 1.** A four-part theory of talent development

Finally, the relationship between the gifted field and general education is reflected by these theories. Currently, education policy and practice focus on “21st Century Skills” (e.g., Bellanca & Brandt, 2010; Partnership for 21st Century Skills, 2011; Trilling & Fadel, 2009). Notably, these skills reflect an area that has been the centerpiece of gifted education for many years. What is most interesting about the popularization of 21st Century Skills is that attention is now being given to noncognitive as well as strictly cognitive skills. Significant contributions in this area of research include Gardner’s Good Works project, which focuses on excellence, ethics, and engagement and documents the conclusion that many young people want to work to make the world a better place (Fischman & Gardner, 2009); Sternberg’s work on wisdom, which targets achieving a common good through a balance among intrapersonal, interpersonal, and extrapersonal interests (Sternberg, 1998); and Seligman’s work on positive psychology, which deals with the development of character strengths and virtues (Seligman, 1998).

Hopefully, this summary and articulation of the conceptual foundations being presented will generate more research, extend dialogue among scholars in the field, and perhaps even impel

more scholars to devote attention to a field that has been limited in theoretical underpinnings (Ambrose et al., 2010).

### **The Four-Part Theory**

For over four decades I have been examining and reexamining the meaning of the age-old questions of “What makes giftedness?” and “How do we develop it in young people?” I raised the first part of this question in an article that reexamined existing conceptions of giftedness (Renzulli, 1978) and emerging research led to updates (Renzulli, 1986, 2005). I have continued to explore what causes some people to use their intellectual, motivational, and creative assets in ways that lead to outstanding manifestations of achievement and creative productivity, whereas others with similar or perhaps even greater potential fail to achieve high levels of accomplishment. I continue to wonder what causes the development of only a minuscule number of Thomas Edisons or Rachel Carsons or Langston Hughes or Isadora Duncans, whereas millions of persons with equal “equipment” and educational advantages (or disadvantages) never rise above mediocrity. Why do some people who have not enjoyed the advantages of special educational opportunities achieve high levels of accomplishment, whereas others who have benefitted from the best of educational opportunities and enriching lifestyles fade into obscurity (Dai & Renzulli, 2008; Renzulli, 1982a; Sternberg, 2003)?

Other questions have also led to attempts to frame the nature of giftedness. Is giftedness an absolute concept or a relative concept? That is, is a person either gifted or not gifted (the absolute view) or can varying kinds and degrees of gifted behaviors be displayed in certain people, at certain times, and under certain circumstances (the relative view)? Is gifted a static concept (i.e., you have it or you do not have it) or is it a dynamic concept (i.e., it varies both within persons and within learning-performance situations; Renzulli, 1986)?

This article represents a synthesis of the literature that frames my responses to the questions above in combination with the purposes of gifted education that form the rationale for recommended approaches to developing giftedness. Although I refer to this work as a general theory for the development of human potential, it is made up of four subtheories I have worked on over the years and that are presented in graphic form in Figure 1.

#### **Subtheory I: The Three-Ring Conception of Giftedness**

The Three-Ring Conception of Giftedness attempts to portray the main dimensions of human potential for creative productivity. The name derives from the conceptual framework of the theory—namely, three interacting clusters of traits (Above Average Ability, Task Commitment, and Creativity) and their relationship with general and specific areas of human performance. Perhaps the most salient aspect of this theory is that it is the interaction among these clusters of traits brought to bear on a particular problem situation that creates the conditions for the creative productive process to commence. A second aspect of the theory posits that whereas abilities (especially general intelligence, specific aptitudes, and academic achievement) tend to remain relatively constant over time, creativity and task commitment are contextual, situational, and temporal. Finally, these clusters of traits emerge in certain people, at certain times, and under certain circumstances. The Enrichment Triad Model is the compatible learning theory from

which I attempt to prescribe educational conditions that create the conditions for stimulating interaction between and among the three rings, described below.

