

- a clear stratigraphical picture given. At the recent Seminar in Prehistory held at Poona it was decided to organize an expedition to undertake a fresh study of Narbada stratigraphy.
38. S. A. Semenoy [*Prehistoric Technology*, translated from the original Russian by M. W. Thompson (London, 1964)] has tried to infer more definite function of these tools from traces of manufacture and wear seen with the help of a microscope and other devices.
39. See J. Desmond Clark, *Current Anthropol.* 1, 319 (1960).
40. ——— and F. E. Zeuner, *Environment of*

- Early Man* (Univ. of Baroda, Baroda, 1963).
41. The late Professor Zeuner (see 40, p. 21) suggests the alternative species.
42. Dr. R. V. Joshi, to whom this article was sent for comments, says that the industry might have evolved (in part) from the Early Stone Age, as on the river Wain-ganga, Nagpur, where he has a better evolutionary series.
43. Joshi, in a paper presented before the 50th Indian Scientific Congress, in 1963, draws attention to the close similarity between the tools from the younger terrace gravels on the Zambezi, Southern Rhodesia, now exhibited in the Musée de l'Homme,

- Paris, and the Middle Stone Age tools from India. Professor A. H. Dani (32) believes that the Indian Middle Stone Age culture derives from western Asia through western Pakistan.
44. Line drawings (three views) of many of the tools are given in H. D. Sankalia, *Prehistory and Protohistory in India and Pakistan* (Univ. of Bombay, Bombay, 1962-63).
45. In the preparation of this article I am indebted to several of my pupils (some of whom are now colleagues), for I have drawn on their unpublished works, and to my entire staff of the Department of Archaeology, University of Poona.

## Racial Differences and the Future

Racial differences in intelligence and ability should be investigated rather than assumed not to exist.

Dwight J. Ingle

This article is a review of a few of the problems related to the struggle of minority ethnic groups, especially the American Negroes, for equal rights and advancement. It considers possible genetic and environmental bases of the problems, tenable means of achieving equal rights with a minimum of conflict, and the possible replacement of weakly effective efforts to alleviate bio-social problems by methods which would prevent their occurrence; and it makes a plea for freedom of debate and inquiry. All that follows is open to debate and criticism; this is an expression of ideas that is intended to be heuristic, not self-validating or fully documented. I use the word "race" in its popular sense, recognizing that all ethnic groups represent mixed origins and that there is no known physical or behavioral trait which is found exclusively in one "race."

The struggle by individuals and groups throughout the world for special rights and privileges is opposed more strongly than ever before by faith in man's worth as an individual and in his freedom to pursue self-fulfillment and happiness as indispensable goals of life. But one individual's drive for self-fulfillment may conflict with another's; hence society adopts laws, customs, and ethics which attempt to define rights and freedoms and thereby guide human conduct.

Most scientists accept the principle of equal legal and moral rights for the individual regardless of race or religion and support the right of each individual to advance according to his abilities, drives, and behavioral standards. But the equality of man is a social, legal, and ethical, rather than a biological concept, for among living things nothing is equal to or identical with anything else. Even if we were to achieve equal civil rights and equal opportunities, complex problems would remain.

Some ethnic groups, the Negroes especially, are handicapped by a sub-standard culture. Centuries of slavery and racial discrimination have left some, though not all, Negroes with a cultural handicap which begins to be transmitted from adult to child in the earliest formative years. Do genetic handicaps occur more frequently among Negroes than among other ethnic groups? Racists claim that the Negro race is genetically inferior to other races in intelligence, while equalitarians claim that all races are equally endowed with intelligence. Both groups support their respective dogmas by spurious argument and emotionalism. Although it is common to speak and write of intelligence as a unitary quality of mind, it is surely complex (1) and is indirectly and imperfectly measured by standardized tests. Both rac-

ists and equalitarians claim special knowledge about the relative importance of native endowment and of environment in determining the level of intelligence. The conventional wisdom of the times is that biological differences among races are of no significance from the standpoint of social action. The climate of opinion in our courts, universities, and public press is not favorable either to further inquiry into the question or to debate of the issues. Even those who recognize that the question is unresolved claim that science must stand aside in the struggle for social values.

