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Science and Man . . . *By Joshua Lederberg*

Are Intelligence Tests Fair?

Intelligence stands among the highest of human values. Yet, whenever we attempt to measure it, we face such frustration that the cynicism is universal. "Intelligence is whatever is measured by intelligence tests." This warning is then promptly forgotten and test scores are used to justify a wide range of social attitudes and educational schemes to tell people what their proper place in the world must be.


Lederberg

The brain is the organ of thought and it would be preposterous to imagine that any two brains are precisely alike in their inherent structural ability to process new information and to store and retrieve the old.

Even electronic computers which remain quite identical in their static hardware are completely dependent on the programs that instruct them to display data-processing virtuosity. And the human brain constantly changes its very structure as part of the process by which it functions.

"TESTING PROBLEMS in Perspective" is an important collection of critical papers recently issued by the American Council on Education and edited by Prof. Anne Anastasi of the Psychology Department of Fordham University. She remarks, concerning the efforts to produce "culture-fair" tests of intelligence: "If we start eliminating items that differentiate subgroups of the population, where shall we stop? We could with equal justification proceed to rule out items showing socio-economic differences, sex differences, differences among ethnic minority groups, and educational differences. Any items in which college graduates excel, elementary school graduates could, for example, be discarded on this basis. Nor should we retain items that differentiate among broader groups, such as national cultures, or between preliterate and more advanced cultures. (But) what will be left . . . what will be the validity of this minute residue?"

Behind these cautionary remarks is the realization that intelligence tests, despite all the diligent effort to relate them to inherent brain functions, are necessarily tests of some actual behavior. They are then tests of achievement, a measure of the skills cumulatively acquired by the individual from his earliest history onward.

No test has been devised for intelligence that can be administered outside the framework of a language common to the examiner and the subject: most of us would score an IQ close to zero on a Chinese version of the Stanford-Binet.

IF THE IQ IS inherently a test of achievement rather than ability, how do we account for its actual merits in predicting academic performance? The answer is that it has been standardized against a moderately wide range of middle-class white American culture. It is a fairly broad test of just those skills most highly relevant to the further educational challenges which the student will most likely meet in his actual schooling.

If the child's informational and emotional milieu is normal for the culture, it may also reflect his inherent biological capacity to learn. That is, the only behavioral test we have for biological intelligence is the level of achievement reached in a standard environment. But whose environment is standard?

When we learn more of the biology of the brain, we will probably discover more objective tests, for example a way to count the number of neuronal connections in the brain of the newborn child. And yet, this could still never tell us what that number might become during the further growth of the child, if we knew how best to complement his individual genetic potential.