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Education, Democracy, and the Science of Individual Differences

> The question of mental capacity from the standpoint of race has become of particular interest for America on account of the immigration situation and the presence of the Negro. In this connection it becomes important to determine how a race rises from one level of culture to another, whether by internal stimulation and native ability, or by accepting and imitating the culture of the higher level of society; and more particularly, which races are fit to progress and which are not, and why.
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> W. I. THOMAS (1912)[1]

> It has been recognized that equality of opportunity is not provided when all children must take precisely the same work, that what may be a significant opportunity for one child is a relatively valueless opportunity for another. Rather, the term has come to mean that every child should have equal opportunity to develop his particular abilities and aptitudes for successful and happy living in a democratic order. It is under the pressure of this demand that the curriculum has been broadened, special classes formed, varied types of materials introduced and flexibility of school organization increased.
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> HOLLIS CASWELL AND DOAK S. CAMPBELL (1935)[2]

When W. I. Thomas, the University of Chicago sociologist, posed his questions about race, he did so in order to encourage research that would dispel popular ideas about the innate inferiority of some races. In 1912, at the height of the progressive era, Thomas used a variety of sources, including Franz Boas and W. E. B. Du Bois, to argue for the primacy of culture and social environment in the formation of group character and to insist on the capacity of all races to learn. Thomas was not specifically addressing the problem of the schools, but his article contained a significant quote which underscored the meaning of the American faith in education as it had hitherto been understood and expressed by social progressives. In Poland, in the mid-nineteenth century, according to one of Thomas's sources, "the feeling of the nobles with regard to education of the peasant was expressed in the opinion . . . that culture not only did not become the peasant, but for the most part he was incapable of it."[3] The belief that certain segments of the population were incapable of being educated un-

derscored, by contrast, the firm commitment initiated by the common school ideal and confirmed by social progressives that all Americans could be educated.

In the 1920s, views like those of Thomas, which explained racial characteristics in primarily cultural terms, grew in certain academic circles, especially in anthropology and sociology. But these views competed with and were frequently eclipsed by another and increasingly powerful explanation that provided very different answers to Thomas's concerns. In answer to Thomas's inquiries about mental capacity in the context of immigration, this view brought a sharp and unadorned emphasis on differences that were inborn, unlearned, and impermeable. And it was this set of beliefs, deeply informed by a psychology of measurement and expressed in IQ testing, that exerted the most powerful influence on the schools. The emphasis on inborn differences cast a pall on traditional American assumptions about the educability of all, and throughout the 1920s it existed in deep tension with the continuing pressure for more and longer education. The tension between fuller education for all Americans and the implied limitation on the educability of many outside the American mainstream characterized school development during its crucial period of expansion and is fundamental to an understanding of the particular meanings that schools gave to their adoption of progressive concepts and language. For while progressives had challenged the schools to expand and deepen their commitments to democratic education, they left an unclear legacy, incomplete definitions, and ambiguous challenges to an institution already deeply troubled by the practical realities of immigration.

The reasons for the increased reliance of the schools on forms of thinking that emphasized the inborn rather than the learned were complex as I hope the following discussion will reveal. But certain underlying influences can be more simply suggested. First, by emphasizing schooling as socialization, progressive social reform had impressed upon the schools the necessity to define the child whose schooling was their object, and this made the schools turn to those tools, above all the IQ, which could provide an efficient and cheap definition. Secondly, progressive school reform, which exerted an increasing influence as school systems grew in size and complexity, was part of another face of progressivism—managerial reform, from which it drew significant inspiration. And while social reformers expressed progressivism's most generous impulses and humane directions, managerial reformers, who were enamored of efficiency, expertise, and a systematic approach to institutional development, cast a long shadow over the entire period. Thus while social reformers' expectation of the new role that schooling would play in society added gravity to the schools' burdens and renewed seriousness to their purpose, it was the emphasis on system and

order that defined the direction of school development in the 1920s. When the pedagogical emphasis on socialization and the institutional pressure for systematic expansion were combined with the reality of millions of school-age children from foreign homes and cultures, the product was both the fulfillment and the devaluation of the democratic faith in schooling.

I

The expansion of American education in the early twentieth century was often described in language drawn from the theater or the circus: "dramatic," "spectacular," "amazing," "extraordinary." Though overdrawn, the adjectives capture certain dimensions of the phenomenon. How else describe a system that within the half century from 1890 to 1940 saw the proportion of all children five to seventeen years of age attending school soar from 44 to 74 percent? How else portray an industry in which the annual expenditure per child climbed from 17 to 105 dollars in the same period and for which the average number of attendance days rose from 60 to 130?[4] Ordinary words fail to convey the scope of an enterprise which from a rudimentary dedication to teaching reading, writing, and citizenship prided itself by the 1920s and '30s on its medical services, vocational guidance programs, mental hygiene clinics, social dances, orchestras, gymnasia, free lunches, and community centers. Small wonder that the words of description were often also words of praise, suggesting that like the triumphant economy of which it was part, the development of education in the United States was simply larger than life.

