



Intellectual giftedness: Economic, political, cultural, and psychological considerations

Samuel D. Mandelman ^{a,*}, Mei Tan ^b, Abdullah M. Aljughaiman ^c, Elena L. Grigorenko ^{a,b,d}

^a Teachers College, Columbia University, USA

^b Yale University, USA

^c King Faisal University, Kingdom of Saudi Arabia

^d Moscow State University, Russia

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ABSTRACT

The concept of intellectual giftedness has had a long history in the literature of psychology and education. However, though the existence of the phenomenon underlying this concept has never actually been disputed, there are multiple ongoing debates regarding its definition, methods for its identification, and subsequent programming. This essay is conceived to contribute to the discussion on intellectual giftedness and to provide a global context for the other articles in this issue. The essay is comprised of three major parts. First, we review the defining terms, contexts and theories historically and currently applied to the understanding of intellectual giftedness. Second, we comment on models used to identify it. Third, we discuss the major influences that directly shape the treatment of giftedness in a number of international settings.

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1. Intellectual giftedness: Terms, contexts, and theories

The concept of *intellectual giftedness* has had a long history in the literature of psychology and education. It has been captured by a variety of terms throughout the centuries, from ancient writings (e.g., Socrates¹ and Confucius²) to modern interpretations. Though the existence of the phenomenon underlying this concept has been disputed by few, there are multiple ongoing debates regarding (1) what intellectual giftedness really is and what it should be called (i.e., intellectual giftedness or something else); (2) whether it can or should be identified, and if so, how; and (3) what to do, if anything, for those who possess it.

This essay is conceived to contribute to this discussion and to provide a global context for the articles following in this special issue. The essay's three parts address the questions above. First, we review a variety of existing views on the terms used to refer to intellectual giftedness, the contexts determining educational systems' attitudes toward intellectual giftedness, and various theories of intellectual giftedness. Second, we comment on models used to identify intellectual giftedness and discuss their various advantages and disadvantages. Third, we present the major influences, such as political pressures, governmental approaches, educational ideologies,

and resources, that shape some of the models for the identification of giftedness that are currently being applied around the world.

1.1. Terms

The literature is replete with numerous terms used to reference intellectual giftedness. The term “gifted” in and of itself describes a continuum of ability [i.e., mildly gifted (IQ 115–129, top 2.5%), moderately gifted (130–144, top 1%), highly gifted (145–159³, top 0.13%), exceptionally gifted (top 0.003%), and profoundly gifted (top 0.000003%), although these IQs and %-thresholds may vary a bit⁴. Other commonly used related terms are talented⁵, high ability⁶, high potential⁷, able⁸, superior⁹, exceptional¹⁰,

³ It is of note that most recent tests are not design to capture scores over 160. Thus, using scores for cut-off purposes might be not appropriate.

⁴ 1: having great natural ability; 2: revealing a special gift (Merriam-Webster, 2009).

⁵ 3: the natural endowments of a person; 4 a: a special often athletic, creative, or artistic aptitude, b: general intelligence or mental power, c: ability; 5: a person of talent or a group of persons of talent in a field or activity (Merriam-Webster, 2009).

⁶ 1: having sufficient power, skill, or resources to accomplish an objective 2: marked by intelligence, knowledge, skill, or competence (Merriam-Webster, 2009).

⁷ 1: existing in possibility : capable of development into actuality (Merriam-Webster, 2009).

⁸ 1 a: having sufficient power, skill, or resources to accomplish an object, b: susceptible to action or treatment; 2: marked by intelligence, knowledge, skill, or competence (Merriam-Webster, 2009).

⁹ 4 a: greater in quantity or numbers, b: excellent of its kind : better (Merriam-Webster, 2009).

¹⁰ 1: forming an exception: rare; 2: better than average: superior; 3: deviating from the norm: as a: having above or below average intelligence, b: physically disabled (Merriam-Webster, 2009).

* Corresponding author. Teachers College, Columbia University, Box 118, 525 W. 120 Street, New York, NY 10027, USA.

E-mail address: SDM2125@Columbia.Edu (S.D. Mandelman).

¹ See *The Republic* by Plato, where Socrates refers to abilities as a gift from gods.

² See *San Zi Jing* (“All Wisdom With Three Words”) by Wang Ying-ling (circa 13th century), where Confucius talks about effort and its superiority over abilities and introduces the concept of meritocracy.

supernormal¹¹, precocious¹², rapid¹³, quick¹⁴, prodigy¹⁵, and genius¹⁶, among others. Some of these terms are used interchangeably, whereas others signify different categories (Marland, 1972) or levels (Gagné, 1995) of development. An exploration of the semantic borders and overlaps between all of these terms might be an interesting task on its own. However, they all share a core idea: that there are manifestations of human potential that differentiate a person intellectually from his/her reference groups (e.g., peers, colleagues, or countrymates). Throughout the discourse presented here the concept of *intellectual giftedness* (IG), defined as a display of a high-level of intellectual potential across multiple domains (see Kaufman, this issue) or within a single domain of human performance, is the focus of discussion. IG is viewed as an internal (see Thompson & Oehlert, this issue), always present, characteristic of the individual who demonstrates it, though it can be modulated by the situation (e.g., the educational context) in which that individual is immersed (see Stoeger & Ziegler, this issue).

2. Contexts

Many considerations determine the particular accent (or a lack of such) of a given educational system's approach to IG. Given the limited nature of this essay, only areas of particular interest and influence are mentioned here. Specifically, a brief typology of educational systems with regard to modern philosophical and political considerations is presented. Next, the economic pressures influencing the nature of education in the modern world are outlined.

2.1. Typologies of educational systems

Typically, any discourse on IG and the answers to the three questions posed above—concerning the definition of IG, how it might be identified, and how those identified should be treated—are highly contextualized within the particular educational system around which such discourse unfolds. Although modern educational systems are multidimensional and diverse, one dimension of such systems is particularly important for this discussion: the mechanisms by which educational opportunities and privileges are distributed among individuals within the system. Although there are many variants of such distribution schemes, only three main typologies are discussed here: (a) plutocracy/nepotism/oligarchy, (b) meritocracy, and (c) egalitarianism.

