CHAPTER 7

The Integrative Model of Talent Development (IMTD)

From Theory to Educational Applications

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Scholars and educational practitioners almost unanimously acknowledge that the term *giftedness* designates two distinct realities: early emerging forms of giftedness with strong biological roots, as opposed to fully developed adult forms of giftedness. They express that distinction through associated pairs of terms, like potential/realization, aptitude/achievement, and promise/fulfillment. That dichotomy surfaces in countless popular expressions, such as "education's goal is to maximize each student's potential," or "realizing her potential is each person's lifelong challenge." It also manifests itself in many practical situations, for instance, in the way most school districts select students for their gifted programs. They use two main sources of information: (a) group IQ tests that measure intellectual abilities, and (b) school grade results (exams or tests) that assess academic performance (Cox, Daniel, & Boston, 1985; Johnsen, 2009). Thanks to these ubiquitous tools, they select students who possess both outstanding *potentialities* and outstanding *achievements*; in other words, they manifest at the same time "gifted" aptitudes and "gifted" achievements. This practice is so common that it led me to describe gifted program participants as IGAT students: Intellectually Gifted and Academically Talented (Gagné, 2007). The IGAT acro-

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nym conveys that idea of "bright achievers," an expression that merges (confuses?) both meanings of the giftedness label.

What does this dual meaning tell us about gifted underachievers? Professionals commonly describe underachievement "as a discrepancy between expected performance (ability or potential) and actual performance (achievement)" (Siegle & McCoach, 2013, p. 377). According to that definition, gifted underachievers become, at the same time, gifted (high potential) and nongifted (average or low achievement)—a clear oxymoron! Similarly, when advocates for the gifted insist that all of these children should be able to fulfill their potential, they are in fact demanding special educational services that will help the gifted become gifted!

Our field lived with that conceptual incoherence until the publication (Gagné, 1985) of the Differentiating Model of Giftedness and Talent (DMGT, initially identified as *Differentiated*). The DMGT introduced a clear conceptual differentiation between the two labels *giftedness* and *talent*. Even more, it used that differentiation as the foundation for a detailed theory of talent development. The editor of the journal in which the DMGT first appeared hailed that article as "the best discussion of giftedness and talent presented in the last decade" (Feldhusen, 1985, p. 99). And Borland (1989) stated in his handbook:

> Gagné's use of the terms *giftedness* and *talent* appears to be the least arbitrary and the most useful of those proposed thus far. The distinction between competence and performance is a real and meaningful one, and it allows for the building of a model that permits the operationalization of the concepts. (p. 23)

Unfortunately, in spite of these early laudatory comments, the DMGT approach remains to this day a marginal perspective—the biconceptual use of the term *gifted* continues to reign in our professional literature; ensconced habits are hard to break!

Thanks to a major update (Gagné, 2013) that included the creation of the Developmental Model for Natural Abilities (DMNA), both the DMNA and the DMGT were recently merged into the Integrative Model of Talent Development (IMTD; see Figure 7.1). In this chapter, the IMTD, and especially its DMGT component, will serve as the conceptual framework to answer the five following questions: (1) How does the DMGT distinguish gifts from talents? (2) How does the DMGT describe the talent development process? (3) Where do gifts come from; are they innate? (4) How can we best foster academic talent development (ATD)? (5) What makes the DMGT/IMTD unique?

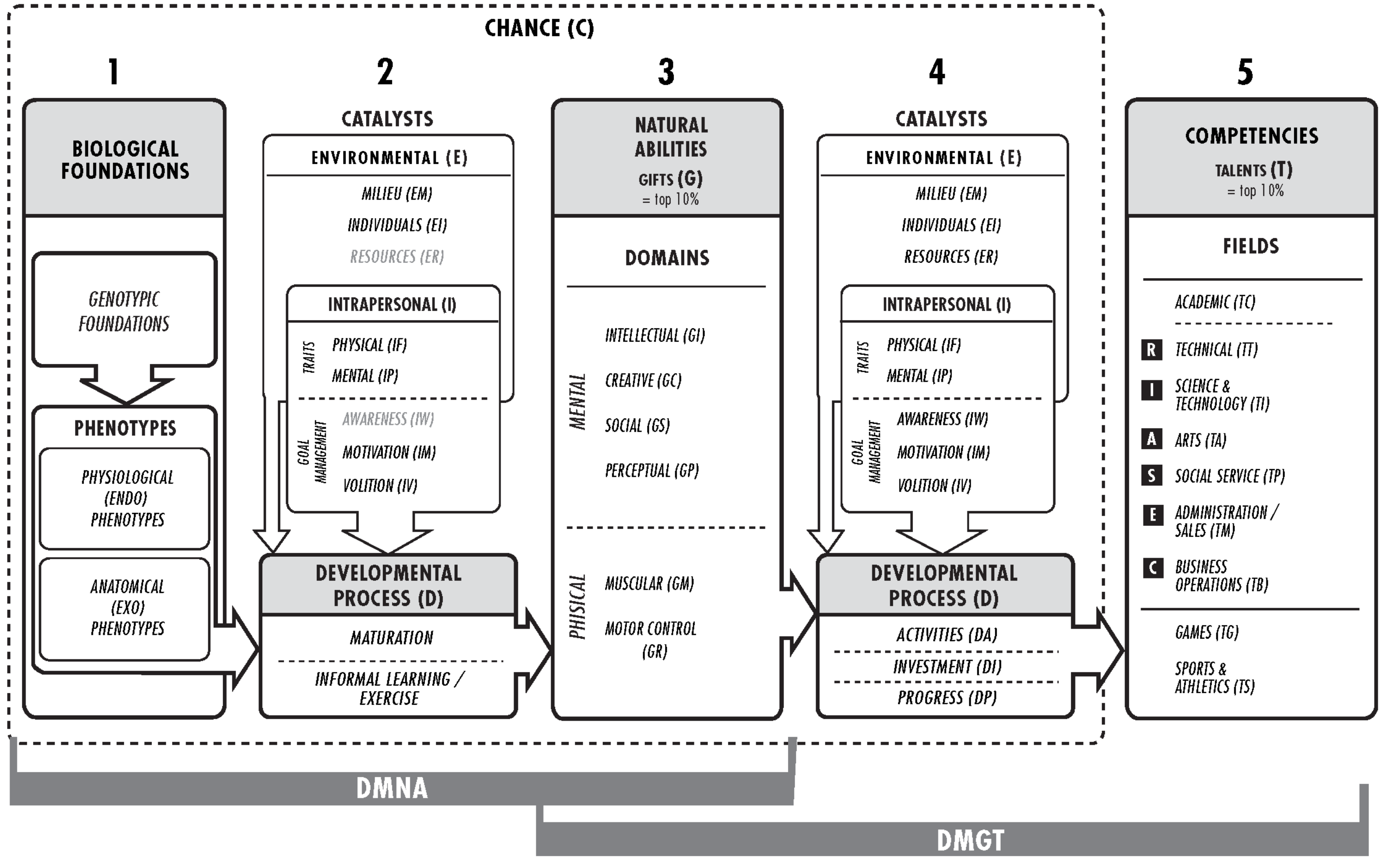

Figure 7.1. Gagné's Integrative Model of Talent Development (IMTD).

How Does the DMGT Distinguish Gifts From Talents?

The DMGT's crucial differentiation has its roots in two observations I made when I entered this field in the late 1970s: (a) the presence of two distinct concepts subsumed under the single label of giftedness, and (b) the gross underuse of a readily available label, namely the term *talent*. Wouldn't we eliminate unnecessary conceptual ambiguity if we adopted distinct labels when referring to aptitudes as opposed to achievements? This is exactly what the DMGT proposed: Adopt the term gifted to convey a potential anchored in biological and genetic foundations, and the term talent to represent outstanding systematically developed competencies. Thus were born the two basic definitions that constitute the core of the DMGT framework.

> *Giftedness* designates the possession and use of biologically anchored and informally developed outstanding natural abilities or aptitudes (called gifts), in at least one ability domain, to a degree that places an individual at least among the top 10% of age peers.
>
> *Talent* designates the outstanding mastery of systematically developed competencies (knowledge and skills) in at least one field of human activity to a degree that places an individual at least among the top 10% of "learning peers" (those having accumulated a similar amount of learning time from either current or past training).