Larger than life too were the problems with which the schools were forced to deal. Progressive reformers had articulated as an imperative and in theoretical form the burdens the schools were already beginning to carry—the burdens of a heterogeneous population and a rapidly changing environment. While John Dewey and those he influenced and represented challenged the schools to define democracy's future, school systems throughout the nation were, for better or worse, struggling with what had become an importunate democratic presence. Above all, the schools were confronted by the problem of heterogeneity, as a dramatically expanded population, which in cities meant overwhelmingly the children of immigrants, carried their different backgrounds, aptitudes, and behaviors into the heart of the schools and forced educators to seek pedagogical solutions to what were often social problems.

To the problem of heterogeneity, educators increasingly brought what is best described as the organizational solution—a remedy whose essential component was efficient instruction. While it was part of what Michael

Katz described as the bureaucratic tradition already implicit in nineteenth-century school development, the organizational solution drew heavily upon contemporary social developments, especially a faith in science and a new cultural orientation to hierarchical thinking that had a specially pungent influence on matters concerning race and immigration. The concept of IQ and testing for mental capacity which developed in this context became for the schools the most efficient organizational solution to the pedagogical problems posed by heterogeneity.

Throughout the nineteenth century, the schools had been moving toward more systematic forms of organization as they responded to the growing professional self-conciousness of school administrators, especially in urban settings. At the same time, public schools were from the mid- to the late nineteenth century witness to repeated and often explosive conflicts (wars, Diane Ravitch has called them) as different groups hoped to bend the schools to their needs in order to achieve or retain power over the schools' programs and directions. Politicians, businessmen, church leaders, labor unions, teachers, pedagogical reformers, parents, all projected their own perceptions and demands onto the schools. By the late nineteenth century, those demands often appeared under the progressive umbrella. In the end, the conflicts encouraged growth, not only in size, but in significance as the schools became the arena in which various aspirations, for power, for status, for training, for order, were necessarily to be realized.[5]

By the early twentieth century, however, as social reformers added their demands and visions to the schools' burdens, public schools had already taken on basic characteristics that would structure their subsequent development. Most significantly, as David Tyack has demonstrated, American public schools were by the early twentieth century already integrated institutions, administratively centralized, professionally self-conscious, and geared toward systematic expansion. Indeed, most of the school reforms of the period tended to accelerate this process. The reorganization and centralization of the massive New York City school system in 1896 illustrated the phenomenon, and this date may be taken as symbolic of the changes taking place nationwide, especially in the context of accelerating urbanization. By the second decade of the twentieth century, schools had developed sufficiently as complex institutions so that investigators were exploring issues of social efficiency and designing elaborate school surveys modeled on the better-known social surveys of the progressives.[6] The surveys assumed the desirability of professional control and administrative integration and held the central school officers responsible and accountable for the functioning of the schools in their districts. The school survey was meant to be "a study by an impartial outside expert thus freeing the schools from lay domination of professional matters," in order that "an educational pro-

gram might be designed to meet the future needs of the community. . . . More than a method or a technique of inquiry, the survey idea is a part of our education system which had developed in a fundamental way with our whole educational organization."[7] The key words in this description, as they were for managerial reformers generally, are "professional," "expert," "system," "organization." In the schools, this form of progressive reform, in which experts and techniques freed the schools from public interference, often overshadowed the more problematic and visionary demands of social reformers.

The systematic rationalization of the schools that began with administration in the nineteenth century turned toward issues of program development in the twentieth. By then the word "science" had been added to "organization" as the guiding spirit of development. As one investigator noted, "When the science of education shall have become fully formulated we shall have ready at hand complete and verifiable conclusions relating to three important aspects of the educational process: the child, the significant characteristics which mark stages in its growth; the demands of the social group into which the child is born and in which he must live; and the teaching method, whereby economy of time and of effort in teaching and learning is secure." In short, a modern science of education needed to coordinate the psychology of child development, the social context, and the curriculum. The need to rationalize the learning process through minute attention to age, interest, ability, and socially useful learning underlay most discussions of schooling at all levels throughout the early twentieth century.[8] This rationalization was in part the result of the organizational requirements of schools as they grew in size and complexity and a further expression of the bureaucratic systematization which had begun in the nineteenth century. But the attention to a science of education was not simply the result of developments within educational thought or school administration. Rather the schools' choices and concerns reflected their intimate connection with the society which they hoped to serve. Two features of that society were especially crucial to the evolution of the schools, and these developments had also significantly affected progressive social reformers. The first was the reorganization of the work process; the second, the immigrant presence, especially in American cities.