Typology (a) refers to educational systems in which opportunities and privileges are distributed by wealth (plutocracy), family connections (nepotism), or social class (oligarchy). These distribution mechanisms were commonly characteristic of early educational systems, such as those of ancient civilizations, medieval times, and the pre-industrial world. Throughout the 20th and 21st centuries, these mechanisms have slowly but surely been forced out, but their residues are still highly influential in weak educational systems where only a small minority of the population has access to educational opportunities such as higher education [(e.g., the majority of African

countries, (Grigorenko, 2008)], though less influential in strong educational systems, in which various legacies are promoted, but only for a small minority (e.g., within highly prestigious private educational institutions). This typology is not directly relevant to the discussion below because when access to educational opportunities is driven by wealth, family connections, or social class privileges—that is, factors external to an individual's characteristics—internal characteristics such as IG become irrelevant to the process. However, this typology is pertinent to this discussion indirectly because social-economic factors and family circumstances interact with IG, and are thus important to take into account while thinking about issues of both identification and educational provision.

Typology (b), meritocracy, assumes that access to educational opportunities is and should be provided based on ability and accomplishments (merit). The argument behind this typology is that educational systems should be stratified and segregated so that more advanced schools educate the most able students, who then continue on to higher education institutions and ultimately make contributions to the societies who promoted them (see Subotnik & Rickoff, this issue). Numerous educational systems around the world have attempted to implement meritocratic mechanisms for accessing educational opportunities with various degrees of success, ranging from creating generations of highly productive individuals who have influenced the development of science and technology in their countries [e.g., the Soviet Union, (Grigorenko, 2000)] to, arguably, creating segregated educational systems that, in fact, preserve the privileges of upper-, upper-middle-, and middle-class families (Ball, 2003; Power, Edwards, Whitty & Wigfall, 2003; Teese, 2000; Tomlinson, 2005) due to the fact that the selection criteria are highly correlated with indicators of social-economic status (e.g., parental income and education). Illustrated by multiple examples throughout the world that are quite variable in their realization and effectiveness, this typology is central in the justification for and conceptualization of intellectual giftedness. Many theories of giftedness and gifted education are based on the doctrine of meritocracy. In fact, the very idea of identifying intellectually gifted children and treating them in a special way is rooted in this doctrine (Lipman, 2004). Identification within this typology is, supposedly, based only on the internal characteristics of an individual, i.e. individual differences; no other characteristics should matter. However, though there is consensus in the literature on this, there is a great diversity of opinions with regard to how these internal characteristics should be selected (Plucker & Barab, 2005), where the threshold lines between gifted and not gifted should be drawn and how the inclusion criteria should be defined (Crace, 2006), and how gifted and non-gifted students should be educated within the same educational system (Lucey & Reay, 2002).

Typology (c), the doctrine of egalitarianism, holds that all individuals should be treated as equals and have the same educational opportunities and privileges. In this context, the assumption is that all children have abilities, although they might differ in their specific profiles, and that therefore they all have an equal right to the educational opportunities that will allow them to develop and realize their abilities, whatever they are. This approach assumes that all children are able, although to various degrees, and that it is the task of the educational system to adjust itself such that everyone's needs are met and their abilities realized. The doctrine of egalitarianism has heavily influenced the concept of IG and gifted education, particularly in the US system of education, where much attention is given to the underrepresentation of minority students in programs for intellectually gifted children (Ford & Moore, 2006; Gallagher, 2005; Gordon & Bridgall, 2005). The argument there is that the pattern of identification criteria should be diversified so that the abilities of many more children of diverse backgrounds can be revealed, thereby allowing them to be eligible for services (Gentry, Hu & Thomas, 2008). Reis and Renzulli in this issue further discuss underrepresentation of giftedness in diverse populations.

¹¹ 1: exceeding the normal or average ; 2: being beyond normal human powers (Merriam-Webster, 2009).

¹² 1: exceptionally early in development or occurrence; 2: exhibiting mature qualities at an unusually early age (Merriam-Webster, 2009).

¹³ Marked by a fast rate of motion, activity, succession, or occurrence (Merriam-Webster, 2009).

¹⁴ 1: acting or capable of acting with speed; as a (1)*:* fast in understanding, thinking, or learning*:* mentally agile (2)*:* reacting to. stimuli with speed and keen sensitivity (3)*:* aroused immediately and intensely (Merriam-Webster, 2009).

¹⁵ a highly talented child or youth (Merriam-Webster, 2009).

¹⁶ a: a single strongly marked capacity or aptitude, b: extraordinary intellectual power especially as manifested in creative activity, c: a person endowed with transcendent mental superiority (a person with a very high IQ) (Merriam-Webster, 2009).

The majority of today's educational systems have adopted elements of meritocracy and egalitarianism, blending them, although not without a struggle [e.g., (Radnor, Koshy & Taylor, 2007; Tomlinson, 2008)], into a brew of policies that reflect the cultural, political, and economic profiles of the countries in which they exist. However, there are educational systems that openly declare themselves merit-based (e.g., Israeli and Singaporean) or equality-based (e.g., French and Spanish). Although perhaps abstract and philosophical at first glance, this distinction is fundamentally important for understanding the various interpretations of IG and the identification and education practices being applied toward IG in different educational systems around the world. Correspondingly, this distinction is revisited throughout this essay multiple times.

3. Realities of the modern world: Forces of economics and politics

Within each of the typologies discussed above there are specific economic and political factors and pressures that further shape the educational systems in countries; some of these factors will now be explored. The concept of a *global knowledge economy* has recently penetrated the literature on both general (Thompson, 2004) and special—in particular, gifted—education (Tomlinson, 2008). The majority [although not without exception, e.g., (Tomlinson, 2008)] of educators argue that the restructuring of the global market introduces specific challenges to economies that want to remain competitive in this market, calling for global educational reforms. Apprehensive over losing dominance in the world market, quite a number of leading economies have raised concerns about educating their youngsters sufficiently to compete in a global arena, calling for the enhancement of school education in general [e.g., UK DfEE¹⁷ (Department for Education and Employment, 1997a,b); USA [for a review, see (Subotnik, Edmiston & Rayhack, 2007)]; Singapore [for a review, see (Grigorenko & Tan, 2008)] and fretting over decreasing interest and achievement in mathematics and science amongst its youngsters [e.g., UK (Smith, 2004; Williams, 2008); US (Subotnik et al., 2007)], especially in the face of such rapidly developing economies as China and India, whose educational systems have recently produced highly competitive players in the global knowledge economy on a huge scale [for a review, see (Grigorenko, 2008)]. Yet, although explicitly worried about the competition, many educational systems of the developed world have not yet “made up their minds” about the best response to globalization. Similar to the economists who express uncertainty concerning both the plausibility and value of globalization for humanity at large (Lind, 1995; Sennet, 2006), educators in the developed countries cannot seem to decide how to balance their investments in meritocracy and egalitarianism in “globalization-based” reforms (Crace, 2004; Radnor et al., 2007; Tomlinson, 2008). It is a weighing of educational and philosophical values against inescapable economic and political realities.

