

Acceleration and Enrichment: The Context and Development of Program Options

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Introduction

Acceleration and enrichment may be regarded as legs that support the same chair. Casual consideration of the definitions of the two approaches will reveal apparent similarities. Whatever the appearances, the rationales for acceleration and enrichment are based on different assumptions about four basic issues: the nature of intellectual giftedness, affective characteristics of giftedness, the goals of regular and gifted education, and the adequacy of regular education curricula. Cultural and societal factors and historical events have also influenced the assumptions of educators and the public about all factors associated with acceleration and enrichment. Differences in basic assumptions and shifts in values and goals have had a profound influence on initiatives to provide programs to gifted students.

This chapter is divided into four principal sections. First, it begins with a discussion of definitions of acceleration and enrichment. Implications of the definitions for program development and implementation will accompany those discussions. The second section of the chapter describes the historical context of the debate over the relative merits of acceleration and enrichment. In the third section, factors that fuel the debate are delineated. The final section of the chapter describe attributes of national educational systems that affect the development of acceleration and enrichment options and presents descriptions of the options that are employed.

Acceleration: Definition and Programming Issues

Pressey (1949, p. 2) defined acceleration as "progress through an educational program at rates faster or at

ages younger than conventional". Several assumptions can be identified in his definition. First, it presupposes an educational program in which content, tasks, and skills are defined for each level of instruction. Second, the definition assumes that there is a pace of instruction that may at least be inferred to be suitable for most students. Third, it assumes that some children are capable of mastering the standard curriculum faster, and, thus, are capable of more rapid progress. Pressey's definition sets two criteria for accelerated advancement: higher than average achievement and the ability to master the material at more rapid rates compared to age level classmates.

Although the term acceleration is frequently associated with grade skipping, a number of variations fit Pressey's criteria. In the early 1920s, acceleration was mainly a form of advancement in grade status (Stedman, 1924). Passow, Goldberg, Tannenbaum, and French (1955) noted eight different options: grade skipping, double promotion, early admission to first grade, extra course work, single subject acceleration, concurrent enrollment, and extracurricular course work. Kitano and Kirby (1986) listed no less than thirteen methods, while Benbow (1979) compiled fourteen. Table 1 provides a compilation of options identified as accelerative in various textbooks and articles about the education of gifted children.

These programmatic options vary along two dimensions. The first involves the degree to which the student is treated differently from his or her age peers. Some of the options do not require extensive amounts of time away from age mates. For example, extracurricular options and credit by examination do not necessarily entail separation from the normal age/grade placement

TABLE 1
Range and Types of Acceleration

(1) Early entrance to kindergarten or first grade	The student is admitted to school prior to the age specified by the district for normal entry to first grade.
(2) Grade skipping	The student is moved ahead of normal grade placement. This may be done during an academic year (e.g., placing a third grader directly into fourth grade, skipping the last 2 years of high school to enter college), or at year end (e.g., promoting a third grader to fifth grade).
(3) Continuous progress	The student is given material deemed appropriate for current achievement as the student becomes ready.
(4) Self-paced instruction	The student is presented with materials that allow him or her to proceed at a self-selected pace. Responsibility for selection of pacing is the student's.
(5) Subject-matter acceleration	The student is placed for a part of a day with students at more advanced grade levels for one or more subjects without being assigned to a higher grade (e.g., a fifth grader going to sixth grade for science instruction).
(6) Combined classes	The student is placed in classes where two or more grade levels are combined (e.g., third and fourth grade split rooms). The arrangement can be used to allow younger children to interact with older ones academically and socially.
(7) Curriculum compacting	The student is given reduced amounts of introductory activities, drill, review, and so on. The time saved may be used to move faster through the curriculum.
(8) Telescoping curriculum	The student spends less time than normal in a course of study (e.g., completing a 1-year course in 1 semester, or finishing junior high school in 2 years rather than 3).
(9) Mentorships	The student is exposed to a mentor who provides advanced training, experiences, and pacing in a content area.
(10) Extracurricular programs	The student is enrolled in course work or summer programs that confer advanced instruction and/or credit for study (e.g., fast-paced language or math courses offered by universities).
(11) Concurrent enrollment	The student is taking a course at one level and receiving credit for successful completion of a parallel course at a higher level (e.g., taking algebra at the junior high level and receiving credit for high school algebra as well as junior high math credits upon successful completion or taking a college physics course in lieu of high school physics).
(12) Early graduation	Graduate from high school or college in 3-1/2 years or less.
(13) Advanced placement	The student takes a course in high school that prepares him or her for taking an examination that can confer college credit for satisfactory performances.
(14) Credit by examination	The student receives credit (at high school or college level) upon successful completion of an examination.
(15) Correspondence courses	The student takes high school or college courses by mail (or, in more recent incarnations, through video and audio course presentation).
(16) Acceleration in College	The student is admitted with full standing to an advanced level of instruction at least 1 year early.
(17) Early entrance into junior high, high school, or college	The student completes two or more majors in a total of four years and/or earns a Master's degree along with the Bachelor's.

Material compiled from: Southern, W.T., & Jones, E.D. (1991). Academic acceleration: Background and issues. In W.T. Southern, & E.D. Jones (Eds.), *The academic acceleration of gifted children* (pp. 1-29) New York: Teachers College Press and Benbow, C.P. (1979). The components of SMPY's smorgasbord of accelerative options. *Intellectually Talented Youth Bulletin*, 5, 21-23.

at all. On the other hand, early entrance or grade skipping place students outside of the normal age/grade placement completely. In between are options such as subject matter acceleration, combined classes, and telescoping curriculum. Subject matter acceleration would require only part-time placement outside of the regular class. Combined classes and telescoped curricula allow the student to remain with at least a few other age peers in an accelerated setting. The discrepancies between (a) the student's age and the accelerated placement, (b) the amount of increase in the pacing, and (c) the student's maturity all contribute to the salience of the intervention. Students who skip more than two grades, or enter higher levels of schooling more than two or three years early, or experience extremely rapid pacing of instruction (e.g., completing algebra in three intensive weeks), are said to be radically accelerated (Stanley, 1977, 1989; Brody & Stanley, 1991). Radical acceleration can be quite conspicuous, but may be less noticeable for students who are socially mature as well as academically precocious.

The second dimension along which these interventions vary is the extent to which they represent administrative recognition of prior achievement. Implicit in Pressey's (1949) definition are the dual criteria of the student's prior achievement and the pace at which the student acquires new knowledge and skills. Some of the options represented in Table 1 seem designed to recognize the extent to which a student has already mastered the curriculum. Early admission to any school level, grade skipping, or subject matter acceleration are applied when a student has clearly exceeded the expectations and demands for achievement at the current grade placement. On the other hand, options such as self-paced instruction, telescoped curriculum, and compacting are ostensibly more concerned with varying the pace of instruction to accommodate the faster acquisition rate of a gifted student. In effect, this dimension represents two purposes for acceleration. First, it involves giving a student credit for what has already been learned. Second, it involves adapting the instruction to provide a better fit with the student's rapid rate of achievement.

Although the issues of salience and purpose for acceleration are rarely discussed in the popular press or in the professional literature, it is clear that forms of acceleration vary on those dimensions. Considerations of both salience and purpose suggest very different potential outcomes for students and educators. Certainly, a few summer courses at a university where little or no communication or articulation with regular school offerings occurs are apt to be less fraught with potential peril than skipping whole years of school. On the other hand, recognition of a student's prior achievement may be less difficult than seeking out a cohort of students to place in a rapid-paced math class or a telescoped middle school. Yet, very few studies define these variables when looking at the effects of acceleration. A student who enters school a few months early may have entirely different sets of experiences than one who enters two

years early. Some researchers have, however, noted that skepticism toward accelerative options is frequently based on assumptions about the desirability of grade skipping alone or equation of grade skipping with other options. Pressey (1954, p. 59), for example, rebutted an article critical of acceleration and complained that the critic had discussed only grade skipping, "the least desirable form of acceleration." DeHaan and Havighurst (1957) referred to grade skipping as gross acceleration and averred that it was a potentially harmful process. While the bulk of research does not clearly demonstrate that there is no risk with acceleration (Cornell, Callahan, Basin, & Ramsay, 1991), critics fail to cite research studies that clearly demonstrate any type of harm.

A third variable, not explicit in Table 1, involves the age at which a student undergoes accelerative programs. Intuitively, one might expect that interventions applied at early ages might have very different effects from those applied when a student is more mature. Some distinctions are drawn in the literature between school entrance and later options. Though some researchers have addressed the issue of the age at which the student receives an accelerated program (e.g., Feldhusen, Proctor, & Black, 1986), with the exception of early entrance, this variable is also virtually ignored in the research literature. Concerns about early admission arise from fears that taking students who are not in school and placing them into instruction with the potential for doing so before the child is developmentally ready may cause harm. Many of the researchers who have conducted studies have used school readiness as a concept that applies to virtually all cases of early entrance, regardless of the mental capacity or achievement of the child (e.g., Baer, 1958; Bigelow, 1934; Carroll, 1963; Carter, 1956; DiPasquale, Moule, & Flewelling, 1980; Forester, 1955; Hall, 1963). The justification of these concerns remains problematic (Jones & Southern, 1991) and will be addressed specifically later.

On the surface, the level of the intervention and the purpose for which the intervention is used may have strikingly different effects. The apparently contradictory claims about the potential harm from accelerative options may even be partially explained by the confusion that results from ignoring what may be important variations between different types of acceleration. Certainly, if grade skipping were used only for purposes of recognition of student achievement, then concerns about gaps in instruction and undue pressures and expectations for achievement would prove groundless. Since there is a tendency for educators not to make distinctions between either the processes or potential effects of different forms of acceleration (Southern & Jones, 1991), attempts to make assessments to guide the selection of the most appropriate acceleration alternatives have been rare. Such assessments would also be difficult if attempted. By the time acceleration options are considered, it is already apparent that the student has learned considerably more than age peers in the same grade. It will appear that the student may benefit

from a more rapidly paced curriculum, but the actual rate of learning is not directly observable. Thus, the decision whether to offer options that emphasize either more rapid formal instruction or grade advancement will generally have to be made on the basis of the same predictor—prior achievement. Given the conservatism with which many practitioners view acceleration, for all practical purposes only students achieving far higher than their current placement are considered for these options (Southern & Jones, 1991). It is unlikely that students who are only moderately advanced will be considered for any option. When options that amount to administrative recognition of prior achievements are used, concerns for the social and emotional adjustment of children who are younger than their classmates may remain, but it is unlikely that academic problems will ensue.