Although the nineteenth century saw the beginnings of an American educational enterprise, both the scope and the significance of schooling were fairly limited for the majority of the American population. Except for the extremes of those who received no schooling and the very few for whom schooling was a fundamental part of professional training or an expression of elite status, the large majority of Americans received little more than the fundamentals of literacy and the rudiments of what was believed nec-

essary to the exercise of responsible citizenship. Certainly, some students went to school longer than was required for the basics, and some did so because they expected to reap various social and economic rewards, but, in general, minimal attendance—from three to five years—was all that was either required or considered desirable throughout most of the nineteenth century. Indeed, before 1880 no state even had an effective compulsory education law,[9] and education was ambiguously and marginally related to an individual's future opportunites. Some Americans certainly did achieve a higher status and position than that occupied by their parents, but this was not normally the function of schooling. Instead, status and success were related to a host of factors that grew from the network of community, kin, politics, and church which dominated nineteenth-century social relationships during the early stages of industrialization. Mobility usually depended on connections, marriage, capital, skills acquired in a variety of ways, or the demonstration of work habits, industry, sobriety, and ingenuity. Similarly, inheritance, speculation, luck, and grit often defined the much more dominant agrarian economy of the time.[10]

In many ways, the late nineteenth century saw an erosion of this social world. And just as reformers responded to the loosening of the relationship between work and citizenship by placing their hopes in a more socially responsive education, educators, businessmen, and the public began to turn to the schools for their placement services and for the training in skills required by the increasingly impersonally organized modern world. The skills provided by the schools, then or now, ought not to be exaggerated. Nevertheless, in a society where business management, communications, and industrial integration on a large scale were beginning to subordinate entrepreneurship or mechanical know-how, a more refined literacy which the schools, and especially secondary education, could provide became increasingly desirable. Since the schools were also expected to transform unruly youngsters into citizens with regular and dependable habits, they became logical loci for concentrating the informal and promiscuous training which in the nineteenth century had been a function of general community participation.

To respond to these changes, the schools needed to refocus education by replacing the concentration on rudimentary literacy on the one hand and scholastic mastery on the other. They needed to divest themselves of older programs whose logic of development was internal to the disciplines and whose unstated but generally recognized progression was toward greater knowledge in those areas which eventuated in university admissions. The discussions centered on high-school education most acutely reflected these changes, but the rejection of the older perspectives affected all schooling and was fundamental to the reevaluation of educational endeavors at the

turn of the century.[11] This reevaluation required that the schools, above all, shift their attention from the task to the child.

The child was, of course, the central concern of educational progressivism. The progressives expressed the new orientation in education most consistently and called upon a long pedagogical tradition to legitimate their views. Progressive educators hoped to reform education by first of all rejecting what they considered the dull traditional routine whose guiding spirit was subject matter. Instead, they proposed to substitute the needs of the child broadly defined, needs that included physical, mental, and emotional growth, interests and aptitudes, present and future relationships, and the "realities" of the world into which he or she would fit in later life. John Dewey had most carefully described this complex of social, political, work, and personal relationships toward which the schools had an obligation to educate their charges. But almost all school reformers, and indeed by the early twentieth century most educators, expressed their commitment to what they called schooling for "life." In many ways, educational progressivism provided articulate expression, often couched in highly serious pedagogical terms, to the new perspective that the schools had to adopt in order to respond to the realities of the world they hoped to serve. This is not to say that battles did not have to be fought against more conservative forces but only that progressivism tended to confirm and accelerate, not to challenge, the important new role the schools began to assume and the new concentration on child development as the core science.

In addition to the task of designing a modern curriculum to educate all children more attentively, the schools confronted a second and related problem that also emerged from the social changes of the period—the composition of the American population. Wherever schoolmen and women looked in the late nineteenth and early twentieth centuries, they saw the children of immigrants and the specific educational problems they posed. According to the 1911 Dillingham Commission investigation of selected American cities, 57.8 percent of all the pupils in thirty-seven cities investigated in 1908–9, were children of immigrants. In that year, 71.5 percent of New York's 500,000 public schoolchildren had foreign-born fathers. Of Duluth's 11,000 schoolchildren, 74.1 percent were of foreign parentage; and in Cleveland, Cincinnati, Detroit, Minneapolis, Buffalo, Boston, San Francisco, and most other large cities, two-fifths, and often much more, of all children in schools were of foreign parentage. The vast majority of these children were in the primary grades, and a very large proportion of them (40.4 percent) were what contemporaries called "retarded"—two or more years older than they should have been for the grade level they had attained in school.[12] The Dillingham Commission, in line with many investigations during the first two decades of the twentieth century (notably

those of Leonard Ayres), showed that school children were overage, not performing, not progressing, not learning. While the problem was not peculiar to the children of immigrants, it was most prominent among these children and most worrisome.