Note how the DMGT clearly separates the concepts of giftedness, potential, aptitude, and natural abilities on the one hand, from those of talent, performance, achievement, and systematically developed abilities, as well as expertise, eminence, and prodigiousness; it is one of the DMGT's unique qualities. Note also that the term *ability* is used here as an umbrella construct; it covers both natural abilities (aptitudes) and systematically developed abilities (competencies). Beyond offering differentiated definitions, the DMGT proposes a detailed theory of talent development (see Figure 7.2). It has five major structures called *components*: gifts (G), talents (T), talent development process (D), and two types of catalysts, intrapersonal (I) and environmental (E). Each component is subdivided into *subcomponents*, just like the domains of giftedness and fields of talent we have mentioned above. And all subcomponents harbor subdivisions called *facets*; they are so numerous that the DMGT identifies just some of them as illustrative examples. The DMGT uses three-letter

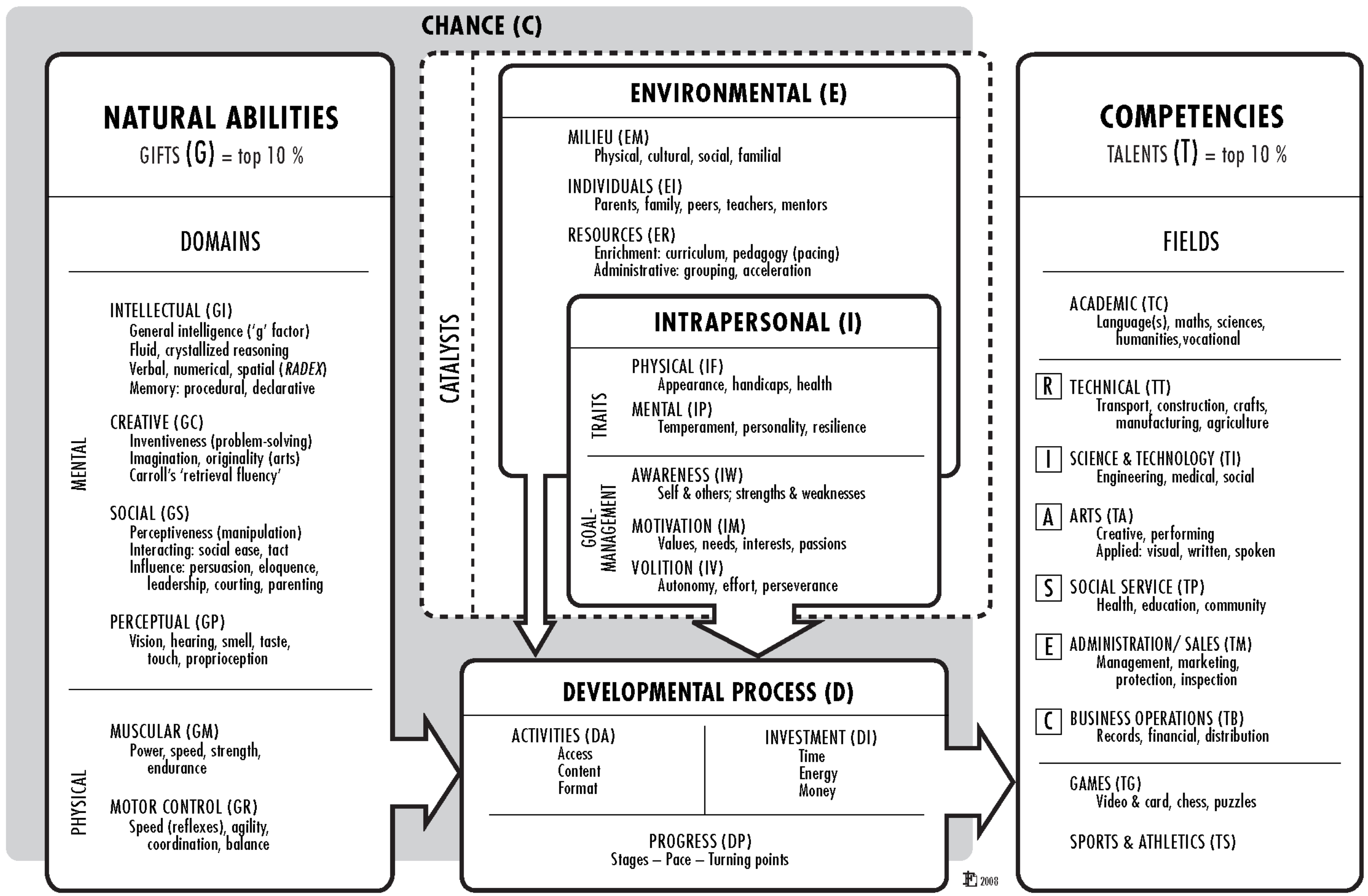

Figure 7.2. Detailed illustration of Gagné's Differentiating Model of Giftedness and Talent (DMGT).

codes to represent all of its constitutive elements; the first letter identifies the component, the second represents the subcomponent, and the third a particular facet. Let's begin with the first two components: gifts (G) and talents (T).

Giftedness and Talent

The *DMGT* identifies six natural ability *domains*, or subcomponents, of the Giftedness (G) component. Four of them belong to the mental realm (intellectual–*GI*, creative–*GC*, social–*GS*, perceptual–*GP*), and the other two to the physical realm (muscular–*GM,* motor control–*GR*). Each subcomponent comprises more specific natural abilities called *facets* (see Figure 7.2). Note that in our field the term *gifted* designates almost exclusively outstanding intellectual or cognitive natural abilities (GI). Natural abilities are not innate; as we will discuss in Part III, they do develop, especially during childhood, through maturational processes and informal exercise. Yet, that development and the level of expression are substantially controlled by the individual's genetic endowment. We observe major individual differences in natural abilities in the daily lives of all children, both at home and at school. For instance, think of the intellectual abilities needed to learn to read, speak a foreign language, or understand new mathematical concepts; the creative abilities that help solve different types of problems and produce original work in the visual and performing arts, in literature, and in science; the physical abilities involved in sports, music, and sculpture; the social abilities essential when interacting with classmates, teachers, and parents. Gifts can be observed more easily and directly in young children because environmental influences and systematic learning have not yet exerted their moderating influences in a significant way. However, they still show themselves in older children, even in adults, through the facility and speed with which individuals acquire new competencies in any field of human activity. Said differently, ease and speed in learning are the trademarks of giftedness: they contribute significantly to every learner's pace of progress.

Talents (T) belong to the performance pole of a potential-performance continuum; they represent the outcome of any outstanding talent development process. Talent fields can be extremely diverse; the *International Standard Classification of Occupations* (ISCO; see https://en.wikipedia.org/wiki/International_Standard_Classification_of_Occupations) reveals that there are literally thousands of distinct occupations, and we can find talented individuals in each of them. Figure 7.2 shows nine talent subcomponents of the T component, each with a series of more specific facets. Six of them have their source in Holland's RIASEC classification of work-related personality types: Realistic, Investigative, Artistic, Social, Enterprising, Conventional (alternatively Doer, Thinker, Creator, Helper, Persuader, Organizer; see Anastasi & Urbina, 1997). Three additional subcomponents complement the RIASEC taxonomy: preoccupational academic (K–12) subjects, games, and sports. A particular natural ability can express itself in many different ways depending on the field(s) of occupation adopted by an individual. For example, motor control (GR) can be modeled into the particular skills of a pianist, a painter, or a video game player. Similarly, cognitive processes can be modeled into the scientific reasoning of a chemist, the memorization and game analysis of a chess player, or the strategic planning of an athlete.

