

SHOCKLEY
ON
EUGENICS AND RACE

The Application of Science to the
Solution of Human Problems

ROGER PEARSON

Preface by
ARTHUR R. JENSEN

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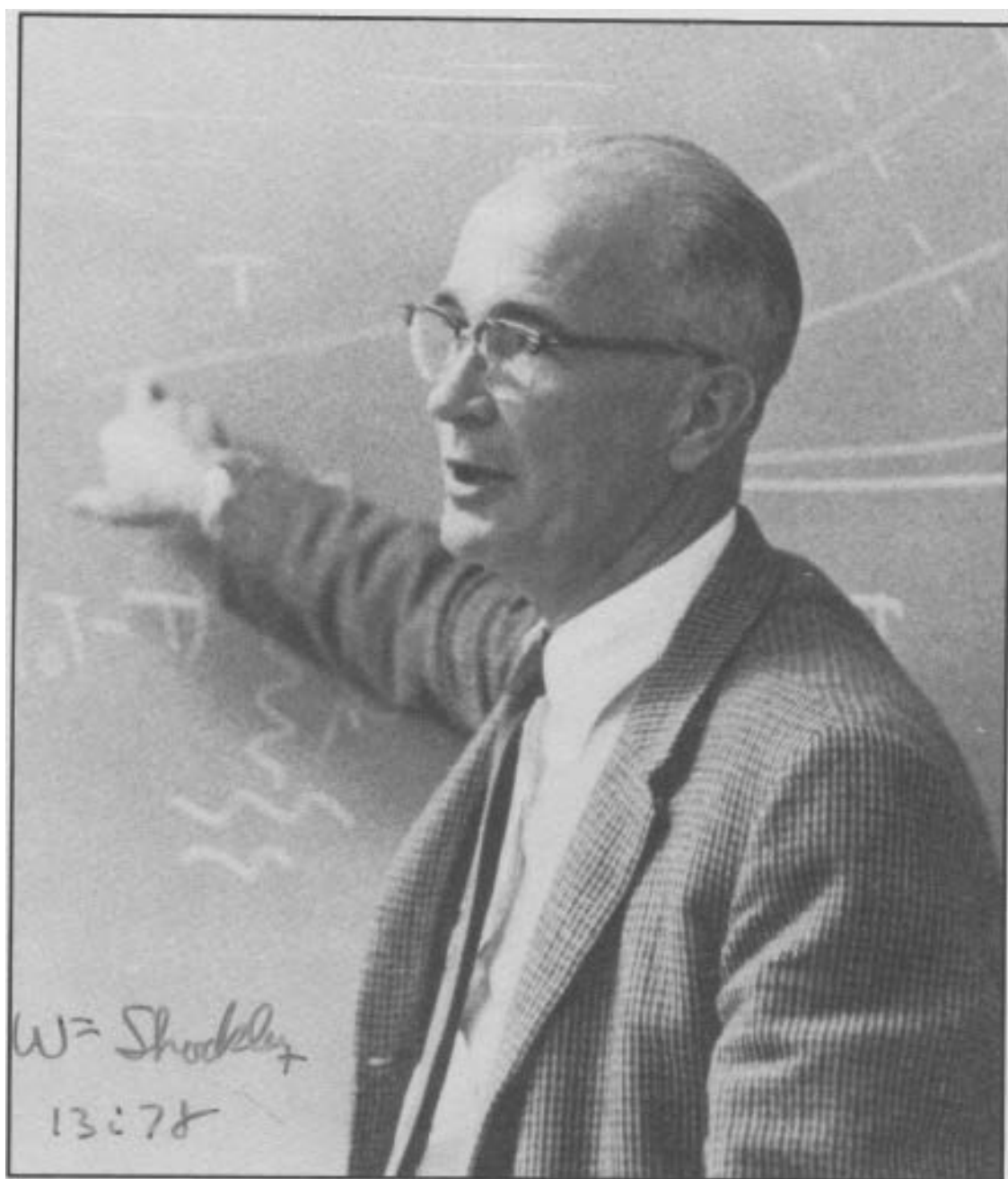
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William Bradford Shockley
(1910-1989)

PREFACE BY ARTHUR R. JENSEN

The man of science, whatever his hopes may be, must lay them aside while he studies nature; and the philosopher, if he is to achieve truth, must do the same. Ethical considerations can only legitimately appear when the truth has been ascertained; they can and should appear as determining our feeling towards the truth, and our manner of ordering our lives in view of the truth, but not as themselves dictating what the truth is to be.

