

The Fading of a Bad Idea: Review of The measure of minds By

Michael E. Staub

Review by Jerome Kagan email: jk@wjh.harvard.edu

The members of each animal species vary in biological and psychological properties. The students of non-human species managed to arrive at the consensual criterion of fitness, or reproductive success, to rank the relative importance of each property. They also agreed that a blending of local ecology with the animal's genome made the major contribution to fitness. It is difficult, however, to assess the relative contribution of each in a non-experimental, natural setting.

Fitness does not work as a criterion for ranking human traits because our species cares more about their own and others' status in a community than in number of offspring. Historical events regularly alter the traits that are awarded higher status depending on place and time. The properties have included strength, endurance, courage, ability to dominate others, land owned, leadership, piety, membership in a priestly group, family pedigree, oratorical or writing skills, wisdom, wealth, and after industrialization, a technical talent that most of the time required schooling outside the home.

The twentieth century brought increasing numbers of youths pursuing careers requiring at least 12 years of schooling or a college degree in order to learn a marketable technical talent. This new social setting made families more concerned with the quality of the schools their children attended. Because more affluent, better educated families knew about and could afford the best schools it was inevitable that the children reared in families with higher status in the society would attain the highest scores on tests of academic skills. Indeed, one of the most reliable facts in the social sciences is the positive correlation, often between 0.3 and 0.4, between a family's social class and their children's IQ and academic achievements. This relation is found in large industrialized nations as well as in small,

isolated villages in developing countries. The 10-year children growing up in the isolated village of San Marcos on the shores of Lake Atitlan in Northwest Guatemala whose families owned the small plot of land on which their adobe hut stood attained higher scores on varied cognitive tests than the children from lower status families who rented the land.

Many European and North American adults were bothered by the fact that a family's class was such a powerful determinant of a child's future. The elites in nineteenth-century England were not. They interpreted Charles Darwin's thesis as implying that those who were dominant in a society were biologically more fit. Francis Galton tried to prove this idea by giving tests of sensory acuity and motor skill, which were influenced by biology, to large samples of English adults. He was frustrated by the absence of a relation between scores on these tests and success in the society.

The French authorities who were committed to greater equality of opportunity for all citizens, but did not have enough schools for the child population, chose a meritocratic criterion. They asked Alfred Binet to develop a test that would predict which children were least likely to profit from an elementary education. Binet, with his collaborator Theodore Simon, adopted a pragmatic, rather than a theoretical, perspective. Because Binet believed that the ability to sustain attention and remember facts were the most critical skills needed for school progress they assessed these talents in their 1905 IQ test. Unlike Galton, they did not claim that children with higher IQ scores were biologically different from others, nor did they suggest that IQ was a significant construct in a theory of mental abilities.

After Lewis Terman revised the Binet-Simon test the Englishman Charles Spearman performed a factor analysis on test data from many children. His analysis revealed a factor common to all the items. Although this factor invited more than one interpretation, Spearman, who was friendly to Galton's views, called this factor "g" for general intelligence. Spearman believed "g" reflected a person's level of mental energy which contributed to the ability to detect the relations between ideas. Although

many regard the ability to detect a feature shared by two different patterns, often called relational reasoning, the most significant cognitive ability that is not obviously a product of experience, only two of the 10 core sub-scales in the current version of the Wechsler IQ test (WAIS-IV) assess this skill.

Spearman treated "g" as a continuous property. He rejected the possibility that the small proportion with very high or very low levels of "g" were qualitatively different from the majority whose scores fell between plus or minus two standard deviation from the mean. L. L. Thurstone's analysis of comparable test scores reflected seven different talents and no support for "g". J.P. Guilford's analyses revealed 120 separate mental factors.

The ancient Greeks believed in three separate talents. None resembled "g". Episteme referred to a person's accumulated knowledge which facilitated understanding. Phronesis was the ability to inhibit behaviors that were sanctioned while choosing actions that were adaptive in the society. Contemporary psychologists would call this ability self-control or mindfulness. Techne was the mastery of a specific skill, usually a craft involving the hands. Contemporary English speakers might replace the above trio of Greek words with the terms smart, good, and skilled.