Another interesting issue that is relevant to this discourse is the correlation between the “quality” of a given educational system and the given economy that supports that system. Although arguably not perfect, a number of indices are of interest here. First, various international organizations (e.g., United Nations, 2007/2008 Human Development Report, <http://hdrstats.undp.org/en/countries>, accessed on July 14, 2009) collect a number of indicators on world economies, of which three are of particular interest to this discussion: (1) the human development index¹⁸ value; (2) the commitment to educa-

tion¹⁹, i.e., public spending; and (3) the education index²⁰. Another important index is provided by the International Monetary Fund, which publishes annual gross domestic product (GDP) at purchasing power parity (PPP) per capita, a statistic that captures the values of all final goods and services produced within a nation in a given year divided by the average (or mid-year) population for the same year (World Economic Outlook Database–April 2009, International Monetary Fund, accessed on April 22, 2009). Finally, there are a number of comparative educational international studies that provide indicators of how well children in different countries perform in specific academic domains. For example, the Trends in International Mathematics and Science Study (TIMSS) provides international data on the mathematics and science achievement of 4th- and 8th-grade students compared to that of students in other countries (for a study examining TIMSS and other international comparisons—e.g., PISA and PIRLS—that also includes GDP and HDI in their analysis see Rindermann, Sailer & Thompson, 2009). TIMSS data have been collected in 1995, 1999, 2003, and 2007, with TIMSS 2007 results released in December of 2008 (Gonzales et al., 2008). To illustrate a number of points, here we focus only on indicators for a handful of the countries who participated in the TIMSS 2007 comparison.

First, predictably, the education index of a nation is correlated with that nation's human development index values ($\rho = 0.780, p < 0.001$) and with GDP (PPP) ($\rho = 0.614, p < 0.001$). What is more surprising, however, is that current public spending on education (commitment to education index) does not correlate with educational index, the nation's human development index values, and with GDP (PPP). In other words, previous investments in education (as opposed to current investment reflected in the commitment to education index) appear to correlate more strongly with the attained human development index values and GDP (PPP), but decisions on current investments (as reflected in commitment to education) in education appear to be made prospectively, as a true investment in the future. Specifically, among the TIMSS 2007 nations, the highest ten indexes of commitment to education were registered, in decreasing order, for Botswana, Yemen, Norway, Sweden, Tunisia, Israel, Saudi Arabia, Morocco, New Zealand, and the Ukraine.

A second interesting observation concerning the relationship between the economic and academic is that the children's performance on these international tests seems to be grounded in, but only partially predicted by, economic indicators. Specifically, the overall TIMSS scores correlated with the participating nations' human development index values ($\rho = 0.664, p < 0.001$, for mathematics and $\rho = 0.658, p < 0.001$, for science); GDP (PPP) ($\rho = 0.523, p < 0.001$, for mathematics and $\rho = 0.521, p < 0.001$, for science); and education indices ($\rho = 0.793, p < 0.001$, for mathematics and $\rho = 0.778, p < 0.001$, for science). Yet, the performance indicators did not correlate with indicators of public investment in education.

Thus, higher-income nations tend to demonstrate higher education indexes and better performance in international comparison studies, such as TIMSS. Also, the ranks of levels of performance in math and science competitions are highly correlated with each other ($\rho = 0.947, p < 0.001$). However, the predictive power of student performance by economic index is modest, ranging from 27%, for GDP (PPP), to 44%, for human development index. Moreover, what is quite obvious is the tremendous amount of variation in the characteristics of the economies

¹⁷ Now renamed the Department for Education and Skills, see below.

¹⁸ The human development index (HDI) is a summary measure of a country's human development. It measures the average achievements in a country in three basic dimensions: a long and healthy life, as measured by life expectancy at birth; access to knowledge, as measured by the adult literacy rate and the combined gross enrolment ratio in education; and a decent standard of living, as measured by GDP per capita in purchasing power parity (PPP), in US \$ (<http://hdr.undp.org/en/statistics/tn1/>).

¹⁹ Commitment to education here is used to refer to the public expenditure on education as a percentage of total government expenditure (see http://www.uis.unesco.org/i_pages/indspec/tecspe_egv.htm for definition and <http://hdrstats.undp.org/en/indicators/165.html> for data).

²⁰ The education index measures a country's relative achievements in both adult literacy and combined primary, secondary and tertiary gross enrollment. First an index for adult literacy and one for combined gross enrollment are calculated. Then these two indices are combined to create the education index. <http://hdr.undp.org/en/statistics/tn1/>.

whose children demonstrate better or worse performance. Clearly, many other characteristics of an educational system, in addition to the properties of its host economy, influence the success of a system as captured by large-scale international comparison studies such as TIMSS. Thus, the connections between the economic and educational characteristics of a country are complex. It has been noted (Jimenez & Patrinos, 2008), for example, that the investment in education in lower income countries has a much higher return than in higher-income countries. What is also important, however, for high-income countries is that the poor performance of children, when interpreted as indicative of the performance of a given educational system, has been deemed a cost to the future of that economy. For example, it has been estimated (McKinsey & Company, 2009) that the persistent gap in academic achievement between US students and their peers from other countries has divested the US economy of about \$2.3 trillion in 2008 alone, in addition to the tremendous economic gains that would have been realized were there no such achievement gap.

4. Summary: 5 important points

To summarize the global situation of education in general and education for the gifted in particular, we present five important points established by the discussion thus far. These five main points provide the cornerstones for the discussion on IG that will follow. These points concern 1) the multiplicity of definitions of IG that currently exist; 2) the relationship of an education to its philosophical placement on the meritocracy–egalitarianism continuum; 3) the economic factors that influence a country's educational accomplishments; 4) the current struggle of many educational systems with the justification for investment in education; and 5) the growing emphasis on inclusion in education.

