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The History of "Intelligence"

In the United States we have a belief about intelligence that is

unique

dominant

and wrong

Unique because it is stronger here than any other country in the world, though by no means limited to our shores.

Dominant because it is a pervasive organizer of our society.

And wrong because it is simply incorrect, as I hope to demonstrate in this book.

The reason for dealing with this concept of intelligence in a book about high expectations teaching is that it plays a major role in the low achievement of millions of children in this country. We say "all children can learn," but we don't really believe it. And we don't really believe it because of the belief we hold about intelligence.

Beliefs underlie all our actions—our beliefs about teaching and learning, our beliefs about ourselves, our beliefs about institutions. More than any other belief, our belief about children and their capacity to learn influences the messages we send them and the actual learning they attain.

Beliefs are the single most potent anchor of successful teaching behaviors. The belief about ability is beyond technique, but it underlies all

motivation for teachers to acquire repertoire. So to the degree that you are influenced by this chapter about our unique (and wrong) concept of intelligence in this country, your teaching will change in significant ways.

Most of this book is about practical strategies, but they are practical strategies in service of a moral imperative: All children deserve a fair chance at a good life, and a good education is big part of how we honor that promise. It is important for readers to understand the history of our national belief in the bell curve of ability so that we can understand how we have created the unequal system we have. And it is also important so that we can act to combat it from a position of belief as well as skill.

In America our concept of intelligence is that it is:

A thing—a tangible entity, something singular and real

Fixed—it is unchangeable; whatever you got is all you'll ever get

Innate—whatever of it you have, you got when you emerged from your mother's womb

Unevenly distributed—unfortunately some of us have more of it than others

Deterministic—it determines how you'll do in school and in life

Measurable—but fortunately we can measure it and create the appropriate educational environment for each student[1]

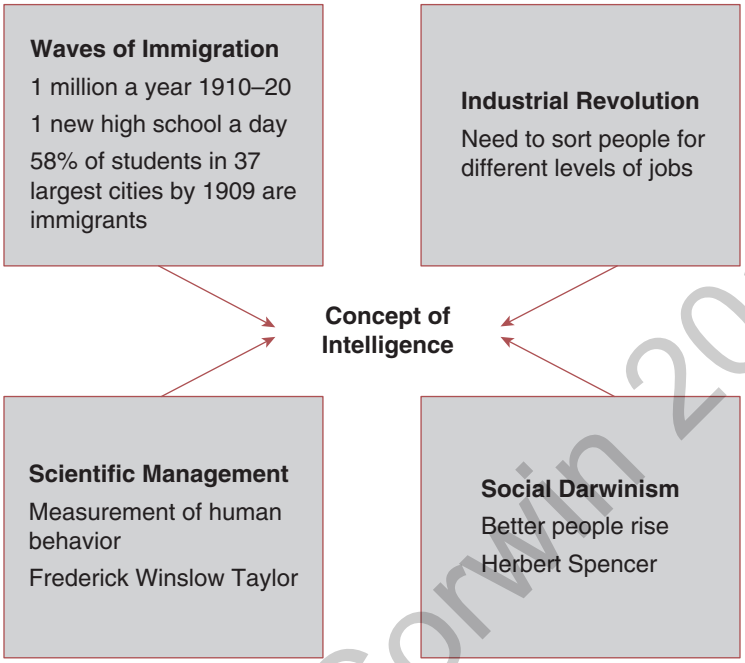
So therefore intelligence → leads to → achievement

This concept of fixed intelligence and achievement lives in each of us to a certain degree. And it isn't our fault. One can't grow up in America without being infected by it. It's like breathing smog in Los Angeles, as Beverly Daniel Tatum used to say of racism. We don't blame the residents of that city for inhaling smog. We are all smog breathers. We all tend to see students' capacity as limited by innate intelligence. But the consequences of that belief for the way we do school and the behaviors we do with children are huge, omnipresent, and tragic. They are life limiting for children. If we can adopt a new and different belief about the nature of intelligence—namely, that intelligence and ability are things that can be developed—and do so with conviction that almost everyone has enough of it to do rigorous academic material at high standards, our schools will become transformed places.