On the other hand, attempts to predict the potential value of more rapidly paced instruction will encounter different assessment problems. If a class is being identified to embark on a telescoped high school curriculum, then chances for assessment error are higher. The search for prospective candidates will involve increased numbers of students, some of whom may fall into the margins of error of the instruments used. The smaller the population screened, the greater the likelihood that students will be selected who cannot succeed in their acceleration options. If the demand on the students is extremely high, some of the potential concerns about achievement and the pressure of expectations might prove justified, at least in theory. In practice, even these options have generally been employed only among large populations in urban areas (e.g., Havighurst, Stivers, & DeHaan, 1955), and cut-off scores for selection have been set so high that the problem of false positives is virtually nonexistent. The Talent Search model is a case in point. Students selected for fast-paced instruction at age 12 or 13 take the Scholastic Aptitude Test (SAT) and achieve a threshold score that is about the average for college-bound male high school seniors. While such high criteria for entrance may screen some capable students out of a fast-paced instructional program, Stanley and his colleagues have clearly demonstrated that high acceptance criteria can eliminate the dangers of over-expectation (e.g., Stanley & Stanley, 1986; Stanley & Benbow, 1986).

Researchers have rarely addressed the issue of the potential advantages for gifted students associated with each accelerative option or the problems of assessing students and matching them with the most appropriate forms of acceleration. Though Study of Mathematically Precocious Youth (SMPY) has attempted to develop and design a variety of program options that meet the needs of individual students, documentation of the benefits derived from these programs have not translated to practitioners. When deciding to accelerate instructional placements or pace, practitioners have been influenced most by their assumptions about the nature and effects of acceleration. Southern, Jones, and Fiscus (1989a,b)

found that practitioners did not differentiate either among the type of option employed, the age of the accelerant, the salience of the intervention, or its purpose. This may result from a general tendency for educators and parents to over-generalize research on accelerative options. Thus, information about early entrance to grade school may be applied equally to early entrance to college. Research about telescoping college curricula may be applied to middle school programs. Evidence about the effectiveness of extracurricular programs may be applied to school interventions.

Decisions to use acceleration options seem to be based on three general assumptions. The first is that gifted students differ from their peers primarily in the rate at which they can acquire knowledge (though this does not preclude belief that their cognitive abilities are qualitatively different). Second, there is a strong belief that adapting the pace of instruction or advancing grade placement will answer many of the needs of gifted students. The third assumption, while rarely stated, is implied by the first two: the content of the curriculum across all levels of school is generally appropriate and challenging for gifted students, but they are denied access to it because of artificial and inappropriate age/grade barriers.

Enrichment: Definition and Programming Issues

While acceleration is defined as more rapid than typical advancement within a given curriculum, enrichment has been regarded as a process that extends instruction beyond the bounds of that curriculum. Over the years, authors have varied on the specific aspects of their conceptualizations of enrichment programs. Early descriptions used terms like addition to and expansion of the regular curriculum (e.g., Freeman, 1920). Hollingworth (1926) suggested that enrichment should assist gifted students to develop initiative and originality. Osburn and Rohan (1931) asserted that the goals of gifted-child education should include a curriculum that is rich and varied to relieve gifted students of monotony and to allow for active exploration. Passow (1958) identified four guidelines for the development of enrichment programs. He suggested that the curriculum could be modified to enrich the programming for gifted students in three ways: (a) in the breadth or depth with which it was approached, (b) in the tempo or pace with which it was presented, and (c) the kind or content of material that was presented. Passow's fourth suggestion was that the development of process skills was an essential part of the curriculum for gifted students and that efforts should be made to tie enrichment to the unique nature of gifted learners in general and to the interests of individual students. His four guidelines for enrichment are the themes most consistently expressed in discussions of enrichment programs.

Breadth, Passow's first theme, tends to be described as increased opportunities for applications of knowledge

and skills (e.g., Kaplan, 1979). By depth, writers and theorists imply learning more about topics than is typically presented in the curriculum. One example given by Norris (1958) was a unit on the Indian mound builders developed for the Cleveland Major Work Program, a topic that was mentioned only casually in the regular curriculum. Kaplan (1979) refers to this element as horizontal enrichment.

Passow's second guideline about enrichment programs was the tempo and pace of instruction. Since gifted students can, in the same amount of time, learn more than their less capable age mates, their educations may be enriched by study of novel content not normally presented in the regular curriculum. The assumption is made that the curriculum usually taught in school omits large amounts of content, materials, and skills that would be valuable to learn. Enrichment through the inclusion of additional or novel content would allow students to explore and develop deeper and more meaningful understandings of given academic areas. For example, electronics, historiography, and ecology, along with a myriad of other potential topics, could be presented for study by gifted students. Because of the nearly infinite number of possibilities for introduction of novel content, authors have often used student interest as the major factor for selecting additional content, determining appropriate emphasis, and devoting time to study. Kaplan calls this vertical enrichment. Renzulli (1977) defines enrichment as study of content "above and beyond" the curriculum, and asserts that student interest and learning styles should be used to determine the course of study in programs for the gifted.

The third theme struck in Passow's guidelines is that of making the curriculum responsive to the student. The nature of the gifted learner defines the type of content and the processes of instruction to be used. For many theorists, notably Renzulli (1979), enrichment differs from acceleration because of the efforts that are made to take advantage of the student's unique nature and needs. As early as 1926, Hollingworth suggested that good education for the gifted must take into account their interests and needs. Frequently expressed sentiments about the proper nature of enrichment programs for gifted and talented children are that education should be child-centered, and that the student's affective development is perhaps as important as academic achievement (of course, they are not mutually exclusive).

In practice, enrichment may fall short of the ideals Renzulli outlines for such interventions. While Renzulli has designed programs that have as a major component student interest, many programs in place identify students for enrichment programs that then proceed to ignore individual interests and abilities. For example, a student keenly interested in mathematics may be required, instead, to brain-storm about the energy crisis or the abortion debate solely because a teacher or enrichment committee believes he or she will be served better through such "enriched" social studies. This can be termed "irrelevant enrichment." No matter

how excellent it may seem to the teacher, it is largely irrelevant to the actual major interests and needs of that gifted child. This sort of enrichment is also often presented to groups of gifted children, perhaps somewhat homogeneous with regard to IQ but not with respect to their interests. The element of choice may be missing or limited to yearly projects ostensibly identified by the student, but which are frequently constrained by the program resources selected by a teacher for group instruction.

Passow's (1958) fourth theme is that of instruction in process skills. These include creative and critical thinking, heuristics and problem solving, and affective or social/personal skills. Gallagher (1981) pointed out that gifted students need heuristics that would help them manipulate the complex content in new situations and across interdisciplinary applications. Tannenbaum (1983) echoed Hollingworth's (1926) call for development of initiative and originality. He noted that gifted students should learn to be producers rather than simply consumers of knowledge. These assertions fit well into the learning structures posited by Bruner (1973), who claimed that effective learning was best accomplished by instruction in the processes of different disciplines at the expense of facts and simple skills. They also fit into a recurring concern about the explosion of knowledge and the potential inefficiency of current instructional methods to assist students to master some contents.

The call for process training in gifted education, however, also included a potential pitfall. Differentiating education for the gifted by content alone is often problematic. At what point does presenting unique content become either a form of acceleration, or an exercise in finding arcane instructional subjects for gifted students that they are unlikely to encounter in the regular curriculum? On the horns of this potential dilemma, it is possible to de-emphasize content entirely. A major emphasis on training process skills could produce instruction for the gifted that would be virtually content-free. Creativity training exercises would need not be tied to school curricula at all. Problem-solving techniques could be practiced with problems that had no relation to various school subjects. Renzulli (1977) noted the proliferation of activities that bore little relation to academic content. This trend continued through the 1970s and early 1980s, with curriculum for the gifted increasingly dependent on process-training skills separate from the regular classroom curriculum.

Advocates of enrichment for the gifted argue that it differs from accelerative options in three basic ways. First, they assume that the regular school curriculum is limited and monotonous for gifted students. The curriculum ignores a large number of interesting and valuable subjects for study to concentrate on a relatively sparse set of knowledge and skills. Therefore, the curriculum must be modified by extending the opportunities for application and elaboration, studying topics at greater length and depth, and introducing novel topics and themes into the regular curriculum. Second, advocates

of enrichment suggest that a modification is required in the way gifted students study any content. They assume that the regular curriculum concentrates on rote learning of facts and skills at the expense of facilitating more complex cognitive abilities, creativity, and basic understanding of the major processes inherent in the content discipline. Third, arguments for enrichment assume that a central focus of curriculum modification should be the welfare of the student, and that social and emotional welfare can be insured through curriculum interventions that stress social and emotional development. This assumption also includes a basic belief that the regular school curriculum does not meet these needs for gifted students.

It is unlikely that any advocate of enrichment would deny that the pacing of instruction needs to be varied for gifted students. Passow (1958) suggested that enrichment provide for greater breadth and depth of study than regular education, and that the tempo and pace of instruction be varied to recognize the capacity of gifted students to learn more than their age mates in less time. Kaplan's (1979) description of vertical enrichment is hard to distinguish from acceleration (cf. Khatena, 1991, p. 389, who claims that "Acceleration can be viewed as horizontal and vertical enrichment"). Advocates of acceleration proceed on the assumption that the curriculum is in very general ways acceptable, or at least they consider that the education system will hold both precocious children and children of more average ability accountable for demonstrating achievement of common knowledge and skills. They are certainly not apt to defend every curriculum practice and theme. In fact, a common rationale for acceleration has been that gifted students can accomplish their requirements faster and have time for deeper or more divergent studies. Common ground in the assumptions of proponents of acceleration and enrichment are that the gifted students can learn faster than other students of the same age and there is a great deal they can learn. Their progress should not be stifled or thwarted by simplistic and unchallenging curricula. The basic debate over acceleration "versus" enrichment, however, involves the extent to which varying the pace of instruction will meet the needs of gifted students. Renzulli (1979) questioned whether progressing through the general curriculum rapidly really met any important needs of gifted students. His concerns were shared by those who argue for enrichment as a primary means to address the needs of gifted students. This implies that acceleration options are regarded solely as a speeding up of pace. Daurio (1979), on the other hand, described horizontal enrichment as unsystematic. He argued that attempts to provide enrichment would be apt to hold students back from other important learning experiences (and implicitly that accelerants would receive such experiences). For most programs and practices, it is unlikely that either extreme characterization will be completely accurate.