First, a variety of terms is used to signify IG, and their usage and connotations are related to the cultural, philosophical, and political contexts of the educational systems in which they are used.

Second, the views on the necessity and importance of gifted education within a given educational system are related to that system's position within the meritocracy–egalitarianism spectrum. Because there is a clear connection between the quality of a general educational system and the achievement of its selected representatives, there is probably also a correlation between the effectiveness of systems of gifted and general education within a given country. On a large-scale, this connection has never been rigorously investigated. On a small scale, illustrations from gifted systems around the world underscore this observation. It is notable that, although the educational systems vary tremendously, most of them are hybrids, blending together elements of meritocracy and egalitarianism. A clear identification of the elements and degrees of hybridization makes the task of designing the system of gifted education in general and its components much easier. As has been stated before (Gallagher, 2008), to be effective, a system of gifted education should capitalize on the strongest characteristics and infrastructure of the system of general education within which it exists. This consideration is especially important because, when disconnected from the general educational system, many programs for gifted education around the world are hampered by the cyclical nature of their funding, the instability of the priorities and objectives prescribed to them, and, correspondingly, the difficulty of sustaining a program for a long time (Forster, 2005).

Third, there is a complex relationship between the economic characteristics of a country and the accomplishments of its general and gifted educational systems. Although solid financial support of general education is important, it seems that many other factors, in addition to economic indices, differentiate the effectiveness of an educational system. When viewed as a prerequisite for accomplishment, rather than an accomplishment in itself, IG is a seed that develops or not within its environment. If defined as a developing expertise (Heller,

2007), IG requires many systemic inputs to ensure its fruition; economic factors are only some among many such requirements.

Fourth, economical globalization and the resulting restructuring of the labor markets, both countrywide and worldwide, pose new challenges for both general and gifted educational systems. The challenges are many, but among them is the dilemma of the wisdom of investment into gifted education. While countries, especially low-natural-resource countries, are investing in their children with IG, what is the likelihood of these children returning the investment to their countries? Or should the goal of gifted education be redefined, so that the investment is viewed as a contribution to the global (not country) economy? Answers to these questions are taking shape as educational systems try to balance the priorities of gifted education, defined as (1) the utilization of IG for societal benefits; (2) contributions to the fulfillment, development, and happiness of individuals with gifts and talents; and (3) the enhancement of human civilization. It appears that as globalization unfolds, the first priority of gifted education, which has been dominant since its inception, might not be as important as the second and third priorities. The world is changing and so is its attitude toward IG (for further discussion, see Reis & Renzulli and Subotnik & Rickoff, this issue).

Fifth and finally, one of the characteristics of the changing world is its growing emphasis on inclusion. As general education has become globally available, although its quality varies widely around the world, there are powerful discussions about increasing the inclusiveness of gifted education. These discussions are especially influential in societies with a high degree of diversity among its members (e.g., USA, UK, and Australia). If at the beginning of the 20th century IG was defined rather unitarily, modern theories of intellectual functioning stress the multiplicity of human intellectual gifts. The field of gifted education started in the 1900's with estimates of the prevalence of IG at 1%; in the seventies, Marland (1972) talked about 10% of the population being gifted and talented; today, regulatory documents from the UK government [for a summary, see (Dracup, 2003)] refer to the prevalence of gifts and talents at 20%. In fact, in its programmatic documents, a community of developed countries (Organisation for Economic Co-operation and Development, OECD) stresses the importance of balancing individual fulfillment with inclusive practices of educational and vocational development (Organisation for Economic Co-operation and Development, 2002). The more inclusive human societies are, the higher the appreciation of the miscellany of IG, and the more widely spread gifted education becomes. But then, is there a clearly defined border between gifted and general education? The answer to this question, of course, depends on the definition of IG.

And so we come full circle here, having started by listing the variety of terms used to describe the phenomenon of IG, and come back to the need to understand the various conceptions of IG. The next section considers the most prominent conceptions of IG as presented in the literature today and proceeds to explore the links between these definitions and the typologies to which they contribute.

4.1. Giftedness

Most theories of giftedness are fundamentally connected to theories of intelligence, even sometimes used interchangeably (for an exception, see Gruber's (1982) theory of creativity and intelligence). For example, the *g*-theory is a theory of giftedness where giftedness is defined as IQ over a particular threshold; Gardner's theory of multiple intelligences is also a theory of giftedness, but where the IG of a particular type is established through high-level performance in a particular domain; Sternberg's triarchic theory of intelligence is a theory of giftedness in which IG is established through high-level performance in one or more cognitive areas, analytical, creative or practical thinking. All theories of IG make a reference to intelligence and its measurement, however defined. Yet, theories of giftedness differ in the theory of intelligence they recruit, the

centrality of intelligence to that theory of giftedness and how it is measured, and what else is deemed important in addition to intelligence. Theories of IG also vary in their emphasis on the role of developmental processes. Some theories assume, implicitly or explicitly, the stability of the nature and level of IG throughout the lifespan, whereas other theories are built upon the idea of IG's developmental transformations over time.

There is an important parallel between the various theories of giftedness discussed here and the typologies of education discussed above. This is in their parallel aspects of exclusion and inclusion, with the current trend toward being more inclusive. Theories of giftedness that are very narrow tend to be associated with more meritocratic systems. Whereas theories of giftedness that emphasize that merits may be discovered in multiple domains rather than in a single specific domain of intellectual functioning (i.e., which is captured by performance on standardized tests of intelligence) tend towards inclusiveness and egalitarianism.

Consider the following illustrations. If a strict unidimensional definition of IG is used (i.e., the threshold is set at 1% of the population's performance on a standardized IQ test), then, by definition, gifted education is intended to serve only 1% of the student population. However, if IG is defined in multiple domains, even at the same high threshold, given that performance in these multiple domains does not correlate perfectly, by definition, the gates into gifted education will be open wider. For example, for Sternberg's three abilities (see Sternberg, this issue), the estimate for the amount of shared variance from a typical study (Sternberg, Grigorenko, Ferrari & Clinkenbeard, 1999) is ~25%. Thus, if three abilities (rather than one) are considered, then ~2.5% (rather than 1%) of the population will be identified. If identification is based on Gardner's nine intellectual domains, then, depending on the degree of overlap in the performance in these domains, 7–8% of individuals can be identified as gifted. The gates are opened even wider when other, non-cognitive aspects of giftedness are considered. Clearly, the more dimensions of human functioning considered, the more inclusive the selection into gifted education, and the more blurred the distinction between gifted and general education. Correspondingly, each educational system that purports to promote special education for the gifted should have a gatekeeper—a clear definition that identifies the difference between gifted and non-gifted individuals, which definition/criteria may vary with level of education. This will determine the percent of the population that will be selected and subsequently served differently from the rest of the population.

