

## Building gifts into talents: Overview of the DMGT

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This overview of the DMGT covers five themes: (a) its rationale; (b) the five components; (c) the 'how many' question; (d) the DMGT's 'basements'; and (e) some basic dynamic rules of talent development.

### ***I – THE DMGT'S RATIONALE***

The field of gifted education defines its special population around two key concepts: giftedness and talent. Those who browse through the scientific and professional literature in gifted education soon discover that the existence of two terms does not mean the existence of two distinct concepts.

Most authors commonly use these two terms as *synonyms*, just like in the commonly used expression: "the gifted and talented are..." A few scholars (e.g., Joseph S. Renzulli, Robert Sternberg) even hesitate to use the term talent, focusing their whole conception of outstanding abilities on the concept of giftedness.

When the two terms are differentiated, the distinction may take many forms. Some apply the term 'gifted' to high cognitive abilities, and the term 'talented' to all other forms of excellence (e.g., arts, sports, technology). Others consider giftedness to represent a higher order of excellence than talent. Still others associate giftedness with some mature expression as opposed to a vision of talent as an undeveloped ability. In other words, if we were to extract from major publications in the field all the proposed definitions for these two terms, we would end up with well over a dozen.

Whereas conceptions abound and often contradict one another, scholars keep mentioning one particular idea in almost every discussion of the giftedness construct. They acknowledge, implicitly or explicitly, a distinction between *early emerging* forms of 'giftedness' with strong biological roots, and *fully developed* adult forms of 'giftedness.' Scholars will express that distinction through pairs of terms like potential/realization, aptitude/achievement, and promise/fulfillment.

The Differentiated Model of Giftedness and Talent (DMGT) was created to take advantage of that distinction; it became the basis for new differentiated definitions of these two terms.

GIFTEDNESS designates the possession and use of outstanding *natural* abilities, called aptitudes, 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* abilities, called 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 age peers who are or have been active in that field.

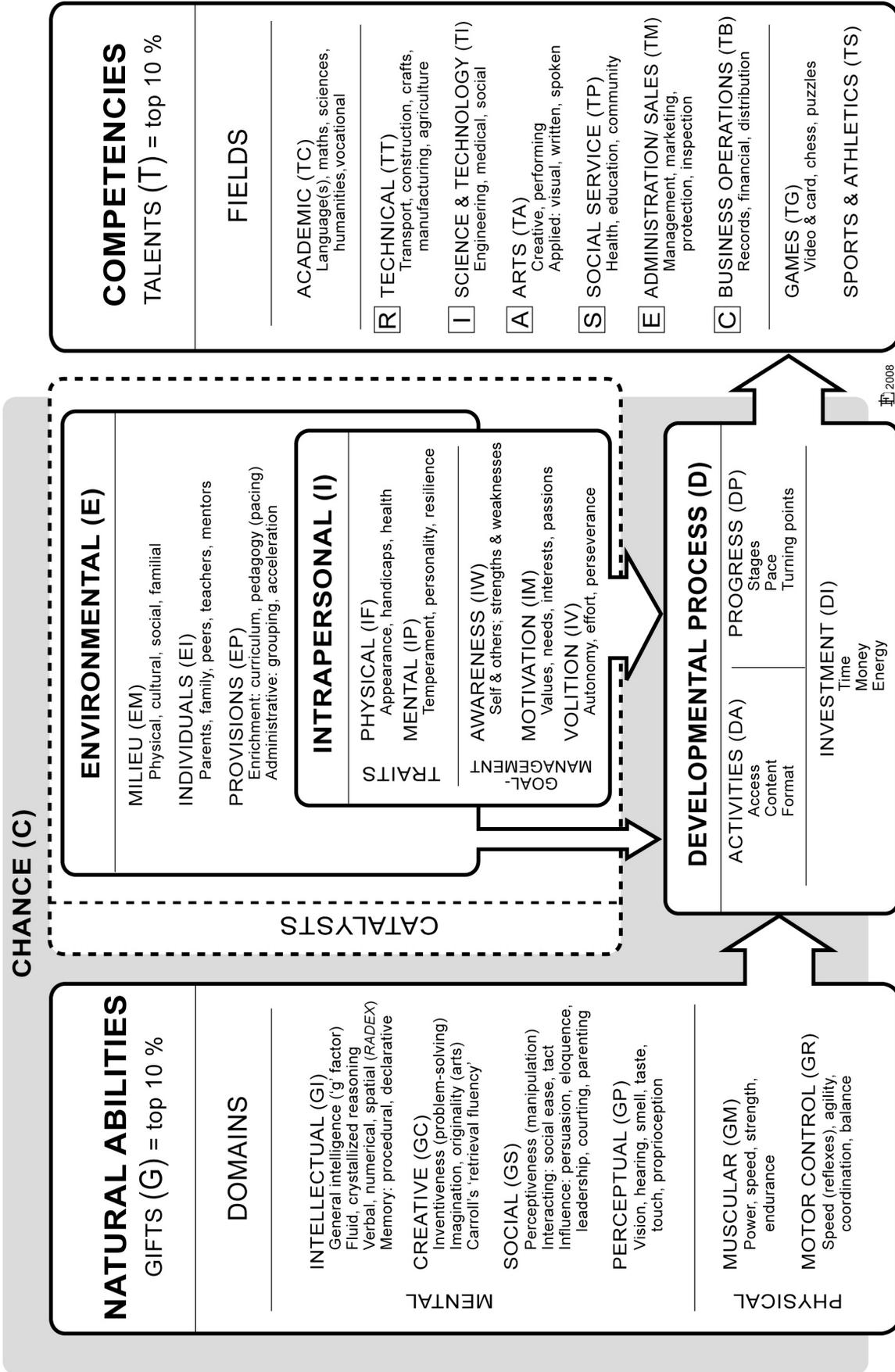
These definitions reveal that the two concepts share three characteristics: (a) both refer to human *abilities*; (b) both are *normative*, in the sense that they target individuals who differ from the norm or average; (c) both target individuals who are 'non-normal' because of *outstanding* behaviors. These commonalities help understand why so many professionals and laypersons regularly confound them.