The obvious solution was to keep children in school longer, and that solution was embodied in the two archetypical progressive drives—the campaign against child labor and the concurrent efforts for more effective and stringent school attendance laws. By 1920 the two related battles had resulted in marked success. By that date, only 8.5 percent of all children in the age group ten to fifteen were gainfully employed, while 90.6 percent of all children seven to thirteen and 79.0 percent of those fourteen to fifteen were in school. And the laws were most effective in increasing the attendance of the children of immigrants. By 1930, 90.0 percent of all fourteen- and fifteen-year-old children of native-white parents were in school, while 91.3 percent of the children of foreign or mixed parentage and 92.6 percent of all those who were themselves immigrants were at school.[13] But the child-labor laws brought into the schools precisely those children (of the laboring class and the immigrants) whose frequent academic failure, apparent lack of academic interest, and future economic status were most troublesome and with whom traditional school programs were least able to cope. The issue of retardation had emerged precisely from this context, and it posed a paradoxical problem. As the schools succeeded in incorporating more children, they seemed least successful in educating them.

Retardation underscored several early twentieth-century concerns and was fundamentally related to "scientific" curriculum development. Above all, retardation emphasized age-grade standards, the carefully calibrated grade system, and the accurate coordination of grades into a hierarchy of schools—elementary, junior high, and high school. And it reflected the infatuation with a kind of scientism of numbers which was also part of the school survey movement and the basis of mental measurement. This led to an obsession, not only with efficiency, but with the specific efficiency that seemed to inhere in age-appropriate education. Retardation also led to two very significant conclusions: something was wrong with the schools, and something was also wrong with some of the children in the schools.

While these were school issues and educators addressed them through traditional and revised pedagogical means, the most significant solution came from outside the world of education. The solution, like the problems, came from the peculiar confluence of immigration, science, and reform that affected most aspects of society in early twentieth-century America.

II

Progressive social reformers hoped to use education to revitalize democracy through the reconstruction of the elements of individual political responsibility. To this faith in democratic renewal through education, progressives added a new faith—in science, technical expertise, and the symbolic power of numbers. Amidst the disorders of the late nineteenth-century and early twentieth-century world, science and numbers seemed to promise just that fundamental knowledge and access to order that would result in control. Science was more than a form of data-collecting; it would also provide a method for solving social problems and making social policy.[14] In the early twentieth century, education and science went hand-in-hand with the euphoria of reform.

The science that had the most profound effect on educational practice was psychology, a hybrid calling which was part biology, part philosophy, and in good part linked with the evolving profession of education. Most significant for education was the fact that American psychology had by the first two decades of the twentieth century become deeply involved in mental measurement, especially in devising tests to measure mental capacity. "Mental testing," as the movement was universally called throughout its early years, was rooted in various currents of nineteenth-century European science. Its foundation lay in the laboratory techniques of German Wundtian psychology, powerfully augmented by the development of statistical methods in England by Karl Pearson and Charles Spearman. The specific form and content of mental testing finally bore the indelible signature of the French psychologist and educator Alfred Binet who, in attempting to solve some of France's own educational problems, had designed a technique for identifying feebleminded children in the growing French school system. Binet transferred the center of gravity of the science from the laboratory and statistical graphs to the school and the child.[15]

In the United States, mental testing first surfaced in a relatively minor way in the 1890s in a report by the pioneer psychologist James Cattell. But the early interest among psychologists and a few educators was nothing compared with what was soon to follow. For it was only as the French concern with personality and abnormality was joined to the English preoccupation with the measurement of individual and group differences in the form of aggregates and norms that mental testing as an American science was born. Despite its European ancestry, testing became a major preoccupation only in American psychology, where, in the words of an early historian of testing, the "movement . . . swept everything else before it" during the second and third decades of the twentieth century. As Harlan Hines observed in his book popularizing intelligence testing, "It is doubtful whether

so much public interest has been aroused since Darwin propounded his theories about the descent of man."[16] Mental testing is important in the United States not because it dominated American psychology for a generation, although this is interesting, but because it crystallized the preoccupations of a social generation. It provided Americans with a powerful way of organizing perceptions and a means for solving pressing institutional problems.

The Americanization of mental testing began in 1911 when Lewis Terman, the Stanford psychologist, adopted Alfred Binet's age-mentality scale to test, sort, and classify American schoolchildren. Terman was not the first American to use Binet's tests, but he was the first to use them with normal children.[17] With Terman's adoption of the Binet scale and his subsequent modification and introduction of the concept of intelligence quotient (IQ) in 1916, the history of IQ testing in America properly began. Terman's work with normal children clearly anticipated the use of IQ tests in the schools, and he was a vigorous proponent of their large-scale adoption. His enthusiasm for the method was virtually unbounded, since it was, in his words, "from the practical point of view . . . the most important in all the history of psychology." By 1911, Terman had already claimed that "by its use it is possible for the psychologist to submit, after a forty-minute diagnostication, a more reliable and more enlightened estimate of the child's intelligence than most teachers can after a year of daily contact in the schoolroom." Educators like Elwood Cubberly, probably the most influential educational spokesman of the time, also foresaw the educational implications. In introducing Terman's book in 1916, he observed that "The present volume appeals to the editor [Cubberly] of this series as one of the most significant books, viewed from the standpoint of the future of our educational theory and practice, that has been issued in years."[18]

