

A HISTORY OF GIFTEDNESS: A CENTURY OF QUEST FOR IDENTITY

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Giftedness as a concept has evolved in history to become an entity of its own, on which conceptual, social, and educational enterprises have been built. Conceptually, whether what we call *giftedness* denotes an essence or quality that holds its identity, unity, and continuity relies on empirical verification in differential and developmental psychology research as well as theoretical and practical justifications. Socially, whether giftedness as a social construct serves an equitable, productive social cause or the public good relies on the affirmation of cultural values as well as cognizance of the nature of this precious human capital. Educationally, effective identification and education for the gifted and talented depends on a deep understanding of the nature and nurture of human potential. In this chapter, I provide an overview of the 100-year history of searching for this elusive human quality or exceptionality, delineating major historical periods and identifying related issues. I provide a critique of the construct of giftedness and its history, and discuss alternative ways to build on the legacy and move forward. The chapter concludes with the argument that a talent development approach to understanding human exceptional competence in the form of increasing differentiation and multiple developmental trajectories/pathways (involving nature and nurture) leading to various forms, kinds, and degrees of talent, high-level expertise, and creativity will help us get out of the conceptual quagmire and better guide educational policy and practice.

IMPORTANCE OF THE TOPIC: CONCEPTUAL, SOCIAL, AND EDUCATIONAL UNDERPINNINGS OF GIFTEDNESS

The intellectual history of a concept has its own logic. It evolves through human reflective consciousness, sometimes conscience, as an adaptation to new conditions and demands (Toulmin, 1972). Therefore, concepts like giftedness (or intelligence and creativity, for that matter) are functionally meaningful only in the context in which they are used, and change when contexts demand such a change. The history of giftedness has at least conceptual, social, and educational underpinnings that define what giftedness means at the theoretical, social, and practical levels. Behind this history is a group of stakeholders with a vested interest in the identification and development of high potential and accomplishments manifested in children and adults alike. A century has passed since the inception of giftedness as a critical concept. Now that giftedness has become a field of study in its own right, the search for a distinct identity never stops; indeed, the intellectual history of giftedness can be characterized as a continual effort to define itself intellectually, socially, and practically.

Giftedness at the Conceptual Level

Gift is defined as “a notable capacity, talent, or endowment”; *gifted* means “having great natural ability.” This use is explanatory, attributing superior performance to some form of natural

endowment, convenient for daily communication but more nuanced under scrutiny. For example, when the term is used for children, it means manifested potential, but when adults are concerned, it often means eminent accomplishments in a domain (Mayer, 2005; Siegler & Kotovsky, 1986; see also Chapters 16 and 17, this handbook). For the former, the dictionary definition might apply well, but for the latter, natural endowment may play a significant role but is by no means the whole story. In that sense, reductionist accounts that attribute superior performance to natural endowment are simplistic, to say the least. Indeed, the history of giftedness is full of debates on whether a child model or adult model should be used as the standard definition (e.g., Ericsson, 2006; Gagné, 1999; Gruber, 1986).

Epistemologically, concepts can be inductively derived from observations of a class or category of objects or phenomena, or conversely, the central meaning or essence of a concept can be dictated, and what is relevant and what is irrelevant to the concept can be deductively determined. In the tradition of psychological research, the inductive approach is called *idiographic*, starting with particulars, and the deductive approach is *nomothetic*, starting with universal assumptions (Allport, 1937). The history of giftedness started with a nomothetic approach (i.e., determining who are gifted in an a priori fashion, using IQ standards; Terman, 1925), and has become increasingly idiographic (i.e., recognizing a variety of empirical manifestations of giftedness; Witty, 1958).

The nomothetic vs. idiographic approach to giftedness, one anchoring on the abstract and the other on the empirical (Holton, 1981), has profound intellectual and practical consequences. Consider theories developed by Gagné (1985) and Feldman (1986). Gagné's theory, in a time-honored conception of giftedness as a natural endowment, is nomothetic in the sense that the theory stipulates the presence, dimensions, and degrees of giftedness, and maps out elements (intrapersonal and environmental catalysts, in his terms) that shape its development in a theoretical manner (see Chapter 11, this handbook). In contrast, Feldman's (1986) theory of the confluence of internal and external factors in shaping the lives of child prodigies is empirically derived from case studies, and domains of giftedness come from

"natural" human activities (chess, mathematics, etc.) rather than psychological constructs (intellectual, affective, etc.). The empirically derived theory tends to consider a host of contextual and personal factors that help shape the way giftedness manifests itself, rather than assuming a priori that giftedness is innate and sits in the head in a unitary fashion prior to the environmental exposure. In other words, according to Feldman's confluence theory, giftedness in mathematics, chess, or art is not a thing sitting there to be awakened or activated, but many things coming together like the chemical bonding process, in which environmental stimulation is a contributor (see Chapter 18, this handbook).

The nomothetic vs. idiographic approach has another consequence: it makes gifted conceptions either exclusive or inclusive. Nomothetic concepts define things by its essential or defining features. They emphasize homogeneity in essential features, and thus are exclusive: a person is either gifted by these features or not; an individual has to fit the standard image of gifted persons to be identified. In contrast, the idiographic approach by nature recognizes the multiplicity of gifted manifestations, and tends to see specific instances of giftedness as prototypes (typical cases) or even exemplars (distinct instances), but does not exclude the possibility that there are atypical manifestations of giftedness that defy whatever the standard image prescribes. Therefore, idiographic conceptions are more inclusive by nature. This epistemological difference partly accounts for the historical tension between exclusive and inclusive definitions (Renzulli, 1986).

At the heart of conceptions of giftedness is the nature-nurture (or being-doing) issue: Is giftedness born or made? Starting with Galton (1869) and Terman (1925), the debate has endured (e.g., Ericsson, Roring, & Nandagopal, 2007; Gagné, 2009), and neither side can claim victory (Dai, 2010). Treating human potential as normally distributed in a population is a nomothetic conception largely thanks to psychometric technology and theory. Carroll (1993), among others, has made monumental contributions to this enterprise. Making further assumptions about human potential as genetically determined is a theoretical argument contested in more recent psychological research (Ericsson,

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2006; Ericsson et al., 2007). A major problem with the psychometric definition of giftedness as a natural endowment is that tested abilities are always developed or developing ones (Lohman, 2006); furthermore, it does not yield the kind of insight developmental, neurobiological, and cognitive research can provide into the processes and mechanisms that produce superior performance. By simply providing the descriptive data (even with theoretical conjectures derived from factor analysis), the measurement technique alone simply does not rise to the status of science (Grinder, 1985). On the other hand, the preponderance of evidence points to the significance of natural endowment for excellent performance (see Dai, 2010, for a review).

