ADVENTURES OF THE MIND

INTELLIGENCE AND HEREDITY

> *"But we must remember that the highest virtues to be sought . . . are in essence those so long proclaimed but seldom actualized: wisdom and brotherhood, that is, the pursuit of the 'true and the good.' When it is understood that the genetic method offers simply an additional but indispensable approach toward this ancient idea, then our voluntary genetic efforts, scattered and disjointed though they now must be, will tend in a common direction."*
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> *—Herman J. Muller*
> *Nobel Prize Laureate*

The word "intelligence" was derived from a translation of Aristotle's term "dia-noesis" which he defined to be the abstract qualities (sensation, perception, memory, imagination, reasoning) involved in all intellectual processes.

It was not until the turn of the last century that scientists began to search for a more technical definition. Sir Francis Galton (who in his *Hereditary Genius,* 1869, noted that intelligence and greatness run in families) was the first to attempt an intelligence test based on scientific–as opposed to empirical–data. His test, based on the hypothesis that there is a high correlation between sensory acuity and general intelligence, has since proven to be inaccurate. It did, however, inspire an international search for a functional intelligence test. Since a modern definition of intelligence was yet to be made, scientists continued to rely on intuition and common-sense judgments to verify the validity of their intelligence tests.

It was the pragmatic Frenchman, Alfred Binet (1857-1911), who first devised a functional intelligence test. Working with a large number of Parisian school children, Binet developed a test that successfully separated the mentally retarded from the normal students at an early age. His tests were based on a variety of factors including verbal adroitness, ability to perceive analogies and abstractions, a capacity for problem solving, mathematics, classification, causal connections and distance perception.

Since he worked with children, Binet was forced to devise some way to compensate for the variation in test performances caused by age differences. And it was this adjustment of test results according to age which led directly to the modern "Intelligence Quotient" (I.Q.) which is simply the mental age (derived by test performance) divided by the chronological age times 100. Binet's test was soon widely accepted since it accurately reinforced intuitive judgments about individual intelligence (i.e., those judged to be of subnormal intelligence scored poorly on the test, while those judged to be highly intelligent scored exceptionally well). So the test was accepted not on the basis of an exact definition of "intelligence" but rather because it reflected accurately the intuitive judgments about a person's intelligence. It is important, therefore, to realize that an intelligence quotient can only be based on relative performance. Unlike the more measurable attribute of height–which can be determined forever by the immortal inch–intelligence is measured by comparison. The fact that it is administered to large numbers of people gives it solidarity and stability.

It was not long after man first gave birth to the concept of "intelligence" that he began to conjecture about the respective roles of heredity and environment in its formation. Until the development of I.Q. tests, scientists could only guess–but given a means to measure intelligence, they could at last make more accurate estimates. For many years the accepted figure for heredity (in intelligence causality) was 75 to 80 percent. More recently, however, environmentalists have successfully argued that early training and quality of environment are the major factors producing a high or low I.Q.

The environmentalists had almost dominated the purlieus of I.Q. while the geneticists sought the quiet paths of the birds and the bees and the Drosophilus fruit flies. But two years ago, one scientist made certain observations in print (favoring heredity 80 percent to 20 percent) and discovered perhaps to his surprise that his statements quickly fanned a flame of controversy.

The scientist was Arthur Jensen, Professor of Educational Psychology at the University of California (Berkeley). Previously the author of numerous articles on individual differences in human learning, and cultural, developmental and genetic determinants of intelligence and learning ability, Jensen was invited by the editors of the *Harvard Educational Review* to write an article entitled "How Much Can We Boost I.Q. and Scholastic Achievement?" Appearing in the winter 1969 issue, the article stated that since intelligence is largely hereditary, the I.Q. cannot be boosted substantially by compensatory education. The essay evoked many responses both indignant and laudatory. Some labeled the article irresponsible and racist. Others claimed that the press had seized upon the article, exaggerated a few of its points and played them up out of context to bolster their political and social stance.

The fields of academia were thus well plowed and sown with the seeds which sprouted forth in the October 1971 issue of the *Atlantic Monthly.* Professor Richard J. Herrnstein, then chairman of the psychology department at Harvard University, wrote a scholarly article entitled "I.Q." In it he reviewed the history of I.Q. tests, summarized with scientific detachment many of Professor Jensen's findings, and put forth the hypothesis that social standing will be based to some extent on inherited differences among people. Although many scientists felt that Herrnstein only summarized familiar conclusions and research that had been done over a long period of time–he was roundly attacked by environmentalists.

The issue, oversimplified, is this: *To what extent does heredity influence the intelligence of an individual? To what extent does environment affect I.Q.? How valid are I.Q. tests in measuring intelligence?*

The purpose of the symposium which follows is not to present an answer or even an opinion–but rather to present a sampling of the most lucid, concise arguments we could find, gathered from prominent researchers and academicians involved in the dispute.

We leave you to your own conclusions, with a last word from Thomas Jefferson, a man who knew how to engage in argument and to rise above it: *"I tolerate with the utmost latitude the right of others to differ with me in opinion without imputing them criminality."*

The Editors