At the same time, Terman's tests and the IQ scale were not quite fitted to the needs of the American school system. First, they required costly individual administration on a one-to-one basis. Second, Terman and other early testers jealously guarded their own expertise in this scientific procedure and insisted on expert administration.[19] American entrance into the First World War changed that. As Americans prepared to fight a war to save democracy, they also found themselves with the kind of heterogeneous fighting force that resulted from democratic immigration policies. That army needed to be organized for maximum efficiency and effectiveness. For this task, a group of psychologists volunteered their services. This committee of the American Psychological Association at once hoped to assist the war effort and to raise psychology's still shaky status as a scientific profession in the eyes of the public.[20] Mental testing seemed to provide a way to fulfill both the needs of the army and of the profession. As

a science, testing could call on the enthusiasm for the exactitude of numbers for practical results. Mental testing seemed like the perfect instrument in a progressive crisis: it was socially useful, numerical, and had reform implications.[21]

Although the army tests were based on and still linked to the individual Binet scale, the army test was a "group test," organized and routinized around pen and paper exercises which required only one administrator to provide general instructions to a large group. Over 1,700,000 men were eventually tested in this way. The army tests demonstrated the feasibility of mass testing, and as one textbook on testing noted, "The possibility of measuring an individual's intelligence by a short and simple test has captured the imagination of school people and of the general public." In the long run, the army tests were a significant administrative breakthrough, but the headline-grabber and contemporary interest involved the results. The early discussions of the army tests revolved around a pseudo-issue—the apparent fact that almost half the American draftees had scarcely the mentality of thirteen-year-olds. Doomsayers and gloomsayers quickly latched on to this fact to add fire to the many forecasts about the decline of American civilization to which the period was prone. Walter Lippmann, in a now famous essay, handily disposed of this issue by noting that in their haste the testers had failed to translate into adult terms an age-grade scale that had originated with the testing of schoolchildren.[22]

Neither Lippmann nor other critics were able so easily to dispose of another feature of the results which would have long-lasting social consequences. For, as they proceeded to refine the test results, psychologists went beyond comparing and ranking individuals within a large population. They also correlated differences in scores with social categories like region, education, race, and country of origin of the draftees.[23] While there were marked differences within all categories, the attention of testers and the public was riveted by the markedly lower scores registered by blacks and the recent immigrants, like Italians and Slavs, who did worse than native-white Americans on both tests administered to those literate in English (Alpha) and those not literate or non-English speaking (Beta). The army tests made the crucial link between mental ability and race, not for the first time, but on a mass scale and in the full glare of public attention.

What had begun as a way of eliminating the feebleminded, proceeded to a ranking of individuals according to talent, and finally became a means for ordering a hierarchy of groups. Mental testing as a measuring device was a defining and sorting instrument, a way of distinguishing and differentiating which, given the cultural concerns of the time and in the context of statistical techniques like normal distributions, correlations, and factor analysis, led predictably to racial comparisons. In so doing, of course, in-

telligence testing sharpened and confirmed the cultural awareness of individual and group differences.[24] Since Americans were, in the first thirty years of the century, inundated by dozens of immigrant groups who were so radically different first from "Americans" and then from each other, the emphasis on differences, now measurable by scientifically validated tests, was translated from the realm of the senses to that of statistics. At a time when democracy seemed threatened by heterogeneity, counting, sifting, and ranking provided a form of order and containment.

All of this was true regardless of whether the mentality measured by the tests was innate or learned. In fact, as far as the army was concerned, it mattered not at all whether the tests measured ability or achievement, whether they reflected what an individual could learn or had learned. What the army needed was an objective means to locate talent and to make assignments. Its concern was suitable to an organization drawn from a democratic mass which was to be organized for maximum efficiency.

It did, of course, matter very much that mental tests purported to measure innate ability rather than learning, but it mattered less for what the army functionally needed than for what it reveals about American preoccupations. For what the designers and promulgators of intelligence tests proposed was that they could arrive at an absolute measure of intelligence and not merely a relative way of discriminating among individual abilities. By the time of the army tests, American testers, especially Lewis Terman, were eager to demonstrate the infallibility of the tests as absolute yardsticks. In so doing, they emphasized the constancy of intelligence, the fact that once measured, an individual's intelligence would thereafter remain measurably the same. In part, this reflected the specific needs of education which, once the tests were used with sample "normal" children, obviously became the primary field for the future application of tests and was so recognized even before 1917.