By the late 1940s, American psychologists and the public were divided on the contribution of biology to Spearman's controversial "g" factor. Many favored the strong influence of experience. A few studies of small numbers of monozygotic twin pairs separated during infancy and growing up with parents varying in education found that children living with better educated adoptive or foster parents had substantially higher IQs than those growing up in homes with less well educated parents. But some respected scientists and many citizens resisted the suggestion that experience was the only important determinant of IQ. Genes had to exert some influence. There were too many examples of intellectually brilliant adults who were raised by poor and/or uneducated parents or relatives- Newton Da Vinci, and Faraday are only three of the many examples of individuals whose accomplishments

cannot be attributed to early rearing experiences. These men and women had to possess uncommon biological properties that allowed them to master special domains of knowledge and arrive at significant insights in specific content areas. It is unlikely that these unusual individuals possess the general mental ability implied by “g” that predicts high skill in all intellectual fields. Albert Einstein would not have been a great poet, nor is it likely that T. S. Eliot would have been a brilliant physicist.

It is not unimportant that the human mind favors material entities, such as neuronal collections, as the foundation of all observable phenomena. The child’s first representations are of concrete things. Greek philosophers made geometric forms or atoms the invisible bases of all that is observed. The ancient Chinese were an exception. They made the complementary energies of yang and yin the foundation of nature rather than things. The frequent occurrence of catastrophic climatic events may be one reason why the Chinese made invisible forces the origin of observed events.

Michael E. Staub, a professor of English and American Studies at City University of New York, picks up this narrative in his slim, but accessible and richly detailed, “Mismeasure of Minds”. This book considers the 40 year interval between the 1954 decision of the Supreme Court declaring that racially segregated schools were unconstitutional and 1994 when Richard Herrnstein and Charles Murray published the “The Bell Curve”.

The Supreme Court judgment angered the white citizens who feared that desegregation would tempt their innocent, well-mannered children to adopt the bad habits of poor black children and, by slowing their educational progress, reduce the likelihood of admission to America’s better colleges. Although most of these parents neither understood nor cared about the scientific bases of “g”, they were willing to exploit this idea if it slowed desegregation.

Arthur Jensen, an educational psychologist at the University of California, stirred the pot in 1969 in a 123 page article in an issue of the Harvard Educational Review. After acknowledging the influence of

experience on IQ scores, he declared that the concept of “g” defined intelligence, even though no scientist understood what “g” was. He declared that “g” was not a verbal, spatial, or mathematical ability. These were specific competences. Jensen never considered the possibility that variation in “g” might reflect variation in motivation to perform well on tests, rather than an abstract, mysterious cognitive property.

Jensen admitted, without apparent embarrassment, that “g” is whatever IQ tests measure. Jensen did not seem to appreciate that no natural kind is defined only by a measurement. Biologists do not define a bacterium as a blood measurement. A volt is not defined by a reading on a volt meter. Anxiety is not defined by a set of answers on a questionnaire. The intrinsic properties of each of these ideas comprise its definition. .

Jensen’s second error was to interpret the lower IQ scores of African- Americans as due partly to the genes that contribute to “g” because of the high heritability of IQ in monozygotic twin pairs.

Heritability, which is based on the similarity of IQ scores in genetically related individuals, is computed from an equation that assigns the potentially large, but unknown, amount of variance attributable to gene by environment interactions to genes. When, years later, geneticists performed analyses of the genomes of large samples varying in IQ they were surprised to discover that genes accounted for a much smaller amount of variance in IQ scores than the high heritability values based on similarity of test scores between genetically related individuals (Coleman, Bryois, Gaspar, Jansen, Savage, Skene, et al., 2019).

Jensen’s essay was followed by seven short replies, most of which were critical of his conclusions. I noted in my reply that Jensen had drawn an illogical conclusion from the heritability of IQ and the lower IQ scores of African- Americans. I used height, which we know is affected by a large number of genes, as an example. Mayan Indian children living in the highlands of Guatemala are shorter than

wealthier Mayans living in urban areas. But the shorter height of the highland Indians is due to malnutrition and disease. When these factors are removed these children are no longer shorter than more affluent Mayans or white children of the same age. Thus, genes do not explain the observed differences in stature. Many African-American children live with poor families on inadequate diets which render them vulnerable to more infectious illnesses than middle class children of any ethnic group. Until scientists evaluate the diverse effects of growing up in poor black, American families the validity of Jensen's main conclusion remains unknown.

