Building gifts into talents: Brief overview of the DMGT 2.0

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In 2007-08, I introduced many important changes to most components of the Differentiated Model of Giftedness and Talent (DMGT). This updated version was unveiled—a bit tongue-in-cheek—as the "DMGT 2.0." This brief overview of the revised DMGT will cover 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

Chaotic conceptual foundations

The field of gifted education defines its population with 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 common expression: "the gifted and talented are…"

When the two terms are differentiated, the distinction may take many forms. Some apply the term 'giftedness' to high cognitive abilities, and the term 'talent' to all other forms of excellence (e.g., arts, sports, technology). Others consider giftedness to represent a higher level 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.

Exploiting a fundamental dichotomy

Whereas conceptions abound and often contradict one another, scholars keep mentioning one particular dichotomy 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 groups of individuals are 'non-normal' because of outstanding behaviors. These commonalities help understand why so many professionals and laypersons regularly confound them.

Both definitions concretize the meaning of 'outstanding' with precise estimates of prevalence, namely the top 10% of a relevant population. The rationale for this statistical value will be briefly discussed in section III.

From these two definitions we can extract a simple definition for the talent development process: it corresponds essentially 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).

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).

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 (see section IV). 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 American College Testing's World-of-Work classification of occupations. It has its source in John Holland's work-related classification of personality types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (RIASEC). The six basic types lead to 26 specific occupational groups summarized within each of the RIASEC categories. Three additional subcomponents complement the 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, especially during the training period. It is no doubt in sports that outstanding achievements are easiest to measure; every day, newspapers offer pages of such measurements! Note the lack of elitism in the DMGT's concept of talent. Contrary to most scholars' examples, usually borrowed from eminent individuals in elite professions, the DMGT stresses the presence of talented individuals in most human occupations.
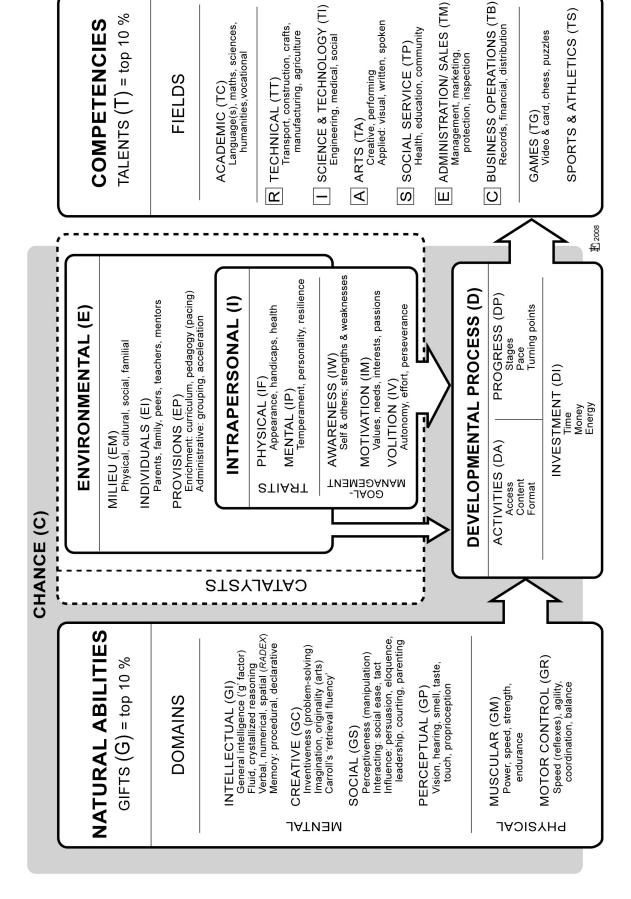
Talent development process (D)

Talent development is formally defined as the systematic pursuit by talentees, over a significant period of time, of a structured program of activities leading to a specific excellence goal. I judged useful to create a neologism, talentee, to describe anyone participating in a systematic talent development program.