So, what are examples of the definitions and methods of identification actually used in the field of gifted education?

4.2. Identification of IG

The identification methods that are currently employed are at most only 100 years old. These assessments include psychometric assessments and range from standardized maximum performance tests to inventories and even self-report. The usage of these assessments in the identification of giftedness varies tremendously around the world. Many educational systems stress the importance of the preservation and development of human capital (Balchin, Hymer & Matthews, 2009). Some do it in a non-differentiating manner while others are much more specific in their focus, for example, on the importance of supporting children who are predisposed to high achievement in math and science [Australia (Watters & Diezmann, 2003); UK (Koshy, Ernest & Casey, 2009; Smith, 2004; Tomlinson, 2008; Williams, 2008); USA (Subotnik et al., 2007); see Ushakov, this issue]. The importance and priority of gifted education is discussed not only in developed but also in developing countries (Ndirangu, Mwangi & Changeiywo, 2007). It is accurate to say that, when sampled around the world, the majority of countries (if their financial situation permits this, of course) do establish, support, and promote gifted education. Yet, the concept of gifted education is not universally

accepted (see Reis & Renzulli, this issue); in fact, it has been stated that “giftedness is a chimera” (p.2) and that the ideal would be “gifted education without gifted children” (p.3), achieved by differentiating and meeting the individual needs of every child in the classroom (Borland, 2005).

However, if a system supports gifted educational practices, it has to decide on how to select students into these practices. The literature consists of a number of general considerations that are worth mentioning here. There is no “golden bullet” of selection in the field of gifted education; various identification paradigms have different constellations of pluses and minuses (Heller, 2004). It has been suggested that the first step in the process of gifted identification should be mapped on the (1) purposes of the unfolding selection and (2) the underlying model of giftedness that drives the selection (Heller, 2005). As soon as the purposes are established, a sequential identification strategy should be developed. Such a strategy should include a combination of multiple methods and multiple informants (Ford & Trotman, 2000; VanTassel-Baska, Feng & De Brux, 2007), as well as multiple criteria (Bélanger & Gagné, 2006). The selection process should focus on multiple components of IG (Kuo, Su, Hu & Maker, this issue). Whereas in the Terman tradition, IG was largely identical to the *g*-factor, today the dominant characteristic of IG is its differential or multidimensional nature [for an overview, see (Heller, Mönks, Sternberg & Subotnik, 2000; Sternberg & Davidson, 2005)]. Finally, the selection should consider the educational history of children evaluated for IG.

As discussed above, IG does not develop in isolation; it is always a product of the interaction between children's internal capacities and the general educational system in which they are immersed. Correspondingly, it is advisable to use so-called “synthetic approaches” (Heller, 2007) to identification, in which psychometric results of testing are juxtaposed against the pedagogical influences on the developing expertise of intellectually gifted children. There is an implicit convergence on what might need to be assessed in an IG individual, not only to label him or her as gifted, but also boost the probabilities of him/her realizing this IG into true accomplishments by entering a so-called “success cycle,” which is characterized by an adequate balance of positive affect towards the domain in which IG is manifested such that the individual exhibits engagement with and persistence in cognitively demanding tasks, resulting in high achievement and success in the domain of IG (Aiken, 1973). In this context, a variety of non-cognitive indicators are typically considered, varying widely, from personality characteristics (Cross, 2008; Vialle, Heaven & Ciarrochi, 2007; Zuo & Tao, 2001) to thinking and learning styles (Cross, 2007; Park, Park & Ho-Seong, 2005; Sak, 2004).

The literature contains evidence of unbalanced development of children with IG, where their intellectual development is often significantly ahead of their social developmental and maturation (Farrent & Grant, 2005). Thus, it is conceivable that gifted identification should focus not only on identifying and qualifying strengths, but also identifying and qualifying weaknesses, which might preclude an individual from entering or remaining within the “success cycle,” regardless of his or her exceptional IG. It has been conjectured that “what we collectively call ‘giftedness’ comes about from differences in individual competencies” [p. 213 (Heller, 2007)]. Building competencies assumes the life-long process of capitalizing on strengths and compensating for weaknesses (Sternberg, 1996). Therefore, identifying both should be considered important.

In addition to the general considerations related to gifted identification discussed above, it is also important to consider developmental and lifespan evidence that connects the multiple life stages of individuals who have been either identified or not as gifted, and their having achieved, or not, remarkable outcomes in their careers. Specifically, it is important to consider the literature on (1) prospective studies of children identified as gifted and (2) retrospective studies of

individuals who have achieved high levels of career success and recognition (Subotnik & Rickoff, this issue).

The observation relevant here is that there is a shortage of rigorous studies evaluating the impact of being identified and/or educated as an individual with IG (Subotnik et al., 2007), or of participating in a gifted education program (Delcourt, Cornell & Goldberg, 2007). This shortage, as well as the quality of existing studies, has been interpreted as a lack of “hard” evidence supporting gifted education as a practice (Borland, 2005).

Without debating the quality and quantity of the relevant studies, a number of highlights from these studies are mentioned here, to make note of particular indicators that have been “stamped” as effective in identification practices and predictive of future (post-identification) success. A number of prospective studies have been carried out to follow groups of individuals who were identified as children with IG into adulthood. For example, Funke and colleagues (Funke, Krauss, Schuler & Stapf, 1987) found that when all of the variables were considered individually, the best predictor was the biographical questionnaire, followed by domain-specific ability/achievement and creativity tests. General intelligence and creativity tests were reported to have the lowest prognostic value (possibly due to the restricted range of IQ after selection). [For a discussion regarding the measurement of creativity see Lubart, Pacteau, and Jacquet in this issue].