I was sufficiently surprised by reading Richard Herrnstein's 1971 essay in "The Atlantic, which amplified Jensen's views, that I called him to ask if I could come to his office to discuss the essay. I had learned from my eight years in Harvard's psychology department that he was a student of animal behavior and guessed that he had never administered IQ tests to children from varied class backgrounds. I appreciated the effects of class on test scores. I remember watching a poor black boy from inner city Baltimore fail the question on the Wechsler Intelligence Test for children which asked "What do you have to do to make water boil"? I suspected that this child had never heard the phrase "What do you have to do" and I asked the examiner to rephrase the question and ask, "How do you get water to boil"? "You put it on the stove" was his quick reply.

I presented Herrnstein with the evidence pointing to the effects of class of rearing on IQ scores. The next sequence is a flash-bulb memory that I describe here because Richard died in 1994 and I feel it is not disrespectful to present his replies to my presentation. He first asked me what I thought his IQ was in first grade. I said it was probably between 110 and 120. "No, it was 90" he replied, "And what was my IQ in the fourth grade?" he asked. When I repeated my answer he told me it was 129 and then asked why it had risen 39 points. I gave the stock answer. I said that immigrant Jewish families, (I knew he grew up with immigrant Hungarian parents in New York City) typically encouraged academic

excellence in their children. He now became animated and in a strident voice said, "I will tell you why it rose, there is Hungarian royalty on my mother's side." I understood at once that I could never persuade him that experiences made a large contribution to IQ scores that were between 80 and 115, which represents most individuals. So I thanked him and left while recalling the scene in the film "My Fair Lady" when the linguist, after dancing with Eliza Doolittle, claims she is a Hungarian princess.

The sociologist James Coleman had claimed in 1964 that a child's experiences in the family during the first five years had a profound effect on cognitive development. Daniel Moynihan, who was one of Richard Nixon's advisors before he became a senator, used Coleman's data to write in the "The Negro Family" that the experiences of young children in typical African-American families were very different from those of middle class whites. This variation in experience contributed to the variation in school achievement and standard IQ tests.

Twenty-three years after the Atlantic essay Herrnstein and Charles Murray published "The Bell Curve". This book challenged the experiential interpretation of the IQ differences between African-American and white children, as well as the hope that the difference was reparable with the proper intervention. The fact that most black children attending a Head Start center did not display major improvements in cognitive skills made it easier to argue that genes were a major cause of the persistent IQ differences. If that were true, government spending on Head Start, which began in 1965, was probably a waste of taxpayer money. The data available in the 1990s revealed that the average gain in IQ and cognitive skills across all black children enrolled in a Head Start Center was too small to account for the larger differences in IQ and school achievement.

Staub adds to the information on race, IQ, and genes descriptions of a number of concepts that he believes touch on the controversy. He highlights the work of Robert Rosenthal and Lenore Jacobson in "Pygmalion in the Classroom" which declared that a teacher's expectation of a child's ability

affects her behavior toward the child and his or her performance. Critics of “Pygmalion” noted that the conclusions about children in classrooms were hyped because the most persuasive evidence came from examiner effects on rat behavior.

The studies of self-concept, based on Julian Rotter’s idea that children’s conception of themselves is a function of others’ behaviors toward them, implied that black children were more likely to develop self conceptions that led them to expect failure. The concept of minimal brain damage was a third amorphous idea proposed by a small group of investigators to explain the rising incidence of diagnoses of ADHD. Not surprisingly, poor children were most likely to receive this diagnosis. Because so many blacks were poor this label was often given to black children who were not performing well in school.

Roger Sperry’s experiments on split brain patients led to a flurry of studies and the bold speculation that black children were born with a balance that favored right brain skills, compared with whites who were better at left brain tasks. Although there was no firm evidence for either claim, some psychologists invented tests for these two kinds of skills. Very few scientists in 2020 believe that humans can be sorted into left and right brain groups.