*Above Average Ability* encompasses both general (e.g., verbal and numerical reasoning, spatial relations, memory) and specific (e.g., chemistry, ballet, musical composition, experimental design) performance areas and is the most constant of the rings. That is, any student's performance within the parameters of this ring is minimally variable, as it is linked most closely with traditional cognitive/intellectual traits. The reason that this ring makes reference to "above average ability" (as opposed to, e.g., "the top 5%" or "exceptional ability") derives from research that highlights minimal criterion validity between academic aptitude and professional accomplishments (Renzulli, 1976, 1986, 2005). In other words, research suggests that, beyond a certain level of cognitive ability, real-world achievement is less dependent on ever-increasing performance on skills assessment than on other personal and dispositional factors (e.g., task commitment and creativity). This realization highlights the limitations of intelligence tests and the innumerable aptitude and achievement tests that are used to identify candidates for "gifted programs."

*Task Commitment* represents a nonintellective cluster of traits found consistently in creative productive individuals (e.g., perseverance, determination, will power, positive energy). It is best summarized as a focused or refined form of motivation—energy brought to bear on a particular problem or specific performance area. The significance of this cluster of traits in any definition of giftedness derives from myriad research studies as well as autobiographical sketches of creative productive individuals. Simply stated, one of the primary ingredients for success among persons who have made important contributions to their respective performance areas is their ability to immerse themselves fully in a problem or area for an extended period of time and to persevere even in the face of obstacles that would inhibit others.

*Creativity* is that cluster of traits that encompasses curiosity, originality, ingenuity, and a willingness to challenge convention and tradition. For example, there have been many gifted scientists throughout history, but the scientists whose work we revere, whose names have remained recognizable in scholarly communities and among the general public, are those scientists who used their creativity to envision, analyze, and ultimately help resolve scientific questions in new, original ways.

In summary, the Three-Ring Conception of Giftedness is based on an overlap and interaction between and among the three clusters of traits that create the conditions for making giftedness. Giftedness is not viewed as an absolute or fixed state of being (i.e., you have it or you do not have it). Rather, it is viewed as a developmental set of behaviors that can be applied to problem-solving situations. Varying kinds and degrees of gifted behaviors can be developed and displayed in certain people, at certain times, and under certain circumstances. The rationale for the Three-Ring Conception of Giftedness draws on the previously mentioned anticipated social roles of persons with high potential.

## Subtheory II: The Enrichment Triad Model

All learning exists on a continuum ranging from deductive, didactic, and prescriptive approaches at one end to inductive, investigative, and constructivist-based approaches at the other. This continuum exists for learners of all ages—from toddlers to doctoral students—and it exists in all areas of curricular activity. The continuum also exists for learning that takes place in the nonschool world, the kind of experiences that young people and adults pursue as they acquire new skills for their jobs or work in the kitchen, the garden, or the workshop in the basement. (There are, of course, occasions when a particular approach falls between the two ends of the continuum, but for purposes of clarifying the main features of deductive and inductive learning, I will treat the two models as polar opposites.) Both models of learning and teaching are valuable in the overall process of schooling, and a well-balanced school program must make use of both approaches as well as strategies that use a combination of these approaches.

*The deductive model of learning.* Although many names have been used to describe the theories that define the ends of the learning continuum, I simply refer to them as the Deductive Model and the Inductive Model (Guilford, 1967). Although the Deductive Model is familiar to most educators and guides, much of the learning that takes place in classrooms and other places in which formal learning is pursued. The Inductive Model, on the other hand, represents the kind of learning that typically takes place outside formal school situations. A good way to understand the difference between these two types of learning is to compare how learning takes place in a typical classroom with how someone learns new material or skills in real-world situations. Classrooms are characterized by relatively fixed time schedules; segmented subjects or topics; predetermined sets of information and activities, tests, and grades to determine progress; and a pattern of organization that is largely driven by the need to acquire and assimilate information and skills that are deemed important by curriculum developers, textbook publishers, and committees who prepare lists of standards. The deductive model assumes that current learning will have transfer value for some future problem, course, occupational pursuit, or life activity.