The D component has three sub-components: activities (DA), investment (DI), and progress (DP). Talent development begins when a child or adult gains access (DAA), through identification or selection, to a systematic, talent-oriented program of activities. These activities include 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 investment (DI) sub-component quantifies the intensity of the talent development process in terms of time (DIT), money (DIM), or psychological energy (DIE). These three indices are transformed into longitudinal curves showing increases or decreases over time; they can also illustrate differences between talentees.

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—the talentee is progressing toward the defined excellence goal. The long-term developmental course of a talentee will be marked by a series of more or less crucial turning points (DPT) (e.g., being spotted by a teacher or coach, receiving an important scholarship, accidents, death of a close one).

NATURAL ABILITIES
GIFTS (G) = top 10 %

DOMAINS

MENTAL

INTELLECTUAL (GI)
General intelligence ('g' factor)
Fluid, crystallized reasoning
Verbal, numerical, spatial (*RADEX*)
Memory: procedural, declarative

CREATIVE (GC)
Inventiveness (problem-solving)
Imagination, originality (arts)
Carroll's 'retrieval fluency'

SOCIAL (GS)
Perceptiveness (manipulation)
Interacting: social ease, tact
Influence: persuasion, eloquence,
leadership, courting, parenting

PERCEPTUAL (GP)
Vision, hearing, smell, taste,
touch, proprioception

PHYSICAL

MUSCULAR (GM)
Power, speed, strength,
endurance

MOTOR CONTROL (GR)
Speed (reflexes), agility,
coordination, balance

CHANCE (C)

CATALYSTS

ENVIRONMENTAL (E)

MILIEU (EM)
Physical, cultural, social, familial

INDIVIDUALS (EI)
Parents, family, peers, teachers, mentors

PROVISIONS (EP)
Enrichment: curriculum, pedagogy (pacing)
Administrative: grouping, acceleration

INTRAPERSONAL (I)

TRAITS

PHYSICAL (IF)
Appearance, handicaps, health

MENTAL (IP)
Temperament, personality, resilience

GOAL-MANAGEMENT

AWARENESS (IW)
Self & others; strengths & weaknesses

MOTIVATION (IM)
Values, needs, interests, passions

VOLITION (IV)
Autonomy, effort, perseverance

DEVELOPMENTAL PROCESS (D)

ACTIVITIES (DA)
Access
Content
Format

PROGRESS (DP)
Stages
Pace
Turning points

INVESTMENT (DI)
Time
Money
Energy

COMPETENCIES
TALENTS (T) = top 10 %

FIELDS

ACADEMIC (TC)
Language(s), maths, sciences,
humanities, vocational

R **TECHNICAL (TT)**
Transport, construction, crafts,
manufacturing, agriculture

I **SCIENCE & TECHNOLOGY (TI)**
Engineering, medical, social

A **ARTS (TA)**
Creative, performing
Applied: visual, written, spoken

S **SOCIAL SERVICE (TP)**
Health, education, community

E **ADMINISTRATION/ SALES (TM)**
Management, marketing,
protection, inspection

C **BUSINESS OPERATIONS (TB)**
Records, financial, distribution

GAMES (TG)
Video & card, chess, puzzles

SPORTS & ATHLETICS (TS)

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The I and E catalysts

Generalities. 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.

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 appearance, gender, 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 behavioral predispositions with a strong hereditary component, 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 one's strengths and weaknesses plays a crucial role in the planning of talentees' developmental activities. Strengths and weaknesses concern both the G, I, and E components. Goal-oriented processes may be differentiated according to goal-identification activities (IM), as opposed to goal-attainment activities (IV). The term 'motivation' usually brings to mind both the idea of what motivates us (IM) and how motivated (IV) we are, how much effort we are ready to invest in order to reach our goal.

Within the DMGT framework, 'motivation' refers specifically to the identification—and occasional reassessment—of an appropriate excellence 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 efforts talentees will need to reach it. Long-term goals placed at a vey high level require intense dedication, as well as daily acts of will power to maintain practice through obstacles, boredom, and occasional failure.