Development of the Acceleration and Enrichment Debate

During the last 70 years the value of academic acceleration has been debated often, but a century ago there would have been scant interest in a chapter that described the processes of enrichment or acceleration in the education of the gifted and talented. Then, many bright youths were taught mainly individually by tutors or attended essentially ungraded one-room schools, as both Hollingworth and Terman did. However, conceptualizations of talent and ability have changed over time and they differ across cultures. They are influenced by prevailing economic conditions, societal sentiments on the role and value of education, the availability of educational programming, and status of the students who have access to these opportunities. Indeed, in many parts of the world where access to education is limited by the extreme paucity of national resources the questions dealt with in this chapter are probably moot. Until recently, concern about the benefits and risks of acceleration has been limited primarily to the United States.

In the United States, a commitment to universal education for all youths, a strong commitment to egalitarian values, and the play of historical forces have all combined to produce a professional literature that is at once vast and contentious. The aspirations for universal access to basic educational opportunities are no longer unique to the United States. In many other nations, older notions about the limitations of educational access now lack general acceptance. While few other countries can match the percentage of students in the United States who attend colleges and universities, many exceed the percentage of students who successfully complete secondary schools (Faraj, 1988; Snyder & Hoffman, 1990). European and East Asian countries have not only widened access to educational options, but also many of these countries have adopted a number of the assumptions inherent in the educational structures of the United States. Echoes of some of the same debates concerning initial school entry age and appropriate pacing have been heard in Western Europe and in Asian nations with advanced educational systems (Gredler, 1980). In some countries educators have generally assumed that children of similar ages need to be served in the same settings. As awareness of the need to develop educational talent increases, these assumptions will come in conflict with the fact that many students can learn at a pace much more rapid than their age peers. Despite different national educational systems, some of the resistance experienced in the United States to accelerative options may be repeated. The field of gifted-child education is a comparatively young one in much of the world. The body of theoretical treatises and research literature deals predominantly with the American context of schooling, but increasing interest in the gifted and talented is likely to raise similar concerns and objections. Certainly, few issues in the education of

the gifted have been debated as long or as fiercely as those surrounding enrichment and acceleration.

The Historical Context

It was not until the middle of the nineteenth century with the publications of Francis Galton (1869) that any real notice of differential educational needs for the gifted were noted. Galton's early research interests were into the nature of the genius and the extent to which genius was hereditary. He argued that genius was a trait observable in families of eminence and transmitted through inheritance. His writings were concerned with the traits men of genius possessed that allowed them to succeed in a wide field of human endeavors. He did not comment extensively on their educational needs, but did feel that every effort should be made to propagate genius through scientific selection of parents. Galton's position was characterized by an essential belief that hereditary genius was a highly desirable trait because it ensured attainment of eminence and relatively strong mental health. This position dominated the early history of research on the gifted and talented and would be adopted most wholeheartedly by Galton's intellectual heir, Lewis Madison Terman.

Terman's (1925) longitudinal study of students with high IQs involved many of the attempts to identify and provide for gifted children in the first third of the twentieth century. Terman believed strongly in the heritability of intelligence and the inherent stability of those who showed remarkable ability. He was strongly influenced by Galton's work, including his perspective on the positive relationship between genius and mental health. He reacted quite strongly (see Terman, 1954) to the claims of Lombroso (1891), a physiognomist, that geniuses were extraordinarily subject to diseases of madness. Terman's five-volume *Genetic Studies of Genius* functioned at one level as an apologia for the Galtonian characterization of genius. These studies defined genius as a particular, statistical occurrence (an IQ of 140 on the first, 1916, version of the Stanford-Binet Intelligence Test, attained by less than 1% of the population), and they also served to assert that these children were not only high achievers, but they were also more ethical, more stable, and healthier than the general population. It was Terman's strong belief that these students represented the future's most productive citizenry.

Although Terman's (1925) findings seemed to contradict Lombroso (1891), they provided no obvious basis for educational intervention with the gifted. Terman was aware that his assertion of extraordinary ability and exceptional adjustment might lead to a conclusion that no special provisions were required for the gifted. He was able to point to data which indicated that intervention of rapidly paced instruction would be ineffective. Among the students he studied, Terman found that the median age at which these students

completed high school and college was approximately one year ahead of their chronological peers. He also examined two sub-samples of the entire study whom he identified as school accelerants and who had been graduated from high school at mean ages of 14.9 and 16.0 years, respectively (Terman and Oden, 1947, pp. 264-281). In the third and fourth volume of the *Genetic Studies of Genius*, Terman and colleagues (Burks, Jensen, & Terman, 1930; Terman & Oden, 1947) commented at length on the effects of moving gifted students at a pace faster than normal or placement in classes ahead of schedule. They cited a number of benefits from the practice, including allowing students to (a) enter careers at earlier ages, (b) engage in mandatory military service, (c) improve motivation and avoid slovenly work habits, and (d) save financial resources for themselves and the taxpayer. In both studies (Burks et al., 1930; Terman & Oden, 1947) it is clear that the authors expected that their argument would be met with some skepticism. Indeed, by that time, acceleration had become a fairly controversial issue, and would not be acceptable as the sole programming response for gifted students. Ironically, the debate began to heat up almost at the same time that Terman published his initial study in 1925. (For concise updating of the studies, see Oden, 1968.)

Kett (1974) pointed out that the notion that students should remain with their age peers is very recent. It was not widely held in the nineteenth century, and appeared only with the arrival of an educational bureaucracy after 1920. During the 1920s several changes occurred in general education that in turn brought accelerative options under closer scrutiny. Those events included (a) mandatory attendance for all children, (b) increased educational expectation, (c) huge increases in the numbers of students being educated, and (d) the increasing prevalence of progressive education and developmental theories in child psychology. The public began to perceive the need to provide all children with a basic education. That sentiment was also fueled by public concerns about the abuses in child labor and the need to assimilate massive numbers of immigrants arriving during the early twentieth century. Mandatory attendance was finally accomplished during the United States' economic collapse in the Great Depression of the 1930s. Acceleration began to fall into disfavor as it became increasingly important to hold these students out of the labor market longer than had frequently been accepted in the past. Attempts to prevent abuse of child labor and protect the sometimes tenuous job security of adults contributed to greater numbers of American youths' completing higher levels of schooling. Secondary schooling became an institution for all children, not just those who lived in moderate to large communities. Those factors, combined with the rapid population growth of the 1940s and 1950s, dramatically increased the numbers of students in schools. A bureaucratic response soon followed and began to accentuate the institutional character of schools. Kindergarten plus

12 years became the conventional period for schooling. Students were sorted by age rather than ability or attainment. Standard curricula were adopted, and general uniformity increased with the growth of an emerging textbook industry. Chronological age became the standard attribute for educational placement. Along with sex, age is the most easily obtainable characteristic of a child entering and progressing through schools. Its value as the basis for grouping squared with popular wisdom about child development.

The fourth factor that contributed to the disfavor of acceleration was the application of the emerging developmental perspective on child psychology to education. Dewey (1962) advocated emphasis on the education of the whole child and found strong support in the educational community. In American schools, social and emotional health of the child became as important to the development of school programs as academics. The perspective readily permitted the needs and interests of various constituents of the educational process to be met. Teachers, for example, have a strong need for "psychic rewards of knowing and understanding their students." Administrators are concerned about good public relations, staff support, and harmony. Parents want their children to experience good classroom atmosphere and positive interactions with other children. The community values educational efforts that build community harmony (Lortie, 1969). These values soon became the basis for school structuring and, ultimately became the source of much of the theoretical underpinnings of enrichment activities for gifted children.

The influence of developmental psychology was strengthened with the publication of developmental theories of intelligence and learning. Piaget (1952), for example, posited stages of development that were relatively fixed and unresponsive to direct intervention. From this, educators incorrectly interpreted chronological age as the major indicator of a child's psychological development and, thus, his or her ability and potential for success in learning.

It is not surprising to find that acceleration was coming increasingly under attack. Daurio (1979) notes that the debate about acceleration began in earnest in the late 1920s, only to fall moot during the Depression era. Enrichment programming began to take its place as a principal option for dealing with the needs of gifted and talented children. Enrichment was firmly grounded in the progressive education movement and capitalized on concerns about social and emotional needs of students. The movement toward enrichment had, of course, to deal with the findings of Burks et al. (1930), which had seemed to indicate strongly that the gifted were not subject to hazard in these areas.

Grinder (1985) has written that the views of Terman (1925) were increasingly contradicted by the growing assumption that gifted children were at risk in the areas of social and emotional development, and that the primary purpose of programming lay in insuring

the emotional health and happiness of gifted students. Those assumptions certainly were at the heart of many of the programs that grew in the 1920s.

Hollingworth founded the Speyer School, dedicated to providing enrichment for gifted students. She claimed that signs of maladjustment and unhappiness were not unusual among both moderately and highly gifted children (Hollingworth, 1924, 1942). She emphasized the need to provide psychological support for their integration into a less gifted society.

Prominent examples of accelerants who experienced difficulties were widely cited and seemed to buttress critics' concerns about the process of acceleration. For example, William J. Sidis had entered Harvard at an extremely early age, but thereafter experienced severe problems in personal and social adjustment (Montour, 1977; Wallace, 1986; Wiener, 1953). Hollingworth cited the case of John Stuart Mill, who complained in his autobiographical writings about the tyranny and unsuitability of his father's educational regimen but, nevertheless, became a renowned political economist (Mill, 1908; Packe, 1954). Textbooks and articles (e.g., Davis, 1924; Hollingworth, 1926; Rugg, 1924; Stedman, 1924) in the field began to describe options for the gifted that included enrichment rather than accelerative options.

Freeman (1920) provided early descriptions of two potential approaches to meeting the needs of gifted children. The first was speeding up the pacing of instruction (acceleration) or adding to the curriculum (enrichment). He reported that rapid pacing (a process referred to as flexible promotion) had been employed since 1868. In this process, the curriculum was divided into smaller units, such as nine weeks in length rather than the traditional year. Students were tested frequently and passed on to the next higher unit as needed. He also noted that no teacher or administrator in a national survey had reported any harm accruing from the process. However, in that same survey, he reported rather wide use of enrichment among the schools surveyed.