The American concept of intelligence was born out of the convergence of four historical forces at a particular time in our history: 1890–1920. It

[1]I first heard a version of this list from Jeff Howard in 1985. He is an unsung hero of this movement to convince students that "smart is something you can get."

Figure 1.1



Thanks to Greg Ciardi for first thinking this through and putting together this graphic.

didn't exist before then. It was invented here on our shores, and it took form and assumed a dominance in our society with no parallel anywhere in the world.

Between 1890 and 1920, four historical trends intersected that gave the theory of intelligence deep purchase in the American imagination (Figure 1.1). During this period, massive waves of immigration brought new citizens by the millions to our shores. At the same time, the shift from an agrarian to an industrial economy created the needs that industry brings, the need for a stratified workforce: people to sweep the factory floor, people to work the assembly line, foremen to supervise the work, managers to staff and run the operation, capitalists to raise the money and govern the corporation. For the first time in U.S. history, there was a need to sort people for these new jobs, and waves of new people arriving to be sorted.

Coincidentally, the science of measuring human behavior was getting spectacular buy-in across the country as Frederick Winslow Taylor and scores of disciples were hired to study workers with a stopwatch and speed up their performance to make them more efficient. Speed and efficiency became valued commodities, and it became commonly accepted that human behavior of all kinds could be measured. This was an era of science and progress and measurement.

At the same time all of this was happening, from Herbert Spencer in England came the idea of social Darwinism (that "better people" will rise because they are "better," that is, more fit). And in turn-of-the-century America, the country of Benjamin Franklin, individualism, and self-reliance, it was almost inevitable that the notion of survival of the fittest be applied to competition among individual people as well as the evolution of species (Gould, 1981).

It became accepted that those who are at the top of society must therefore be better, and if we could simply figure out who were the more innately fit, we could sort people and invest resources accordingly.

Certain people played central roles in England, France, and the United States in the evolution of the concept of intelligence. The history unfolds logically and deliberately with connections among the key players.

England—1883: Sir Francis Galton (Charles Darwin's nephew) studies men of great reputation and distinction. In 1883 he starts a lab for the physiological measurement of intelligence. In 1886 he conceives of the idea of correlation coefficient. He founded the eugenics movement.

Note three ideas here:

1. A relative of Charles Darwin who has read about "survival of the fittest" seeks to measure whatever it is that great men have that makes them superior. He starts by studying physical reflexes.
2. He conceives of the idea of a mathematical measure of correlation between two phenomena, though he doesn't discover the formula for calculating it.
3. He founds the eugenics movement, which posits that superior people should breed and inferior people should not. That way we will improve the gene pool of the general population.

United States—1893: James McKeen Cattell, a student of Galton, coins the term *mental test* and advocates these tests be given in schools. He begins publishing results. No established "mental test" of intelligence yet exists.

So the idea of mental superiority has come to our shores, but not yet permeated the educational system.

England—1895: Herbert Spencer argues intelligence is inherited and advocates mental testing.

So social Darwinism is now generalized to mental ability, "intelligence," and advanced by Spencer as something that is inherited and should somehow be measured.

England—1901: Karl Pearson, another student of Galton, succeeds in developing *factor analysis* as a statistical technique and also publishes the Pearson product-moment correlation coefficient formula for establishing the relationship between two ideas in relation to chance. Thus it is now possible to take some measured entity (e.g., a test of mental ability) and correlate it with some other entity (e.g., academic success).

United States—1904: Charles Spearman calls the thing being measured by mental ability tests G, standing for general intelligence.

France—1908: Alfred Binet develops a test for identifying learning disabilities.

This test is imported to our shores and used as a test of mental abilities for the first time in a small sample of American schools. A hundred years later this test, now called the Stanford-Binet Intelligence test, still bears the Frenchman's name.