The Prevalence of Gifted and Talented Individuals

How many people are gifted and/or talented? As shown in both definitions above, the DMGT offers a clear answer to the prevalence question: "outstanding" means individuals who belong to the top 10% of the relevant reference group in terms of natural ability (for giftedness) or achievement (for talent). This generous choice for the initial threshold is counterbalanced by the recognition of levels of giftedness or talent; the DMGT's metric-based (MB) system of levels constitutes an intrinsic constituent of the DMGT. It has four hierarchically superposed levels, each of them comprising the top 10% of the preceding one; you can be either simply (no label) gifted or talented (top 10%), *highly* G or T (top 1%), *exceptionally* G or T (top 1: 1,000), or *extremely/profoundly* G or T (1:10,100). These levels apply to every domain of giftedness and every field of talent. Why 10%? I could answer "Why not?" because the prevalence question has no absolute answer; nowhere will we find a magical number that automatically separates those labeled gifted or talented from the rest of the population. In other words, giftedness and talent are not qualitative distinctions.

The choice of a proper threshold requires that professionals come to a consensus, just like nutritionists did when they established the various category thresholds for the body mass index (BMI). Unfortunately, no such consensus has yet been achieved in the various fields of talent development. Yet, the prevalence question is crucial for both theoretical and practical reasons. From a theoretical standpoint, a prevalence estimate represents an important contribution toward a more precise definition of any *normative* construct (e.g., poverty, tallness, weight, most neurotic syndromes) that targets, as is the case with giftedness and talent, a marginal subgroup within a population. Practically speaking, adopting, for instance, a threshold of 10% instead of 1%—a *tenfold* difference in estimated prevalence—has a huge impact on selection practices and talent development services (Gagné, 1998). For example, the availability of clear thresholds and labels facilitates not only the selection process and the description of study samples, but also the comparison of results from different studies. Moreover, the MB system of levels should remind educators that the vast majority of gifted or talented individuals (90%) belong to the lowest—mild—category, and that only a tiny fraction of those identified as gifted or talented in their youth will ever achieve eminence in their chosen field.

How Does the DMGT Describe the Talent Development Process?

Although talent development is not a new concept in our field, it acquired its popularity mostly in the present century. Indeed, if we go back just a few decades, the talent development label disappears from the titles of books or chapters, as well as subject indexes (e.g., Barbe & Renzulli, 1975; Passow, 1979). The expression slowly took flight in the 1980s, helped possibly by the immense popularity of Bloom's (1985) *Developing Talent in Young People*. Soon after, Renzulli and Reis (1991) ended a politically oriented article as follows: "Talent development is the 'business' of our field, and we must never lose sight of this goal, regardless of the direction that reform efforts might take" (p. 34). Unfortunately, they did not specify what they meant by talent development. From the 1990s onward, the number of publications that included "talent development" in their title grew steadily. A cursory look at the tables of contents and subject indexes of recent handbooks (e.g., Balchin, Hymer, & Matthews, 2009; Callahan & Hertberg-Davis, 2013; Colangelo & Davis, 2003; Dixon & Moon, 2006; Kerr, 2009; MacFarlane & Stambaugh, 2009; Plucker & Callahan, 2008; Renzulli, Gubbins, McMillen, Eckert, & Little, 2009; Shavinina, 2009; Sternberg & Davidson, 2005) confirms its more frequent use by academics. But, as I argued elsewhere (Gagné, 2015b), the DMGT alone analyzes in depth the various influences that affect the talent development process, from the first struggles of novices to the full-time investment of world-level performers in academia, arts, or sports.

The Talent Development Process

The G-T-D components constitute the core of the DMGT; they express a basic premise of the DMGT's view of talent development: talents result from the progressive transformation of outstanding aptitudes, or gifts, into equally outstanding competencies, or talents. Thus, natural abilities or aptitudes serve as the "raw materials," or constitutive elements, of talents; they act through the talent development process. I created the neologism *talentee* to label any individual, child or adult, actively involved in a systematic talent development process, whatever the field. Talentees coordinate the various elements of that process, which is subdivided into three subcomponents: activities (DA), investment (DI), and progress (DP), each of them subdivided again into multiple facets (Figure 7.2). Talent development begins when a child or adult gains access (DAA), through an identification/selection process, to a systematic program of specialized activities. They include a specific content (DAC), the curriculum, offered within a specific learning environment (DAF or format). The investment (DI) subcomponent quantifies the intensity of the talent development process in terms of time (DIT), psychological energy (DIE), or money (DIM). Ericsson's (2006) concept of deliberate practice combines the DIT and DIE facets. Finally, the progress (DP) of talentees from initial access to peak performance can be broken down into a series of stages (DPS; e.g., novice, advanced, proficient, expert). Its main quantitative representation is pace (DPP), or how fast—compared to learning peers—talentees are progressing toward their predefined excellence goal. The long-term developmental course of most talentees will be marked by a series of crucial turning points (DPT; e.g., being spotted by a teacher or coach, receiving an important scholarship, suffering a major accident as an athlete, having difficulty overcoming the death of a parent).

The "Supporting Cast" of I and E Catalysts

The large sets of *intrapersonal* (I) and *environmental* (E) catalysts affect the talent development process either positively or negatively. The I component comprises five subcomponents grouped into two main dimensions, namely stable traits (physical–IF, mental–IP), and goal management processes (self-awareness–IW, motivation–IM, and volition–IV). Within the mental or personality (IP) category, the concept of temperament refers to behavioral predispositions with strong biological and hereditary underpinnings, whereas the term *personality* encompasses a large diversity of positive or negative acquired styles of behavior (Rothbart, 2012). The most widely accepted structure for personality attributes is called the Five-Factor Model; research has shown each factor to possess significant biological roots (McCrae, 2009). The term *motivation* usually brings to mind both the idea of what motivates us (IM) and how motivated (IV) we are, that is, how much effort we are ready to invest in order to reach a particular goal. Within the framework of their Action Control Theory, two German scholars (Kuhl & Beckmann, 1985; see also Corno, 1993) proposed to differentiate the global goal-seeking process into (a) distinct goal-setting activities, which would receive the label motivation (IM), and (b) goal-attainment activities, which they labeled volition or willpower (IV). Talentees will first examine their values and their needs (IW), as well as determine their interests or be swept by a sudden passion; these will serve to identify the specific talent goal they will be aiming for (IM). The loftier that goal, the more efforts talentees will need to put forth in order to reach it (IV). Long-term goals placed at a very high level will require intense dedication, as well as daily acts of willpower to maintain investment in practice (the DI subcomponent) through obstacles, boredom, and occasional failure.

The E component appears partially hidden behind the I component (Figures 7.1 and 7.2). This partial overlap signals the crucial filtering role that the I component plays with regard to environmental influences. The bulk of environmental stimuli have to pass through the analytical sieve—conscious or subconscious—of an individual's needs, interests, or personality traits; talentees continually pick and choose which stimuli will receive their attention. The E component comprises three subcomponents that refer to distinct environmental perspectives: social, psychological, and educational. The first one, called *milieu* (EM), includes a diversity of influences, from physical ones (e.g., climate, rural vs. urban living) to social, political, financial, or cultural ones. The second subcomponent focuses on the psychological influence of significant *individuals* (EI) in the talentees' immediate environment. It includes, of course, parents and siblings, but also the larger family, teachers and trainers, peers, mentors, and even public figures adopted as role models by talentees. The third subcomponent covers all forms of talent development *resources* (ER), among them adapted curricula, special courses or schools, advanced teams in sports, and so forth.

The Chance Factor

Chance represents the *degree of control* talentees have over the various causal factors affecting their talent development. Atkinson (1978) affirmed: "all human accomplishments can be ascribed to two crucial 'rolls of the dice' over which no individual exerts any personal control: the accidents of birth and background" (p. 221). Indeed, we do not control the genetic endowment received at conception; yet, it affects both our natural abilities (G component), our temperament (IP), as well as other elements of the I component (IM + IV). Moreover, we do not choose or control the family (EI) or social environment (EM) in which we are raised. These two sources alone give chance much power in sowing the bases of a person's talent development possibilities. Because of its polyvalent role as an *éminence grise* throughout the model, I have chosen to illustrate its influence as a background halo covering the components it influences (Figures 7.1 and 7.2).