Stedman (1924, p. 8) described the development of a program for gifted junior high students as a response to avoiding high school subject matter. "[The parents] were unwilling to make 'high school babies' and so the problem was to provide a post-8th grade course which would make suitable demands . . . without introducing them to high school subjects." Hollingworth (1926, p. 312) stated that, "The subjects taught in high school can be learned by very gifted children when they are 9 or 10. . . . But what profit is found in having done so?" Davis (1924) claimed that attitude development was vital for gifted students. Additional courses offered to the gifted in many areas included typing, tennis, art, and music (Hildenbrand, 1981). The schools began to incorporate wider definitions and to decrease reliance on IQ for identification. Hildenbrand (1981) claimed that schools could not support the more stringent and limited view of giftedness promulgated by Terman because, for many middle class students, it reduced access to training for professional careers.

The enrichment model was congruent with the progressive education movement, and with the acceptance of progressive education, the rationale for special programs for gifted students shifted. The turn was away from Terman's (1925) position that special education for the gifted was necessary to develop the talents of these children as societal resources. Instead of moving students through school quickly, there was increasing emphasis on promoting the mental health and well-being of gifted students, and during periods of exceptional economic stress, to maintain them in school and out of the work force.

The Cleveland Major Work Program, one of the earliest and most fully documented program for gifted students, has been described by Hildenbrand (1985) as an archetype for progressive education. Goddard (1928) noted that each classroom contained a piano, tool benches, aquariums, and bookshelves. The activities frequently included field trips with reports rather than extensive emphasis on content instruction. He reported that the teacher "can teach what she wishes. She does not even have a daily time schedule" (Goddard, 1928, p. 86). Hildenbrand (1985) stated that the dominance of this approach to enrichment arose from its obvious benefits for teachers, administrators, parents, and the community.

By the 1930s school personnel were generally reluctant to employ grade skipping (Pressey, 1954). Until the obvious exigencies of World War II, when vast amounts of manpower were needed in rapid fashion, assumptions about the dangers of grade skipping were rarely tested (Daurio, 1979). By contrast, a great deal of research was carried on during the 1940s. Pressey (1949) published extensive studies about the efficacy of early admission and telescoping of curriculum at the college level. Terman and Oden (1947, pp. 279-281) commented extensively and favorably about the impact of accelerative options. Yet by the end of the decade, the influx of veterans lessened the demand for rapid pacing through college, and the G.I. Bill guaranteed veterans economic access to a university education. The basic beliefs and attitudes of constituents of gifted programs, however, had probably not markedly changed during the war. Thorndike in 1947 wrote to Terman that the curriculum at the Hunter School for the Gifted was confined to art, music, and other "non-academics" and that teachers and administrative staff worried about making the course overly intellectual (cited in Hildenbrand, 1981).

In his Bingham Lecture, "The Discovery and Development of Exceptional Abilities and Capacities," Terman (1954) noted that lockstep (progress through the grades) was much more prevalent than it had been 30 years before. The availability of employment in a prosperous period and the beginnings of an increasing presence of women in the work force contributed to a demand for schools to take students at earlier and earlier ages. But efforts to employ early admission or grade skipping in the public schools were resisted by pressures of a skyrocketing population of

school-age children. Many districts undertook studies to determine the effects of early admission, and many of these "local studies" claimed to find evidence of major harm (e.g., Baer, 1958; Bigelow, 1934; Carroll, 1963; Carter, 1956; Forester, 1955; Hall, 1963; King, 1955; Mawhinney, 1964; Orbzut, Nelson, & Orbzut, 1984). Conversely, Worcester (1956) and Hobson (1946, 1963) found marked benefits. While resistance to early entrance remained high, other forces were at work and reintroduced a sense of urgency for school level acceleration.

During the early 1950s, calls for improving the quality of American high schools increased. Part of the impetus for those reform efforts was provided by a growing perception that the United States was falling behind the Soviet Union, and that American technological dominance was threatened. Conant (1959) and others called for the consolidation of small high schools into larger schools, with curricula that heavily stressed math, science, and technology. The launching of Sputnik by the Soviet Union in 1957 seemed to fuse fears that American students were receiving inadequate education.

During the 1960s there was a significant shift in educational values. Emphasis on the development of talent declined with the shift in attention to compensatory education. The dominant educational theories stressed themes similar to those of the progressive era of the 1920s. Personal relevance, enhanced self-concept, pride in one's racial or ethnic origins, and attainment of self-actualization became major criteria for effective schooling. Talent searches and attempts to channel talent into science and technical fields were frequently considered exploitative. Tannenbaum (1983) pointed out that intensified efforts to develop and use student talent as a national resource were associated with the subsequent dissatisfaction of many students with the sciences expressed in the decades that followed Sputnik.

Research into issues of acceleration were rare during this period. Enrichment was the dominant form of programming, where programs existed. In 1971, however, Stanley and his associates at Johns Hopkins (Stanley, 1991) began an examination of radical acceleration, looking at the effects on students of entering college two or more years earlier than normal. The first studies, concentrating on students with precocious mathematical ability, seemed clearly to indicate that these students achieved at high levels with no apparent harm to social and emotional well-being. Stanley's efforts began to gain adherents, and by the early 1980s a national network developed to discover and to develop boys and girls who reason exceptionally well mathematically and/or verbally.

Renewed interest in acceleration was concurrent with two factors that facilitated its dissemination. The first was growing perception nationally that American schools were inadequate. The curricular innovations of the 1960s and early 1970s were widely regarded as failing to instruct in the basic skills and competencies.

Reformers decried the lack of strict guidelines and specific curricula in the content areas. It was also claimed that too much emphasis was given to affective and emotional concerns, while academic content was slighted. The second factor that spurred interest in acceleration was fear that America was falling behind its principal economic rivals, especially Japan. During the 1980s widely cited national commission reports seemed to confirm the decline of the educational system (e.g., National Commission on Excellence in Education, 1983, 1985).

Factors that Fueled the Debate

Seven decades of discussion and dispute over the relative merits and risks of acceleration and enrichment illuminate both the factors that cause interest in the debate to wax and wane and the effect of political and social sentiment on the type of research that will be done and believed. Issues that have continued to influence the debate include beliefs about the intrinsic need to guarantee the welfare of children and to assimilate other cultures into the national value system, assumptions about the social and emotional vulnerability of gifted students, and availability of educational options and resources for gifted students.

First is the overly simplistic competition between societal intentions to develop talent vs desires to provide a nurturant and happy learning environment. There was concern over children in the labor market, where they were frequently exploited and/or hired at the expense of adults. During the 1920s the assimilation of immigrants and the protection of children from exploitation in the labor force became much more immediate issues than protecting "genius". Schools served as havens to protect children from exploitations of industrial labor. Mandatory and extended schooling also had the effect of protecting the jobs of adults. As noted above, the economic impact of the Great American Depression of the 1930s sealed the controversy until the exigencies of World War II required the development of talent. In the post war years, economic expansion and the rapidly increasing numbers of students assisted in the return to dominance of the enrichment paradigm. It was only during the heights of anxiety that accompanied the cold war public relations disasters of the Soviet explosion of the hydrogen bomb and Sputnik and the portents of an economic disaster in the 1980s that increased interest in accelerative programmatic options.

A second important element in the debate is that proponents of acceleration and enrichment seem to retain solidly opposed assumptions about the relationship between intellectual precocity and the social/emotional health of gifted students. These viewpoints are complemented by a view of school curriculum as either narrow and rigidly defined, stifling the needs of the gifted child, or as a relatively comprehensive

preparation of which mastery is essential for all children. The seeds of these viewpoints can be seen in the competing claims of Galton and Lombroso in the nineteenth century. Galton believed in the innate superiority of men of genius and averred that special schooling was neither required or even helpful. He pointed to numerous examples of men of eminence who were either uneducated during childhood or who experienced dreadful educational experiences. His view seemed to be that access to academic excellence might be necessary, but special provisions were not required. Lombroso, on the other hand, advanced theories of the innate instability of genius. For Lombroso, education was the source of a good deal of potential harm. Teachers could stifle and frustrate the delicate mind of the genius with devastating results. This debate is implicit in the works of Terman and Hollingworth. It can also be found implicitly in positions adopted by Stanley and Renzulli. If gifted students are of normal or superior adjustment, then special curricular interventions to insure emotional well-being are not required. For others, gifted children are at risk from threats that arise precisely from academic pressure applied to them because of their abilities. To the extent that one believes the latter, purely accelerative options are regarded as potentially harmful.

A crucial consideration is the extent to which the child is encouraged to take an active part in the educational decision-making process. For example, how eager is the child to skip a school grade, to work intensively in an accelerated mathematics class, to participate in academic summer programs etc.? Also, how effectively are the child's parents facilitating their offspring's social, emotional, athletic, and cultural development? Brody and Stanley (1991) assert that parents and the child must work on these four areas as much or more than on academic development. According to their views, each intellectually gifted child should strive to develop proficiency in at least one athletic sport and performing or fine art. This would provide the gifted youth several contrasting reference groups with whom to interact.

A third factor in the debate is the availability of options and resources for gifted children. In times of prosperity resources are relatively plentiful and the public has access to broader arrays of educational options. In times of economic or political crisis, alternatives are more constricted. The periods of interest in acceleration coincide with periods of political crisis and economic constraint (with the exception of the Great Depression of the 1930s). The availability of resources is always influenced by the political strength of the constituent groups that attempt to influence educational policies.

These three factors are pervasive in the United States, where there has been a consistent effort to provide public education to all students in a more or less equivalent form. There has been no history of long-standing or rigid class divisions that exist in other countries, although for most of the country's existence it discriminated severely against African Americans. The United States

has also experienced economic growth that has been accompanied by periods of attention to the welfare of individual children and extension of resources to meet the commitment to universal education. In countries where these conditions do not exist, efforts to define the needs of gifted students will progress differently.