The problems of other American minorities, such as several Asian groups and the Jews, each of which is subject to segregation, bias, and discriminatory laws, have largely been solved. Each group has a cultural heritage which has facilitated self-fulfillment and successful competition with other groups. Is the average genetic endowment of these groups better than that of the Negro? Despite discrimination against these groups, on the average they perform better than Negroes in the classroom and on objective tests of intelligence and achievement. Many individuals among other minority groups, such as the American Indians and Puerto Ricans, are underprivileged, as are a substantial number of native-born whites who do not suffer from racial prejudice.

### The Biology of Race

Several points relevant to the biology of race seem clearly established. (i) There is extensive overlap in the intelligence of whites and Negroes; the generalization made by racists that all whites are superior to all Negroes is false. (ii) The scholastic and intelligence-test performance of Negroes is

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on the average poorer than that of whites. (iii) The abilities, drives, and behavioral standards of some Negroes have led to high achievement in business, law, government, education, and the arts and sciences; many Negroes are good schoolmates, good neighbors, and good citizens. Conversely, indolence, incompetence, and poor citizenship can be found among all racial groups in America, more frequently among Negroes than among whites and Asians. (iv) Race and color are not valid criteria for judging the worth of an individual. Whatever criteria are needed to judge the individual and to define his rights and freedoms should be applied without regard to race or color.

Why, then, examine the question of average racial differences in genetic endowment? The question remains important; first, because of efforts to place individuals in jobs, schools, and housing on the basis of race without regard for their abilities, drives, or behavioral standards; second, because of efforts to extend the concept of equality among races to a point where it conflicts with the rights of individuals to move ahead according to drive and ability in a free competitive society; and third, because of a growing body of opinion that the way to solve racial conflict is by the interbreeding of races. If it is true that there are significant differences between the genetic endowments of the races, this knowledge could and should affect the handling of biological and sociological problems.

If it were possible to prove the existence of significant differences between representative samples of white and Negro brains in respect to any biological measure which could be correlated with intelligence and behavior, this would be evidence for a biological basis for racial differences. Carleton Putnam teaches (2) that such evidence exists and that for this and other reasons Negroes should be segregated socially and in schools. The evidence cited by Putnam is without scientific value. He has referred to Bean (3), Vint (4), and Connolly (5) as having described morphological differences in the brains, especially the frontal lobes, of Negroes and whites. There is no objective evidence that any of the average differences claimed to exist are marks of inferiority or are correlated with intelligence and behavior. I have reviewed the studies by Bean, Vint, and Connolly in detail (6) and found

that none of the relevant variables were controlled in any of the studies. The brains were from cadavers. Vint studied only Negro brains and had no control group, and Bean and Connolly compared Negro brains from American sources with brains obtained decades ago from Germany. It would be difficult to imagine more inadequate sampling. Putnam referred to Herrick (7), Halstead (8), and Penfield and Rasmussen (9) on the importance of the frontal lobes. Nothing is said by these authors which would support Putnam's claim that the Negro brain is inferior; in fact, Halstead, Penfield, and Rasmussen have repudiated the teachings of Putnam (10).

How should the claim that the Negro brain is genetically inferior be tested? It would be necessary to gather brains from persons of different races for whom the respective environments, including prenatal and postnatal nutrition, were equivalent. The factors of age, sex, and health would have to be controlled. Diseased and senile brains should be excluded. The brains would have to be removed from skulls at the same time after death, fixed, processed, and measured by identical methods, and studied as "unknown" by not one but several experts. If it were possible to establish significant average differences in brains among races, it would still remain to be shown that any such difference is a mark of inferiority or that it is a physical measure of intellect or any other quality of mind. Claims to knowledge must also withstand replication of the experiments as well as debate and criticism.