Dynamic Interactions

All five components of the DMGT entertain a large diversity of complex dynamic interactions, both among themselves and between specific facets within each of them. Space does not allow a detailed survey, but consider, for example, that all efforts by teachers or parents to modify the characteristics of children and students (e.g., interests, personality, beliefs, deviant behavior) illustrate E → I influences; of course, you can easily imagine influences in the opposite direction (e.g., students' passions influencing the behavior of parents or teachers). The most fundamental pattern of interactions defines the DMGT's view of the talent development process, namely the long-term transformation of outstanding potentialities into equally outstanding competencies, thanks to the constant mediating effect of both groups of catalysts. Even talent, the outcome, can have a motivating impact on students: Success breeds success! It can also influence environmental sources, parents as well as teachers. In summary, no causal component stands alone; they all interact with each other and with the learning process in very complex ways, and these interactions will differ significantly from one person to the next.

The G into T transformation process needs nuances; strictly speaking, that definition is incomplete. If we consider that individual differences in achievement have many other sources than just G, it means that students with aptitudes below the top 10% gifted level can still achieve above the talent threshold (also top 10%) thanks to the positive influence of high levels of influences from either D, or I, or E (or all of them!). Of course, as the level of aptitudes decreases, the probability of talent will also decrease sharply, so much so that there is only a small probability that students with average cognitive aptitudes will reach talent level performances (Gottfredson, 1997; Herrnstein & Murray, 1994). Conversely, gifted level aptitudes do not guarantee the emergence of talent, as evidenced by the well-known phenomenon of underachievement.

Even though all four causal components are constantly active, it does not mean that they are equally powerful as agents of talent emergence. This is no doubt a truism at the individual level because each talented person follows a unique path toward excellence. But what can we say about averages? Are some factors *generally* recognized as stronger predictors of outstanding performance? For all those involved in the talent development of gifted individuals, this is *the* ultimate question both theoretically and practically. Most of us harbor a personal "implicit theory" about the causal origins of academic talent, and a major characteristic of these personal—or more scientific—views is the tendency to privilege one key influence of success. That key influence may reside within the family or in the school environment, be identified as amount of study, determination and willpower, motivation and passion, cognitive aptitudes, and so forth. I have labeled that question "What makes a difference?" Its extensive discussion represents another unique characteristic of the DMGT. Unfortunately, space does not allow a presentation of that analysis (see Gagné, 2004), but allow me a teaser. For the specific case of academic achievement, I proposed in that article the following decreasing hierarchy of influence for the four causal components: (a) intellectual giftedness (GI); (b) intrapersonal catalysts, especially IM and IV; (c) developmental activities, especially investment in energy (DIE); and (d) environmental influences.

The above discussion leads to the following *theoretical* definition of academic talent development (ATD) within the DMGT/IMTD framework:

> Academic talent development (ATD) corresponds to the progressive transformation through a long-term learning process of biologically anchored, informally developed, and mostly cognitive outstanding natural abilities (the gifts) into equally outstanding

> systematically developed academic competencies (knowledge and skills) (the talents), thanks to constant moderating interactions with two large groups of catalysts, intrapersonal characteristics and environmental influences.

Practical Usefulness of the Differentiation

Here is one example among many of the potential usefulness of the DMGT's differentiation between giftedness and talent. The vast majority of studies that compare gifted students with nongifted peers use "convenience" samples, usually participants in gifted programs. Recall that these "gifted" students have been selected, most of the time, with measures of both intellectual giftedness and academic talent; as I mentioned early in this chapter, they are IGAT students. Researchers use such comparison groups to examine the relationship between intelligence and a diversity of other personal characteristics (e.g., motivation, perseverance, personality traits, psychopathology, and so forth). But, these researchers do not realize that their so-called gifted samples are conceptually tainted; the inclusion of achievement data makes them more than just intellectually gifted. Keep in mind that academic talent results from the complex influence of multiple causal factors from the D, the I, and the E subcomponents, not just the GI subcomponent. Individual differences in valid academic achievement measures faithfully reflect these complex influences: differences in level of intrinsic motivation, in family support, in personality traits like anxiety, in peer influences, in study time, and so forth. Consequently, we should not be surprised that the high achievers typically selected for gifted programs will prove themselves, on average, somewhat more motivated, socially adept, or psychologically stable than average peers (Neihart, Pfeiffer, & Cross, 2016). As a case in point, at the end of their comparative analysis of the psychopathological characteristics of "gifted" versus average students, Francis, Hawes, and Abbott (2016) observed:

> It is possible that the nature of the gifted program selection process results in members who are functioning well in school (academically, behaviorally, and socially), potentially leading to participant selection bias in studies that underestimates the prevalence of intellectually gifted children with behavioral or other difficulties. (p. 295)

Could it be that their knowledge of the DMGT prompted that very relevant observation emphasizing the DMGT difference between giftedness and talent?

Where Do Gifts Come From; Are They Innate?

In the first part of the chapter, we defined natural abilities as having significant biological roots; these roots manifest themselves in many ways, for instance, anatomical or morphological characteristics, neurophysiological activity in the brain and body, gene expression, and countless other forms discussed in the scientific literature on talent development (Geake, 2009). Unfortunately, the DMGT framework presented leaves no room for these distal sources of talent emergence. In order to offer a comprehensive view of the talent development process, I judged it imperative to find a way to integrate these causal influences.

Biological Foundations of Gifts and Talents

Science has adopted a hierarchical organization of explanations, moving progressively from behavioral phenomena, down to physiology, microbiology, chemistry, and then physics. For instance, Plomin, DeFries, Craig, and McGuffin (2003) described functional genomics as “a bottom-up strategy in which the gene product is identified by its DNA sequence and the function of the gene product is traced through cells and then cell systems and eventually the brain” (p. 14). The expression “bottom-up” makes clear that such biological underpinnings would occupy some underground level under the strictly behavioral DMGT framework. A brief examination of the literature did suggest that three underground levels would create an acceptable vertical differentiation (see Column 1 in Figure 7.1). The bottom *chemical* basement is reserved for genotypic foundations (e.g., gene identification, mutations, gene expression, epigenetic phenomena, protein production, and so forth). The next one, the *physiological* basement, covers microbiological and (neuro)physiological processes; it moves us from genotypic to phenotypic phenomena, but their hidden nature, at least to the naked eye, explains their label of *endophenotypes*: They correspond to “physical traits—phenotypes—that are not externally visible but are measurable” (Nurnberger & Bierut, 2007, pp. 48–49). Finally, the upper *morphological* basement includes anatomical characteristics that have been shown to impact abilities or intrapersonal catalysts. Most of these characteristics are observable *exophenotypes*, either directly (e.g., tallness in basketball, physical template in gymnastics) or indirectly (e.g., brain size through neuroimaging, muscle type through biopsy). Both endophenotypes and morphological traits are part of the complex hierarchical causal chain joining genes to physical or mental abilities, and ultimately to systematically developed skills.

The Proper Meaning of "Innate"

The Developmental Model for Natural Abilities (DMNA) aimed to integrate these biological foundations as building blocks in the development of natural abilities and gifts. It also aimed to respond to scholars who question the relevance of the concept of giftedness, and correct the misunderstanding transmitted by well-meaning users of the DMGT who simplistically describe gifts as innate and talents as acquired. That simplistic bipolar view is wrong. As already pointed out, gifts are not innate; they develop during the course of childhood, and sometimes continue to do so during adulthood. Of course, this developmental view of natural abilities has to fight its way through a host of common language expressions that maintain the ambiguity, like "She is a born musician," "It's God's gift," or "Either you have it or you don't!"