The history of giftedness has gone through a dialectical cycle of changes. In the first stage, nature and nurture are treated as separate entities, contributing to the development of superior performance in an additive manner, as early pioneers such as Galton (1896) and Terman (1925) tended to do. In the second stage, nature and nurture are seen as reciprocal (i.e., amplifying each other through passive, evocative, and active correlations; see Scarr, 1992) and interactive (i.e., environmental stimulation and exposure leads to qualitatively different responses and effects, depending on the characteristics of the person; see Papierno, Ceci, Makel, & Williams, 2005). In the third stage, nature reveals itself through nurture, and nurture mediates nature (e.g., genetic expression), so much so that the two are inseparable in the developmental process (see Dai, 2010; Dai & Coleman, 2005). Ultimately, reconciling the role of nature and nurture depends on our ability to marshal all evidence (psychometric, developmental, social, and neuropsychological) to formulate a coherent theory of giftedness in the making; a theory that gives full justice to the “being” and “doing” part of human potential (Dai, 2014), and elucidates the process of becoming gifted and talented in childhood, being high-performing in adolescence, and possibly being eminent in adulthood (Subotnik, Olszewski-Kubilius, & Worrell, 2011).

Giftedness at the Social Level

Social-level analysis is important because, historically, concepts such as giftedness and intelligence

are deeply rooted in social practice and cultural context. Consider the fact that the term *gifted children* was invented before women were allowed to vote in the United States. The two facts may not appear related to each other, but when the tacit assumption about the gender differences in giftedness is scrutinized, the argument that giftedness as a social construct (Borland, 2003) becomes quite compelling.

Since Galton (1896) and Terman (1925), the social rationale for identifying the gifted has been a fundamental concern over improvement of the human race, and more recently, the prosperity of a nation (Marland, 1972). Assumptions of *human perfectibility* (Tocqueville, 1835/2004), morally as well as intellectually, have always been undergirding social justification for a particular educational endeavor, gifted education being a case in point. The history of the overrepresentation of White students with a high socioeconomic status in gifted education makes it more compelling to consider (and sometimes reconsider) the way giftedness is conceptualized and identified. Social impetuses driving conceptual changes in giftedness mainly concern equity and social equality (Dai, 2013). Equity concerns are present even in the effort to break the hegemony of the IQ tradition in the discourse on intelligence and facilitate more pluralistic conceptions of human potential (e.g., Gardner, 1983; Sternberg, 1985). Renzulli's (1978, 1986) three-ring theory of giftedness, which stipulates a lower ability threshold (i.e., above-average abilities, roughly one standard deviation above the norm), can be seen as motivated by equity concerns, as the theory views nurturing conditions for gifted manifestations as having higher importance than merely identifying giftedness, a more balanced nature–nurture view than any previous theories. More directly, Renzulli and Reis (1991) pointed out a “quiet crisis” (p. 26) in gifted education, precisely because the old way of thinking about giftedness became increasingly limiting under the new demands on equity and social equality in education, echoed by a more recent special issue on the topic (Cross & Borland, 2013).

Giftedness at the Educational Level

In addition to equity concerns, the effectiveness of education gearing toward high-level talent

development and achievement is predicated on a sound understanding of the nature–nurture issue, the domain–generality issue, and, for that matter, what part of human potential is malleable and what part is not as malleable. According to Renzulli (1986), abilities are trait-like, less malleable, and more amenable to psychometric testing, than task commitment and creativity, which vary greatly with functional contexts and developmental stages and are subject to environmental influences (see Chapter 12, this handbook). Construal of giftedness as fixed versus incremental and changeable has direct consequences as to whether giftedness should be identified in a once-and-for-all fashion, or whether different criteria should be used for different age and social groups, in different contexts, and at different junctures of talent development. The determination of malleability also has a direct bearing on whether specific interventions for a particular line of talent development are viable. The history of giftedness is full of debates on whether the term giftedness should only apply to qualities that are not malleable—namely something born, not made (e.g., Gagné, 1999). Indeed, Renzulli’s three-ring theory has been criticized for this reason (see Renzulli, 1999). If constituent qualities of giftedness are malleable, proactive strategies (i.e., promoting these qualities through education) are desirable. Conversely, if they are not very malleable but observable, reactive strategies (i.e., a diagnose-and-treat approach) will be more effective.

By the same token, if giftedness is domain-specific, identification needs to consider a unique set of domain-specific parameters; subject-based acceleration or targeted enrichment makes sense and specific developmental trajectories can be mapped out for intervention purposes (VanTassel-Baska, 2005). Conversely, if giftedness has a high level of domain generality, then a categorical approach to gifted programming becomes meaningful. That is, identification schemes on the basis of general criteria (e.g., IQ tests, a combination of math and verbal tests) would be viable, and grade-based acceleration or enrichment across school subjects is viable. By the same token, general ability grouping and targeted training in leadership, creativity, and critical thinking can be justified to some extent.

Beyond the issues of malleability and domain-specificity, whether the condition of being gifted, however defined, constitutes an exceptionality is another critical conceptual issue that has deep educational implications. Historically, it is almost taken for granted that giftedness is a form of exceptionality (A. Robinson & Clinkenbeard, 1998). As a corollary, gifted education can be treated as a form of “special education” serving some exceptional education needs, similar to interventions designed for children with learning disabilities and other conditions (Matthews & Foster, 2005). However, increasingly, advocates of talent development have argued for more inclusiveness in gifted education (Renzulli, 1994; Treffinger & Feldhusen, 1996). Borland (1989) distinguished between two modes of gifted education: serving “special needs” and cultivating a precious national resource (or human capital; see Eyre, 2009). Underlying these different modes of education is the critical issue of whether giftedness as a condition constitutes a qualitative or quantitative difference (Dai, 2010).

HISTORICAL AND CONTEMPORARY PERSPECTIVES: ESSENTIALISM, DEVELOPMENTALISM, AND CONTEXTUALISM

Conceptions of giftedness, broadly defined, can be traced back as early as Plato (see Grinder, 1985), but systematic thought and research devoted to this topic was a relatively recent event, and developed along with modern psychology. Early pioneers included Francis Galton and Alfred Binet (see A. Robinson & Jolly, 2014), among others. In America, with Terman’s (1925) study as the onset, the quest for the nature and consequences of giftedness has lasted for a century, and is still ongoing. The search for the locus of giftedness is also a search for the identity of a burgeoning field of studies that has yet to define its boundary and defend its credibility. In the following section, I provide a historical-theoretical account to capture the essence of this century-long quest. This account is by no means exhaustive of all that happened during the hundred years, but its purpose is to identify and articulate the main thread of the intellectual history of giftedness, which

can be characterized as resolving around three core elements: person, development, and context. The locus and origins of giftedness turn out to be more elusive and complex than the founding scholars expected. As a result, the history of the search for giftedness can be defined as an ever increasing conceptual sophistication, going through four stages of development: conceiving, broadening, and refining the concept of giftedness, and exploring new frontiers.