Course of the Debate

During the last 70 years, a wide array of assertions have been made about the comparative benefits of acceleration and enrichment. The issues arise from basic differences in philosophy and beliefs and about the nature of schools and the nature of gifted learners. Supporters of acceleration from Terman to Stanley have contributed to a lengthy list of possible benefits for gifted students who are accelerated. These include:

- (1) Less emphasis on needless repetition and drill.
- (2) Achievement of closer match between the student's level of instruction and level of achievement.
- (3) Appropriate recognition of mastery so that students may receive credit for course work mastered regardless of their ages or grade level.
- (4) Increased opportunity for academic exploration as a result of having more time to investigate courses of study or even careers.
- (5) Increased productivity, especially in careers where early contributions seem most important (see Lehman, 1953).
- (6) Increased time for careers.
- (7) More exposure to intellectual peers.
- (8) Greater economy through reduced time spent in school, as well as diminished need for teachers in gifted education.
- (9) Lower probability of monotony and boredom.
- (10) Increased achievement motivation.
- (11) Reduced probability that capable students will drop out, because they will be more motivated to achieve in academics.

(12) Development of appropriate work habits and avoidance of poor study habits that might suffice, but not adequately challenge, highly capable students.

- (13) Avoidance of or solution to underachievement.
- (14) Avoidance of conflicts with age peers who do not share academic interests and abilities.

The claims of hazards from acceleration can be roughly categorized under four major headings: (a) academic achievement, (b) emotional maladjustment, (c) disruption of socialization, and (d) reduction in extracurricular opportunities. Each of these areas describes a wide variety of concerns and is summarized below.

Academic Outcomes

(1) Accelerants will fail in the new setting because they will not be able to comply with increased academic pressures.

(2) Developmentally precocious children who are accelerated will slowly lose their advantage and eventually fall behind their older classmates.

(3) Accelerated students will have gaps in their academic preparation that may become more pronounced and severe as they go through school.

(4) Accelerants will be physically or emotionally too immature to compete successfully with their older classmates.

(5) Precocity is more apparent than real. Accelerants may demonstrate knowledge, but lack appropriate experience, and thus will be unable to handle mature themes and concepts at higher grade levels.

(6) Acceleration within the regular curriculum will not provide needed experiences for gifted students (e.g., independent learning, creative problem solving).

(7) Increased academic demands will force children to concentrate on mastery of the basic skills and knowledge presented in the regular curriculum and therefore fail to develop creativity and productive divergent thinking.

Social Adjustment

(1) Accelerants will sacrifice time to develop and to learn through play and exploration.

(2) Students who are accelerated will miss age-appropriate social activities.

(3) The development of friendships will be threatened because accelerated students' time and opportunities to socialize with same-age peers will be reduced and older classmates will reject them.

(4) Acceleration will reduce opportunities to develop social skills.

Emotional Adjustment

(1) Frustration from increased academic and social demands will cause stress and burnout.

(2) Reduced opportunities to form friendships will lead to isolation and antisocial adulthood.

(3) Diminished opportunities to develop extracurricular interests and hobbies will contribute to emotional difficulties in later life.

(4) Acceleration will not allow for the introduction of valuable and potentially therapeutic integrative experiences that are present in enrichment.

Reduced Extracurricular Opportunities

(1) Accelerated students will have fewer opportunities to participate in age-related extracurricular activities.

(2) Because of relatively immature physical development, accelerants will not be able to participate in varsity athletics.

For critics of acceleration, these hypothesized risks seem unwarranted. If acceleration is used to address

a mismatch between demonstrated achievement and curriculum, it ignores the deficiencies inherent in the curriculum itself. Furthermore, it also does not address other needs that gifted students may have. Acceleration is an intervention that may address what is only a temporary developmental anomaly. Finally, acceleration does not address the unique nature of the gifted student and does not expand offerings that are based on traditional views of the more average student.

The nature of claims and counterclaims about acceleration have been consistent, but researchers have addressed them only periodically and spasmodically. A great number of studies have accumulated on the effects of acceleration on academic and affective development, but variables from both domains have been defined so broadly and measured so diversely that consistent generalizations have been difficult (Cornell et al., 1991). Recent studies and comprehensive reviews, however, have provided some strong evidence about some of the effects outlined above.

A broadly inclusive meta-analysis of the effects of grade skipping (Kulik and Kulik, 1984) documented that accelerants did not suffer academic harm from the process. The accelerated students remained highly productive and maintained their academic advantages even in the new, more demanding settings. Those findings were consistent with major reviews (Daurio, 1979; Pollins, 1983) and a best-practices analysis by Rogers (in press). Southern et al. (1989a,b) found that few parents, students, teachers, school psychologists, and coordinators of gifted programs cited academic harm as a potential outcome from acceleration. Fears of academic harm as a result of grade skipping may have been laid to rest, provided that parents of the accelerants wisely strive to help their child become well adjusted socially and emotionally.

When considering early admission to school, however, there is considerably more controversy. Some researchers have linked early admission to increased failure and retention rates and even to referral and placement in special education (e.g., DiPasquale et al., 1980; Maddux, 1983; Maddux, Stacy, & Scott, 1981; Orbzut et al., 1984; Uphoff & Gillmore, 1985, 1986). Jones and Southern (1991) and Robinson and Weimer (1991) have pointed out the limitations involved in the research supporting such conclusions. School readiness literature in general suffers from a variety of methodological and procedural errors that make conclusions about academic harm from early admission problematic. For systematic studies with favorable outcomes, see Worcester (1956) and Hobson (1963).

The evidence concerning social and emotional harm is less conclusive. Cornell et al. (1991) have pointed out that assertions of no harm from the process of acceleration have not been proven. Among other things, they point to (a) a lack of adequately designed studies, (b) failure to examine dropouts and students who did not succeed in accelerative programs, (c) frequent reliance on case study methods and self-report data, both of

which are susceptible to bias, and (d) the large proportion of studies based on questionnaires and surveys with low or unknown reliability and validity instead of more rigorous psychological instruments. Regardless of the methodological problems and unaddressed questions, advocates of acceleration are put in the unfortunate position of having to confirm the null hypothesis—that is, the absence of harm. That criterion is an unusual one and cannot really be met. The null can be rejected in individual studies when relationships are observed at given levels of probability. Alternatively, the researcher may fail to be able to reject the null hypothesis because a relationship could not be observed at a specific level of probability. The null hypothesis itself cannot, however, be proven to be true. It may be rejected, or it may fail to be rejected, but tests of the statistical probabilities of relationships will never provide valid proof that relationships do not exist. Furthermore, human beings are subject to so many different conditions and influences that no one variable such as educational acceleration is likely to triumph over them all. Inevitably, there will always be some failures.

There are few if any adequately designed studies that document social and emotional harm. Rogers (in press) calculated a negligible effect in the areas of social and emotional harm. Kulik and Kulik (1984) decided against any meta-analysis of social or emotional effects because of the dearth of well-designed studies on either side. It is clear, however, that those who are convinced of the negative impact of accelerative options hold their beliefs tenaciously. Southern et al. (1989b) found that concerns about accelerative options most frequently centered on social and emotional implications. Many respondents were able to cite assertions from critics of acceleration, while few were able to cite studies by proponents. They maintained their concerns about social and emotional adjustment despite any awareness of empirical support and frequently without any actual experience with academic acceleration of gifted students.

There are several possible explanations. First, social and emotional development are much more nebulous constructs than academic achievement. Instruments that measure academic achievement are widely available, are fairly well accepted, and have excellent psychometric features. The same is not true of instruments that attempt to measure social development or emotional health. The definitions of these constructs vary from setting to setting and researcher to researcher. Informal assessment by teachers and parents is also less definite than with academic achievement. Teachers are accustomed to making judgements about the level of learning individuals achieve in classrooms. It is, perhaps, their most familiar daily task. Determining if a student has suffered from social or emotional harm is a much less familiar one.

Second, because acceleration is a practice that most educators believe should be used conservatively, its impact may be overestimated. If a student experiences difficulties after acceleration, it is likely that parents,

teachers and age mates will ascribe the difficulties to the acceleration (in logic, the *post hoc, ergo propter hoc* fallacy—after this, therefore because of this). Gagné (1981) has pointed out that, in most of the cases he studied, the problems encountered by the accelerant would probably have occurred with or without acceleration. Yet, because of the weight given to acceleration decisions, problems are attributed to the educational intervention. It is unfortunate that students cannot serve as their own controls. It is impossible to determine what would have happened should a particular student not have been accelerated. This might be approximated by using identical twins as the experimental subjects. Yet, such a study would probably not be feasible because of social and ethical concerns.

Third, it seems clear that assumptions about the effects of one type of acceleration will be generalized to other types. Children who are young-in-grade also will be presumed to be affected similarly by the academic and social/emotional demands, regardless of whether or not they were placed in higher grades or entered school early because of demonstrated precocity and maturity or for other reasons. Southern et al. (1989b) observed that educators rarely considered a difference in the effects of early entrance and grade skipping or reasons for a student's being young-in-grade. They also observed that educators claim to base their assumptions about the effects of acceleration on their personal experiences, but very few have had much experience with gifted accelerants. Instead, it appears that educators' conjectures are based on over-generalizations of the school-readiness literature and on their experiences with students who were young-in-grade, but probably not academically precocious. The school-readiness literature is generally concerned with the effects of being relatively young-in-grade and does not concern itself with selected populations of the gifted. Some of the more sensational fears have been applied to practices specifically for gifted students, and to acceleration procedures that are apt to be quite different from early entrance (Southern & Jones, 1991).

Fourth, much of the concern expressed over social and emotional adjustments among accelerants arises from a basic confusion about the term itself. Acceleration brings to mind the speeding up of a student's learning tempo, an external manipulation of student learning. The common usage of the word means to hasten, quicken, or rush through—perhaps with the use of some force. Common images of the effects of "rushing" are tripping, crashing, overheating, burning out, and missing the time to enjoy the trip. In reality, however, students are rarely "sped along." Furthermore, there is no evidence that accelerants are likely to miss out and then fall behind as a result of acceleration. In the light of common school practice, most acceleration decisions are undertaken solely to apply some administrative recognition to a student's prior achievement.

Early admission and grade skipping do not usually result from broad screening efforts by the district to

determine which students could benefit from instruction at a more rapid than normal pace (for an exception, see Hobson, 1963). On the contrary, parents, administrators, or teachers recognize the extraordinary achievements of individual students and refer them for some form of intervention. Consideration of acceleration options generally occurs because of concerns that the student will not have access to any new learning opportunities in the current placement, or because the student may be showing signs of maladjustment in the current setting, which then is interpreted as a sign of boredom. Acceleration options are rarely used without extensive assessment of the student and the learning environments, or without consultation with the parents, teachers, and students. The result is a rather conservative use of acceleration options. Generally, students who are eventually accelerated already are performing at the upper limits of the new settings as well.