If these uses of the label *innate* are incorrect, what does innateness really mean? When we say that young Mary is a "born" pianist, we are certainly not implying that she began playing the piano in the nursery, or that she was able to play a concerto within weeks of beginning her piano lessons. Describing her talent as innate makes sense only metaphorically. It will convey the idea that Mary progressed rapidly and seemingly without effort through her music curriculum, at a much more rapid pace than that of her learning peers. The same applies to any natural ability. Intellectually precocious children do not suddenly manifest an exceptional vocabulary or logical reasoning processes; their cognitive development goes through the same stages as any other child. The difference resides in the ease and speed with which they advance through these successive stages. The term *precocious* says it all: They reach a given level of knowledge and reasoning *before* the vast majority of their learning peers. Researchers in behavioral genetics have given the term *innate* a very specific definition. At the behavioral level, it implies

> hard-wired, fixed action patterns of a species that are impervious to experience. Genetic influence on abilities and other complex traits does not denote the hard-wired deterministic effect of a single gene but rather probabilistic propensities of many genes in multiple-gene systems. (Plomin, 1998, p. 421)

So, when people use the term innate to qualify the DMGT's natural abilities, they spread two false interpretations, namely that the observed individual differences are immutable, and that they are present at birth or, if not, appear suddenly with minimal training. Because of its restricted meaning, few scientists use the term innate to describe any type of natural ability or temperamental characteristic.

If natural abilities cannot be considered innate as defined above, where does the "gift" in giftedness reside? Certainly not in the upper basement identified above, because these morphological structures require extensive development; most do not achieve maturity until adolescence or even adulthood. If we go one basement down to the physiological level, we might be in a gray zone where it becomes difficult to separate innate processes, like maturation, from environmentally influenced developmental activities. For example, genetic agents govern most stages of embryogenesis. If the development was strictly maturational, then we could probably speak of innateness. It is clear, however, that the lowest basement, devoted to gene activity, is almost completely—but not totally, according to the new field of epigenetics—under inborn control.

Introducing the DMNA

How does the development of natural abilities proceed? Figure 7.1 shows that process through the DMNA. At first glance, it appears similar to its right side counterpart, the DMGT, but a closer look shows major differences between them, both at the component and the subcomponent levels. The main difference is, of course, a transfer of the G component from the left side (DMGT) to the right side (DMNA); aptitudes—and their outstanding expression as gifts—are now the outcome of this particular developmental process. Here, the three levels of biological underpinnings, structural elements as well as processes, play the role of building blocks for the phenotypic natural abilities. The developmental process specific to the DMNA appears here in summary form, with just two macroprocesses identified. Maturation, of course, covers a diversity of biological processes at each of the three basement levels, from embryogenesis upward, that govern the growth of mental and physical abilities. These maturational processes have no direct relationship with the talent development process itself; their role is to mold the natural abilities that will become, in turn, the building blocks of talents. As for the learning subcomponent, it is called informal because it lacks the structured organization (e.g., curriculum, access rules, systematic schedule, formal assessment) typical of talent development activities. It takes the form of spontaneous learning and practice, acquired mostly subconsciously and automatically, without regular attention to its growth.

Every developmental process requires catalytic influences, both intrapersonal and environmental. These two sets of catalysts appear here structurally identical to their DMGT counterparts. The exact contents within each element will differ, as well as their relative causal significance. Two subcomponents, self-awareness (IW) and resources (ER), appear in lighter font because they play a much more modest causal role than in the DMGT; we cannot expect, for instance, young children to show the same level of awareness (IW) toward their strengths and weaknesses as older individuals, but no doubt that interests and passions (IM) can manifest themselves very early (Gagné & McPherson, 2016). Similarly, within the realm of mental traits (IP), large individual differences appear as soon as we start assessing any of them. With respect to motivational issues, children express very early their desire—or lack of it!—to engage in all kinds of daily activities: physical exercise, reading, learning to play a musical instrument, video games, playing with friends, and so forth. To some extent, their level of interest will influence the amount of their short-term or long-term investment, as well as their potential decision to participate in a talent development program and to maintain their involvement in it. Environmental catalysts also play a significant role in fostering or hindering the development of human aptitudes, and all three subcomponents are involved, except that formal resources play a minimal causal role.

Here are just a few examples. With regard to the Milieu (EM) subcomponent, recent studies (e.g., Harden, Turkheimer, & Loehlin, 2007) suggested that the degree of heritability (H) of cognitive abilities varies with the socioeconomic level of the families; the H component's importance decreases significantly in low-income families. In fact, the whole area of gene by environment interactions belongs to the E component (Plomin, 1994). With regard to the Individuals (EI) subcomponent, interventions by parents to create a specific family environment, propitious either to general knowledge learning, to musical activities, or to athletic ones, could impact the development of related natural abilities. In the case of the Resources (ER) subcomponent, government programs developed to improve the school preparedness (a.k.a. cognitive abilities) of at-risk children (te Nijenhuis, Jongeneel-Grimen, & Kirkegaard, 2014) represent interesting efforts to build these natural abilities. In sum, natural abilities proceed through a developmental process somewhat similar to the talent development process. The same basic "ingredients" are involved in fostering or hindering their growth. Of course, as Angoff (1988) perceptively highlighted, the most significant distinction between gifts and talents remains the amount of direct genetic contribution. The DMNA makes that point clear in its choice of building blocks.

Introducing the IMTD

As soon as the DMNA was conceived, it became clear that joining the two developmental models into an Integrative Model of Talent Development (IMTD) would bring closure to these theoretical musings. Figure 7.1 illustrates the result, with the G component's central position ensuring the linkage between the DMNA's build-up of outstanding natural abilities on the left side and the DMGT's talent development process on the right side. The IMTD shows how talent development has its distal origins in the progressive emergence of natural abilities, as early as through the complex process of embryogenesis. The maturation process will continue after birth as the various natural abilities, mental and physical, progressively take form at different levels of expression from one individual to the next, thanks to the contribution of the two sets of catalysts, as well as innumerable daily occasions for informal learning and exercise. At some point, usually during childhood or early adolescence depending on the type of talent chosen, some gifted individuals, or those not too far from the DMGT's cutoff threshold of top 10%, will choose a talent field that fits their perceived profile of natural abilities and interests, and begin the long and complex journey leading to eventual top performance, as described in the DMGT model. Some will go far beyond the basic 10% threshold of minimal talent; others will not, and the reasons behind the level of expertise achieved by talentees will be found in the numerous facets that comprise the DMGT.

How Can We Best Foster Academic Talent Development (ATD)?

Most school districts commonly group their special educational provisions for gifted/talented students (the IGAT) under the label "gifted programs." The ATD programmatic approach I will describe here has little in common with the vast majority of these gifted programs. Before going further, let's properly define the concept of *program* I will use here. It originates in a seminal distinction proposed over three decades ago by Tannenbaum (1983); he defined a program as "a comprehensive offering, sequenced over a long period of time, usually designed as a requirement, and very much a major part of the total school curriculum. Thus, the school offers *programs* in mathematics, literature, art, social studies, and the like." (p. 515) On the other hand, provisions were "more fragmentary, an ad hoc offering, relatively brief in duration, often designed by an individual teacher with special abilities rather than by a curriculum committee, and supplemental to the major offerings, not integral with them" (Tannenbaum, 1983, p. 515). Borland (1989) endorsed and expanded Tannenbaum's distinction. Although he considered "that there is nothing at all wrong with provisions for the gifted," and that they "may be among the most valuable [opportunities] offered to students in their school careers" (Borland, 1989, p. 44), he judged these provisions to have major drawbacks. He stated, for instance, that "whereas provisions are fragmentary, programs have well-articulated sequences of goals, skills, and content. Whereas provisions are extracurricular, programs consist of activities that constitute a prescribed part of the course of study of identified gifted students" (Borland, 1989, p. 44). Note that programs and provisions do not represent qualitatively distinct categories, but rather opposite poles on a continuum. Thus, some educational resources could possess characteristics that place them somewhere between these two poles. Both scholars considered that most existing gifted programs at that time belonged much more to the provision than to the program pole. As we will see later, I consider that judgment to apply equally well to current gifted programs. Sadly, that seminal conceptual distinction has had literally no impact on the terminological habits of scholars and educators; terminological fuzziness remains one major differentiating characteristic between the social and natural sciences! To allow for easier reading, I will keep using the expression "gifted programs" to refer to the same ensemble of provisions that this label targets in the gifted education literature.