The Conceiving Years: The Essentialist Construal

Theoretically, the starter of this quest was Francis Galton (1869). Galton made a minimalist (and often radically reductionistic) assumption of the nature of high potential (i.e., there are some kind of genius “genes” at work, accounting for the superior accomplishments of a few individuals). He also invented a measurement technique crucial for later development of psychometrics. Furthermore, his mathematical maneuvering of data to find discernable patterns and regularities led to heritability estimates critical for the claim of genetic contributions to human potential. Giftedness as conceived in the beginning of 20th century also heavily relied on psychometric intelligence theory based on the discovery of a shared component in a variety of subtests, dubbed *general intelligence* or Spearman’s “g” (Spearman, 1904). However, this more technical construal of intelligence was not what Galton initially had in mind. Galton (1869) had this to say about the subject:

By natural ability, I mean those qualities of intellect and disposition, which urge and qualify a man to perform acts leading to reputation. I do not mean capacity without zeal, not zeal without capacity, not even a combination of both of them, without an adequate power of doing a great deal of very laborious work. (p. 33)

In hindsight, Galton’s conception of “natural ability” can be criticized, as the three constituent qualities he identified must be separate things coming together in a particular context or at a particular developmental juncture (see Renzulli, 1986;

Simonton, 1999 for more discussion), rather than an innate, unitary capacity or structure, as he suggested. Nevertheless, the notion that the making of giftedness takes capacity, passion, and the commitment to hard work has proven to be a deep insight that is still meaningful today (Lubinski, 2004).

Terman (1925) and Hollingworth (1924, 1942) were strong believers in giftedness as manifested in high IQ performance. They started a tradition of treating giftedness as a unitary core of high general intelligence that sets the gifted apart from the rest of their peers, not only in terms of high facility in intellectual functioning (Gallagher, 1977, 2000), but also in its profound ramifications for the individuality of persons so identified, such as different ways of thinking, different social-emotional characteristics, different educational needs, and unique developmental trajectories and pathways. This conception was further strengthened when Dabrowski, trained in developmental psychology in Europe, was introduced to the American audience (see Ackerman, 2009). To be sure, Terman (see Terman & Oden, 1959) later realized that, within the high IQ group he studied, there were individual differences in motivational and emotional characteristics (translated in today’s language as self-efficacy and goal-directedness) that contributed to differential achievements decades later. However, the basic premise of high IQ individuals as a homogeneous group remains intact (Terman, 1954). For Hollingworth, who studied a group of extremely high IQ children, unique social-emotional needs became a focal point.

In addition to this homogeneity assumption, these early advocates of giftedness also considered this quality to be permanent; that is, giftedness is a quality of the person that holds its identity, unity, and continuity across situations and over time. Once a child is identified as gifted, this child will always be gifted. Here is the logic: the IQ test measures a child’s intellectual capacity, and this capacity, being part of natural endowment, will be with the child forever, regardless of changing circumstances or developmental changes. Taken together, the core assumptions of homogeneity and permanence are underlying the *essentialist tradition* in conceptions and theories of giftedness (Dai, 2010).

There were challenges within the psychometric tradition as to whether there are other kinds of giftedness. Getzels and Jackson (1962) argued for the creatively gifted as a separate category of giftedness, though the data they provided is far from convincing, as the creatively gifted they identified also had a high average IQ (127, to be exact; see Borland, 2014a, for more discussion). Torrance (1966) created his own now famous creativity tests aimed at identifying the creatively gifted. Regardless of their differences, early pioneers had strong convictions that giftedness sits in the person, and that it is homogenous (hence the sharp distinction between creativity and intelligence) and permanent (some kind of highly stable aptitude that distinguishes itself from achievement or developmental outcomes). This essentialist tradition with its assumptions of homogeneity and permanence, however, is currently challenged on theoretical (e.g., Simonton, 2005) and technical (e.g., Lohman & Korb, 2006), as well as scientific, ethical, and practical grounds (see Borland, 2003; Dai, 2016a, for critiques). Dissatisfaction also comes from the fact that the initial claims Terman (1925) and other advocates made about the power of general intelligence as measured by the IQ tests in predicting future achievement are exaggerated, to say the least (see Borland, 2014a; Subotnik et al., 2011), leading to a search beyond Spearman's "g" (Spearman, 1904) for explanatory factors.

Broadening the Concept and Switching the Focus: The Rise of Developmentalism

A major shift in conceptions of giftedness occurred sometime in the 1950s. Dissatisfied with the rigidity of an IQ-based definition of giftedness and the essentialist construal of giftedness, Witty (1958) argued for a more inclusive definition:

There are children whose outstanding potentialities in art, in writing, or in social leadership can be recognized largely by their performance. Hence, we have recommended that the definition of giftedness be expanded and that we consider any child gifted whose performance, in a potentially valuable line of human activity, is consistently remarkable. (p. 62)

In this new definition, not only were domains broadened to include artistic and social endeavors, but criteria for determining giftedness were also shifted from test performance to authentic task performance (see also DeHaan & Havighurst, 1957). More important, however, is the logic underlying this new definition. Witty felt that, in conceptualizing giftedness, the importance of *capacity* was overemphasized and *zeal* (or drive) was underestimated, to use Galton's terms (see Jolly & Robins, 2014). An emphasis on performance rather than capacity reveals Witty's practical wisdom of not making a sharp, unwarranted distinction between what is capacity or aptitude and what is achievement, a strategic move in historical hindsight (Lubinski, 2004; see also Chapter 31, this handbook). By emphasizing performance, the new conception of giftedness legitimized authentic task performance as evidence of giftedness, and made room for motivation to play a role. It is not accidental that, although earlier pioneers like Galton, Terman, and Hollingworth were more keen on identification, Witty paid greater attention to providing appropriate educational opportunities to develop leadership and creativity in gifted students. The balance of nature and nurture was readjusted in the mid-20th century.

The first official definition issued by the Office of Education in the United States (Marland, 1972) bears a clear resemblance to Witty's. The Marland Report states,

Gifted and talented children are those . . . who by virtue of outstanding abilities are capable of high performance. . . . Children capable of high performance include those who have demonstrated any of the following abilities or aptitudes, singly or in combination: 1) general intellectual ability, 2) specific academic aptitude, 3) creative or productive thinking, 4) leadership ability, 5) visual and performing arts aptitude, 6) psychomotor ability. (p. ix)

The Marland definition, like Witty's, broadened the construct of giftedness definitively, and made it more inclusive. However, it also created unexpected problems. It is a convenient taxonomy, and the listed

categories are not mutually exclusive, nor, indeed, rigorously and consensually defined. For example, leadership has a social, as well as expertise/creativity, dimension and can manifest itself across domains; creative (or productive) thinking is not a domain of its own but a process that can be manifested in all domains of human activity. Such a convenient list could mislead educators into believing that it represents a scientifically justified typology of giftedness.