Note that both definitions concretize the meaning of 'outstanding' with precise estimates of prevalence: the 'how many' question. Assuming that most human abilities manifest themselves as normal—or bell curve—distributions, the DMGT states that gifted and talented individuals occupy the top 10% of such distributions.

From these two definitions we can extract a simple definition for the talent development process.

TALENT DEVELOPMENT corresponds to the progressive transformation of gifts into talents.

These three components, giftedness (G), talent (T), and the talent development process (D), constitute the basic trio of components within the DMGT. Two additional components (see Figure) complete the structure of this talent development theory: intrapersonal catalysts (I), and environmental catalysts (E).



## **II – THE FIVE COMPONENTS**

### ***Gifts (G)***

The G component of the DMGT clusters natural abilities into six sub-components. Four of them are mental: intellectual (GI), creative (GC), social (GS), and perceptual (GP). The last two are physical abilities: muscular (GM) abilities devoted to large physical movements, and abilities associated with fine motor control and reflexes (GR); both usually contribute to complex physical activities (e.g., tennis, baseball, gymnastics).

Natural abilities are NOT innate; they do develop over the whole course of a person's life, but probably more during a person's early years. Their spontaneous development through maturational processes, as well as non-systematic daily activities, is partially controlled by the genetic endowment. This development rapidly produces large individual differences in a person's aptitudes for the systematic development of competencies.

We can observe natural abilities in most tasks children confront in their daily activities and their schooling. Think for instance of the intellectual abilities needed to learn to read, speak a foreign language, or understand new mathematical concepts. Think of the creative abilities involved in writing a short story, composing a song, drawing an attractive poster, or playing with LEGO blocks. Notice also the social abilities children use in their daily interactions with classmates, teachers, and parents. Finally perceptual and physical natural abilities guide activities in the schoolyard, in neighborhood sports, or arts (dance, sculpture, crafts).