Moon and Rosselli (2000) proposed to break down talent development programs into three main components: (a) the definition of the program's developmental goals, (b) the identification of the target population, and (c) the contents of the proposed developmental interventions, both in terms of curriculum and administrative parameters. Let's discuss them within the DMGT perspective, because the DMNA component of the IMTD has little relevance here.

Goals of a DMGT-Inspired ATD Program

A DMGT-inspired ATD program aims to foster through the best educational practices available the maximal transfer of high cognitive aptitudes into academic excellence. Keep in mind that the DMGT is a talent development theory, which explains why its key objective is academic excellence. Choosing this particular program goal does not exclude the inclusion of parallel goals within a given ATD program, for instance, developing personal maturity and social conscience, or fostering physical well-being (*mens sana in corpore sano*). But we would have to create a different theoretical structure to present the diverse causal components of each parallel goal. That discussion is not relevant here. My key point is that personal characteristics (the IP subcomponent) appear in the DMGT only because of their potential impact on the developmental (D) process.

Identification of the Target Population

Just as in any talent development program, a DMGT-inspired ATD program aims to select as talentees those students best prepared to profit maximally from the program's content (curriculum and format). Which are the best predictors of academic excellence? Which of them make more of a difference on average? As we discussed in Part II, there are theoretically dozens of potential influences dispersed among the four causal components (G, D, I, E) of the DMGT. But, which among them have revealed better predictive power with respect to academic achievement? Research has shown that current academic achievement outperforms any other predictor of future achievement. For instance, Marques, Pais-Ribeiro, and Lopez (2011) found correlations above .90 between consecutive aggregated subject matter achievements in grades 6 to 8. For his part, Muijs (1997) observed an "extremely strong relationship [between] school achievement in wave 1 [Grade 4] with school achievement in wave 2 [Grade 5], (. . .) a fact borne out by a Pearson correlation of .88 ($p < .001$) over time" (p. 272). This should surprise no one because successive achievement measures assess exactly the same content; we are in fact just measuring the longitudinal reliability of a given predictor. But there is more to consider. At first glance, indices of academic success appear simple, both at the data collection and interpretation levels. Yet, that easy metric and straightforward meaning hide a much more complex interpretive power. According to the DMGT, talents (T) result from the progressive transformation of high natural abilities (G) through a long developmental process (D), with the catalytic help of personal characteristics (I) and environmental influences (E). Consequently, measures of academic achievement—indeed of any performance—incorporate the *combined* influences of all these distinct sources (G, I, D, E); they give them very complex roots. They have roots in the genetics of high natural abilities, roots in passion and interest for a field's knowledge and skills, roots in unfailing perseverance and willpower, roots in parental and teacher support, and, let's not forget, roots in lots of chance, both good and bad luck.

What would be the next best predictor of academic excellence? The answer is clear: intellectual aptitudes. Literally hundreds of predictive studies have confirmed that IQ scores show impressive correlations with academic achievement; they correlate between .50 and .60 at the elementary level, and between .40 and .50 at the high school level (Jensen, 1980; Macintosh, 2011). This data no doubt explains why, as pointed out earlier, school districts give precedence to these two sources of predictive information in their identification procedures. Beyond these two unavoidable sources of identification, are there any other valuable criteria, sources that might add some specific additional predictive power? The clearest one is the DMGT's subcomponent volition (IV), also called conscientiousness in the Five-Factor model of personality (McCrae, 2009), or grit (Duckworth, Peterson, Matthews, & Kelly, 2007), or "rage to master" (Winner, 1996, p. 3). The main problem with that criterion is the lesser availability of psychometrically valid measures (Gagné & St Père, 2001). Any other criteria (e.g., attention, deliberate practice) would have to be tried out in specific ATD programs to assess their potential specific contribution to global predictive power.

Seven Essential ATD Characteristics

The search for the essential characteristics of a DMGT-inspired ATD program began with a survey of our field's professional and scientific literature, taking note of suggestions from various scholars and professionals. I also examined the best recognized practices in other talent development fields, especially the well-structured fields of music and sports. I found there much more convergence and homogeneity in goals and practices; they offered plenty of materials that could be applied in educational settings. A synthesis of that search first took form as the "ten commandments for academic talent development" (Gagné, 2007). They were later condensed (Gagné, 2015a) into the seven following constitutive elements:

1. An enriched K–12 curriculum;
2. Systematic daily enrichment;
3. Full-time ability grouping;
4. Customized/accelerated pacing;
5. Challenging excellence goals;
6. Highly selective access; and
7. Early introduction.

The first four characteristics target Moon and Rosselli's (2000) content/format component, the next one the program's goals, and the last two the talentee population. As a "keystone" characteristic, the first one deserves its first rank hands down; grouping all the others according to program components solved a conundrum, namely trying to create some hierarchy among them. Except for the last one, which sets the point of departure of a structured ATD pathway, I consider the six other constitutive characteristics as necessary components. These seven characteristics lead to the following formal definition of an ATD *program*.

> A DMGT-inspired academic talent development (ATD) program is an early implemented, customized long-term sequence of structured learning activities anchored in a constantly enriched and challenging academic curriculum, directed toward the attainment of high-level excellence goals.

Let's examine in more detail each of these seven constitutive characteristics.

1. An enriched K–12 curriculum. By definition, "academic" talent development programs aim to foster academic excellence, and academic excellence expresses itself as outstanding mastery of the K–12 curriculum; it is that curriculum we must enrich for academic talentees to experience regular learning challenges. The term *curriculum* covers both the content of specific subject matters at a particular grade level and its integrated structure within and between grade levels; it also includes instructional strategies. A provision that does not aim to implement this keystone characteristic cannot receive the DMGT-inspired ATD label. It also constitutes the key element in Tannenbaum's (1983) definition of a proper program for gifted students. As he pointed out, "enrichment for the gifted is as much an educational imperative as is the 'common core' for the general school population" (p. 424). The recently proposed Advanced Academics model (Peters, Matthews, McBee, & McCoach, 2014) recommended a similar curricular priority. I chose the term *enriched* well aware that I was "delinquently" rejecting the choice made by most of my colleagues, who prefer the politically correct term *differentiation* (e.g., French, 2009; Kaplan, 2009; Renzulli, 2009). It is very sad that perceived political pressures or public stereotypes (e.g., a nonenriched curriculum is a poor curriculum) force professionals to put aside proper terminology; its rehabilitation is overdue for the simple reason that the term enriched best describes the type of differentiation *specifically appropriate* for fast learners.

What does an enriched curriculum look like? At the broadest level, that of a structured set of subject matters, it does not differ substantially from the regular curriculum; most adaptations appear to target specific contents at particular grade levels, as well as instructional strategies (e.g., Hertberg-Davis & Callahan, 2013; Tomlinson, 2009; VanTassel-Baska & Little, 2003). For instance, Rogers (2009) identified seven research-based content—and instructional—modifications that provide "significant academic benefits for gifted learners" (p. 264): abstract concepts, complex contents, multidisciplinary themes, sequence reorganization, links with human and social issues, introduction of professional inquiry methods, and subject acceleration. With respect to instructional strategies, I proposed (Gagné, 2007) four different types of enrichment that I labeled the four D's: enrichment in Density, in Difficulty, in Depth, and in Diversity. That particular sequence reflects a *decreasing* order of relevance, thus giving clear priority to enrichment in Density. Also called curriculum condensation or compacting (Reis, Burns, & Renzulli, 1992; Reis, Renzulli, & Burns, 2016), it serves as the pedagogical core of a properly enriched curriculum. Academic talent development specialists should prioritize it over other forms of enrichment because it offers the most relevant response to giftedness' trademark, namely ease/speed in learning. Moreover, the school time liberated through faster mastery of subject matter units creates learning space for additional enrichment.