This conclusion, to a certain degree, is aligned with observations derived from the Talent Search (TS)/The Study of Mathematically Precocious Youth (SMPY)²¹ studies (Lupkowski-Shoplik, Benbow, Assouline & Brody, 2003). These studies have now generated more than 30 years of long-term longitudinal research [e.g., (Lubinski & Benbow, 2006; Lubinski, Benbow, Webb & Bleske-Rechek, 2006; Stanley & Benbow, 1986; Swiatek, 2007; Swiatek & Benbow, 1991)]. Of interest is that the so-called “promising aptitude complex” (Lubinski & Benbow, 2006) includes such indicators as interest, values, and commitment, along with SAT-M scores. In addition, such factors as chance and educational opportunities are acknowledged as playing a major role in the transition from promise to accomplishment.

Similarly, the role of cognitive and non-cognitive indicators has been stressed in sustaining and developing IG across the life span in a number of studies around the world: Australia (Gross, 2006); Canada (Grayson, 1999); Finland (Nokelainen, Tirri, Campbell & Walberg, 2007; Nokelainen, Tirri & Merenti-Välimäki, 2007); Iceland (Freeman & Josepsson, 2002); Israel (Zeidner & Schleyer, 1999); Germany (Rahn, 1986; Trost & Siegl, 1992), and the USA (Feist, 2006). Of interest here is the observation that there are some cultural differences in patterns of the strengths of these predictors (Nokelainen et al., 2007), such that indicators that are predictive of success in one culture might not be that informative in another.

There are also relevant retrospective studies (Hillebrand, 2002; Van Houten, 2002; Zuckerman, 1977; 1992; 1996), of which here one is exemplified. In this study (Feist, 2006), members of the US National Academy of Sciences were surveyed about their early developmental years. Although they all recognized the importance of having “talent,” a prominent theme in the interpretation of their success brought to the fore indicators such as motivation. In summary, while it appears that ability and achievement (more domain-specific than general) are important for both the identification of IG and its realization, they might not be enough. The literature repeatedly mentions constructs such as drive and persistence, intrinsic motivation and curiosity, and specific learning strategies [e.g., (Ablard & Lipschultz, 1998; Calero, García-Martín, Jiménez, Kazén & Araque, 2007; Chan, 2007; L. K. Chan,

1996a; 1996b; Clemons, 2008; Clinkenbeard, 1996; Dai, Moon & Feldhusen, 1998; Dresel & Haugwitz, 2005; Feldhusen & Wood, 1997; A. E. Gottfried & Gottfried, 1996; 2004; A. W. Gottfried, Cook, Gottfried & Morris, 2005; Hong & Aquilino, 2004; McCoach & Siegle, 2003; Neber & Schommer-Aikins, 2002; Porath, 1996; Risemberg & Zimmerman, 1992; Silverman, 2007; Singh, 2009; Stoeger & Ziegler, 2006; Street, 2001; Tang & Neber, 2008)] in the context of both identification and the life-long development of IG.

Another important consideration with respect to gifted identification pertains to the various sources of the information obtained (e.g., different informants) during the process of identification. Many identification models around the world use hierarchical approaches to identifying children with IG, engaging informants other than the children themselves. The most often used informants are teachers and parents, although some models also use peer nominations. Second, there are, although scattered, bits of evidence suggesting that informants for gifted identification (i.e., parents, peers, and teachers) are all characterized by different profiles of strengths and weaknesses that contribute both convergent and divergent information (Schroth & Helfer, 2008). For example, it has been reported that teachers and parents are more accurate in reporting on motivation and leadership skills during the process of identification than on intelligence and creativity (Chan, 2000).

A final point is that the process of identification (presumably based on a chosen theory of giftedness) should be carefully matched with the pedagogical programs that are to follow this identification. Different models of instruction for intellectually gifted students exist, varying from special schools (Cavanagh, 2006), to apprenticeship/mentorship models (Subotnik, Duschl & Selmon, 1993; Subotnik & Steiner, 1994; Zuckerman, 1987; 1992; 1996), to enrichment (McAllister & Plourde, 2008) and competitions, to limited summer/after school programs (The Eli Whitney Museum, <http://www.eliwhitney.org/>). VanTassel-Baska and Wood (this issue) offer a detailed discussion of a model of gifted education. Although there is descriptive literature on various models of teaching gifted students (VanTassel-Baska & Brown, 2007), there are also acknowledgements of both the necessity to evaluate these models of identification and teaching, separately and together (Callahan, 1992; Callahan & Moon, 2007; Doina, 1997), and the lack of relevant literature (VanTassel-Baska, 2006). Indeed, it is remarkable, given the extensive spread of gifted education around the world, that the number of studies evaluating this model of education is limited, often occurring as dissertations (Christian, 2008), and often being only descriptive in nature (Weber, Boswell, & Smith, 2008).

To complete this discussion on the various methods and issues of identification and the models for serving those who have been identified, three different themes have to be acknowledged.

First, to establish an adequate system of identification of IG, it is important to consider the triangle of the following questions: who, why, and how? The answer to the “who” question is directly connected to the general education system and the society the educational systems are in. In other words, to devise an effective (i.e., minimizing the number of false negatives) and efficient (i.e., minimizing the number of false positives) (Pegnato & Birch, 1959) system of identification of IG, the devisors of this system should consider the meritocracy—egalitarianism continuum, and define what elements of the infrastructure of their general educational system are usable/applicable for their system of gifted education (e.g. whether there are national examinations which can be used in the identification process, such as done in Singapore).