It is possible that differences in the structure and chemistry of brains do have a relation to differences in race, but at present there is no satisfactory evidence for or against this proposition.

What kind of evidence would be needed to settle the question of race and intelligence? First, we need valid, culture-free measures of intelligence; second, representative samples of white and Negro populations as subjects; third, statistical determination of the significance of the differences in test performance; fourth, replication of the studies by different designs and methods; and finally, debate and criticism of methods and results in order to exclude other plausible hypotheses. Since only culture-linked tests of intelligence are available, scientists aim

to compare representative samples of whites and Negroes in which the culture (home, street, and school), socioeconomic status, and other relevant variables are the same. Now we reach a basic problem: Performance on intelligence tests, culture, and socioeconomic standing are all correlated, because cultural and socio-economic advancement depend in part upon intelligence; a sample which is atypical with respect to one factor will be atypical with respect to the other two variables. This consideration is damaging to the claims of the equalitarians.

### Genetic Basis for Racial Differences

What evidence is relevant to the claim for a genetic basis of racial differences in drives and intelligence? All of it is indirect. (i) Studies of experimental animals show that ability to learn has a genetic basis and that drives and other behavioral traits have an important genetic component (11). (ii) Studies on man have shown beyond reasonable doubt that ability to learn and reason has a genetic basis. The most convincing studies are on identical twins (12); the same studies also demonstrate the importance of environment. (iii) The histories of the Negro and white races show that the latter have made greater contributions to discovery and social evolution. (iv) Negroes on the whole perform less well in school and on objective intelligence and achievement tests. This is generally true even when the Negro child has attended integrated schools from the beginning. The culture of the home and street probably remains unequal in most, if not all, cases. There is a general tendency for the difference between the white and Negro children to increase as they grow older. The equalitarians argue that the average decline in IQ scores of Negroes results from substandard schooling and increasing experience with social discrimination. An alternative hypothesis is that this decline is due in part to a genetically based difference in maturation of ability to learn and manipulate abstract ideas. (v) With some welcome exceptions, Negroes tend to do poorly in the sciences and medicine. This is sometimes true of Negro students who have experience only with good home environment and good schools. This consideration, not far advanced beyond case-study evidence, is

not compelling. (vi) It seems improbable that when races differ in other physical characteristics, the human brain, the highest product of evolution, would show an identical distribution of capacities among the races.

What considerations favor the equalitarian view? (i) Tests of intelligence and school achievement are affected by culture, and each can be improved by coaching (13). Intensive training and motivation of Negro children has sometimes raised their average test performance to equal or exceed norms for whites. Missing from such studies are control groups of whites given extra training and motivation. Changes in culture, motivation, and coaching improve the achievement and test performance of white as well as Negro children. A significant improvement in the average test performance of recruits between World War I and World War II is reported (14), both whites and Negroes showing gains, so that a marked difference between the races remained. It is not known whether optimal support of genetic endowment of both races would decrease, abolish, or increase the differences between races.

(ii) In a few, though not in all, studies in which Negro and white children were matched for socio-economic background, the differences in school achievement and test performance were insignificant (15). As I mentioned above, this evidence is faulty, since intelligence, culture, and socio-economic standing are all correlated. It could be argued that because the Negro is handicapped by job discrimination, he must have higher intelligence than the white in order to reach the same socio-economic level. Some other investigators report that, even when whites and Negroes are equated for socio-economic standing, the school and test performance of the whites averages higher than that of the Negroes (16). It may be that the groups are only superficially equated and that they remain different in several important respects.

(iii) The test performance of Negro recruits from certain northern states in World War I was superior to that of white recruits from certain southern states (17). Except to illustrate the overlapping of achievement and performance of the races it is absurd to omit comparisons between northern whites and northern Negroes and between southern whites and southern

Negroes and conclude that racial differences are due to environment only. The cornerstone of the scientific method is the experiment in which all relevant variables except the one being studied are controlled. It is claimed that the average difference in test performance between white and Negro recruits was greater in World War II than in World War I (18).