Witty's (1958) influence can also be seen in Renzulli's (1978, 1986) three-ring theory, which was a culminating point in the broadening stage. The most obvious of this influence is the articulation of motivation (task commitment) as an integral part of giftedness. What was more revolutionary, however, was a view of giftedness as a relative state that happens to some individuals at some times in some places, rather than an "absolute concept" (Renzulli, 1986, p. 62), structurally permanent and functionally pervasive. In this antiessentialist spirit, Renzulli prefers to focus on "gifted behavior" (p. 63) about which we can do something, rather than giftedness as an entity sitting in the head. The three-ring theory introduces developmental timing and contextual factors in explaining how giftedness as a critical state occurs when above average abilities, domain-general or domain-specific, are brought to bear on a task at hand through task commitment, eventually leading to some expression or product judged to be novel and valuable for its purposes (i.e., creative). Moreover, the theory stipulates a more distinct role of nurturing gifted behavior than previous models and theories, as it postulates task commitment and creativity as contextually shaped and more malleable than basic abilities. Three-ring theory was the first developmental rendition of giftedness. It inspired a more explicit developmental conception of giftedness in Europe (Mönks & Mason, 1993). However, it deviated so much from the essentialist construal of giftedness that after many years of its publication, it remains controversial (see Renzulli, 1999). The essentialist construal of giftedness (i.e., homogeneity and permanence) dictates that giftedness should be a capacity or capacity-like, not a developmental state, and that task commitment and creativity are too contextually varied and malleable to be qualified as constituents of giftedness.

A view of giftedness not as a static quality in the head (i.e., capacity), but as a result of the confluence of several forces, endogenous and exogenous, coming together in the right place at the right time, was a major shift in focus—from treating giftedness as a simple matter of individual differences to seeking a deep understanding of how exceptional competence comes about in context and further evolves. This developmental orientation opened a new horizon for understanding the nature and nurture of gifts and talents.

The second half of the 20th century can also be characterized as a domain-specific turn in conceptions of giftedness. Gruber's (1981) biographic research on Darwin, Bloom's (1985) interview studies with eminent young scholars and artists, Feldman's (1986) research on child prodigies in math, art, and chess, among other domains, and Csikszentmihalyi, Rathunde, and Whalen's (1993) research on talented adolescents, laid a new foundation for understanding the origins of giftedness, talent, and outstanding accomplishment. Theoretically, Feldman (1994, 2003) pointed out that cognitive development in one way follows a universal path, as Piaget suggested, but in another way follows distinctive individual developmental trajectories and pathways on the basis of an individual's propensities and inclinations vis-a-vis environmental opportunities. There is a universal-unique continuum in human ontogeny (individual development). By incorporating mainstream developmental psychology, the notion of giftedness found its new foundation in lifespan development.

There were also efforts by the advocates of the traditional psychometric theories of giftedness to forge an integration of differential and developmental approaches. Ziegler and Heller (2000) defined giftedness as a tipping point when developmental conditions are optimal to allow some individuals to demonstrate this superior quality. N. Robinson, Ziegler, and Gallagher (2000) looked at the two tails of the intelligence spectrum, the intellectually challenged and intellectually gifted. They argued that the intellectually gifted go through more developmental stages, a conjecture consistent with the recent brain research showing that high IQ subjects have a prolonged cortical development than

subjects in the normal IQ range (Shaw et al., 2006). True integration of differential and developmental approaches awaits a new force of integration that shows how the domain-general and domain-specific resources come together developmentally, vis-à-vis environmental opportunities and challenges, to shape a person's unique trajectory and pathway called *talent development*.

Refining the Concept: Contextual and Temporal Emergence of Gifts and Talents

As suggested earlier, in the history of giftedness, scholars have been wrestling with the issue of competing claims, from the person accounts and the developmental and contextual accounts and from the domain-general accounts and domain-specific accounts. Resolving this conundrum takes a new tack: The parameters have to be remapped. Tannenbaum (1997) brought people back to the drawing board, and created a new road map of the gifted land: who (producer vs. performer), what (thought, artistry, or service), and how (proficiency vs. creativity). Simonton (1999, 2005) mapped out the main parameters developmentally in his emergent-epigenetic model of talent development.

According to the emergent-epigenetic model (Simonton, 1999, 2005), giftedness or talent is relative to the nature of a given domain that offers a specific set of opportunities and challenges to an interested person. Whether gifted behaviors will emerge depend on (a) whether the domain is simple or complex, (b) whether the person has the right combination of genetic components vis-à-vis the domain, (c) whether these functional components for the domain operate at an additive or multiplicative fashion, and (d) whether all the components relative to the domain come into place (i.e., developmentally matured) at the right time. In other words, what kind of giftedness emerges is not prespecified or preordained in biology but determined by a combination of multiple factors: *person* (biology), *domain* (culture), *social context* (opportunities and age peers), and *developmental timing* (epigenesis). The model also predicts that gifted behaviors are not a constant but can emerge and disappear, depending on individuals' developmental timing, opportunities for sustained engagement, and related population characteristics.

Dai (2010; Dai & Renzulli, 2008) proposed *flexible agency, participation, and increasing differentiation*, among others, as major tenets of individual development. From a differential-developmental point of view, giftedness as outstanding performance or behavior is an emergent, changing property of person-environment interaction that grows and becomes more differentiated over time. This formulation attempts to solve the tensions between the person accounts (essentialism) and contextual-developmental accounts (developmentalism), between domain-general and domain-specific accounts (see Pfeiffer, 2013, for a similar effort in his tripartite model of giftedness).

Using a neo-Piagetian approach, Porath and colleagues' research shows that domain-specific differential development (emerging talent) starts very early (during the preschool years for mathematics and writing, among others), though it is constrained by the working memory capacity (see Porath, 2006). Working memory capacity has individual difference and developmental underpinnings that constrain performance in terms of cognitive efficiency. Cognitive sophistication (i.e., metacognitive awareness and control) is another possible domain-general mechanism that facilitates domain-specific development (Dai, 2010; see also Miller, 2005). Extending this research beyond childhood and adolescence, Horowitz, Subotnik, and Matthews (2009) provided a lifespan developmental perspective on giftedness that further elaborated on giftedness as a dynamic, developmentally changing state, with different challenges and opportunities at different points in individual development. Together, they provide an integrated, unified understanding of gifted behavior and talent manifestation.