Clearly administrative in nature are options such as concurrent enrollment, Advanced Placement, credit by examination, or correspondence courses. Each of these has built in a product or examination that documents achievement so as to reward learning with the appropriate level of recognition. Pacing is not external in these options and they do not entail separation from age peers or the normal curriculum of schools. Options such as continuous progress and self-paced instruction are rarer. Still, they do not entail external manipulation of rate or pacing. By definition, they occur at rates determined by the student's interest and ability. Moreover, these options are most frequently employed in settings that retain contact with same-age peers.

There are some options that, on the surface, appear to involve manipulation of the pace of instruction. Curriculum compacting, telescoping curriculum, and extracurricular options like fast-paced math courses do imply external manipulation of the curriculum. Some of these programs use a purposeful search for likely candidates for the process, raising the specter of misidentifying students and endangering their social or emotional welfare. In fact, these options are generally firmly based on prior student achievement, and the amount of differentiation may be very small.

Fast-paced classes, for example, are most often extracurricular, offered away from the regular classroom. Students self-select for participation and are usually in class with other same-age peers. It is only when enough of these classes have been completed to qualify the student for admission to higher level of schooling that salient differentiation takes place. In this case, a long history of successful achievement precedes any placement outside of the normal age and grade. Students who qualify for such classes through the SAT or similar tests of academic achievement are not under great risks for inappropriate pacing. Though their achievements are gained through extracurricular experiences, it is learning documented by their test performance. The criteria for such selection of applicants is set so high as to preclude

all but the slightest chance of including students who would not be able to cope with the demands of a fast-paced instructional program.

The process of telescoping is also probably less drastic than it might at first appear. Although having 3 years of instruction collapsed into two may suggest a very rigorous academic effort, telescoping is most frequently employed for larger groups of students. Thus, a substantial group of age-level peers accompany each other through the process. The grouping not only provides for peer support, it also limits how extreme the effects of accelerated pacing will be. In high school, unselected students often complete all requirements in 3½ years or less, entering college 6 months to a year ahead of schedule with no apparent ill effects. Also in senior high school considerable homogeneous grouping is achieved "naturally" via the elective course structure (e.g., chiefly academically able students take physics, calculus, Latin, etc.). Telescoping is frequently applied during the middle grades. The history of curriculum development in the United States has helped insure that ill effects during middle school are unlikely. Tye (1984) states that one major purpose of both middle schools and junior high schools is to reduce the pace of instruction to allow students time for social development and to allow slower students to consolidate basic skills before high school. Hence, the expectation for academic achievement in the middle grades may be generally lower than in either elementary school or high school.

Options that place students in higher levels of education (e.g., early admission to high school or college) impose very different environments on students. However, once again, it must be pointed out that students who receive such interventions are generally selected because of an observed remarkable performance. Educators do not make a practice of initiating efforts to find prospective candidates for early college entry.

Since acceleration is not a process of speeding students along, some of the research outcomes and many of the assumptions of proponents and advocates need to be reexamined. In the first place, the outstanding achievement of accelerants in their new placements should be viewed in the light of the probable large initial advantage most will have even in the accelerated placement. That large advantage also may explain some of the results that purport to show adjustment or maladjustment in accelerated populations. The high degree of difference from age mates observed among students who are candidates, rather than the accelerative intervention itself, may be responsible for perceptions of difference in social adjustment.

Oponents and advocates of acceleration should also realize that describing acceleration as a process of intervention is probably inaccurate in most cases. The pace of curricula and instruction are manipulated relatively infrequently. Instead, in most options, the student is placed in a setting that merely recognizes what the student already knows, and does not accurately reflect his or her potential functioning.

That is why SMPY urged from its inception that admission to special, academic, accelerative supplemental courses for mathematics and science be based on clear evidence of superior quantitative reasoning ability or clear evidence of superior verbal reasoning ability for the verbal subjects. In fact, for most such programs only these abilities are required—not grades earned in school, teachers' recommendations, etc. The usual minimum score levels are, before age 13, at least 500 on the mathematical part of the College Board Scholastic Aptitude Test (e.g., SAT-M) or 430 on SAT-Verbal. Each of these two score ranges (500–800M and 430–800V) defines approximately the top 1% of 12-year-olds.

Ironically, the extreme levels of concern about social and emotional development connected with acceleration may actually cause difficulties. The rarity of employment of accelerative options makes those who do undergo the process appear less normal. Parents, teachers, school psychologists, and administrators agonize over decisions about accelerative options; this can communicate to students that there are tremendous dangers inherent in moving ahead of age mates. After the decision is made to employ an accelerative option, students may be carefully monitored in an attempt to determine if harm is taking place. All this communicates to students, peers in the new placement, and teachers that there may be potential consequences to acceleration that threaten the accelerant's social or emotional well-being.

It seems clear that much of the debate over acceleration and enrichment arises not from the merits of either, but from the protagonist's assumptions about the natures of both giftedness and school bureaucracy, and the prevailing currents of political and social demands. In fact, the implication that acceleration and enrichment are antithetical, even that they could be set in opposition, is naive. A number of authors (Davis & Rimm, 1988; Feldhusen, 1991; Kitano & Kirby, 1986; Stanley, 1979a; VanTassel-Baska, Feldhusen, Seeley, Wheatley, Silverman, & Foster, 1990) have pointed out that these processes overlap considerably, both theoretically and in practice. If enrichment is viewed as stretching the curriculum to a greater breadth or depth than normal, it is likely that elements contained in the original will be part of the revised curriculum for some school level. The curriculum can be pictured three-dimensionally as a funnel with the spout representing the entry point of school. Academic options are relatively narrow and more focused in early elementary years. Later, the funnel widens to encompass more areas of study. In the same way the curriculum in schools widens enormously. In fact, by the graduate level in college, nearly any field of human inquiry is included.

Those who advocate enrichment would be quick to point out that it is not their goal to supplement normal curricula with subjects totally outside any purview of study. The analogy is not meant to trivialize the concerns of those who would point out limitations in the standard curriculum. On the other hand, it is important to note

that any enriched curriculum is likely to include some significant measure of accelerated schooling. If a fifth grader is interested in genetic engineering, it is likely that pursuit of that interest will require knowledge and skills normally taught at higher levels of education. If a junior high school student engages in an independent project and works with local government officials, it would be difficult for her or him to avoid learning concepts of political science normally presented at the high school or even the college level.

Moreover, describing acceleration as simply more rapid progress through stultifying and trivial curricula is equally erroneous. It would be nearly impossible to progress through higher levels of any discipline without teaching the processes by which professionals in that discipline operate. This is particularly true of accelerative elements in secondary and post-secondary study. Accelerative options will eventually entail many of the processes most closely associated in the literature with enrichment, such as independent study, productive and critical thinking in the discipline, and higher-order thinking skills.

It is possible to imagine enrichment options that operate merely to hold students at grade level, regardless of their abilities to learn more. Schools sometimes place a high priority on the maintenance of bureaucratic convenience at the expense of serving the individual needs of the child, or believe strongly in the nativity of intelligence and development (Shepherd & Smith, 1986; Smith & Shepard, 1988; Jones & Southern, 1991). It is also possible to conceive of accelerative options that merely provide students with more rapid pacing of academic monotony or demands that emphasize only knowledge acquisition at the expense of application, analysis, or synthesis. While conceivable, these outcomes remain ones that require an almost malevolent, or at least stupid, intent. Enrichment that answers the goals and objectives of those who originally advanced the process for students will invariably contain elements that are accelerative. Acceleration that provides students appropriate learning experiences will also contain many of the elements that are touted as the strengths of the enrichment paradigm.

Research efforts to date have weakened the apparent dichotomy some advocates present. It is ironic that reviewers have pointed out the relative lack of evidence for the effectiveness of acceleration options. Slavin (1990) asserts that accelerative options have demonstrated only comparative effectiveness. It is unclear, in his view, whether acceleration offers clear benefits over other potential interventions in meeting the needs of gifted students. Moreover, proponents of acceleration, in their zeal to prove the processes involved are harmless, have neglected to look at potential differences among various kinds of gifted learners and how they may be affected by accelerative programs (Cornell et al., 1991). Advocates of enrichment are similarly indicted. Apparently as a result of being stung with complaints that enrichment is ineffective (Daurio, 1979), they have

concentrated on demonstrating academic gains at the expense of presenting evidence of other potential benefits for gifted students. Both sides have concentrated on the charges of the other rather than documenting the elements of each approach that can benefit specific types or the wide range of gifted children.

International Developments

What is to be learned from the American experience in this debate, and how does the debate take shape in other countries? Perhaps the most important lesson is that provisions for gifted and talented children are informed less by sound educational research than by broad generalizations of educational research, prevailing presumptions of common sense, extrapolations of personal experience, folk lore, and political agenda. These in turn are usually driven by the financial and social exigencies operating at the time. For any society, such demands will include the following themes: (a) the commitment to providing access to education, (b) the definition of basic education within the context of that society, (c) the resources made available to fulfill opportunity of access, (d) the social concern for the exploitation of talent as a national resource, (e) the degree to which schools function as gatekeepers to access higher levels of achievement, and (f) the general appeal of egalitarian social values. These factors will interact with each other to characterize the efforts that societies will take toward developing acceleration and enrichment options.

In societies where educational opportunities are limited by class access, by economic resources, or by a strongly perceived need to exploit talent, debate over options for the gifted will be moot. The same will be true in societies where the school is seen as a source of wisdom or as gatekeeper for access to higher social and economic status. In these societies, individuals with access are privileged. The debate does not concentrate on the nature of instruction. Instead, it focuses on the limits of access to instruction. In countries where the school is regarded as an instrument of upward mobility and where values for universal access prevail, debate over options for the education of gifted students is likely to occur. As in the case of the United States, transient economic and social forces may, however, intensify or quell the debate for some time. When a nation feels that its standard of living is threatened, efforts to provide universal access may be traded off in favor of exploiting talent, just as concerns for individual liberty may be set aside while efforts are made to bolster national security in times of peril.