Deductive learning is based mainly on the factory model or human engineering conception of schooling. The underlying psychological theory is behaviorism, and the theorists most frequently associated with this model are Ivan Pavlov, E. L. Thorndike, and B. F. Skinner. At the center of this ideology is the ability to produce desirable responses by presenting selected stimuli. In educational settings, these theories translate into a form of structured training for purposes of knowledge and skill acquisition. A curriculum based on the Deductive Model must be examined in terms of both what and how something is taught.

The instructional effects of the Deductive Model are those directly achieved by leading the learner in prescribed directions. There is nothing inherently “wrong” with the Deductive Model; however, it is based on a limited conception of the role of the learner and fails to consider variations in interests and learning styles. Also, in this approach, students are always cast in the roles of lesson-learners and exercise-doers rather than authentic, first-hand inquirers.

*The inductive model of learning.* The Inductive Model, on the other hand, represents the kinds of learning that ordinarily occur outside formal classrooms in places such as research laboratories, artists’ studios, theaters, film and video production sets, business offices, service

agencies, and within almost any extracurricular activity in which products, performances, or services are pursued. The theorists most closely associated with inductive learning are John Dewey, Maria Montessori, and Jerome Bruner. The type of learning advocated by these theorists can be summarized as knowledge and skill acquisition gained from investigative and creative activities that are characterized by three requirements (Renzulli, 1977, 1982b). First, there is a personalization of the topic or problem—students are doing the work because they want to. Second, students are using methods of investigation or creative production that approximate the *modus operandi* of the practicing professional, even if the methodology is at a more junior level than that used by adult researchers, film makers, or business entrepreneurs. Third, the work is always geared toward the production of a product or service intended to have an impact on a particular audience.

The information (content) and the skills (process) derived in inductive learning situations are based on need-to-know and need-to-do requirements. For example, if a group of students is interested in examining differences in attitudes toward dress codes or teenage dating between and within various groups (e.g., gender, grade, students vs. adults), they need certain background information. What have other studies on these topics revealed? Are there any national trends? Have other countries examined dress code or teenage dating issues? Where can these studies be found? Students will need to learn how to design authentic questionnaires, rating scales, and interview schedules and how to record, analyze, and report their findings in the most appropriate format (e.g., written, statistical, graphic, oral, dramatized). Finally, they will need to know how to identify potentially interested audiences, the most appropriate presentation formats (based on a particular audience's level of comprehension), and how to open doors for publication and presentation opportunities. Information used in inductive learning is based on just-in-time (JIT) knowledge as opposed to the to-be-presented knowledge that characterizes most deductive learning situations. The Internet has made JIT knowledge easily available to today's learners; and the interactive capacity of today's technology allows students to go beyond simple text consumption and worksheets-on-line.<sup>2</sup>

This example demonstrates how knowledge and skills become instantaneously relevant because they are necessary to prepare a high-quality product. All resources, information, schedules, and sequences of events are directed toward this goal, and evaluation (rather than grading) is a function of the quality of the product or service as viewed through the eyes of a client, consumer, or other type of audience member. Everything that results in learning in a research laboratory, for example, is for contemporaneous use. Therefore, looking up new information, conducting an experiment, analyzing results, or preparing a report or presentation is an action-oriented and investigative act of learning. We can see here the relevance of the JIT knowledge mentioned above. This kind of learning differs from deductive learning, and the skills developed in investigative learning are the better outcome for preparing young people for creative and productive futures.