(iv) Some studies of learning in infants and young children have shown (19) that the Negro child performs as well as or better than the white child. The validity of the measure, sometimes simple motor learning, as a criterion of intelligence is the issue here.

(v) There is a growing body of evidence that the mother-child relationship in primates (20) and the early handling of laboratory animals (21) have important enduring effects upon biology and behavior. Strodbeck (22) has studied the factors which initiate a syndrome of poor socialization in the children of Negro slums and has shown that special training can facilitate the readiness of these children for school.

The above references are given to illustrate some relevant studies and problems. Most of the evidence on racial differences is descriptive and gives little insight into the causes of these differences beyond indicating that the pattern of causes is complex. Anastasi (23) has written an excellent treatise on differential psychology in which she emphasizes the possible environmental causes of racial differences. After reviewing some of the physical traits relating to race, this author states, "It appears improbable that racial differentiation in such physical traits was accompanied by differentiation with regard to genes affecting intellectual or personality development." Shuey (24) has covered the same sort of evidence but has emphasized the genetic basis of racial differences in intelligence.

The concept that the white and Negro races are approximately equally endowed with intelligence and drives remains a plausible hypothesis for which there is faulty evidence. The concept that the average Negro is significantly less intelligent than the average white is also a plausible hypothesis for which there is faulty evidence. There is no sound structure of evidence and logic which compels a conclusion on the issue of race and intelligence.

## Sources of Data

How can new useful data on racial differences in abilities be obtained? I suggest the following possible sources of information. (i) The Armed Services of the United States have data on the test performance of large samples of recruits, extending through several decades of social progress for the Negro, that have not been fully reported. (ii) The school systems of some small northern cities have never segregated the races and have or could obtain comparisons of racial groups in respect to test performance and achievement. A number of school systems that have been desegregated for several years have new data on white and Negro children who have had experience only with good equal schooling. Some school systems do not record the race of the child, thereby making information on important issues unobtainable. It may, however, be impossible to find culturally equated samples of whites and Negroes in Anglo-American societies. (iii) Similarly, there are communities, especially in western states and Canada, which have never practiced segregation other than social (which may be important) or job discrimination. (iv) There are some orphanages in which children of different races have been housed and educated together from early life. (v) Finally, I suggest comparisons of the highest achievers of different races who have never experienced either a substandard culture or poor schools. Although the problem of sampling and unequal culture could not be completely controlled, I believe that, if sampling were done according to the best guidance by statisticians and if the problem were approached by different designs and methods, it would be possible to significantly reduce the faults in the evidence on race and intelligence.

Assurance of full civil rights for the Negro is desirable and necessary, but it will not solve all of his problems. To achieve the ideal that individuals be judged according to abilities, drives, and behavioral standards without regard to race will ease but not solve the problems of Negroes or members of other groups who are handicapped by substandard culture and possibly by poor genetic endowment.

The more militant Negro leaders who now dominate the civil rights movement, having been told that there

are no genetically determined racial differences in drives and abilities, are demanding equal representation in jobs and in government at all levels of competence. If the equalitarian view is correct, then this is a just goal for the Negro. If it is not correct, then equal representation of the Negro at the higher levels of job competence and in government will be deleterious to society; return to the principle of judging the employability of the individual without regard to race would be preferred. If the 30 percent overlap usually found between the test scores of whites and Negroes in the United States should indicate the extent of a genetic difference between the races, this means that the number of Negroes who will remain dependent on social welfare is substantially greater than the number of whites so maintained and that the number of Negroes of high competence is substantially smaller than the number of such whites.