For educational systems in many developed countries, class concerns and the schools' responsibilities may combine to limit access to all levels of education. In these instances, debate about educational provisions for the gifted will be notably subdued. In Great Britain, for example, relatively few students have access to the

highest levels of post-secondary training. The debate in the United Kingdom and in countries adopting a British model has devolved to one of class access rather than forms of programs available. In third-world countries, scarce resources have limited the number of educational options for the population at large. Debate over the type and variety of programs for the gifted is similarly limited, but for different reasons. When only a small number of citizens can receive education of any kind, and access becomes more limited as the level of education increases, questions about the nature of the educational experience diminish in importance.

Of course, there are areas where both conditions exist. South Africa and Venezuela are notable examples. Depending on the perceived need in these countries to develop talent that can compete with industrialized nations, concerns for the education of gifted students will differ. Many third-world countries and many nations in the former Communist bloc have gone through major commitments to exploit talent. The commitment to develop talent seems to be a paradox in an egalitarian Marxist system, but it remained a central tenet of much of the Communist bloc. The additional privileges and advantages that accrued to those whose talents were identified and developed were accepted as the Communist countries cast their efforts to develop resources in terms of a struggle for their existence.

Some nations have a heritage that provides a history of limited access, but also have major commitment to an egalitarian revision of those historic strictures. Australia, Canada, and New Zealand have had educational systems adapted from an English model. Today, however, these former British colonies generally have a goal of universal access and more egalitarian attitudes toward social mobility. In some cases these commitments are limited by economic resources. In others, it is limited by the weight of traditional views of the schools' role as a limiter of upward mobility. In some of the East Asian democracies, strong commitments to a view of schools as a repository of cultural orthodoxy (another manifestation of the role of school as gatekeeper to social mobility) governs some elements of the debate. For Japan, the development of talent as a national priority often conflicts with official commitment to provide open access to public school education. In Singapore there have been major commitments to talent development. The demand for the exploitation of human talent resources has far outweighed concerns for preservation of class. It has been accomplished largely through the the power of leaders to arbitrarily effect educational changes and there has been little debate about the form such educational programs will take.

While it is not possible here to describe more than a few national attitudes toward programming options for the gifted, some representative cases might be helpful. The background and educational history of Britain and Japan will be reviewed, and the implication for accelerative and enrichment options will be examined. A brief review of notable applications will follow. Finally,

in the conclusion we shall discuss reasons why, despite ongoing debate, accelerative options are more easily employed in the United States.

Britain

Through its once vast empire, Great Britain's education system became the most influential model in the world, adopted in widespread British colonies and possessions. Attitudes and beliefs about the purpose and role of education that are inherent to the British model were also distributed throughout the world. With independence, some former colonies have attempted to reform their adopted education systems. Several initiatives to reform the system have occurred in Great Britain also. The reforms, however, have not removed the effects of fundamental beliefs about the role of education. It is instructive to examine Britain's attitudes and the forces that interfere with recognition of the needs of gifted students.

In order to understand the attitudes of the British toward special provisions for the gifted and talented, it is essential to recognize that, for much of its history, the British education system operated as a major element of the class system. Education in general, and higher education in particular, were only gradually made available to middle and lower class social strata. University education was the province of upper class families (Furneau, 1962). The Education Acts of 1870 (the first attempt to mandate compulsory education) and 1902 established a system of elementary and secondary schools funded from local taxes (rate funded) that were very specifically organized to educate lower class children (elementaries) and middle class children (secondary). These options were provided as terminal educational opportunities (Simon, 1990). They also were intended to provide differential educational methods for each class. One of the principal authors of the 1902 Act writes that "The different classes of society, and the different occupations, require different teaching" (Simon, 1990, p. 24).

The social upheaval of two world wars placed demands on the system to open advanced educational options to lower and middle class as well as upper class children. The Education Act of 1944 was a commitment to opening larger opportunities for lower and middle class children. It provided for a three-tiered set of options that tracked students to university preparation, general preparation, and technical/vocational preparation. Students were selected for tracks on the basis of a test of potential aptitude, the "Eleven Plus Exams." Students from upper class and upper-middle class backgrounds scored markedly higher on the examinations than working class students, and, thus, accounted for most admissions to university preparation programs and to the universities themselves (Fleming, 1962). As a practical matter, the reform did little to open access to university education. Gradual disenchantment with the examinations, and the

rise of comprehensive schools, which rejected tracking by examination, eventually led to the decline of the predictive examination model. Since the 1960s, there has been strong popular mistrust of efforts which appear to track students early.

Unlike the United States, the British system maintained restricted access to higher, even to upper secondary, education. In 1987 only 18% of all 16–18-year-olds were enrolled in educational options (Simon, 1990). The proportions of British youth who enroll in post-secondary education are far lower than in either the United States or other nations of Western Europe (Simon, 1990). In 1960, applicants outnumbered admission places in universities by a factor of 20:1 (Fleming, 1962). Subsequent growth of university enrollments has increased and new universities have been founded, but demand still far outstrips the supply of places (Simon, 1990). To some extent, this restriction is explicable in economic terms. University is free for British students, so expanding access involves large central government support. British policy makers have been willing to open universities without cost to all students who qualify for admission. They have been unwilling, however, to provide sufficient funds either to expand post-secondary education or to put secondary schools in working and lower middle class districts on more equal footing with schools in more advantaged areas. In Britain, the university is one of the key institutions for the preservation of culture, and culture is clearly perceived to be for the minority (Simon, 1990).

Despite the initiatives of the Education Acts, Britain has had a strong tradition of local control. The extent of curricular offerings and the level of educational offerings are determined by Local Councils responsible for determining the ranges and levels of education programming and for funding those efforts through local rates. Parents who feel that locally supported school offerings are insufficient have two options. They can apply for scholarship support to attend a grammar (i.e., academic public high) school, or they can opt for private (called “public”) school. Access to the scholarships is limited, so only those who could afford it could avail themselves of private schools. The Education Act of 1988 aimed at imposing a national curriculum that would standardize offerings and set national standards for education. In addition, a series of competency tests was planned to be given to students at various age levels. By 1992, standardization of funding and of the initial curricula had been put into place.

Historical developments and traditions have limited recognition of the special educational needs of the gifted. First, limited educational access for lower and middle class students to academically oriented schools resulted in relatively limited opportunities for advanced education. Since the educational system is generally perceived as catering to an elite, there is less demand to review its suitability for populations of gifted students.

Second, the intense debate over tracking through differential levels of schooling and predictive examinations has left the public and liberal education theorists with a severe wariness about procedures that remove students from mainstream education. One of the few British texts about the education of the gifted (Freeman, 1979) concludes that most gifted children can be well educated in heterogeneous groups, and that exclusive attention to academics may result in harm to a gifted child’s social and emotional development. Gallagher (1985) suggests that in Britain grouping of any kind is viewed with distaste, but sentiment toward enrichment in regular classes is more favorable. Understandably, efforts like the Westinghouse Science Talent Searches or the SMPY model of Stanley and associates have not been received enthusiastically. Currently, students are grouped almost solely on the basis of chronological age. Progress from one grade to another and one level to another is age-based. Any provision made for individual differences comes from additions to the curriculum presented to all students, rather than varying of presentation or pacing (Freeman, 1979). The practical outcome of the suspicion with which ability grouping is viewed has stifled the development of accelerative options of all kinds.

Third, the establishment of a national curriculum may provide new impetus for examining the needs of gifted children. As curriculum is standardized, it may be more apparent that academically able students exceed the current level of demand for each grade. This will be particularly true if expansion of post-secondary options occur and expectations for higher educational attainment become more general. The impending connections with other nations of Western Europe in the European Economic Community (EEC) may serve to expand such expectations. Until and unless this happens, limitations in the number of post-secondary placements currently being experienced in Britain eliminate options for some students to progress more rapidly through the school curriculum. If few such places exist, it is unlikely that increasing the competition for them will be met with enthusiasm.

Finally, Britain represents a tradition of education as a social-status gatekeeper that is present in many areas of the world and limits concerns for the special needs of the gifted. Where access to education is limited for any reason, concerns about the gifted will be secondary. Ironically, the reaction to a class-dominated educational system arising in the 1950s and 1960s is also a factor that limits support for programs for the gifted. Many of the debaters who campaigned for maintaining separate (generally upper class) levels of education used the needs of gifted children to buttress their arguments. This has left a residue of distaste in the mind of those who wish to liberalize education in Britain. There the needs of gifted children are associated with elitist arguments. Where countries have attempted to widen

the educational mission from a legacy of aristocratic or oligarchic dominance, resistance to serving such a group may be expected.

Japan

As Japan has emerged as a dominant industrial and economic power, its system of formal education has attracted increasing attention abroad. In 1868 the Meiji Restoration rejected feudal systems of the Tokugawa era. Since then, formal education has occupied a crucial and rather obvious role throughout Japan's modernization and development (Beauchamp, 1991). Shimahara (1992) argues that, more than in any other nation, Japan relies on its educational system to build its industries, to modernize culture, and to foster the moral character of its children. Japan's emergence to preeminence in world economics has generated a great deal of attention to its educational system. Numerous articles and books have been written about various aspects of Japanese education, but very little has been written about provisions for the education of gifted students. The forces that shaped the Japanese system of formal education have contributed to accommodation for its most precocious students that differ enormously from those of European and American education systems.

All Japanese children, except those with the most profound disabilities, have access to formal education in the primary and lower secondary grades (Jones & Jones, 1986). More than 94% of the high school age students enroll in upper secondary schools. Ninety-seven percent of these graduate from high school. Of the high school graduates, more than one-third enter colleges or universities, and 90% of the university students graduate (Shimahara, 1992).

Access to the Japanese educational system is open, but progress through it is meritocratic—particularly in the transitions from secondary schools to universities. Social mobility and career options are largely decided by the university from which one graduates. Entrance to one of the most prestigious universities virtually guarantees entry to a good career. Thus, the goal for most secondary students is to gain entrance to the most outstanding college or university possible. Higher education in Japan is stratified, and over the last 30 years access to the best institutions has become dramatically more competitive.

With the exceptions of Keio and Waseda Universities, the most prestigious universities are public institutions. Although access to higher education expanded substantially in the 1960s and 1970s to meet the enormously increasing demand, virtually all of the expansion was provided by private universities and colleges. The national universities barely increased their enrollments. Although the Ministry of Education intended that resources should be concentrated in order to effectively develop talent, the result has been a dramatic escalation of competition and excessive emphasis on entrance examinations.