In summary, the Deductive Model has dominated the ways in which most formal education is pursued, and the track record of the model has been less than impressive. One need only reflect for a moment on his or her own school experience to realize that with the exception

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<sup>2</sup> For a discussion of what I refer to as "Going Beyond Gutenberg," see [https://gifted.uconn.edu/wp-content/uploads/sites/961/2021/12/Going\\_Beyond\\_Gutenberg\\_and\\_Skinner.pdf](https://gifted.uconn.edu/wp-content/uploads/sites/961/2021/12/Going_Beyond_Gutenberg_and_Skinner.pdf).



of some basic language and mathematics skills, much of the compartmentalized material learned for some remote and ambiguous future situation is seldom used in the conduct of daily activities. The names of famous generals, geometric formulas, the periodic table, and parts of a plant learned outside an applicable, real-world situation are generally quickly forgotten. This is not to say that previously learned information is unimportant, but its relevancy, meaningfulness, and endurance for future use is minimized when learned apart from situations that have personalized meaning for the learner.

*The enrichment triad model.* The three types of enrichment in the Triad Model (see the upper right hand corner of Figure 1) are designed to work in harmony with one another and it is the *interaction* among the types of enrichment that produce the dynamic properties represented by the arrows that are as important as the individual components in achieving the goals of this inductive approach to learning. Type I Enrichment includes general, exploratory activities that expose students to problems, issues, ideas, notions, theories, skills—in sum, *possibilities*. Often, this type of enrichment serves as a catalyst for curiosity and internal motivation. Type I enrichment may be the method for externally stimulating students toward internal commitment and purpose. These activities should be made available to all students. A highlight of the model that underscores the philosophy behind the Three-Ring Conception of giftedness is that task commitment and creativity are crucial to the development of potentially gifted students, who may “rise to the challenge” in unexpected ways or at unexpected times, given the proper environment.

Type II Enrichment involves both individual and group training in a variety of cognitive, meta-cognitive, methodological, and affective skills. This type of enrichment prepares the students to produce tangible products and/or generate resolutions to real-world problems through its emphasis on skill development and information gathering. It is not enough to be curious and moved toward action; one must also be equipped to tap and use resources in order to take action. Type I activities are intended to capture students’ interests—to inspire—whereas Type II activities are intended to teach students how to move from inspiration to action. Type II activities are contingent on the students’ developmental levels and, as such, should vary in complexity and sophistication with personal and academic maturity. Generally, there are five categories of Type II activities, all of which may be considered as focusing on process skills: (a) cognitive training, (b) affective training, (c) learning-how-to-learn training, (d) research and reference procedures, and (e) written, oral, and visual communication procedures. Type II Enrichment activities can also serve as points of entry into Type III involvement.

Type III activities are individual and small group investigations of real-world problems. Real-world problems are here defined as problems that evoke a personal frame of reference for students, problems with no existing or unique resolution, and problems designed to have an impact on a targeted audience. As with Type II activities, the sophistication and depth of Type III activities is contingent on students’ developmental levels. Regardless of the level of influence and breadth of reach of solutions to real-world problems generated by Type III activities, all such activities encompass four objectives for students: (a) to acquire advanced-level understanding of the knowledge and methodology used within particular disciplines, artistic areas of expression, and interdisciplinary studies; (b) to develop authentic products or services that are primarily directed toward bringing about a desired impact on one or more specified audiences; (c) to

develop self-directed learning skills in the areas of planning, problem finding and focusing, management, cooperativeness, decision making, and self-evaluation; and (d) to develop task commitment, self-confidence, feelings of creative accomplishment, and the ability to interact effectively with other students and adults who share common goals and interests.

Type III experiences are the culmination of natural learning, representing synthesis and an application of content, process, and personal involvement through self-motivated work. These activities serve as the vehicles within the total school experience through which everything from basic skills to advanced content and processes “come together” in the form of student-developed products and services. They may be referred to “the assembly plant of the mind.” Clearly, the student’s role is transformed from one of lesson-learner to first-hand investigator or creator, and the teacher’s role must shift from that of instructor or disseminator of knowledge to some combination of coach, promoter, manager, mentor, agent, guide, and sometimes even colleague.