Gifts manifest themselves more easily and directly in young children because only limited systematic learning activities have begun transforming them into specific talents. Still, we can observe them in older children and adults through the facility and speed with which individuals acquire new knowledge and skills. The easier or faster the learning process, the more we will assume the presence of underlying high natural abilities.

### ***Talents (T)***

Nine talent sub-components appear. Six of them correspond to the ACT's World-of-Work classification of occupations. It has its source in John Holland's well-known RIASEC work-related classification of personality types: Realistic, Investigative, Artistic, Social, Enterprising, Conventional. The six basic types lead to 26 smaller occupational groups summarily identified within each of the RIASEC categories. Three additional sub-components complement the basic World-of-Work system: academic (K-12) subjects, games, and sports.

Most talents are easy to assess: we need only performance measures, nothing else. Exams and standardized achievement tests cover all K-12 subject matters. Similar assessments exist for most occupational fields. It is no doubt in sports that achievements are easiest to assess at levels of excellence. Note the lack of elitism in the DMGT's concept of talent. Contrary to most scholars, who tend to borrow their examples from elite professions, the DMGT stresses the presence of talented individuals in most human occupations.

### ***Talent development process (D)***

The D component includes three sub-components: activities (DA), progress (DP), and investment (DI). The talent development process begins as soon as a child, adolescent, or adult enters, through identification or selection (DAA), a systematic, talent-oriented and long-term program of activities. I judged useful to create a neologism, the term *talentee*, to describe anyone participating in a systematic talent development program.

The core of the talent development activities includes a specific content (DAC), the curriculum, offered within a specific learning environment (DAF or format). That learning environment may be either unstructured (autodidactic learning) or structured (e.g., school, conservatory, sport organization).

The progress of a talentee 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—the talentee is progressing toward peak achievement. The long-term developmental course of a talentee will be marked by a series of more or less crucial turning points: being spotted by a teacher or coach, receiving an important scholarship, accidents, as well as positive (falling in love) or negative (death of a close one) personal events impacting the developmental process.

Finally, the investment (DI) sub-component serves to illustrative quantitatively the intensity of the talent development process in terms of time, money, or psychological energy (Ericsson's deliberate practice).

## ***The I and E catalysts***

In chemistry, catalysts facilitate and accelerate a chemical process; they also remain unmodified after their contribution. Their DMGT metaphorical counterparts differ in two ways: (a) they may exert—by their presence or absence—both positive and negative influences, and (b) they may be permanently transformed through their involvement in the developmental process.

The DMGT is a talent-development model. It is NOT a model representing a person's total personal development. Consequently, only elements that have a significant influence on the talentee's developmental process should be introduced. Any other I or E characteristic judged causally irrelevant for the emergence of the talentee's outstanding achievements should not be included.

Note the partial overlap of the two catalysts; it signals the crucial *filtering* role that the I component plays with regard to environmental influences. The narrow arrow at left indicates some limited direct E influence on the developmental process. But the bulk of environmental stimuli have to pass through the sieve of an individual's needs, interests, or personality traits. Talentees continually pick and choose which stimuli will receive their attention. For instance, parents and teachers well know their limited capacity to modify the learning habits of unwilling youth. On the other hand, research on human resilience has revealed that strong will power can sometimes vanquish seemingly insurmountable environmental obstacles.

***Intrapersonal (I) catalysts.*** The DMGT distinguishes two basic intrapersonal dimensions: (a) relatively stable physical and mental *traits*, and (b) goal-oriented *processes*. Physical traits (IF) include comeliness, racial or ethnic traits, handicaps (think of the Paralympic Games), chronic illnesses, and so forth.

Within the mental or personality (IP) category, we find an almost infinite list of descriptive qualities. The concept of *temperament* refers to hereditary predispositions to behave in certain ways, whereas the term *personality* encompasses a large diversity of positive or negative acquired styles of behavior.

The goal-management dimension includes three sub-components: awareness (IW), motivation (IM), and volition (IV). Being aware of their strengths and weaknesses plays a crucial role for in the planning of talentees' developmental activities. These strengths and weaknesses concern both the G, I, and E components. Goal-oriented processes may be differentiated according to *goal-identification* activities as opposed to *goal-attainment* activities: *what* we want to achieve and *how* we will go about reaching that goal.