2. Systematic daily enrichment. This second constitutive element might appear almost tautological, because the adoption of the keystone first element, with its enrichment focused on condensing the regular curriculum, implies its implementation on a daily basis. Yet, I perceived a need for its inclusion because many teachers or school administrators are worried about the—mythic—cataclysmic impact of accelerative measures; these unfounded fears lead them to refuse that their talentees progress too far ahead while still remaining in their regular classroom. Accordingly, after allowing a short burst of enrichment in Density, they will switch to other types of enrichment, like enrichment in Depth (long-term projects) or in Diversity (noncurricular short-term activities). These talentees will progress in brief rapid spurts followed by pauses occupied with "lateral" enrichment, thus ending their school year more or less at the same level of subject matter mastery as their well-performing nontalentee learning peers. Appropriate enrichment must propose instead intellectual challenges on a *daily* basis. Vygotsky's

(1978) concept of *zone of proximal development*, as well as Stanley's Talent Search instructional approach (Brody & Stanley, 2005), aptly convey the need to maintain the talentees' pace at the cutting edge of their learning capacity, neither too slow to force them to idle regularly, nor too fast to create feelings of helplessness. Teachers must look out regularly for signs of unchallenging content; if there is one thing that many high-achieving students resent, it's having to face, day after day, the constant slow and repetitious pace imposed by their learning peers. This particular problem rarely surfaces in sports or arts; their talent development practices almost automatically maintain cutting-edge teaching strategy.

3. Full-time ability grouping. This third constitutive element directly ensues from the preceding one: How can we best deliver daily enrichment to talentees, if not by grouping them with a specially trained ATD teacher (an appellation much more relevant than "gifted teacher"!)? Yet, this administratively sensible solution, especially its full-time variety, touches a very sensitive chord, probably even more sensitive in our field than the subject of academic acceleration (see #4 below). Commonly discussed in gifted education handbooks before the turn of the present century (e.g., Colangelo & Davis, 1997; Davis & Rimm, 1985; Heller, Mönks, & Passow, 1993), the subject of ability grouping has almost disappeared from recent handbooks, not only as a separate chapter on the subject (e.g., Balchin et al., 2009; Callahan & Hertberg-Davis, 2013; Dixon & Moon, 2006; Heller, Mönks, Sternberg, & Subotnik, 2000; MacFarlane & Stambaugh, 2009; Shavinina, 2009), but even as an entry in encyclopedia-type handbooks (e.g., Kerr, 2009; Plucker & Callahan, 2008). I cannot explain that withdrawal; has our field decided to forgo any defense of that essential practice?

It seems to me so easy to justify the full-time grouping of talentees in view of the research evidence on both the positive academic impacts of grouping (Kulik, 2003; Rogers & Span, 1993) and the almost total lack, in regular classrooms, of enrichment activities that specifically target academically talented students. Major evaluation studies (e.g., Archambault et al., 1993; Robinson, 1998) have shown that the vast majority of these provisions offer little more than a lip service response to talented students' needs. The results revealed, among other things, that teachers offered these activities no more than two or three times a month. Even worse, the activities usually targeted the whole classroom, leaving little specific enrichment for talented students. Archambault et al. (1993) concluded that their survey had painted

> a disturbing picture of the types of instructional services gifted students receive in regular classrooms across the United States. It is clear from the results that teachers in regular third and fourth grade classrooms make only minor modifications in the curriculum and their instruction to meet the needs of gifted students. (p. 5)

From these results, one can understand the label of "busywork" Stanley (1979) used with disdain to describe most of what passes for regular classroom enrichment.

At all levels of the K–12 educational system, teachers prioritize students with learning difficulties who stand at the other end of the achievement continuum. Moreover, the curriculum of most preservice teacher training programs reflects the low priority given to talented students' needs. Courses on special populations reserve only a few hours—when they do so!—to the characteristics and educational needs of academically talented students (Croft, 2003). In that context, responding adequately to the special educational needs of fast learners literally becomes a "mission impossible" (Gagné, 2007, p. 110). That inescapable conclusion should lead to the generalization of full-time grouping for talentees as the only effective way to create appropriate classroom conditions for sustained daily enrichment; grouping 30 or so students around a single ATD teacher also provides a very efficient use of limited specialized resources. In a nutshell, full-time grouping answers a full-time need with a full-time solution, facilitates the enrichment of all subject matters in the regular curriculum, and, contrary to most pull-out services, does not require adding a costly specialist teacher to the school faculty. Recent evidence gives additional strength to that solution. An important evaluation study (VanTassel-Baska et al., 2008) confirmed the enormous time and financial resources required to train regular elementary classroom teachers to implement language arts enrichment modules in their classroom. A team of university specialists had to invest hundreds of hours of professional time over a period of 2 years to train just a dozen elementary school teachers to an acceptable level in the proper use of these enrichment materials, which covered about a third of the school year's curriculum in just one subject matter!

4. Customized/accelerated pacing. Grouping talentees to offer an enriched curriculum does not mean that all individual differences in learning pace have disappeared; remaining individual differences produce over time an increasing gap between slower and faster learners, what has been called a "fan spread effect" (Gagné, 2005). Moreover, analyses of achievement test scores, as well as results from talent searches, show the large gap in knowledge and skills between mildly talented students and their exceptionally talented peers (Gagné, 2005; Lupkowski-Shoplik, Benbow, Assouline, & Brody, 2003). Consequently, those who progress significantly faster than peer talentees should be allowed, if they so desire, to move ahead at an accelerated pace. Unfortunately, most accelerative measures face strong resistance from a majority of administrators, teachers, and parents; they ignore or refuse to accept the overwhelming scientific evidence in support of all forms of accelerative enrichment (Assouline, Colangelo, VanTassel-Baska, & Lupkowski-Shoplik, 2015; Rogers, 1991). Borland (1989) elegantly summarized that conundrum: "Acceleration is one of the most curious phenomena in the field of education. I can think of no other issue in which there is such a gulf between what research has revealed and what most practitioners believe" (p. 185).

5. Challenging excellence goals. Four qualifiers (personal, excellence, challenging, long-term) describe the educational goals that talentees would be invited to set for themselves. Excellence goals must be understood normatively, which means in relationship with the expected achievements of learning peers. Of course, as members of a highly selective group (see #3 and #6), their reference base differs from that of regular classroom students. They are no longer "big fish in a little pond" (Marsh & Hau, 2003; Plucker et al., 2004), but have become smaller fish in the bigger pond of talentee classmates. So, these goals should far exceed the level of academic excellence typically expected within the regular curriculum. Obtaining high marks in a regular classroom has nothing to do with academic talent development; most academically talented students can reach such goals much too easily. Note also that their normative status distinguishes these goals from "personal bests," which can apply to the academic goals of all students. The adjective *personal* means that the talentees not only choose these educational goals themselves, but can also revise them periodically; they should have full ownership.

The third adjective, *challenging*, means that these personal excellence goals should incite talentees to leave the security formerly offered by their "big fish" status, and risk testing their learning limits, not only in cognitive terms, but also with respect to their motivation and volition. Finally, the fourth qualifier refers to a goal-setting process that looks ahead far beyond a few weeks or months, trying to encompass at least a full segment (e.g., elementary, middle school, high school) of the K–12 educational trajectory. Consequently, talentees cannot apply to popular activities like summer camps, once a week pull-out classes, or weekend enrichment activities; they need to target main academic objectives relevant to the enriched regular curriculum. They must also involve a substantial investment in time and effort. On the other hand, they need not be ultimate or peak achievement goals, like completing a Ph.D., at least not before entering high school. Of course, if some young talentees entertain with passion long-term career plans, so much the better! But such passionate long-term involvements remain quite rare (see Gagné & McPherson, 2016).

6. Highly selective access. This sixth constitutive element follows directly from the first two defining characteristics: an enriched curriculum offered on a daily basis. Academic talent development requires not only outstanding natural learning abilities, but also, as with any other developmental program, demonstrated probability of future success. Yet, the selection process mentioned above leaves ample room for error; unless the selection ratio is exceedingly high, like top 10% or less of candidates, some selected students will fail to perform at the level expected by the enriched curriculum. It is then tempting to reduce the program's performance requirements to avoid forcing these students to leave. Program administrators should resist that temptation because it marks the beginning of a slippery course toward more mediocre expectations. Instead, all selected students should know when they enter that their membership depends on maintaining adequate academic results. A reduction of the enrichment level will impact the progress and motivation of all other talentees.