But the stress on the IQ as an absolute measure of an unchanging quality was more than a response to the needs of American schools. It was especially attractive to Americans because it necessarily brought the whole issue of inherited endowment into sharp relief. It provided numerical confirmation to ideas that Thomas had hoped to dispel but with which fluid concepts of culture could hardly compete. Alfred Binet had never been overly concerned with defining tests as a measure of native capacity or of distinguishing between test performance which resulted from innate as opposed to environmental factors.[25] But in the United States, Binet's tests were greeted with an enthusiasm that they failed to arouse anywhere else, including his native France, precisely because Binet's tests, as distinct from Binet's views, offered the possibility of measuring innate mentality and unchanging potential. Most testers were careful to describe their results in

such a way that they could always claim that they had not excluded environment as part of actual performance on the tests. But the clear direction of American interpretation and the construction of experiments with tests were toward the conclusion that intelligence tests measured something that was pure and inborn. If still imperfect, the hope was that the tests could eventually measure the innate, untutored capacity of the individual.[26]

The IQ, as an expression of what intelligence was and as its measure, epitomized this predilection. As developed by Terman, the intelligence quotient was more than a measure of performance on tests. It was a personal ratio (mental age/physical age) that exaggerated the static, individual, and physical quality of what was being measured. This distinguished it from more traditional evaluations of performance which were always implicitly comparative and time-linked.[27] It also emphasized age-grade standards in a manner increasingly important to the schools. In binding qualitative and comparative evaluations of mentality to the more concrete concept of calendar age, IQ seemed to stand apart from culture and to measure something that existed prior to learning. As a result the IQ appeared to capture some essential dimension of individual development as environmentally impermeable as eye color and as easily described as age. Terman's results were related to school developments, not only because they answered the schools' needs for evaluative procedures, but because both IQ and the concepts underlying school development at the turn of the century sought to make age an objective correlative of development.

IQ captured with great precision two dominant contemporary concerns, race and education, which were from the beginning most crucially intertwined in its evolution. It could effectively be argued that, had Americans not been racially oriented and educationally obsessed, neither the enthusiasm for mental testing nor the specific form of its evaluation would have arisen. I have already noted how the social concern with differences made testing to measure differences attractive. To this it need only be added that an evolving racial consciousness (in the early twentieth century attached to white immigrants as well as black natives) tended to look for and emphasize inborn qualities to explain those differences. The search for a biological means to explain differences in character and habits was not new in the twentieth century—Americans had measured skulls in the nineteenth century. But the presumption that what distinguished groups as well as individuals was not only some innate potential but also an unchanging quality invulnerable to environmental modification was not entirely developed in the United States by the time American psychologists began to work on mental tests in the early twentieth century.[28] Progressives were often confused about the relationship between race and culture, and many social scientists, like Thomas, were concerned to discuss that relationship.

The incipient search for a racialist explanation for differences informed American perceptions of the usefulness of testing, and perhaps more significantly helped to determine what the tests would be interpreted to mean. For if Alfred Binet could not have cared less whether intelligence tests measured inheritance or environment, Americans contemplating closing the door to open immigration could not have cared more.[29]

Once these needs and perceptions framed the form in which test results were expressed and explained, the two gave a powerful boost to a racism hitherto lacking scientific precision. Where nineteenth-century evolutionary science had provided Americans with the presumption that some races were superior to others, the IQ provided an absolute calibration and a ranked hierarchy as demonstrated by performance differences on tests. Unlike Binet who had generally been unconcerned about attaching some invariant number to general intelligence, Americans eagerly sought a number as precise and abstract as possible. As Kimball Young appropriately explained, "The grip which apparent exactitude in numbers has upon us ought not to need mention to psychologists. One of the strong appeals to educational and psychological workers using tests . . . is undoubtedly the fact that an array of averages and correlations gives them a sense of definiteness and finality."[30] In the context of the American search for a basis for evaluating racial differences, the newly developed science of statistics provided psychology with the gift of numerology.

This had very specific social consequences. In the early twenties, nearly every study of group differences in IQs was introduced or concluded by a scholarly *obiter dictum* on immigration policy.[31] Americans, and psychologists among them, were profoundly concerned with the effect that uncontrolled immigration was having on democratic institutions, values, and the moral fiber of the nation. With the introduction of intelligence testing, Americans also became obsessed with mentality. This had been foreshadowed by the panicked headlines surrounding the results of the army tests. While the racial conclusions that accompanied intelligence testing were not the cause of immigration restriction, testing provided measurable evidence that greatly enriched the alarmed context in which the immigration exclusion legislation of the 1920s took place. It would be a mistake to conclude as a result of this instrumental function of IQs that they were merely a way to support a racially informed social policy. Race influenced the development of mental testing in far more complex ways. Racial exclusion was a by-product of a whole manner of thinking, perceiving, and ordering that the IQ organized into a science.