Exploring New Frontiers: Contextualism Versus Individualism

Compared to the zeitgeist of the beginning of the 20th century, when Spearman declared in 1904 that general intelligence is once and for all "objectively determined and measured" (p. 201), the zeitgeist of the beginning of 21st century is completely different. For better or for worse, it favors social-contextual accounts and dismisses individual difference accounts of giftedness, reflected in

popular media such as Malcolm Gladwell's (2008) best seller "Outliers," and Daniel Coyle's (2009) book "Talent Code."

American scholars tend to be polarized when it comes to the nature–nurture issue, but in the 21st century, the pendulum is swinging to the nurture side. Ericsson's (2006) influential research on expertise and Weisberg's (2006) research on eminent scientific creativity lend support to the idea that alleged gifts and talents for high-level accomplishments are exaggerated, even their existence is scientifically questionable (Howe, Davidson, & Sloboda, 1998). They highlight the role of dedicated effort and deliberate practice, and downplay the importance of talent or giftedness. A more radical view can be seen in a new wave of contextualism that stresses the nature of human intelligence and creativity as fundamentally situated, distributed (between the person, tools, and resources available), and collective, rather than reflective of individual characteristics (Sawyer, 2012). According to a "relational ontology" (Gresalfi, Barab, & Sommerfeld, 2012, p. 42), intelligent behaviors arise from (a) the nature of the task that frames an activity, and the tools and resources that support that activity; (b) recognized and valued norms and rules that shape particular activities; and (c) the personal history and dispositions of the learner. In other words, to understand outstanding performance, the context that shapes the performance must be understood. This is how the focus on giftedness is shifted from person to context (Barab & Plucker, 2002; Plucker & Barab, 2005).

Ziegler's (2005) actiotope model of giftedness is closest to this new wave of contextualism in its emphasis on situated action with all the supporting tools and resources, action repertoires developed through action, and "subjective action space," with aspirations, intentions, and goals. A major departure of this new contextualism is that it no longer treats person and environment as separate entities but see them as an undividable functional unit. If developmentalism focuses on "giftedness in the making," (Dai, 2010, p. 196), this new contextualism goes one step further and locates giftedness squarely in action and the functional relationship and interaction with some aspects of the world.

PRACTICE AND POLICY ISSUES

In the previous account of the history of giftedness, the vantage point is psychological. However, various conceptions of giftedness occurred in educational contexts as part of a practical endeavor known as gifted education. Discussing this context is necessary for intellectual and practical reasons. For one, discourse on giftedness often takes place in the context of gifted education. For another, specific approaches to gifted programming typically embrace a particular viewpoint regarding the nature and nurture of giftedness; uncovering the hidden assumption is useful if we are to make our educational discourse intelligible.

A *paradigm*, broadly defined, is a system or framework of thought and practice widely accepted by a community of practitioners or professionals as the standard, coherent in its organization, and distinct compared to competing frameworks (see Dai & Chen, 2014, for more discussion). At the core of a paradigm of gifted education is a view of what giftedness means, and what can be done about it. The former concerns the psychological dimension of the nature and nurture of gifts and talents; the latter involves a normative dimension in terms of priorities and values, which is not a true or false question that can be answered empirically, but must be negotiated and endorsed among its stakeholders. A century of quest for identity in the context of gifted education is a search for unique curricular and instructional identity for gifted education (Ward, 1961; see also Borland, 1989; Kaplan, 2003; Tomlinson, 1997). What giftedness means has deep implications as to what can be done about it. If giftedness is about the person, the focus will be on identification and targeted interventions; but if giftedness involves development and context, and if qualities deemed gifted are malleable, practical strategies would be completely different. In the following section, I delineate a history of gifted education parallel to the development of the concept of giftedness. I first examine what has evolved and changed at the conceptual level, largely on the basis of the three-paradigm framework Dai (Dai, 2011; Dai & Chen, 2013, 2014) developed as a general guide. I then provide a historically more nuanced account

that shows how the development and shifts of these paradigms are intertwined, involving many scholars, researchers, and educators working in different historical periods, passing torches, tools, and supplies.

Paradigms and Paradigm Shift

Dai and Chen (2013, 2014) defined a paradigm of gifted education in terms of how programming addresses the questions of what, why, who, and how, pertaining to theoretical foundations and practical approaches. Each paradigm is distinct regarding (a) what is the nature of giftedness, (b) why gifted education is needed, (c) who is gifted and how are they identified, and (d) how are the gifted educated, and what strategies and methods are viable and effective (see Table 1.1)?

From an educational point of view, Terman (1925) and Hollingworth (1942) can be seen as two leading historical figures who laid a solid foundation for what I called the gifted child paradigm in the inception years of the gifted education movement, because they held the same strong conviction that giftedness as evidenced by high IQ scores is genetically determined and sets children so identified apart from the rest (i.e., homogeneous and permanent); what naturally followed was a categorical approach to gifted education, namely, by enjoying the gifted status, gifted children warrant an education uniquely suited for them (Delisle, 2002, 2014).

In terms of purposes of gifted education (the question of why), however, Terman (1925) and Hollingworth (1942) held somewhat differing views. Borland (1989) identified two *raison d'être* of gifted education: a special-education approach and a national-resource approach. Hollingworth placed a premium on special needs of these children. Terman held a national-resource or human capital orientation (see Terman, 1954). Both have had a following in history. Some aligned themselves more with Terman (e.g., Gagné, 1999; Tannenbaum, 1983) and others with Hollingworth (e.g., Roeper, 2006; Silverman, 1997). Indeed, the recently emerging paradigms, the differentiation paradigm and the talent development paradigm (Dai, 2011; Dai & Chen, 2013) inherited the two orientations respectively, though the way advocates of these two paradigms

conceptualize the nature of giftedness (the question of what), the way they identify gifted children (the question of who), and the way they fashion their practical strategies (the question of how) are quite different.

The talent development paradigm emerged in the late 20th century and has been gaining momentum to become a major force in gifted education. Earlier pioneers included Julian Stanley and Joseph Renzulli, among others. Both were active at practical fronts from 1970s onward, and both developed practical ideas to combat the rigid practices of traditional age-graded schooling (Stanley, 1996), as well as the rigid IQ-based categorical approach to gifted education and overemphasis on "schoolhouse giftedness" (Renzulli, 1986; see also Subotnik & Olszewski-Kubilius, 1998). Drawing on the conceptions of multiple and multidimensional intelligences (e.g., Gardner, 1983; Sternberg, 1985), there was a surge of talent development models and research (e.g., Bloom, 1985; Gagné, 1985; Feldhusen, 1992; Feldman, 1992; Lubinski & Benbow, 1992; Maker, 1996; Passow, 1981; Piirto, 1994; Subotnik & Coleman, 1997; Tannenbaum, 1983) that have looked at various manifestations of talent in different domains and how education can create domain-specific experiences (e.g., through authentic inquiry and mentorship) to cultivate talent and creativity in school and optimize talent and life trajectories toward a productive and fulfilling career.