7. Early introduction. This final desirable characteristic of DMGT-inspired ATD programs questions a common administrative practice in school districts, namely to delay structured enrichment until at least grades 3 or 4. The justifications given appear associated with worries about (a) less reliable selection procedures with younger children, (b) a still fragile development, and (c) moving too rapidly from the playful early school environment to the more achievement-oriented regular classroom "treadmill" (Rogers, 1991). That postponement policy contradicts a fundamental law of individual differences in development: Precocity manifests itself . . . precociously! Indeed, the popularity of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI-III; Wechsler, 2003) confirms that intellectual precocity becomes easily noticeable by ages 3 or 4. Indeed, many children who enter kindergarten already know the alphabet, can write their name, read some words, and even do simple arithmetic computations. Their intellectual precocity makes them better prepared than the average first grader to tackle the first-grade curriculum.

Dozens of studies have shown that the level of cognitive development measured by IQ and/or school readiness tests predicts academic achievement in the early grades of elementary school much better than students' chronological age. The correlation between chronological age and academic achievement among cohorts of first graders ranges between .10 and .25 (Gagné & Gagnier, 2004), whereas the predictive power increases to .50 or more when using school readiness tests (Jensen, 1980). In terms of explained variance (r^2), the difference between the two predictors amounts to at least a 6:1 ratio! Sadly, although research evidence has shown their numerous benefits, early entrance provisions have never become popular. After examining all 68 evaluative studies of early entrance, Rogers (1991) concluded that it constitutes a very desirable initiative for the vast majority of children. In summary, this seventh constitutive element strongly invites school administrators to make this initial service the cornerstone of their school district's ATD program. Of course, qualifying early entrance as a "cornerstone" implies that it will be followed by the other building blocks of a comprehensive ATD pathway, all the way from kindergarten to college.

Toward ATD pathways. ATD programs could be sequentially structured into comprehensive K–12 ATD pathways. Concretely, it would begin in kindergarten or first grade with an early entrance policy for intellectually precocious children. Beyond that initial cornerstone, academic talentees would follow a parallel, constantly enriched pathway all the way to the end of high school. That pathway would be available to all children manifesting clear indices of future outstanding academic achievement; it would invite these academic talentees to set for themselves challenging academic excellence goals. Full-time ability grouping would not necessarily mean enforcing an enriched age-grade lockstep. Educators would still occasionally allow further acceleration because of remaining large individual differences in learning pace within the talentee population. This comprehensive programming pathway would introduce more relevant designations, replacing the labels "gifted children" and "gifted education" with the more relevant terms *talentee*, *academically talented*, and *academic talent development*. Educators would still use the gifted label, but in a more specific context; it would refer to natural abilities, for instance, when talking about "gifted learners," exactly as proposed within the DMGT framework. But "academically talented student" or "academic talentee" would become the more common expressions, if only because they represent the main criterion of access to and progress within ADT programs. Teachers endorsed with the responsibility of guiding talentees through the various components of that ATD pathway would be called *ATD teachers*.

I am not aware that such a pathway exists anywhere; most school systems in developed countries do not even succeed in putting into practice the first two key characteristics described above. In fact, the two most popular prototypes currently found in elementary classrooms are pull-out classes and regular classroom enrichment (Callahan, Moon, & Oh, 2017), which has been the case for many decades (Archambault et al., 1993; Cox et al., 1985). Both practices ignore most of the seven key characteristics, especially the crucial principle of daily enrichment of the regular school curriculum. If we encounter virtually no DMGT-based ATD programs in primary schools, we can observe interesting examples of ATD-style academic enrichment at the high school level; for instance the 165 highly selective public high schools—still less than 1% of the U.S.'s 22,568 public high schools—identified by Finn and Hockett (2012) in 30 states, or the network of 50 or so selective high schools in New South Wales, Australia (see https://en.wikipedia.org/wiki/List_of_selective_high_schools_in_New_South_Wales). Finally, when systematically implemented with a truly enriched curriculum, self-contained honors classes also represent potentially appropriate examples of academic talent development (Kulik, 2003). Note that the highly popular Advanced Placement classes offered in a majority of U.S. high schools *do not* implement the ATD model proposed here. Indeed, although potentially very enriching for the talented students who take them, they are the equivalent of pull-out classes, and consequently affect in no way the slow pace of the regular curriculum. This limited sample of existing programs demonstrates that the DMGT-inspired ATD model can be implemented, if not as a full ATD pathway, at least through partial ATD programs.

These limited examples suggest that extensive dissemination of proper enrichment lies far in the future. Most school systems fall very short of answering the educational needs of their academically talented high school students; they have planned, as their unique pathway, an age-grade lockstep (Stanley, 1979) coupled with a slow-paced curriculum that covers the 13 years from kindergarten to 12th grade. And that harsh judgment of academic monotony extends to almost every developed country. Such slow dissemination should surprise no one; ATD promoters face numerous obstacles. The specter of elitism hangs constantly over their heads, the low priority in most schools of talented students' educational needs remains a serious obstacle to increased public investment, the ambivalent attitudes of many teachers and administrators have deep roots, and resistance toward the two main administrative provisions needed to fully implement the ATD model, namely full-time ability grouping and acceleration, will not disappear easily. Changes in terminology will also happen very slowly; the gifted label is too deeply embedded in our professional lexicon to expect a rapid increase in use for the terms *academically talented* or *talentee*. In summary, just as students do with regard to their educational goals, we should split our ultimate objective into a coordinated series of more modest intermediate goals. At the same time, if we believe in the ATD model, we must maintain constant pressure on educational authorities and the school community.

Major Takeaways

In conclusion, at least nine characteristics distinguish the DMGT/IMTD from competing models. Jointly, they make this theory a distinct and unique conception of talent development.

- The DMGT clearly differentiates the meaning of the field's two key concepts: giftedness and talent. This differentiation between potentialities and realizations makes possible a unique definition of underachievement among gifted individuals; it simply becomes the *non*transformation of high natural abilities into outstanding systematically developed skills.
- The above distinction leads to another clear definition: Talent development becomes a progressive transformation of gifts—or near gifts—in one or more domains into talents in a particular occupational field. The DMGT is unique by making the concept of talent as important as that of giftedness for the developmental understanding of outstanding competencies (knowledge and skills).
- The introduction within the giftedness and talent definitions of prevalence estimates (top 10%) also constitutes a unique contribution of the DMGT. Its metric-based system of five levels that applies to any giftedness domain or talent field helps maintain a constant awareness of differences *within* the subpopulations of gifted and talented individuals.
- Most conceptions focus almost exclusively on intellectual giftedness (GI) and academic talent (TC), as well as academically based professions (e.g., scientists, lawyers, or doctors). By broadening the concepts of

giftedness and talent and acknowledging a diversity of manifestations in thousands of occupational fields, the DMGT proposes a uniquely nonelitist view of talent development.

- The DMGT stands almost alone in bringing physical giftedness within the fold of the giftedness construct, defining that domain much more broadly than Gardner's bodily-kinesthetic intelligence (Gardner, 1983). This openness should foster closer ties between professionals who focus on academic talent development and those who devote their energies to the development of athletic or artistic talents.
- The DMGT's complex structure can harbor all potential causal factors of talent emergence. Yet, that structure maintains the individuality of every component, subcomponent, and facet; it also clearly specifies their precise nature and role within this talent development theory. The catalysts are clearly situated outside the giftedness and talent concepts themselves. This sets the DMGT apart from many rival conceptions where disparate elements are included in the giftedness definition itself (e.g., Feldhusen, 1992; Sternberg & Davidson, 2005).
- Only in the DMGT does one find an effort to answer the crucial question: "What makes a difference?" Ranking major causal influences in terms of their relative impact on academic achievement helps acknowledge the crucial role of natural cognitive abilities for the emergence of outstanding academic competencies.
- The newly created DMNA makes it possible to recognize and properly situate structurally the biological and genetic underpinnings of natural abilities and of many intrapersonal catalysts. No other competing model takes into account these more distal causal influences.
- The new IMTD uniquely proposes a fully integrative view of the complex process of talent development, literally "from genes to talents" (Gagné, 2015b).

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