Now read what Binet said about this test that we began using to sort and rank children according to their "natural" ability:

> The scores [on the test] are a practical device; they do not buttress any theory of intellect. They do not define anything innate or permanent. We may not designate what they measure as "intelligence" or any other reified entity.
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> The scale is a rough, empirical guide for identifying mildly retarded and learning disabled children who need special help. It is not a device for ranking normal children.
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> Whatever the cause of difficulty in children identified for help, emphasis shall be placed upon improvement through special training. Low scores shall not be used to mark children as innately incapable. (Gould, 1981, p. 155)

> Intelligence is susceptible to development; with practice and training and especially with appropriate methods of teaching, we can augment a children's attention, memory, judgment—helping them literally become more intelligent than they were before. (Binet, 1899, as translated in Wolf, 1973, p. 207)

According to Binet, the supposed father of the IQ test, intelligence was not a fixed amount, or a constant, or some Platonic, bounded essence. Intelligence was educable. Binet advocated "mental orthopedics":

> What they should learn first is not the subjects ordinarily taught, however important they may be; they should be given lessons of will, of attention, of discipline; before exercises in grammar, they need to be exercised in mental orthopedics; in a word they must learn how to learn. (Binet, 1908, in Gould, 1981, p. 154)

So Binet explicitly posits that intelligence is not fixed, is malleable, can be developed, and hinges on will, another way to say effort. Gould (1981, p. 155) comments, "If Binet's principles had been followed . . . we would have been spared a major misuse of science in our century."

In the years leading up to World War I, ideas fell into place that deepened the trend toward IQ testing.

United States—1911: Psychologist Edward L. Thorndike posits that learning is a stimulus-response cycle comparable to natural selection and thus comparable to neurological response times, a "reflex arc." Thus it is measurable.

United States—1911: Charles Davenport, an early leader in the Eugenics movement, publishes *Heredity in Relation to Eugenics*, which becomes standard required reading in college biology courses. Davenport hires Harry Laughlin to propagandize the doctrine of eugenics.

Now we had a pernicious platform in place for measuring intelligence and, as eugenics advocates campaigned for, sterilizing people whose measured IQ showed them to be genetically defective.

United States—1912: Stanley Hall advocated differentiated curriculum for adolescents of differing ability. We shouldn't have the same curriculum for all students. This is the first time we create what will later be called "tracking."

United States—1913: Henry Goddard translates Binet's tests from the French into English and begins using them to screen immigrants at Ellis Island in New York Harbor. He finds that 83% of Jews, 80% of Hungarians, and 79% of Italians are "feebleminded."

The Ellis Island National Museum of Immigration informs us that the test items ask illiterate farm laborers to copy small geometric shapes, which they have trouble doing because of lack of small motor coordination. This leads to many of them being returned to Europe because they are mental defectives.

United States—1916: Lewis Terman popularizes Binet's test and develops it further. He applies statistical techniques to standardize 100 as the mean, and he advocates universal testing across the population.

United States—1917: Robert Yerkes administers the intelligence test to 1.75 million men entering the U.S. Army during World War I. Thus he creates the first norms for the test based on a broad database.

In that same year Yerkes served as chair of the Committee on Inheritance of Mental Traits of the Eugenics Research Associates. He wrote, "The difference between countries is a very wide one. . . . In general the Scandinavian and English speaking countries stand high in the list while Slavic and Latin countries stand low" (Yerkes, 1921, p. 699).

Readers can see now how the strands were woven together: IQ is measurable, inferior people can be identified, and we should sterilize them to improve the population's gene pool.

Why had Binet's ideas been so turned?

Seymour Sarason wrote about this period and what happened to Binet's ideas:

> The fact is that Binet's "followers," particularly in the United States, were caught up in a confusion between technology and science, between measurement and meaningful rigor, between method and substance. The particular means whereby one studied a problem became so absorbing and complex that it was not long before the original problem became drowned in a sea of measurements. They seized upon the need for measurement and were blind to the complex issues which alone could give significance to their efforts.
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> Binet had all kinds of qualms about pseudo-precision in regard to his scale, but not in a million years could he be accused of denigrating precise measurement. His qualms stemmed from the strong belief that his scale lacked the substance and scope required by his conception of intelligence in action. How could such a belief withstand the Goddards and the Termans, whose concerns for rigor and precision in measurement were uncluttered by the thoughtfulness of a Binet?
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> If American psychology celebrated Terman and his achievements, it was because his work had all the apparent trappings of the scientific mind: standardization of procedures, precision in measurement, quantification, replicability, and validity. (Sarason, 1976, p. 583)

Between 1907 and 1928, 21 states passed laws based on eugenics models. Thus the United States became the first nation in the world to permit sterilization as part of an effort to "purify the race"; by the mid-1930s, this practice had been conducted on about 20,000 people.