### **Subtheory III: Operation Houndstooth—Gifted Education and Social Capital**

The rationale for this subtheory and the one that follows is based on the anticipated roles that individuals with high potential play in society. Whether we like it or not, history has shown us that highly able people assume important positions in all walks of life—government, law, science, religion, politics, business, and the arts and humanities. What kinds of leaders will these people be? What kinds of life experiences created the contrasting behaviors of Nelson Mandela and Idi Amin? This subpart of the overall theory addresses the question: “Why do some people mobilize their interpersonal, political, ethical, and moral realms of being in such ways that they place human concerns and the common good above materialism, ego enhancement, and self-indulgence?” The abundance of folk wisdom, research literature, and biographical and anecdotal accounts about creativity and giftedness are nothing short of mind boggling; and yet we are still unable to answer this fundamental question about persons who have devoted their lives to improving the human condition. Several theorists have speculated about the necessary ingredients for giftedness and creative productivity, and their related theories have called attention to important components and conditions for high-level accomplishment. However, most of these theories have dwelt only on cognitive characteristics, and by so doing, they have failed to explain how the confluence of desirable traits result in commitments for making the lives of all people more rewarding, environmentally safe, economically viable, peaceful, and politically free.

Work related to this topic examines the scientific research that defines several categories of personal characteristics associated with an individual’s commitment to the production of social capital, briefly defined here as using one’s talents to improve human conditions, whether that improvement is directed toward one person or larger audiences or conditions. These characteristics include optimism, courage, romance with a topic or discipline, physical and mental energy, vision and a sense of destiny, and sense of power to change things (Renzulli, 2002). These factors and their subcomponents are portrayed in the lower right quadrant of Figure 1. They are represented in the Three-Ring Conception figure by the houndstooth background in which the three clusters of traits are found. I call these “Houndstooth” traits co-cognitive factors because they interact with and enhance the cognitive traits that are ordinarily associated with the development of human abilities. A number of researchers have suggested that constructs of this

type, including social, emotional, and inter- or intrapersonal intelligence, are related to each other and are independent from traditional measures of ability. The two-directional arrows in this diagram point out the many interactions that take place between and among the factors.

The general goal of this work and a related intervention model is designed to infuse into the overall process of schooling experiences that promote the Houndstooth components and that ultimately give highly able young people a sense of their responsibility to society at large. It would be naïve to think that a redirection of educational goals can take place without a commitment at all levels to examine the purposes of education in a democracy. It is also naïve to think that experiences directed toward the production of social capital can, or are even intended to, replace our present-day focus on material productivity and intellectual capital. Rather, this work seeks to enhance the development of wisdom and a satisfying lifestyle that are paralleled by concerns for diversity, balance, harmony, and proportion in all the choices and decisions that young people make in the process of maturing. What people think and decide to do drives some of society's best ideas and achievements. If we want leaders who will promote ideas and achievements that take into consideration the components we have identified in Operation Houndstooth, then giftedness in the new century will have to be redefined in ways that take these co-cognitive components into account. And the strategies that are used to develop giftedness in young people will need to give as much attention to the co-cognitive conditions of development as we presently give to cognitive development.