Although explicit paradigmatic prescriptions about strength-based differentiation did not emerge until recently, the notion of differentiation has been around for decades. Questioning the effectiveness of pull-out gifted programs that patched on the regular curriculum without any systematic design, Ward (1961) argued that the regular curriculum within schools should be adapted to provide for a full-day learning environment that meets the needs of advanced learners. N. Robinson and Robinson (1982) proposed the notion of optimal match of educational settings for the highly able learners through providing some learning progression flexibility instead of the rigid age-graded academic placement. However, it is in the context of the full inclusion movement that the differentiation paradigm emerged as an important guiding framework

TABLE 1.1

Major Points of Differences Between and Among the Three Paradigms

Dimension	Paradigm		
	Gifted child	Talent development	Differentiation
Assumption (what)	Essentialism; exclusive categorical assumption; status definition; permanent, context-free exceptionality with regard to general ability assumed	Developmentalism; talent diversity assumption; malleable status; increasingly differentiated aptitudes for a particular domain; exceptionality not assumed	Individuality assumption; emergent needs for differentiation; context-dependency of exceptionality
Purpose (why)	Serving the gifted; thinking and leadership qualities as the goal	Supporting domain excellence and innovation; modeling after authentic professions and creativity	Diagnostic focus; responding/serving manifested individual needs within the confines of schooling (e.g., main school subjects)
Targeted students (who)	Classification based on psychometric measures of superior mental qualities	Selection/placement based on aptitudes for a particular domain	Diagnosis of strengths and needs for educational purposes in a particular educational context
Strategy (how)	Programs assumed to be uniquely suited for the gifted; pull-out and self-contained programs as service models	Various enrichments, authentic learning, and mentorship across school, home, college, and community as service models	Appropriate pacing of learning progression, school-based curricular and instructional adaptations and other interventions as service models

Note. From *Paradigms of Gifted Education: A Guide to Theory-Based, Practice-Focused Research* (p. 49), by D. Y. Dai and F. Chen, 2014, Waco, TX: Prufrock Press. Copyright 2014 by Prufrock Press. Adapted with permission.

in gifted education, as the heterogeneity of class composition makes curricular and instructional differentiation even more imperative (Coleman & Hughes, 2009; Tomlinson, 2014; Tomlinson et al., 2003). Regarding the nature of giftedness, this paradigm assumes that educational needs of advanced students only become manifest in the context of a particular juncture of development on a particular school subject and can be best met with the right diagnosis of discrepancies between mastery levels of the student and curricular offerings (Matthews & Foster, 2005). In effect, it advocates a kind of “gifted education without gifted children” (Borland, 2005, p. 1) in the sense that instructional adaptation can be made on an individual basis without the need to label a few students as gifted for special service (i.e., establishing the gifted status) and by default, designate the rest as “nongifted” (see Peters, Matthews, McBee, & McCoach, 2014, for a similar approach called *advanced academics*).

In sum, the differentiation paradigm inherits the legacy of the gifted child paradigm in its emphasis on optimal match, but with more detailed understandings of how to adapt curriculum and instruction to suit education-relevant individual characteristics and developmental changes. The talent development paradigm inherits the legacy of the gifted child paradigm in its emphasis on developing future leaders and major contributors on various fronts of human endeavor, but with a more pluralistic, dynamic, and developmental outlook regarding the nature of human potential and consequently the role of environment and motivation. Despite continuities with the traditional gifted child paradigm, theoretical (the what and why) and practical (the who and how) differences between the two late comers and their predecessor are distinct. Although the two late comers are not incompatible with each other, the differentiation paradigm is a more circumscribed, present-focused, classroom-based,

practice-driven model, and the talent development paradigm a broader, more ambitious (i.e., not confined to school structures and provisions), future-oriented, psychology-based framework that has been implemented in many ways at the practical level (Subotnik et al., 2011).

Development of the Paradigms

Figure 1.1 presents a developmental tree, tentatively mapping out the macrolevel historical and theoretical connections among scholars of various periods and developmental stages. As shown, the four phases of the development of the paradigms roughly correspond to the phases of the conception of giftedness discussed earlier. Continuities of ideas and practices considered paradigmatic are evident in the vertical connections from older generations to younger ones, some of which are real influences across generations of scholars, and others only connected in terms of family resemblance. Discontinuities of ideas and practices that helped create paradigmatic shifts can be seen in the branching out

of the developmental tree horizontally, leading to two emergent paradigms as described earlier. The paradigmatic shifts and changes are not as radical as Kuhn (1962) described. Indeed, as Holton (1981) argued, the coexistence of paradigms in transitional periods is normal, and paradigmatic changes are, in a sense, evolutionary rather than revolutionary. Putnam (1981) put it vividly:

[The situation is] not a single boat but of a fleet of boats. The people in each boat are trying to reconstruct their own boat without modifying it so much at any one time that the boat sinks, as in the Neurath image. In addition, people are passing supplies and tools from one boat to another. . . . Finally, people sometimes decide they do not like the boat they are in and move to a different boat altogether. (p. 118)

This happened in the history of giftedness and gifted education as well.

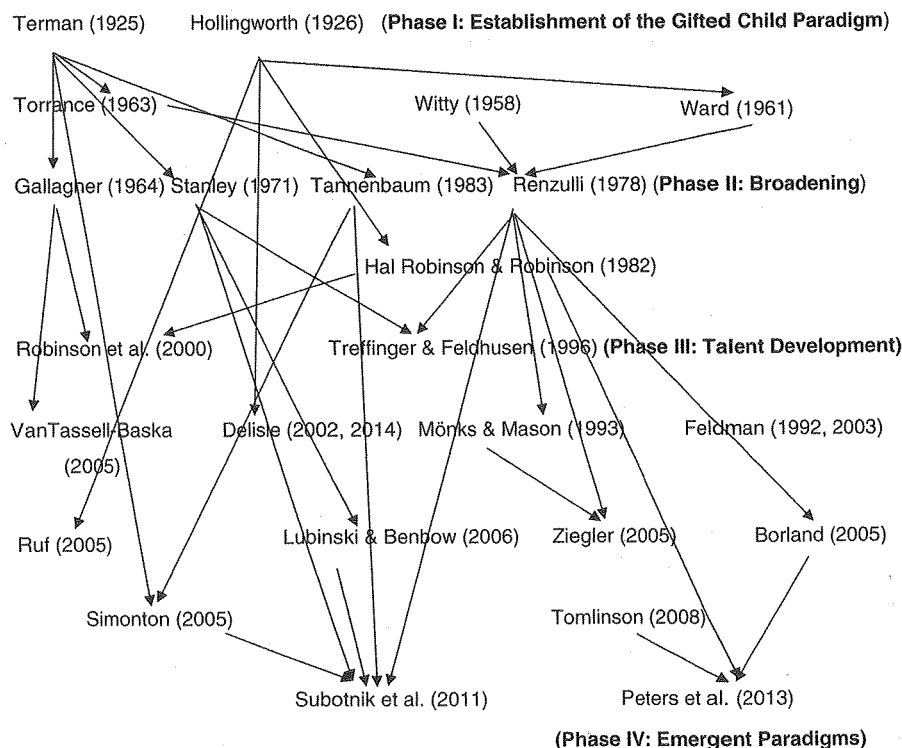


FIGURE 1.1. A map of historical developments in conceptions of giftedness and gifted education. Note that the map is tentative and illustrative, and by no means exhausts scholars of historical importance.