One of the truly remarkable aspects of the early history of IQ testing is the rapidity of its adoption in American schools nationwide. In the twenties, the tests were taken from the laboratory, where they were still being

tested, retested, and modified, and were fast on the way to becoming an entrenched part of educational administration. As early as 1919–20, New York City's *Bulletin of High Points* (a teacher's journal) contained numerous articles in IQ testing, including a symposium on the subject and an account of the successful application of testing at Evander Childs High School. In Mt. Vernon, New York, all students from elementary through the first year of high school had already been tested by 1920. One Detroit educator boldly announced in the *Yearbook of the National Society for the Study of Education* in 1922 that "the adoption of the group method [of testing] by hundreds of school systems is now an old story."[32]

Immediately after the war, the same group of psychologists who had constructed the army Alphas developed the National Intelligence Test. Over 575,000 copies were sold within a year of its issuance—800,000 copies the following year, 1922–23. By 1922, it was competing with numerous other tests of a similar kind. In 1922–23, over 2,500,000 intelligence tests were sold by just one firm which specialized in their development and distribution. Forty different group intelligence tests were by then available on the national market. Many more were rapidly being produced as psychologists suddenly found themselves in a lucrative business, possessing skills very much in demand. Indeed, tests were rushed into press before they were adequately evaluated. Some were a hodgepodge of different forms, completely unintegrated and uncoordinated. Edward Thorndike, éminence grise of psychological measurement and objective testing, was moved to declamation: "In the elementary schools we now have many inadequate tests and even fantastic procedures parading behind the banner of educational science. Alleged measurements are reported and used which measure the fact in question about as well as the noise of the thunder measures the voltage of lightning. To nobody are such more detestable than to the scientific worker with educational measurements."[33]

While the rapidity with which IQ tests were adopted was remarkable, it was not really surprising. From the beginning, Terman and others had targeted the schools as the principle beneficiaries of the tests. And school administrators, eager to adopt scientific tools to cope with problems of curriculum development, a heterogeneous population, and the progressive challenge to tailor school programs to individual needs, responded enthusiastically to an instrument that seemed to slice through their problems efficiently and democratically. Retardation had rung an alarm in schools committed to expansion, and the IQ allowed educators to shift the blame for inadequate schooling to the inadequacy of the pupils. More significantly, IQ could allow the schools to expand and incorporate ever larger and more diverse groups for longer and longer periods, while adjusting to progressive principles.

Education as it was being redefined and reformed in the early twentieth century was turning away from defining learning as the inculcation of information toward issues of socialization that emphasized the acquisition of knowledge in the total process of individual development and growth. John Dewey had most idealistically represented this new direction by passionately rejecting the view that education was the acquisition of the accumulated wisdom of the past and by urging instead that the unfolding of the child's (and society's) potential should be the mission of the schools. By shifting the charge to the schools from the traditional one of instilling an agreed upon body of knowledge to an active development of understanding pegged to individual talent and instrumental in a changing society, Dewey and progressive pedagogy sharpened the challenges facing the schools. Given the schools' design, their dependence on structured grades, central administration, their emphasis on order, and cost efficiency, progressive educational theories propelled the schools to seek ways to define children, not individually, but according to the range of their educability. As Josephine Chase observed in her study of New York schools, "It is to the task of individualizing education, of making the school program elastic enough to fit the needs of each child that the progressive school leaders of New York are bending every effort."[34] To this effort, the IQ was immediately recognized as a powerful ally.

For the schools, the IQ was a concept that seemed ideally suited to their new goals and problems. It seemed to establish a stable educational center by assuming an unvarying constant within each child—his inborn capacity—and was based on a simple testing method designed to discover that potential. On this basis, educators could design programs and curricula that would make education more individually usable and more socially relevant. The IQ thus provided multiple blessings as it was brought to bear on a host of institutional matters. As Elwood Cubberly correctly predicted in his introduction to Terman's *The Measurement of Intelligence*, "The educational significance of the results to be obtained from careful measurements of the intelligence of children can hardly be overestimated. Questions relating to the choice of studies, vocational guidance, schoolroom procedure, the grading of pupils, promotional schemes, the study of retardation of children in schools, juvenile delinquency, and the proper handling of subnormals on the one hand and gifted children on the other—all alike acquire new meaning and significance when viewed in the light of the measurement of intelligence as outlined in this volume."[35]

The IQ categorized students and made it possible for the schools to deal with them in group, class, and hierarchical terms. That the IQ ultimately also predefined children so that students would thenceforth learn only so much as they were at the outset judged able to learn and ironically limited

the function of the school by establishing the primacy of innate ability over environmental stimulation was also a blessing. As one judicious authority on tests, Frank Freeman, observed, "The usefulness of measures of intellectual ability depends in part upon their stability and the possibility of predicting the individual's future intelligence from the measure of intelligence made at a given time. If the purpose of the test is, for example, to classify pupils so that the demands made upon them may be adjusted to their abilities, it is necessary that their abilities shall remain more or less constant."[36] In a final irony, the very needs of the schools thus helped to confirm the meaning of IQ.

The growth of American education and specifically the requirements of educational administration, like the American sensitivity to racial differences, meant that whatever instrument was used to place and locate the individual in the increasingly complex school structure had to provide a constant measure of some inherent and unvarying potential. And just as the immigrant presence was crucial to the cultural network that created IQ as a form of organizing perceptions, so the presence of vast numbers of immigrant children in the schools was basic to the educational situation which seemed to make IQ testing an instrumental necessity. The problems facing the schools—the need for better organization, selection, and a curriculum at once more fully tailored to the individual and more socially alert—were not entirely the result of the presence of new immigrants. But the pressures on education to expand beyond the three Rs, the stricter school attendance laws, and the concurrent child-labor legislation which vastly expanded school populations cannot be separated from problems associated with immigration during this period. Immigration made the schools grow exponentially in scope, size, and complexity. At the same time, it made the schools' problems vastly more complicated.