#### **Subtheory IV: Executive Functions—Leadership for a Changing World**

The fourth and final theory may very well be the “yeast” that enables all constructs described above to actually be used to pursue a desired goal in an efficient and effective way. I sometimes describe this final subtheory as simply “getting your act together.” The most creative ideas, advanced analytic skills, and the noblest of motives may not result in positive action unless leadership skills such as organization, sequencing, and sound judgment are brought to bear on problem situations. Landmark research by Duckworth, Seligman, and others (Borghans, Duckworth, Heckman, & Weel, 2008; Duckworth, 2009; Duckworth, Peterson, Matthews, & Kelly, 2007; Duckworth & Quinn, 2009; Duckworth & Seligman, 2005) has shown that students who persist in college were not necessarily the ones who excelled on measures of aptitude, but the ones with exceptional character strengths such as optimism, persistence, and social intelligence. This research showed that measures of self-control can be more reliable predictors of students' grade-point averages than their IQ scores. Including this focus in the overall theory represents a distinctly different approach to talent development than most of the models focusing primarily on cognitive development. The research noted above documents that both IQ and self-discipline are correlated with grade-point average, but self-discipline is a much more important contributor: Those with low self-discipline have substantially lower college grades than those with low IQs, whereas high-discipline students received much better grades than high-IQ students. Even after adjusting for the student's grades during the first marking period of the year, students with higher self-discipline still had higher grades at the end of the year. The same could not be said for IQ. Furthermore, these studies found no correlation between IQ and self-discipline—these two traits varied independently.

I have focused my work in this area on what are commonly referred to in the business and human resource literature as executive functions. Executive functions are broadly defined as the ability to engage in *novel* situations that require planning, decision making, troubleshooting, and compassionate and ethical leadership that is not dependent on routine or well-rehearsed responses to challenging combinations of conditions. These traits also involve organizing, integrating, and managing information, emotions, and other cognitive and affective functions that lead to “doing the right thing” in situations that do not have a predetermined or formulaic driven response. These functions are especially important to highly capable people because of the positions of power to which they typically ascend.

A number of researchers have pointed out the importance of incorporating these noncognitive skills into everything from curricular experiences (Cordova & Lepper, 1996; Diamond, 2010) to educational assessments (Levin, 2011; Sedlack, 2005) and college admission considerations (Sternberg, 2005). These skills have important implications for the academic success of students, career decisions, and even the economic productivity of nations. Although not minimizing the importance of traditional cognitive ability, these authors point out that conventional assessments account for a small portion of the variance when examining long-term academic and career accomplishment, especially as it relates to the advancement of adult competencies in highly demanding professions where leadership skills and creative productivity are the criteria for success.

A good deal of the background material that led to the inclusion of executive functions in this overall talent development model comes from the field of human resources (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Heckman & Rubenstein, 2001). These authors point out the importance of noncognitive skills in personal and social as well as academic development and—more important for this overall theory—a meta-analysis showed that these skills could be taught. Initial input was also derived from the literature on social, behavioral, and “emotional intelligence” (Goleman, 2006). Goleman argued that great leadership works through noncognitive traits such as self-awareness, self-management, motivation, empathy, and social skills. Although the research literature on these types of noncognitive traits is massive, there is general agreement that the following so-called “Big Five” personality traits (Almlund, Duckworth, Heckman, & Kautz, 2011) are the basis on which education intervention programs should focus:

1. *Openness*—Inventive and curious as opposed to consistent and cautious
2. *Conscientiousness*—Efficient and organized as opposed to easy-going and careless
3. *Extraversion*—Outgoing and energetic as opposed to solitary and reserved
4. *Agreeableness*—Friendly and compassionate as opposed to cold and unkind
5. *Neuroticism*—Secure and confident as opposed to sensitive and nervous

Our research to date on this subtheory has included the development of an instrument called *Rating the Executive Functions of Young People* (Renzulli & Mitchell, 2011). This diagnostic instrument is designed to assist in research dealing with the types and degrees of executive function traits in young people and can be used both to identify potential leadership traits in young people and help teachers determine which curricular experiences can develop desirable leadership traits in individuals or groups. Subsequent diagnostic techniques may

include simulations to determine successful performance in demanding problem-solving situations.