Americans had been sterilized against their will. Most were residents of state mental hospitals and juvenile detention centers. By 1928, over 75% of the nation's colleges and universities offered one or more courses that included a study of eugenics. Not surprisingly, textbooks reflected that emphasis. Between 1914 and 1949, over 90% of the nation's biology texts contained sections on eugenics.

The movement had an impact on elementary and secondary education. At the urging of Davenport and other eugenics educators, school officials

across the nation tried to foster the "development of the intellectual faculties of the few who have outstanding abilities and give limited vocational training to the mediocre" (Hofstadter, 1944, p. 165). To determine which students were best suited to each type of education, they administered IQ tests. Students were then labeled and rigidly tracked. Many children came to believe they were "mediocre" or even "stupid" because of the classes to which they were assigned—a continuing problem a century later.

Few parents questioned testing or tracking. Indeed, many supported the movement after learning about it at exhibits Harry Laughlin (hired by Davenport) and other eugenicists set up at state fairs and museums. Those exhibits featured charts, photos, and graphs that warned against supporting "defectives" at the expense of superior types. They also showcased a variety of techniques designed to protect the nation from an "alien bloodstream." At many of these exhibits, lecturers stressed the importance of positive eugenics—the idea that superior families ought to have lots of children. Eugenicists even sponsored "fitter family" and baby contests at some fairs. The winners were hailed as the kind of "stock America needs more of." These community events helped shape public opinion and win the popular support necessary to translate the principles of eugenics into public policy.

As Oliver Wendell Holmes (*Buck v. Bell*, 1927) is quoted as saying, "Three generations of imbeciles are enough!"

Alan L. Stoskopf (1995), in "Confronting the Forgotten History of the American Eugenics Movement," summed up the situation this way:

> Perhaps at another time Galton's ideas would have been relegated to the dustbin of history. But in the late 1800s and early 1900s, his ideas captured the imagination of many people around the world. Eugenics found a particularly receptive audience in the United States. There Galton's supporters were not night riders for the Ku Klux Klan or individuals on the fringes of society. They were well-respected educators who enlisted the support of some of the nation's most prominent scientists, philanthropists, social workers, and politicians.
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> The Eugenics movement was particularly attractive to native-born, white Americans with some education. It addressed many of their anxieties and fears. It also offered them a "a rational" way of dealing with those anxieties and fears. Many of these Americans were troubled by the rapid changes that were taking place in the United States in the early 1900s.
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> Charles Davenport, an early leader in the movement, had been an instructor at Harvard and an assistant professor of zoology at the University of Chicago before founding the Station for Experimental Evolution (SEE) at Cold Springs Harbor in 1904. . . . [He] conducted experiments on plants and animals. He also ran a summer institute for teachers and field workers.

Davenport was eager to extend his research to humans, but lacked the funds to do so. That year Mary Harriman, the widow of the deceased railroad magnate, agreed to fund that research. In subsequent years, the Carnegie Foundation, which had long bankrolled SEE, also supported Davenport's work on humans.

Laughlin lobbied intensively for restrictions on immigration. At congressional hearings he plastered the wall with charts warning against unrestricted immigration. Over an exhibit of photographs showing "defectives" seeking to enter the nation, he hung a banner labeling those individuals as "Carriers of the Germ Plasma of the future American Population."

The lurid evidence and the testimony of Laughlin's "experts" amplified the fears of many in Congress. They were repeatedly warned that the nation was headed for disaster unless they placed draconian restrictions on immigration. That testimony provided a pseudo-scientific rationale for the Immigration Restriction Acts of 1921, 24, and 27. It was a rationale that even the President of the United States supported. In signing the 1924 bill, Calvin Coolidge declared, "America must be kept American. Biological laws show . . . that Nordics deteriorate when mixed with other races." Eugenic ideas had reached the highest levels of government. The combination of the need to sort people for the needs of the economy and the unease with the influx of foreigners lent strength to the growing Eugenics Movement. (p. 3)

The public statements of prominent figures in these years show the depth of the prejudice and stereotyping of peoples of non-Nordic origin in striking terms.