Immigration helped to frame the context for the schools' search for procedures to define children and to order the curriculum, but the tests were not aimed at immigrants alone. They were a convenient necessity to the schools because they made possible a learning process tailored to individual potential, organizable by classes, while still allowing for progression of instruction by age. The best way to describe this network is a "track." Just as age subdivided schools horizontally and permitted instruction to be developed according to progressive levels of advancement, the track subdivided the system vertically and channeled instruction more precisely as determined by individual abilities. The organizational grid that resulted from the intersection of age and ability permitted instruction to be technically more individualized. If IQ is a ratio that compares age and ability, the tracked class system was the map projected from that concept.

One of the expressed concerns of educators as they adopted progressive concepts was how the schools could best serve each child's needs and talents, and the early proponents of the IQ used this argument constantly. If the school system was not to swamp the individual in a monolithic curriculum which intimidated slow learners, held back fast learners, and failed to take into account future jobs and needed skills, factors like personal potential, ability, and interest should be taken into account. The vertical track could do just that. It was the peculiar virtue of the IQ that it could at once provide the organizing mechanism around which a complex school system could be built, while purportedly protecting the individual child against the impersonality of that system. As the progressive educator, Carleton W. Washburne, explained in 1925, tracking or ability grouping "is but a step toward individualization—a step which makes individual instruction easier both to initiate and to incorporate . . . ability grouping is one of the best first steps toward individual instruction."[37]

In many ways, IQ tracking was an administratively workable but also apparently enlightened and progressively informed way of answering Dewey's challenge to education. The track was a much more efficient way to personalize instruction than the individual-specific education that Dewey adopted in his own model school. The track brought together a group of individuals of similar IQ and tailored instruction to the group. But the IQ-determined ability group limited the definition of what was significant in that instruction. Whereas Dewey was concerned with the education of the whole child, the track brought together children within a similar IQ range. Since the IQ tested only selected forms of ability or accomplishment as expressions of general intelligence (and this was admitted by even the most vociferous proponents of testing) the track not only switched the orientation from Dewey's individual to a group but also defined that group by the specific qualities tested in the IQ.[38] In the process, it transformed Dewey's ever malleable child into one with a constant and determinate IQ capacity and translated the open-ended and constantly changing environment into a narrow-channeled curriculum. The different curricula had different goals and could either propel students toward richer academic prospects or severely limit their horizons.

It would be unfair and mean spirited to argue that educators used IQs simply to exclude the newer immigrants from the lines of advancement that the schools now promised. It was never so simple. The schools continued to be theoretically and actually a force that facilitated access to society's rewards both as an agency incorporating immigrant children into the mainlines of the culture and as a lever for social and occupational advancement for individuals. At the same time, educators were certainly not

surprised when immigrant children scored significantly and consistently lower on the examinations. They had, after all, been well prepared for these results by the army tests and by a whole battery of tests often administered at the very wharfs of Ellis Island. They certainly did little or nothing to guard against the conclusions the tests offered. "If the stream of immigration from Southern and Eastern Europe continues to inundate us," Kimball Young declared, "the schools must take into account the mental abilities of the children who come from these racial groups. . . . The present situation is already causing a revamping of the curriculum and the general educational policy in many school systems." Initially, at least, immigrant children were often channeled into programs that either stopped before the high-school door or, if they entered, ended in technical and vocational programs which provided little basis for effective social mobility through education. From their earliest application, IQs were used to guide students to programs suitable to their "needs" and "talents," and as early as 1923, one popularizer of tests warned that "Many administrators . . . have expanded this idea of vocational guidance through the use of the test results until, if it were generally accepted, we would have nothing short of a type of Prussian control." Immigrants were especially vulnerable to this kind of channeling.[39]

The IQ permitted the systematic rationalization of the modern urban school, and its tenacious hold on the schools resulted from the critical function it served. At the same time, its introduction into the schools was the result of specific historical circumstances—the fervent belief in progress through exact science; the increasing responsibility of schools for training special skills and aptitudes in the twentieth century; the challenge posed to traditional education by progressive educational theories; and the critical role of immigration in compounding the problems of a democratic schooling. IQ was not only a measure which seemed to solve problems that immigration introduced into school systems, it was a concept in whose terms educators could comfortably think and behave. This was because it spoke in terms—"mentality," "development," "age," "grade," "educability"—which defined the educational agenda of the 1920s. It was also because its vision was colored by racial filters. As school administrators turned to the classroom and problems of learning, they saw before them children of many complexions and tongues who needed to be understood in universal, "scientific" terms. They had to be fitted into classrooms so that they could learn, and they needed to be classified so that they could be understood and controlled. The IQ was a form of understanding which made school efficiency thinkable and possible.