I have no doubt that forced segregation of the Negro in schools has generally had a deleterious effect upon the Negro child. I believe that voluntary integration of schools based upon compatible abilities, drives, and behavioral standards is wise and just. When schools are desegregated as a result of social pressures or when desegregation is forced without regard for abilities and behavioral standards, then the standards of the school are downgraded; those Negro children who are unable to compete at a high level are placed in special classes, and the school eventually becomes resegregated. Many individuals believe that forced random desegregation of schools and housing will solve the problems of the Negro. Personally, I oppose equally both forced segregation and forced desegregation in schools and housing; both are affronts to individual freedom and private judgment.

The aim of some integrationists is identical education for all without regard to drives and abilities. Achievement of this aim would be a blow to those public schools which have made some progress toward meeting the differing needs of the dull, the average, the bright, and the gifted of all races.

There are many competent citizens among Negroes and other racial groups who need better housing and who make good neighbors. Increased construction

of middle-class housing open to all racial groups would permit voluntary integration without fomenting racial hate. A number of successful examples have already been developed by private enterprise.

The idea that forced random desegregation meets opposition solely because of racial prejudice is pure fiction, a grave error of judgment against many individuals who fear desegregation. Racial prejudice is real, ugly, and powerful, but its causes are such that it cannot voluntarily be set aside upon command or persuasion. There are compelling reasons why the average white does not wish to have the average Negro as a neighbor or schoolmate which have nothing to do with the color of skin. I refer to poor behavioral standards, none of which are uniquely Negro. For similar reasons Negroes of high standards seek to escape bad culture and would not choose to live with members of any race who represent it. These are the people, not all of them Negro, who are buffeted about by social pressure, who are removed and largely forgotten by urban renewal projects; they are unwanted. These problems cannot be solved by forced integration.

These are facets of the larger problems of overpopulation, crime, unemployment, and the rising costs of relief which will surely be increased by automation. Most attacks upon these problems are merely palliative; there are some successful attempts to salvage damaged lives, but there have been no major efforts to prevent these social and biosocial problems. I believe that we have the basic knowledge needed to prevent most of them. We should discuss and debate possible methods, although society is not ready to adopt them.

### **Improving Substandard Culture**

The handicap of substandard culture begins to be transmitted from adult to child in the earliest formative years. If the vicious cycle of culturally handicapped adults—culturally handicapped children—culturally handicapped adults is to be interrupted, this should be undertaken at birth. Ideally, slum clearance should be undertaken on a giant scale all over the nation. Poverty is pathogenic to many individuals. The areas cleared would be replaced by

subsidized apartment buildings and family houses, some but not all communities being desegregated. An intensive program of conception control should be established; the underprivileged are commonly denied information on conception control, although such information is readily available to those outside the slums. Conception control is important for all who, either because of genetic limitations or because of poor cultural heritage, are unable to endow children with a reasonable chance to achieve happiness, self-sufficiency, and good citizenship. The very high birth rate among indolent incompetent Negroes is a threat to the future success of this race. I do not suggest any programs which would threaten the genetic diversity of man; the same standards of genetic offensive would be applied to all races. Conception control and eugenics, especially the increased use of artificial insemination (25, 26), are means of achieving gains in genetically determined competence, and no class or race should be denied their use as a means to biological and social evolution and prevention of human misery.

Equally important would be nursery care and youth programs which would place each child in an environment favorable to his making the most of his native abilities. Although my statement of the problem here and of possible corrective measures is simplistic, such programs are not impossible. The Scandinavian countries, Denmark especially, have almost eliminated slums, and the incidence of crime is low compared to America. As recently as the 1930's, the Soviet Union had gangs of wild children who lived by robbery and violence. By intensive nursery care and youth programs, the USSR claims to have reduced delinquency to a low level. Of course, a primary purpose of youth programs in the collective societies is to indoctrinate children into their political philosophy. We need not emulate their objectives or all of their methods; surely, there is an American way to occupy the time of infants, children, and young people in a way that will teach good citizenship. The 4-H program is as American as corn-on-the-cob. Although designed for farm boys and girls, it has been tried successfully in urban areas. Extension of the 4-H program into all parts of the country and development of it to embrace science projects and other

kinds of knowledge and skills might be one important step toward preventing crime and developing self-sufficiency and good citizenship. A number of important youth organizations exist, but most of them are for "good" boys and girls and are out of touch with the underprivileged.