In the DMGT, the term 'motivation' refers specifically to the identification—and occasional reassessment—of an appropriate talent-development goal. Talentees will examine their values and their needs, as well as determine their interests or be swept by a potential—but rare—passion. The loftier the goal, the more difficulties talentees will encounter in their efforts to reach it. Long-term goals placed at a very high level will require an intense dedication, as well as daily acts of will power to maintain practice through obstacles, boredom, and occasional failure.

***Environmental (E) catalysts.*** The E component comprises three distinct sub-components. The first one, called *milieu* (EM), includes a diversity of environmental influences, from physical ones (e.g., climate, rural vs. urban living) to social or cultural ones. Economic issues (e.g., family wealth) also belong to this sub-component.

The second sub-component, *individuals* (EI), focuses on the influence of significant persons in the talentee's social 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 the talentee. Recall that only actions by these individuals that impact the talent development process are judged relevant.

The third sub-component, *provisions* (EP), covers all forms of talent development services and programs. The two traditional sub-categories of enrichment and administrative provisions directly parallel the 'content' and 'format' sub-categories of the DA sub-component earlier described. Here we adopt a broader perspective rather than examine provisions from the strict perspective of a given talentee's talent development course. Enrichment refers to specific talent development curricula or pedagogical strategies; its best-known example is called enrichment in density or curriculum compacting. Administrative provisions are traditionally subdivided into two main practices: (a) part-time (e.g., clusters, pull-out classes) or full-time ability grouping, and (b) accelerative enrichment (e.g., early entrance to school, grade skipping, Advanced Placement Program).

### ***About the chance factor***

Chance's placement within the DMGT has evolved considerably over the years. First introduced as one of five environmental sub-components, it became a qualifier of environmental factors. Chance represented the degree of control that talentees had over environmental influences. Its role broadened when it became clear that the problem of control also concerned other DMGT components.

A famous psychologist in motivation, John William Atkinson, once stated that all human accomplishments could be ascribed to two crucial 'rolls of the dice' over which no individual exerts any personal control: the accidents of birth and background. Indeed, we do not control the genetic endowment received at conception; yet, that genetic endowment affects both our natural abilities (the G component), our temperament, as well as other elements of the I component. Moreover, we do not control in which family and social environment we are raised. These two impacts alone give a powerful role to chance in sowing the bases of a person's talent development possibilities.

### ***III – UNDERNEATH THE DMGT***

As mentioned earlier, natural abilities are not innate. They do develop, yet have undeniable genetic underpinnings. Now that the human genome has been decoded, researchers are trying (a) to pinpoint genes responsible for various human abilities and other personal characteristics, and (b) to reconstruct the biological path between them and observable (phenotypic) characteristics. The DMGT represents a 'ground' level theory of talent development. Underneath, we will find supporting biological and neurological structures. These underground structures contribute to create large individual differences at 'ground' (behavioral) level.

The DMGT's underground can be metaphorically subdivided into three basements. At the bottom (B-3), we find *genotypic* structures and processes (e.g., DNA, RNA, protein production). The second basement (B-2) contains a large diversity of physiological and neurological processes (called *endophenotypes*) that control not only a person's biological development from conception, but also ensure the proper functioning of body and brain. The highest basement (B-1) includes anatomical structures (e.g., brain size, tallness, joint flexibility) that have been associated with abilities and other personal characteristics. They are called *exophenotypes*.

### ***IV – PREVALENCE AND LEVELS***

How many people are gifted and/or talented? The prevalence question is crucial in the case of *normative* constructs, which, just like giftedness and talent, target a small proportion of the whole population. Normative concepts include poverty, tallness, weight, most neurotic syndromes, and countless other concepts. Practically speaking, adopting a threshold of 10% instead of 1%—a *tenfold* difference in estimated prevalence—has a huge impact on selection practices and educational provisions!

The 'how many' 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. The choice of an appropriate threshold requires that professionals come to a *consensus*.