A rise in the rates of delinquent and asocial behavior by youths during the 1990s contributed to the popularity of Daniel Goleman’s concept of emotional intelligence because control of emotions was a central feature of the concept. Few cared that this phrase altered the meaning of intelligence as it was understood by Galton, Binet and Simon, Terman, Spearman, or Wechsler. Walter Michel’s marshmallow test, which presumably measured a young child’s willingness to postpone an immediate reward if the delay bought a larger prize, was regarded as an early example of emotional intelligence.

Self concept, minimal brain damage, right and left brains, and emotional intelligence were explored by investigators who were not especially interested in genes, IQ, and race. Readers of “The Mismeasure of Minds” who know the history of psychology might question the inclusion of these ideas in a book

whose theme centers on reasons for the difference in black and white IQ scores. General readers will find these chapters interesting.

Contemporary young adults who do not know the history Staub relates may be surprised by the claims in "The Bell Curve". Their greater tolerance and empathy for those who "fall far from the tree", whether because they are poor, uneducated, belong to a persecuted minority group, or women who were not promoted or sexually harassed, resists placing responsibility for their victimhood on the genes that are presumed to be the bases of "g". Anyone who made this suggestion is likely to be accused of holding a prejudicial attitude. I suspect that Herrnstein and Murray would have a harder time finding a major publisher for "The Bell Curve" in 2020 than they did in 1994.

Howard Gardner, who anticipated the revolt against "g" that was nascent in the 1980s, posited eight different intelligences in his popular 1983 book "Frames of Mind", calling them musical, spatial, verbal, logical, kinesthetic, interpersonal, intrapersonal, and naturalistic. Existing evidence implies that an unusual facility with words, mental manipulations of objects in space, detecting relations between different knowledge networks, inferring the mental states of others, and skilled use of hands or body are among the relatively independent talents that some humans can perfect. Of course, some individuals are talented in more than one of these kinds of expertise.

Although predictions of the future are usually wrong, I offer a few speculations. The most confident is that the concept of "g" will join phlogiston and the ether in the ash heap of bad ideas. Psychologists will begin to appreciate that they should assess patterns of measures and not rely on single measures to arrive at bold inferences. Second, exploration of the bases for class differences in cognitive skills will recruit more attention. Although some class differences appear by the second year in healthy children, we do not know what happens in the homes of these children to produce this variation. I hope this issue is addressed by future cohorts.

Finally I suspect that a high IQ as a primary reason for successful adaptation will be replaced with the ability to get along with others. I regularly read essays in science journals advising professors to establish rapport with their students and telling students to get along with their mentors and establish contacts with those who can promote their career. Young scientists and graduate students are also obligated to be happy. Despite the real pressures on these adults, an essay in the November 14, 2019 issue of "Nature" bemoans the prevalence of anxiety and depression among graduate students in science. Faculty and administration are advised to do something to alleviate this problem. This essay implies that it is more important to be free of worry and a depressed mood than to live with the uncertainty that necessarily accompanies the pressure to make a discovery, obtain a grant, and find a position in a major university.

This is a novel imperative in the history of science. Indeed, many young adults choose science because they suffer from social anxiety or a melancholic mood and see scientific work as a way to escape from the demands for frequent social interactions with strangers. Charles Darwin suffered from social anxiety and Isaac Newton from labile moods. Science in this century has become for many an occupation rather than a calling, as it was for a majority of men and women who chose this career before the second world war when universities, industry, and the media did not offer rich prizes for select discoveries and instant fame for headline-grabbing claims.

I recommend this book to the many readers who have little knowledge of the fierce debates that raged during the brief interval Staub describes in prose that is exceptionally clear and remarkably accurate.

References

Coleman, J. R.I., Bryois, J., Gaspar, H. A., Jansen, P. R., Savage, J. E., Skene, N.,..... & Breen, G. (2019).
Biological annotation of genetic loci associated with intelligence in a meta-analysis of 87,740
individuals. *Molecular Psychiatry*, 24, 182-197.