Themes that emerged as contributors to success from the review of research conducted in the process of instrument development included mindfulness, ethical/moral, social, motivational, and leadership traits as well as the so-called Big Five personality traits or factors mentioned. Also identified were specific traits such as being eager to learn, studious, intelligent, interested, and industrious and other variables such as positive and realistic self-appraisal, preference for long-range goals, successful leadership experience, and community service. Researchers in other domains have also identified noncognitive variables of persons who lead and make a difference. For example, in reports on the characteristics possessed by some of the most altruistic persons in American society, common traits that were demonstrated by most of these individuals included passion, determination, talent, self-discipline, and faith. Leadership, ethics, accountability, adaptability, personal productivity, personal responsibility, people skills, self-direction, and social responsibility have also been identified as critical skills in the literature dealing with 21st century skills, as were professionalism, enthusiasm, leadership, positive work ethic, values, decisiveness, teamwork, character, support, conformity, openness, self-concept, anxiety, and life-long learning.

This overwhelming list of traits that emerged from the literature review were grouped into five general categories as a result of a factor analysis of data collected from several hundred respondents using the instrument mentioned above. The first factor is Action Orientation, which includes specific characteristics that motivate an individual to succeed. The second factor is Social Interactions and it includes traits that enable someone to successfully interact with others. The third factor is Altruistic Leadership, and it includes characteristics relating to both empathy and dependability. The fourth factor, Realistic Self-Assessment, includes characteristics that demonstrate awareness of one's own abilities, realistic self-appraisal, and self-efficacy. Finally, Awareness of the Needs of Others subsumes sensitivity, approachableness, and strong communication skills. Taken collectively, all these behaviors characterize highly effective persons, but they also reflect traits that cause people who have emerged as leaders in their respective fields to "do the right thing" in the arenas and domains over which they have had an influence.

The implications for including executive functions in a theory about the study of giftedness relates to the anticipated social and leadership roles that high potential young people will play in their future endeavors. Embracing executive functions also has significance for the types of programs and experiences that should be provided to develop these skills and the roles and responsibilities of curriculum developers and service providers. The relative newness of this dimension on the parts of scholars in the field is obviously in need of more research and there are many opportunities for creative implementation practices and original research related thereto.

### **Summary**

Gifted education, like all other specialized areas in the arts and sciences, is constantly in search of its identity. What defines a field beyond random and trendy practices are the theories and related research that delineates its parameters, promotes future research, and has an impact on

*defensible* practice. Our field has been notably “thin” on theory development, and the work offered here is just one approach that I hope will promote discussion among scholars and practitioners, generate research on the validity of the ideas and concepts discussed here, and inspire more theoretical development on the parts of other scholars.

The most salient point to make when discussing and generalizing about theories for the study of giftedness in the 21st century is that there is an overlap and an interaction among cognitive, affective, and motivational characteristics. We cannot divorce these numerous and interactive characteristics from the ways we should go about developing gifted behaviors in young people. Developing the intelligences outside the normal curve is as important to the contributions that our field can make as have been the traditional academic markers of successful gifted programs.

A second and final consideration deals with how we should go about producing leaders for the 21st century. This consideration deals directly with how gifted education should differ *qualitatively* from general education. People who have gained recognition as gifted contributors in the beyond-the-school world have always done so because of something they did—an invention, a sonata, a design, and a solution to a political or economic problem. They brought myriad traits to bear on their respective challenges, and it is these types of experiences that provided such opportunities that should be the core of our efforts to educate tomorrow’s people of great promise. The anticipated social roles that people of high potential will play should be the main rationale for both supporting special programs and designing learning experiences that will prepare today’s students for responsible leadership roles in the future.

In my opinion, the biggest challenge in gifted education is to extend our traditional investment in the production of intellectual and creative capital to include an equal investment in social capital and the development of executive function skills (see Subotnik, Robinson, Callahan, & Gubbins, in press). I believe that experiences designed to develop these skills should begin at early ages and focus mainly on direct involvement rather than “teaching-and-preaching” experiences. If we can have an impact on social capital and effective and empathetic leadership, then we will be preparing the kinds of leaders who are as sensitive to human, environmental, and democratic concerns as they are to the traditional materialistic markers of success in today’s world. And the greatest payoff from focusing gifted education on investigative learning and using knowledge wisely will be a dramatic increase in the reservoir of people who will use their talents to create a better world.

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