United States—1885: A member of the Boston School Committee said, "Many of these children come from homes of vice and crime. In their blood are generations of iniquity. . . . They hate restraint or obedience to law. They know nothing of the feelings which are inherited by those who were born on our shores."

United States—1916: In *The Measurement of Intelligence* Lewis Terman wrote:

Border-line intelligence is very common among Spanish-Indian and Mexican families of the Southwest and also among Negroes. Their dullness seems to be racial, or at least inherent in the family stocks from which they come. . . . The whole question of racial differences in mental traits will have to be taken up anew and by experimental methods. The writer predicts that when this is done there will be discovered enormously significant differences in general intelligence, differences which cannot be wiped out by any scheme of mental culture.

> Children of this group should be segregated in special classes. . . . They cannot master abstractions, but they can be made efficient workers. . . . There is no possibility at present of convincing society that they should not be allowed to reproduce, although from a eugenic point of view they constitute a grave problem because of their unusually prolific breeding. (Terman, 1916, as cited in Baca and Cervantes, 1989, p. 147)

These views do not seem significantly different from those represented by prominent figures more recently. In 1994 Herrnstein and Murray wrote, "For many people, there is nothing they can learn that will repay the cost of teaching" (p. 520). And later, "In short, by custodial state we have in mind a high tech and more lavish version of the Indian reservation for some substantial minority of the nation's population, while the rest of America tried to go about its business" (p. 526).

Stanley Fish (1993) wrote in "Reverse Racism, or How the Pot Got to Call the Kettle Black":

> In 1923 Carl Campbell Brigham published a book called *A Study of American Intelligence* in which, as Owen notes, he declared among other things that we face in America "a possibility of racial admixture infinitely worse than that faced by any European country today, for we are incorporating the Negro into our racial stock, while all Europe is comparatively free of this taint."
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> Brigham had earlier analyzed the Army Mental Tests using classifications drawn from another racist text, Madison Grant's The Passing of the Great Race, which divided American society into four distinct racial strains, with Nordic, blue-eyed, blond people at the pinnacle and the American Negro at the bottom.
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> Brigham discovered that differences among test scores of immigrant groups reduced with length of time in the country, and in fact, disappeared after 20 years. Yet he wrote: "The hypothesis of intelligence increasing with length of residency may be identified with the hypothesis of an error in the method of measuring intelligence. . . . We must assume that we are measuring native, inborn intelligence."
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> Nevertheless, in 1925 Brigham became director of testing for the College Board, and developed the SAT. So here is the great SAT test, devised by a racist in order to confirm racist assumptions, measuring not native ability but cultural advantage, an uncertain indicator of performance, an indicator of very little except what money and social privilege can buy. (p. 209)

Not everyone at the time believed these ideas about fixed intelligence. Gould tells us that in 1892 Charles Eliot, president of Harvard University, wrote:

> It is a curious fact that we Americans habitually underestimate the capacity of pupils at almost every state of education from the primary school through the university. . . . It seems to me probable that the proportion of grammar school children incapable of pursuing geometry, algebra, and a foreign language would turn out to be much smaller than we now imagine.
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> We hope that people will refuse to believe that the American public intends to have its children sorted before their teens into clerks, watchmakers, lithographers, telegraph operators, masons, teamsters, farm laborers and so forth and treated differently in their schools according to the prophecies of their appropriate life careers. Who are we to make these prophecies?

Almost 30 years later opponents still spoke out. Walter Lippmann debated Terman in the pages of the *New Republic* magazine and wrote, "We will breed generations of students and educators who don't believe that those who begin weak can ever become strong" (reprinted in Block and Dworkin, 1976, p. 4). Nevertheless, advocates of IQ tests and eugenics carried the day.

A video presentation of the information in this chapter is available at http://rbteach.com/products-resources/video/history-intelligence-1-myth-bell-curve.

Video 1.1

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