At a more microlevel, conceptual changes in giftedness were triggered at all levels: theoretical, research, and practical. Table 1.2 presents samples of major theories, research studies, and educational innovations in each phase of development. As Ambrose, VanTassel-Baska, Coleman, and Cross (2010) portrayed, what helped shape

the growth and changes of these paradigms was the interaction of theory and practice at multiple levels—philosophic vantage point for envisioning the “big picture,” theoretical expeditions for new ideas, research explorations of new fertile grounds, and practical innovations in the trenches—in a top-down as well as bottom-up fashion (see Dai &

TABLE 1.2

Major Phases of Conceptual Development and Representative Theory, Practice, and Research

Major phase/date	Theory	Policy/programming	Research
Phase I, 1900s–1940s: The birth of the gifted child	IQ definition of gifted children (Terman, 1925)	The first gifted program in Worcester, MA, in 1901	Terman's longitudinal study (1925) Hollingworth's study (1924, 1942)
Phase II, 1950s–1970s: Broadening the conception of giftedness	Witty's (1958) new conception of giftedness beyond IQ or cognitive capacity Distinction between intelligence and creativity (Getzels & Jackson, 1962) Renzulli's (1978) three-ring theory and its practical implementation: Enrichment triad	The founding of NAGC by Ann Fabe Isaacs in 1953 Ward's (1961) notion of a unique instructional identity for gifted education Marland Report in 1972 Talent Search Model developed at Center for Talented Youth at Johns Hopkins established in 1971	Torrance's research program on creativity and divergent thinking (see Hébert, 2014) Talented Youth Project by Passow, Goldberg, and Tannenbaum in 1950s (see Borland, 2014b) Utah Conferences on scientific creativity (1955–1966)
Phase III, 1980s–1990s: “Quiet crisis” and the surge of talent development models	“Quiet Crisis” (Renzulli & Reis, 1991) Various talent development models: Tannenbaum (1983), Bloom (1985), Gagné (1985), Feldman (1992), Feldhusen (1992), and Piirto (1994) Special education vs. national resource argument (Borland, 1989)	Integrated curriculum model (VanTassel-Baska, 1986) Department of Education report (Ross, 1993) Schoolwide enrichment model (Renzulli & Reis, 1997) Use of the framework of multiple intelligences in identification (Maker, 1996)	Shore and Kanevsky's programs (Kanevsky, 1990; Shore & Kanevsky, 1993) Bloom (1985) Subotnik, Kassan, Summers, and Wasser (1993): Hunter Elementary School studies Gottfried, Gottfried, Bathurst, and Guerin (1994): Fullerton Longitudinal Study Ericsson, Krampe, and Tesch-Romer (1993)
Phase IV, 2000–present: Great debates and emergent paradigms	Gallagher (2000) vs. Borland (2003) JEG special issue on the nature–nurture issue (Dai & Coleman, 2005) Ericsson, Roring, and Nandagopal (2007) vs. Gagné (2009) Dai (2010) on the nature and nurture of giftedness Ziegler's (2005) actiotope theory Subotnik, Olszewski-Kubilius, and Worrell's (2011) model of talent development	“Gifted education without gifted children” (Borland, 2003, 2005) Use of nonverbal tests in identification (Lohman, 2006; Naglieri & Ford, 2003, 2005) “Response to intervention” (Coleman & Hughes, 2009) Various strategies to provide advanced learning opportunities (Olszewski-Kubilius, 2010) Mentorship programs Peters et al. (2014): “Advanced academics”	Lubinski and Benbow's (2006) longitudinal studies of talented youth Lohman's identification studies (e.g., Lohman & Korb, 2006) VanTassel-Baska's program on integrated curriculum model (see VanTassel-Baska & Brown, 2007) Javits research program on identifying and serving underrepresented groups

Chen, 2014, for a discussion of the reciprocation of theory, research, and practice). Sometimes new theories outside of the field inspired innovative practice (e.g., multiple intelligence inspired a new identification scheme; Maker, 1996). Other times new research findings challenged a well-accepted conclusion that children of high IQ have a high probability of becoming major contributors to the society (e.g., Subotnik et al., 1993), or prompted a reexamination of our deeply entrenched notion of permanence: once gifted, always gifted (e.g., Lohman & Korb, 2006). But many times, it is the discontent with the existing education practices that trigger new practical explorations (e.g., talent search model or the enrichment triad), which in turn lead to new conceptions of giftedness.

Conversely, a paradigm, once established, becomes an increasingly entrenched system, with its theory, research, and practice perpetuating each other and consolidating the paradigm. For example, the gifted-nongifted comparison research design and the placement/prediction design, among others, helped strengthen or perpetuate the gifted child paradigm. The dogmatic adherence to an established paradigm eventually will become a force of conservatism, suppressing the development of new ideas, until the new ideas become strong enough to establish legitimacy among stakeholders as a viable competing alternative (e.g., become more paradigmatic, such as the talent development paradigm or the differentiation paradigm). The cycle of stability and change, of continuities and discontinuities, is discernable. Currently, scholars, researchers, and educators in the field will find themselves in a period of change, even with unsettling discontinuities.

FUTURE CONSIDERATIONS AND DIRECTIONS: TOWARD A UNIFIED VISION OF TALENT DEVELOPMENT

This chapter can only sketch in a nutshell the unrelenting search for the nature of giftedness that has lasted for more than a century. It is important to point out that seeking a deep understanding of exceptional human potential and accomplishments is not merely an intellectual exercise; it is an issue

bearing profound social and practical implications. Indeed, the scientific discourse on the issue is always embedded in the larger social (and often political) and educational contexts. For a growing field of studies, the search represents a quest for identity: What defines the nature of our work that sets it apart from others? In this concluding section, I first provide a brief assessment of a century of work along this line of inquiry, and then discuss several future options. Finally, I argue in favor of going beyond giftedness to embrace a broader vision of not only understanding what nature bestows on each individual, but, more importantly, how to cultivate human potential and help create productive and fulfilling life trajectories and pathways for those showing great promise, which are beneficial to society as well as individuals.