Performance on entrance examinations is generally the sole criterion for acceptance to public and national universities. Since entrance to these prestigious institutions is sought by so many students, the competition is extremely keen. Most of the major universities have their own entrance examinations that supposedly emphasize content most appropriate for their goals. In consequence, preparation for examinations is not the relatively simple matter of becoming acquainted with the general content and format of one or two entrance examinations. Students begin preparing for these examinations very early in their school careers. Public schools are required by law to provide a standard curriculum to all students without tracking groups of students or providing special instruction for individuals. Individualization of instruction, whether by content or pace, conflicts with the strongly held principle of egalitarian schooling. Thus, the academic needs of precocious students must be met outside of public school.

Options to enhance individual learning include private after-school instruction or *juku*, full-time private schools, and *yobiku* the special schools where high school graduates spend a year preparing for their examinations. Participations in these options is broad. Since success is attributed more to diligence than native talent or ability, families of average as well as gifted students will commit themselves to one or more of these options, if they have the financial means. The competition to gain access to the better preparatory schools and private schools is also competitive. The most capable students will seek out and will sometimes be sought by the schools that have records for preparing students to enter the most prestigious universities and colleges.

When they enter special schools, students are assessed and tracked according to their abilities and levels of prior achievement (August, 1992). Thus, special schooling for the most capable Japanese students could be described as accelerative. No acceleration, however, is provided in the public education system. The Central Council on Education, an advisory council established in 1952 to advise the Japanese Minister of Education, has proposed nongraded schools and grade skipping to accommodate the needs of precocious students several times, but those recommendations have been totally stymied (Schoppa, 1991).

For several reasons, enrichment programs for gifted students are generally not provided. First, the Japanese have committed to a standard basic curriculum for elementary and secondary schools. Proposals to diversify secondary curricula have been only partially implemented, and were never intended to provide accommodation for gifted and talented students. Second, enrichment programming for gifted students would be antithetical to the way egalitarian values are perceived in the Japanese education system. Third, as long as the pressures to compete for university entrance are as great as they currently are, it is unlikely that parents will seek programs that divert their children from study

of skills and knowledge that are evaluated by entrance examinations.

To date there has been only grudging official acceptance of the need for differential education for gifted students. Private options have developed to enhance the level and pace of instruction, basically through extracurricular options. A parallel might be drawn with the education of American students who have special talents in art or music. Challenging these students is most frequently done through private lessons and tutoring. In Japan, the strong rejection of class and status values, the role of pre-university schooling as a conservator of social values, and the centralized control of public education have led to a very rigid curriculum. In combination with very specific and highly competitive demands of university entrance examinations, these factors have effectively prohibited the public schools from meeting the needs of gifted students.

China and the Talent Search

One of the world's leaders in both educational acceleration and educational enrichment, especially for mathematics and science, is the People's Republic of China. Through its many talent searches and "Spare Time School" for the most intellectually talented students, which usually meet on Sundays, it has risen to dominate international high school competitions. In the 1992 International Mathematics Olympiad the PRC scored far ahead of anyone else among the more than fifty nations contending. Its margin over the second ranked (the United States) exceeded the margin by which the second place exceeded the tenth. The PRC was also No. 1 in both the International Physics Olympiad and the International Chemistry Olympiad. These achievements are due to diligent searching, intensive and long-term training, and the human resources of a country that has more than a billion inhabitants. Apparently, the Communist ideology of equality is transcended in the PRC by the desire to show the rest of the world how effective its educational methods are.

The PRC has become hospitable to grade-skipping for its ablest youth, more than are the United States or most other countries. In 1986, one of the authors (Stanley) spent a week on the campus of the University of Science and Technology of China (USTC) in Hefei, Anhui Province, interacting with about fifty truly extraordinary, markedly underage college students. He was assured that they were among the ablest boys and girls in the country. Their graduating from the UTSC four or more years early and becoming excellent graduate students in the United States and elsewhere testify to the quality of their selection and education.

Many members of SMPY's "700-800 on SAT-M Before Age 13 Group" (equivalent to the top 1 in 10,000 12-year-olds in the United States), live in the PRC. It is easy to locate such talented students there, because they are numerous and Chinese teachers and professors

cooperate fully in finding them. For a discussion of such searches see Stanley, Huang, and Zu (1986) and Stanley, Feng, and Zu (1989).

Stanley has found it extremely difficult to export to countries other than the PRC the essence of his search for youths who reason exceptionally, or even extremely, well mathematically. He has tried in Taiwan, Japan, South Korea, Singapore, Costa Rica, Spain, Germany, and elsewhere. There have been some advances in Germany, Taiwan, and Spain, but nothing to rival the rich responses from Shanghai, Beijing, Tianjin, and Nanjing.

Australia and the Talent Search

A bright spot in these respects at present seems to be Gross's work in New South Wales, Australia where she is training teachers of the gifted in acceleration principles and procedures. This seems to be creating possibilities for various kinds of educational acceleration in New South Wales and possibly in other Australian states.

Her interest in mathematically precocious youth may have been engendered initially by observing the almost unbelievable precocity of Terence (Terry) Tao of Adelaide. At age 8 he scored quite high on the Australian mathematics examination for entrance to the university, but did not enrol at that time. Stanley had the SAT-M administered to Terry when he was still 8. He scored 760, equal to the top 1% of male college-bound high school seniors in the United States. That is the Study of Mathematically Precocious Youth (SMPY)'s all-time age-score record. At age 10 Terry won a bronze medal in the International Mathematical Olympiad (IMO) competition. At age 11 he won a silver medal. The day before his 13th birthday he earned a gold medal (Stanley, 1989). That, too, is probably the all-time record for the IMO.

By the fall of 1992, Terry (born 17 July 1975) had earned the regular and the honor's Bachelor's degree and a Master's degree in mathematics from Flinders University in Adelaide and become a graduate student of mathematics at Princeton University in the United States. Even in egalitarian Australia Terry had been allowed to proceed at essentially his own appropriate level in each school, attending both high school and college at the same time. Several persons such as Stanley, Gross, and Professor M. A. Clements took a keen interest in him and helped his parents plan effectively for his academic, social, and emotional development. (See Tao, 1992, a book Terry wrote at age 15.)

Other Examples

A third example, even more unusual in some respects, concerns a 12-year-old Guatemalan boy of Indian and

Chinese parentage who was sent by the Bank of Guatemala to Baltimore to work with Stanley toward high school and college education. He scored 730 on SAT-M, even without being proficient in English. (The average college-bound male high school senior in the United States scores less than 500.) By age 17 he had earned a high school diploma from a fine independent school in Baltimore, Maryland, and also, concurrently, a Bachelor's degree in mathematics from a parochial liberal arts college, where he was regarded as being exceedingly brilliant.

The Guatemalan youth is not the only example of concurrently earning the high school diploma and a college degree. About the same time, an American boy of Taiwanese parentage received his diploma from an independent high school in Baltimore and his Bachelor's degree in biomedical engineering from Johns Hopkins University, both at age 17. He then enrolled in the Massachusetts Institute of Technology (MIT) and started as an undergraduate in a different field.

Acceleration and Educational Administration

Despite these examples, acceleration seems relatively rare in most countries compared to the United States. Standardized curricula, limited resources, and centralized control over instructional practice effectively eliminate options. In the United States, educational acceleration is more feasible than in most other countries because of the decentralized nature of education there. Below the college and university level, the educational unit that controls most curricular policies is the school board of the county, city, or school district. Each state and the U.S. government exercise some control, but usually only in general ways. Much of the power to decide about acceleration rests in the hands of the head of the individual elementary or high school, i.e., the "principal" or "headmaster."

State colleges and universities in the United States do have some external control. It typically comes, however, from an appointed Board of Regents that has the well-being of the university firmly in mind. Most private colleges and universities are largely on their own, although some (especially Catholic ones) still have ties to churches. Many institutions of higher education have a great deal of latitude as to which applicants they may accept. For example, Johns Hopkins University has never required a high school diploma of any applicant. Thus a student completing the eleventh grade is free to skip the twelfth and enter Hopkins as a regular, full-time undergraduate a year early if he or she wishes and the university's admissions committee is suitably impressed by the applicant's credentials.

Two Johns Hopkins graduates (B.A. degree in quantitative studies and B.A. in physics) illustrate this. The former skipped grades 7, 9, 10, and 12 and received his degree the month he became 17 years old. The latter skipped grades 6, 7, 9, 10, and 11 and received his degree

with several major honors at age 15 years 7 months, the youngest graduate the university has ever had since it awarded the first three Bachelor's degrees in 1879. The former became a full professor at a top university at age 31. The latter earned his Ph.D. in biophysics at a leading graduate school and is a postdoctoral fellow. Both seem well adjusted socially and emotionally.

SMPY does not recommend "radical acceleration" as a general policy (Stanley, 1989), but believes it should be available to those who are eager to move ahead extremely fast in this way. For most intellectually brilliant students, however, SMPY recommends only a year or two of grade-level acceleration, if any at all. It is crucial to get a fine liberal arts education along the way, rather than to emphasize mere speed through a part of the curriculum. Availability of the College Board's Advanced Placement Program, with its twenty-nine college credit examinations makes hurrying through the grades less necessary and, in SMPY's opinion, much less desirable than when the program started in 1971.

One of SMPY's "protégés" completed eleven Advanced Placement Program examinations and some college courses on a part-time basis before entering the Massachusetts Institute of Technology a year younger than average. In 4 years, by age 20, he had earned four Bachelor's degrees concurrently in electrical engineering and computer science, economics, mathematics, and physics. Was he "accelerated," or was he "enriched"? Obviously, that is a foolish distinction to try to make in this case. Quite likely, via this combination of enrichment and acceleration, he was exceptionally well educated and trained. That is the appropriate motto: enrichment and acceleration, not enrichment vs acceleration. If appropriately done, acceleration must be enriching, and enrichment must, in the long run at least, be accelerative. The title of a book by George, Cohn, and Stanley (1979) emphasized this symbiosis: *Educating the gifted: acceleration and enrichment*. The opposition implied by "versus" should be consigned to the junk pile of harmful stereotypes where it belongs.

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