In other words, for any process of gifted identification one of the central factors to consider is the problem of the validity of this process [p. 262, (Borland, 2008)]. In particular, three types of validity need to be taken into account. First, *construct* validity is connected to the definition of IG utilized by the system, which tries to identify its children possessing these characteristics. Clearly, accepting Terman's

²¹ The Study of Mathematically Precocious Youth (SMPY) was initiated in 1971 by Julian C. Stanley at Johns Hopkins University, but now is primarily administered through Vanderbilt University. In 1980, the Talent Search (TS) was extended to include verbal reasoning to mathematical reasoning. After the identification (i.e., Talent Searches), SMPY provides educational services that include acceleration and enrichment.

definition of giftedness will lead to the selection of very different instruments and result in very different outcomes of the identification process as compared to accepting Gardner's definition. Second, the system of identification has to reflect the difference between *concurrent* and *predictive* validity. Concurrent validity refers to the immediate connection between the identification and placement/education/services that are available in a given educational system for IG students. If the educational system provides various types of alternative educational models, then the selection can include many diverse parameters and be inclusive in its nature. But if, for example, the educational system is rather conservative and places emphasis on the more traditional aspect of memorization, then selection should be focused on "raw" indicators of memory and information processing. Predictive validity, on the other hand, points the selection process toward life-long success and contributions of the child with IG to their country and the world at large, as opposed to immediate placement/education/services decisions. Based on the indications from the literature [e.g., (Hillebrand, 2002; Katz, 1997; Nokelainen, Tirri, & Campbell, 2004; Rothenberg, 1996; Shavinina, 2004; Shoho, 1996; Van Houten, 2002)], selection parameters here should include not only a constellation of currently available internal characteristics of a child, but rather a careful consideration of the systems in which the child is currently immersed [e.g., family (Holoche-Ertl, Kubinger, & Hohensinn, 2008; Rothenberg, 2005; Tirri & Nokelainen, 2007)] and may be immersed in the future [e.g., working environment (Freeman, 2006; Hillebrand, 2002)] and social support (Olszewski-Kubilius, 2000)]. Thus, specific realizations of a selection paradigm should be conditioned by the answers to the questions posed above.

The second trend that must be acknowledged is that, unfortunately, little, conceptually, has changed since 1983 when, based on the review of the literature on the methods of gifted education, Tannenbaum referred to the field as an "inexact science" [p. 342, (Tannenbaum, 1983)]. Yet, the degree of "inexactness" can be controlled by a variety of factors, including self-definition of a system of gifted selection, consistency and care in its realization, and clarity in its goals. Perhaps surprisingly, there is little coherence in the connection between the science and the practice of gifted education. Although multiple theories of giftedness exist in different countries, no single theory is adopted by a single country as the basis of its identification and education of children with IG. It is both surprising and understandable that such an atheoretical definition as that of Marland's (1972): "Students, children, or youth who give evidence of high achievement capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who need services and activities not ordinarily provided by the school in order to fully develop those capabilities" is considered to be the most popular definition in the world. First, this definition is inclusive and matches conceptions of egalitarianism, characteristic of the majority of educational systems in the world. Second, it is not specific and may therefore fit into pretty much any selection process. Third, it is not committed to any theoretical approach or any assessment paradigm. Basically, it is a one-size-fits-all solution to what in reality is a variation of approaches to IG and those who possess it. There is a real need in the field for the development of an approach to gifted selection and education that takes into account the typology being advocated, the model of giftedness that best fits the approach, and considers all possible modes of identification and practice, and then follows up with a competent implementation and evaluation of this approach.

Third, it is extremely important for the system of selection to carefully reflect its cultural characteristics and preferences. There is no (and never will be) universal selection paradigm that will work around the world as long as there are different distinct cultures and countries in which these selection paradigms unfold. An introduction of a selection paradigm should reflect a consideration of the economical, political, cultural, and psychological dimensions related to gifted education in a particular country. With these three dominating themes

in mind, we present below summaries and examples of actual practice from around the world.

4.3. Sampling from around the world

As mentioned above, there is a tremendous variability around the world with regard to how IG is defined, identified, and served (Subotnik & Rickoff, this issue). The examples below provide some illustrations of how education for the gifted is interwoven with a country's philosophical and political views, its cultural history, and its economic base.

As we have illustrated throughout this paper, some of this variability can be understood within the typologies that we have described. A country's very notion of gifted education is shaped by the typology within which it operates. For example, the values of French society, based on the concepts of republican egalitarianism (Vrignaud, Bonora, & Dreux, 2009) have interfered with the legalization of providing for children with IG (Urban & Sekowski, 1993). A systematic policy concerning the identification of the intellectually gifted has never existed in France, where even the word "giftedness" is perceived as a taboo term and the French ministry of education refers to children who go through acceleration and enrichment as "intellectually precocious pupils" (*élève intellectuellement précoce* in French). Similarly, educators and teachers in France also prefer to speak about precocity. Researchers use the descriptive phrase "children with high potential." The system of gifted education in Australia is another interesting example of the tension between egalitarian and meritocracy pressures in education. Australia's system has been described as an egalitarian system that is striving for inclusiveness (Plunkett & Kronborg, 2007; Robinson, 1992). The debate in Australia, which originated within an educational system "characterized by an almost evangelical zeal for principles supporting inclusiveness and egalitarianism" [p. 72, (Plunkett & Kronborg, 2007)], sparked arguments that ranged from statements that the theory and practice of gifted education in Australia is the source of "elitism" (McCann, 2005) and "...is inequitable, undemocratic and even eugenic by intention" [(Krisjansen & Lapins, 2001) as cited in (Jewell, 2005), p. 107] to statements that the underlying theory and practices of gifted education are egalitarian and democratic and based on valuing all children, including gifted ones, as individuals with a variety of needs, and meeting these needs (Braggett, 1997). These intense public debates, paralleled by scrutiny of the educational provisions for the gifted [as reviewed in (McCann, 2005; Plunkett & Kronborg, 2007)], formed the basis for the Australian Senate's inquiry into the status of gifted education in Australia (Australian Senate Employment, Business and Committee, 2001). This inquiry resulted in the conclusion that denying the need for services of gifted children on the grounds that these children are already privileged, or that such services created inequity, was both misguided and misleading [as cited in (Jewell, 2005), p. 112].

Other countries further illustrate how implicit beliefs about people can effect education. For example, practices of gifted education in Hong Kong are deeply rooted in Chinese philosophical (J. Chan, 1996a, b) and educational traditions (Tsuin-Chen, 1961; Wenzhong, 2004; Wu, 2005; Zhang, 1988). Similarly, the gifted education system in Singapore is based on Confucian notions of meritocracy; thus, there is a broad acceptance of highly differentiated education for children with IG. In contrast, the predominant philosophy before the 1990's in Saudi Arabia that drove education policy was that of "equal opportunity." Therefore the general education system in the Kingdom was designed for the average learner and there were no provisions made for gifted students (Maajeeny, 1990). This has since changed, yet education for gifted children is still carried out within a framework of mainstream inclusive education, predominantly using pull-out approaches.