Triumphs and Perils of Searching for the Holy Grail of Giftedness

Mapping out what constitutes giftedness turns out to be trickier than the early pioneers of gifted studies imagined. Initially, they thought that this natural endowment can be easily defined and captured. It was soon realized, however, that development and motivation may be involved, and that somewhat uncontrollable or unpredictable contextual events may also have a role. Now, giftedness is not even considered as sitting in the head but distributed between the person and the task at hand, with tools, resources, and support connecting the two. As the scope of investigation broadened, the term gifted started to lose its magic power, and dissolved into something undefinable. At the practical level, arbitrariness of gifted identification became clear (Hertzog, 2009), and finally people had to face a rude awakening that giftedness is a social construct (Borland, 2003; but see Gallagher, 2000): The meaning of giftedness is imposed for social and practical purposes, rather than dictated by some "objective" reality out there independent of the observer. For a quite long time, scholars and educators alike have been bewildered by the issue of how to determine what should be considered as gifted and what should not (Should giftedness include motivation? Is motivation too malleable to qualify?). Alas, it turns out to be a matter of human decision, based

on how important we think a human characteristic is in explaining high levels of human performance and competence along a particular line of human endeavor. To those who believe that nurture outweighs nature in terms of developing high-level excellence, the priority is always promoting relevant qualities, rather than identifying them.

In one sense, a century of quest for the Holy Grail of giftedness has failed, because no consensus has been achieved as to what giftedness means in the field. Just like the terms excellence or eminence, giftedness indicates a level of rarity and superiority in human performance by varied standards or criteria, rather than a single fixed criterion, be it IQ test scores or eminent creative contributions. In another sense, however, the quest has succeeded, because it has broadened and sharpened our view of high human potential as more contextual, dynamic, and developmental than our predecessors thought; it has led to an extensive search for the origins of high potential, including how human beings surpass themselves and challenge their biological limits; and it has created a rich texture of theories, models, and paradigms that criss-cross a dazzling array of domains of human endeavor and creative accomplishments that has made the world as we know it today.

The current situation, in light of the century of quest for the essence of giftedness, can be characterized as an identity crisis of the field, or a historical turning point, epitomized by the metalevel scrutiny of the term gifted, and an extensive talk about paradigm shift (e.g., Borland, 2003; Feldman, 2003; Peters et al., 2014; Subotnik et al., 2011; Treffinger & Feldhusen, 1996).

Future Options for the Field: A Conservative–Liberal Continuum

Renzulli (1999) proposed a continuum from highly exclusive to highly inclusive definitions of giftedness for educational consideration; it mainly concerns how many people can access and potentially benefit from gifted education. We can hypothetically imagine two extreme ends of such a continuum. On the most conservative end, a highly selective model of giftedness can be created after Einstein or extreme cases of child prodigies, and only one in a million

in the population will fit the category and have access to gifted education. On the most liberal end, a populist model can be created that allows virtually everyone to participate in the process or claims that everyone is gifted and talented in some way, and thus eliminates the need for selectivity (i.e., identification). Scholars often have polarized views on this issue (e.g., Ericsson et al., 2007; Gagné, 2009). It seems that both extremes will not create an equitable and productive gifted education: When a model is too selective, the relevance of the model to public education becomes questionable; when a model involves no selectivity, its viability as an education for high-level excellence becomes problematic.

Along with this conservative–liberal continuum is an epistemic spectrum: We can either consider what constitutes giftedness as highly universal or nomothetic, lending itself easily to standardized approaches (e.g., measurable by standardized tests in a population); or, conversely, we can think of gifted manifestations as highly unique and idiosyncratic, with no tractable common regularities and structures, and not amenable to any scientific mapping or measurement (see Dai, 2010). In history, defining general intelligence nomothetically (Spearman, 1904) met with strong doubts from Alfred Binet, the inventor of IQ tests, who had more faith in “ideographic complexity” of human intelligence (see Brody, 2000, p. 19). In the same vein, attempts to stipulate the meaning of giftedness nomothetically (e.g., Gagné, 1999) also evoked serious concerns given many facets of human potential, as well as diverse ways of their expression (Borland, 1999). Again, the solution may be somewhere between the two extremes, granting credence to objective testing and subjective expert judgment (Borland, 2014a).

Semantically, the term gifted is loaded with surplus meaning (Gallagher, 1991) and carrying historical baggage (Borland, 2003). Should we keep the term giftedness? Or, as some scholars (e.g., Borland, 2003; Peters et al., 2014; Treffinger & Feldhusen, 1996) suggest, we should better go without it? After all, it is a social construct that does not have a fixed functional meaning (Borland, 2003) and is not objectively definable in a sense (Dai, 2010). Moreover, it seems to have created more complications than helped solve practical problems (Peters et al.,

2014). Whatever the case, the term is a double-edge sword, which we need to use with extra care. On one hand, giftedness, having been used as an umbrella name of the field for a century, can still help organize our experiences and observations, and even rally people around for a common agenda. On the other hand, it carries some entrenched meaning (e.g., the assumptions of homogeneity and permanence) that prevents us from thinking outside the box. It is particularly problematic when it creates an illusion of certainty when we claim that a child is truly gifted, as if we have a litmus test that can help us determine who is a real gifted child and who is a fake. With that caveat, we can still use the term gifted children, provided that by gifted we can mean different things in different degrees, surely in specific developmental and social contexts.

Beyond Giftedness: Seeking a Unified Vision of Talent Development

Ultimately, understanding the nature and nurture of high potential is more important than fixing a terminology issue. For that matter, it is desirable to go beyond giftedness to fully understand how someone becomes a great scientist, artist, inventor, or social leader, what their upbringings look like, and how the inner environment (the person) and the outer environment interact to produce a great life. Tannenbaum (1997) provided a useful framework. Subotnik et al. (2011) provided a framework for understanding the developmental stages, processes, and timing of talent development. Dai (2010, 2014, in press) has also developed a theory of talent development that can account for multiple developmental trajectories/pathways (involving nature and nurture), leading to various forms, kinds, and degrees of talent, high-level expertise, and creativity. In short, the talent development perspective provides a scope of inquiry that is much broader and richer than the term giftedness can afford.

As the discourse on giftedness is deeply rooted in educational context, the central issue is how to make gifted education scientifically more compelling, socially more equitable, and educationally more productive (Dai, 2016a). This entails a sound understanding of what giftedness or talent development means, and how it helps frame gifted and

talented programming. To that end, the discussion of paradigms and paradigm shifts will still be meaningful in the years to come, potentially leading to a new era of gifted and talented education (Dai, 2016a, 2016b).

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