Environmental (E) catalysts. Readers familiar with older versions of the DMGT will recall that environmental catalysts used to appear below a central arrow; that arrow represented the developmental process as a progressive transformation of gifts into talents. In this 2.0 update, the E catalysts have been moved up, and largely behind the intrapersonal catalysts.

This partial overlap signals the crucial filtering role played by the I component with regard to environmental influences. The narrow downward arrow at left indicates some limited direct E influences 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.

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 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 the talentee. In a talent development analysis based on the DMGT, we include only personal influences that impact the talent development process.

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 outlook 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 (C)

Chance's placement within the DMGT has evolved considerably over the years. First introduced as one of five environmental sub-components, it later became one of the three catalysts. I finally realized that its 'true' role was that of a qualifier of any causal influence, along with direction (positive/negative) and intensity. Chance represented the degree of control that talentees had over environmental influences.

A famous psychologist in motivation, John William Atkinson, once stated that all human accomplishments could be ascribed to two crucial 'rolls of the dice': 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.

Because of this redefined role, the 'chance' factor should no longer appear in a visual representation of the DMGT. But, because of its popularity among DMGT 'fans,'—as well as my personal attachment to it—I created some room for it in the background of the components it influences.

IV – PREVALENCE AND LEVELS

How many people are gifted and/or talented? The prevalence question is crucial in the case of normative constructs (e.g., poverty, tallness, weight, most neurotic syndromes), which target a small—and marginal—proportion of the whole population. Practically speaking, adopting a threshold of 10% instead of 1%—a tenfold difference in estimated prevalence—has a huge impact on selection practices and talent-development 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 establishment of a proper threshold requires that professionals come to a consensus. In the DMGT, individuals 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 for the initial 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% 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.

IV – UNDERNEATH THE DMGT

As mentioned earlier, natural abilities are not innate. They do develop yet possess undeniable biological underpinnings. Now that the human genome has been decoded, researchers are trying to (a) pinpoint genes responsible for various human abilities and other personal characteristics, and (b) reconstruct the biological path between them and observable (phenotypic) characteristics. The DMGT represents a theory of talent development limited to the 'ground level' of directly observable behavior. The supporting biological structures are situated underneath. Although they contribute to create the large individual differences observed at ground level, they are not constituent elements of the DMGT itself; each of level has its own degree of autonomy.

The DMGT's basement can be metaphorically subdivided into three levels. At the bottom, we find genotypic structures and processes (e.g., DNA, RNA, protein production). The second level contains a large diversity of physiological and neurological processes (called endophenotypes) that ensure the proper functioning of body and brain. Many of them are known sources of individual differences in the G and I components. The highest level includes anatomical structures, called exophenotypes (e.g., brain size, tallness, joint flexibility), which have been associated with abilities and other personal characteristics. These three underground structures interact dynamically to ensure the proper development of natural abilities and many intrapersonal catalysts.

V – THE DYNAMICS OF TALENT DEVELOPMENT

The DMGT is a talent-development model. It does NOT pretend to represent a person's total personal development. Consequently, only elements that have a significant influence on a person's talent development process should be introduced. Any case study of a person's talent development should exclude any I or E characteristic judged causally irrelevant for the emergence of the talentee's outstanding achievements.

Basic dynamic rules

Within the DMGT, natural abilities or aptitudes act as the "raw material" or the constituent elements of talents. It follows that the presence of talents necessarily implies the presence of well above average natural abilities; in most situations, one cannot become talented without first being gifted, or close to the minimum giftedness threshold. The reverse is not true: high natural abilities may remain just gifts, and not be translated into talents, as shown 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, D, E) 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 these youth 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. Many of these students show little intrinsic motivation for academic 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. Their 'real' interests are elsewhere: sports, friends, video games, etc.

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 weekly 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 and their sub-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 the references below. But, creating a causal hierarchy should not make us forget that in most situations all components play an important 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. (2003). Transforming gifts into talents: The DMGT as a developmental theory. In N. Colangelo & G. A. Davis (Eds.), Handbook of gifted education (3rd ed.), pp. 60-74. Boston: Allyn and Bacon.

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