While some countries do not have gifted programs per se they do have mechanisms that essentially serve to differentiate ability levels

among their students. That is, although they may or may not overtly acknowledge the existence of IG, these countries practice methods of differentiation, identification and programming that are targeted at certain populations. France, Germany, Russia and, to a certain degree, Spain, have a tracking system that places students of varying abilities into tracks that suit them best. In France the options after completing these 10 years of primary school (6 years) and *collège* (4 years) include short vocational courses (2 years, manual trade or diploma) or preparatory courses (3 years, *baccalauréate* exam, permitting entry into higher education). Higher education is also characterized by multiple tracks: short higher education courses (2–3 years with a vocational diploma), *grandes-écoles* (1–2 years with a managerial diploma), and university syllabus (8 years with a professional degree). In Germany, for example, the *Gymnasium* is tailored for the most intellectually able children and prepares students for university studies; the *Realschule* covers a broader range of abilities, but focuses primarily on average levels of academic performance; the *Hauptschule* is designed to prepare pupils for vocational educational tracks. There is also the *Gesamtschule*, or comprehensive school model, that combines the tracks of all three approaches. In Russia, similar to what happens in France and Germany, adolescents face significant choices after completing grade 9, when they can make decisions for the first time with regard to continuing on an academic track or switching to a vocational track. Russian adolescents face a similar choice again later when they complete their 11th grade: they can, once again, diversify into a specialized track (e.g., enter a *колледж* for musicians, nurses, or primary school teachers) or continue their education by entering a tertiary educational institution. In Russia specialized programs are coupled with a societal investment; there is an expectation that society will eventually “collect” on its investment through the high-level educational accomplishments of gifted individuals. Thus, the system of general education effectively differentiates its participants into tracks.

On opposing ends of the spectrum, some countries' systems suffer from a lack of structure in their approach to education, while others impose too much. For example, many countries simply do not have any legal educational framework that makes specific reference to gifted education, such as Chile, which is similar to the majority of countries in Latin America; therefore there is no national program that guides gifted education. Also, when individual states or provinces are responsible for education there may be a great variety of definitions being applied even in one country. For example there is a variety of definitions used across Canada's ten provinces and three territories; identification tools vary widely and identification can occur across a range of grades, both primary and secondary. Thus, it is possible that a student identified as gifted in one geographic location will not meet the identification criteria in a different geographic location. A school district is a “variability unit” both for identification and services (Klapp & Porath, 2000). On the other hand, in many countries education is based on a national curriculum and this standardized approach to the delivery of education can pose challenges in catering to the needs of the gifted.

And finally, last but certainly not least, economic considerations can have a great deal to do with gifted education. These considerations go beyond the ever important funding for gifted education. Small countries and countries with limited national resources see gifted education as vital in allowing them to advance their country. For example, being a small country with a limited amount of natural resources, Israel has always valued the intellectual achievements of its people as one of its most valuable reserves (Milgram, 2000) and therefore has always emphasized both the intention to meet the needs of IG children, but also to generate an intellectual return to the country (Peyser, 2005). Similarly Singapore views its people as its only resource (Quek, 2005). This focus on the development of human capital should not only be held by countries with limited natural resources, but rather should be a national priority for any country that wants to maintain or advance its position in an increasingly complex global economy.

Throughout the world one can find almost endless variety in the way countries handle gifted education. Variations exist in the definitions of giftedness, the methods of identifying gifted students, and the services provided to gifted students. The sources of these variations are often deep-seated country-specific beliefs and systems based on each country's political outlook, philosophical stance, and economic situation. An understanding of these complexities allows us to survey the broader picture of gifted education, to grasp the possible difficulties of changing deeply embedded views and approaches, and also to see what change is indeed possible within the field and how it might be accomplished.

5. Concluding comments

This essay explored the meaning and value of the concept of intellectual giftedness (IG) worldwide. It introduced into the discussion on gifted education the major dynamics that shape models of giftedness throughout the world. These considerations—economic, political, cultural, and psychological—cannot be ignored while studying any system of gifted education, yet to date there is little in the literature that looks at the impact these dynamics have on gifted education. While ideally models of giftedness and gifted programs would be based on sound scientific literature, the reality is that these models grow out of the specific political and economic situation of a country, and thus it is impossible to totally separate gifted models and programs from the social, political and economic contexts within which they have evolved. With the increasing complexity of global economies and the global knowledge marketplace, these vital but frequently overlooked dimensions become even more important. We started this essay with a number of questions such as what intellectual giftedness really is and what it should be called; whether it can or should be identified and, if so, how; and what to do, if anything, about those who possess giftedness. The answers to all of these questions can only be found by including the economic, political and cultural considerations we have described above in a broader and long-range view of what is desired from our investments in education.

Despite the fact that more than one hundred years has passed since the development of a standardized IQ test, and all of the subsequent research that has resulted from its development, we still find that there is a great deal of disagreement on what the terms “intelligence” and “giftedness” mean. The question of whether or not there is need for consensus on these definitions has been debated in the literature (Coleman, 2004; Cramond, 2004; Gagné, 2004). But what cannot be debated is the need to improve the current state of gifted education worldwide. The failure to do so results in the loss of egregious amounts of human capital, which has a direct economic impact on all. The current system lacks vision. A literature search on the desired outcomes of gifted education yields but a few loosely relevant articles. A gifted education program cannot possibly be successful when there are no clearly stated desired outcomes. This lack of desired outcomes has hindered the empirical study of the efficacy of gifted education. Countries invest in their education systems because there is a belief that their investment will pay off in some way. Without being able to measure outcomes there is little to show that gifted education in its current form works. So what needs to be done?

There is a need to re-evaluate gifted education. First, in order for a country to implement a successful gifted education they must recognize the educational typology within which they are operating. Next, clear goals for gifted education that fit within the social and cultural constraints of their country must be established. Once this has been done the country must plan a comprehensive system that will ultimately foster the development of students such that they can make the largest contribution back to their countries. This system must work with a definition, identification process, services and desired outcomes that are all aligned with each other within the social constraints of the typology that exists. This alignment is not only

necessary for individual countries but for any successful gifted education system or program. The state of giftedness that we are witnessing today is largely a result of the misalignment of the necessary elements. Putting these elements in their proper place will allow for the rigorous study of the construct of giftedness and the efficacy of gifted education, as well as the proper growth and development of gifted individuals and the countries they call home.

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