In the DMGT, the threshold for both the giftedness and talent concepts is placed at the 90th percentile. In other words, those who belong to the top 10% of the relevant reference group in terms of natural ability (for giftedness) or achievement (for talent) deserve the relevant label. This generous choice of threshold is counterbalanced by the recognition of *levels* or degrees of giftedness or talent. There are five hierarchically structured levels inspired by the metric system; each new level includes the top 10% (one decimal place) of the preceding level. This *metric-based* (MB) system of levels constitutes an intrinsic constituent of the DMGT.

Within the top 10% of “mildly” gifted or talented persons, the DMGT proposes four progressively more selective subgroups. They are labeled *moderately* (top 1%), *highly* (top 1:1,000), *exceptionally* (top 1:10,000), and *extremely* or *profoundly* (top 1:100,000).

Note that the MB system of levels applies to every domain of giftedness and every field of talent. Because giftedness domains are not closely correlated, individuals gifted in one domain are not necessarily the same as those gifted in another. Consequently, the *total* number of gifted and talented individuals largely exceeds the 10% value. Some studies indicate that it might well be two or three times larger.

## V – THE DYNAMICS OF TALENT DEVELOPMENT

### ***Basic dynamic rules***

Within the DMGT, natural abilities or aptitudes act as the “raw material” or the constituent elements of talents. It follows from this relationship that talent necessarily implies the presence of well above average natural abilities; in most situations, one cannot become talented without first being gifted, or close to that threshold. The reverse is not true: high natural abilities may simply remain gifts, and not be translated into talents, as witnessed by the phenomenon of academic underachievement among intellectually gifted children.

There is also a dynamic association between specific gifts and talents. Because of their status as 'raw materials,' gifts represent generic abilities that can be molded into somewhat divergent skills, depending on the field of activity adopted by a talentee. For example, manual dexterity, one of many natural physical abilities, can be molded into the particular skills of a pianist, a dentist, a typist, or a video-game player. Similarly, analytical reasoning, one of many cognitive natural abilities, can be molded into the scientific reasoning of a chemist, the game analysis of a chess player, or the strategic planning of an athlete.

In most talent development situations, the four causal components (G, I, E, D) contribute positively to the emergence of talents. And it is assumed that this positive contribution will become more intense as talentees attempt to reach higher talent goals. These contributions can vary a lot in intensity and continuity from one talentee's story to another. No two developmental paths look alike. This is why talent development is a very complex process, a process where the four causal components modify their interactions over the course of a talentee's developmental path. Think for instance of the close supervision many parents give to their children's homework in elementary school, and its virtual disappearance by the time the kids reach high school.

### ***Illustrative scenarios***

Within the K-12 educational system, it is not rare to observe academically talented students who have invested little more in their schooling than their high natural intellectual gifts. Most of these students never show much intrinsic motivation for learning, need almost no environmental support, and invest little time in their schooling beyond presence in the classroom and occasional pre-exam 'cramming.' Here are students who literally surf on their intellectual gifts.

Conversely, a few students with barely above average natural intellectual abilities may reach the bottom rung of the MB system of levels—mild academic talent—thanks to intense dedication and effort (IV), long hours of deliberate study (DI), and continuous support from both parents and teachers (EI). These two examples illustrate diverse dynamic interactions between the four causal components.

### ***What makes a difference?***

Do some components generally—on average—exercise more powerful influences on talent emergence? My own review of the existing literature has brought me to propose the following downward hierarchy among the four components: *G, I, D, E*. I discuss this hierarchy in detail in some of the references below (see Gagné, 2003, 2005). But, creating a causal hierarchy should not make us forget that in most situations *all* components play a crucial role in the talent developments process. In a nutshell, talent emergence results from a complex choreography between the four causal components, a choreography that is unique to each individual.

### ***Suggested readings***

- Gagné, F. (1998). A proposal for subcategories within the gifted or talented populations. *Gifted Child Quarterly*, 42, 87–95.
- Gagné, F. (2003). Transforming gifts into talents: The DMGT as a developmental theory. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education (3<sup>rd</sup> ed.)*, pp. 60-74. Boston: Allyn and Bacon.
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