The cost of subsidized good housing for all who need aid would be enormous. It has been estimated that in the absence of special effort there will be by 1970 about 3.2 million dilapidated units and 5 million units lacking one or more plumbing facilities (27). On the assumptions that the unit cost of replacement is \$15,000 and that half of the dilapidated units must be replaced, the cost of the 1.6 million replacement units would be \$24 billion. Arbitrarily allowing one-fourth as much per unit to restore the other 1.6 million dilapidated units would cost \$6 billion. Finally, if \$1000 per unit for modernization of the 5 million substandard units is allowed, this would cost an additional \$5 billion. These are conservative estimates. It is easy to imagine that the complete replacement of all substandard housing with good housing would cost \$50 to \$60 billion or more. The added costs of subsidy to insure a decent standard of living and extensive nursery care and of child and youth programs would add billions of dollars per year.

### Cost of Improvement

What does bad environment cost America? It is estimated that the direct and indirect costs of crime exceed \$30 billion per year. I do not know the reliability of such estimates. The city, state, and federal costs of relief are large and are growing. The cost in human misery is inestimable. The problem is complex. Not all of the underprivileged have a substandard culture or become dependent or criminal; the middle and upper classes of society also contribute to dependency and crime.

Considering the grave dangers of overpopulation, an intensive conception control program among those who for either cultural or biological reasons are unqualified for parenthood would be far cheaper and effective. The procedure for sterilization of each sex is now simple, and there are mechanical devices for preventing conception in the

female that can remain in place for years without attention or apparent harm. I suggest that barrenness could be economically subsidized. Although society accepts a number of restrictions on mating, a program to prevent conception among those who are biologically and culturally unsuited for parenthood will be opposed on legal, ethical, and religious grounds.

Relatively few human geneticists claim that knowledge of human inheritance is sufficiently advanced to plan wisely a program of eugenics. Its use would involve risks in a world where governments achieve greater and greater control of personal freedoms without accompanying advances in ethics and wisdom. Some of the programs that have been attempted or proposed in the past are not reassuring. But I believe that we must take the risks and work toward the linking of eugenics and eugenics. The proposals of Muller (25) and of Huxley (26) represent sound biology and do not threaten the genetic diversity of man. Programs to control conception are needed now. It is not too early to expand educational and advisory programs; we can teach the use of artificial insemination when the husband but not the wife is a known carrier of genetic defects. With gradual evolution of eugenics, society may be ready to use the knowledge which may come several decades hence of how to control human heredity by changing the germ plasm.

Those who hope for the equality of all men without thought of their biology should be asked, "Shall we aim to make all men sick or all men well? Shall we aim toward universal incompetence or universal competence?" The concept of equality is meaningful only as it relates to civil rights and opportunities. Otherwise, to aim for the complete equality of all men is an affront to basic freedoms and rights of each individual to seek self-fulfillment according to his interests, drives, and abilities. The ideal of letting each individual move ahead in a competitive society according to his drives and abilities will be realized only if the individual is biologically fit for competition and is free from the almost insurmountable handicap of slum environment. This aim suits the United States, which intends to remain a free competitive society. The philosophy which abhors competition and holds

that men are born biologically equal or, if they are not, that they should be kept equal by Procrustean methods, would establish mediocrity, not excellence, as a national goal. It is a philosophy which exists to the left of red.

Although there is no possibility that a comprehensive program to upgrade the genetic and cultural heritage of all the races will be undertaken for several decades, it is not too early to make a beginning, especially to seek more complete information on the causes of biosocial problems, to propose and debate methods, and to test some ideas by pilot studies. The guiding principle should be prevention of biosocial problems rather than to depend upon palliative methods. Private enterprise should have a major role in defining goals and development of plans. But both private and public enterprise need strong leadership from the Office of the President and other representatives of the people.

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