Bertrand Russell (Mysticism and Logic, 1914)

William Bradford Shockley (1910-1989) was one of those rare persons who, both fortunately and unfortunately, became a legendary and symbolic figure. The public image of such a person is always a mixture of fact and fantasy, and, in the case of Shockley, calumny as well. The present collection of articles and interviews presenting Shockley's own words about his position on issues of great social importance provides an essential basis for free-thinking persons to separate fact from fantasy and calumny regarding his views. Readers can decide for themselves the cogency of his message and argumentation. It is hard to imagine that even those who, after reading this collection, disagree with Shockley, on specifics or in general, or who would dismiss his overriding concern with the future course of the human species, could thoughtfully believe that, if Shockley's worries are perchance justified, they should not be a matter of great public concern but should simply be ignored or denied. Such an attitude would have to presume either that the open recognition of the problem would have worse ultimate consequences than the problem itself, or, *absolutely contrary to fact*, that Shockley's concern about possible dysgenic trends in the nation's population has been contradicted by a preponderance of scientifically reputable evidence.

Shockley's purpose was simply to instigate investigation that would put his worry about dysgenic trends to the test of scientific evidence. He suggested that inquiry should focus on the one objectively measurable and heritable human trait that appears to be correlated, probably more than any other, with the overall quality of life, namely, *intelligence*. To misconstrue his purpose as anything other than this is to perpetuate a fiction. His few specific proposals were explicitly intended as "thought experiments," to get people thinking about the issues. Such "thought

experiments" were routine in his scientific activity and led to many of his electronic inventions. He once remarked, "I'm fed up with questions about whether I'm a 'good guy' or a 'bad guy'. It's so irrelevant! I want researchers to do the necessary studies and determine whether I'm *right* or *wrong*." To a magazine writer who requested an interview with him, in order to write a "personality profile," Shockley said, "I don't give a damn about my personality. I want someone to evaluate what I'm saying." He refused the interview. The reporter called me to see if I might be able to intervene on his behalf. So I called Shockley, who said he would be willing to grant the interview if the reporter would devote at least 10 hours to studying material he would send him and then be able to pass a written exam on it. Otherwise, no interview. The reporter did not accept the challenge.

The editor of this collection asked me to write this preface, which seems appropriate, as I was personally acquainted with Shockley throughout the entire period (1967-1989) of his involvement in the so-called "IQ controversy," and I, too, became one of the principals in this history. The editor's Introduction covers in considerable detail the events of this period in Shockley's career, and Shockley's main published contributions to the "controversy" are best explained in his own writings. So I will only add a few sidelights that may enhance the reader's appreciation of the material that follows.

Shockley, the man, first came to my attention late one Friday afternoon in 1967, at the Center for Advanced Study in the Behavioral Sciences, where I was spending the year as a Fellow. It had been announced that a Nobel Prize winner in physics from Stanford University would give a talk titled something like "The IQ-Hereditry-Environment Uncertainty." As I was at that time writing a book chapter closely related to this topic, I was naturally eager to hear Shockley's talk. Scarcely more than a dozen other Fellows attended. Shockley explained that he was preparing a paper he would present at a meeting of the National Academy of Sciences (NAS), and he wanted to give it a trial run before an audience of behavioral scientists. He welcomed questions and criticism. It was a remarkable, even startling, talk, and provoked considerable discussion. Because it touched on the possible genetic basis of racial differences in IQ, two or three of the Fellows warned Shockley, not at all unsympathetically, that he was asking for big trouble if his forthcoming presentation to the NAS were to be covered by the press. Which of course it was. It may have been at that moment that Shockley first coined the expression "research taboo," which he was to find useful on many subsequent occasions. Shockley had also raised certain

questions about the heritability of IQ which suggested to me that he was probably not fully aware of certain important studies that I thought would be useful to him. After his talk, I introduced myself, mentioned my interest in the genetics of intelligence, and offered to send him some reprints on the subject. In his typical methodical way, he jotted my name, occupation, and phone number in his notebook. I sent him the reprints, and a few days later he called to ask if we could meet at the Center to discuss them, explaining that he wanted to make sure he really understood the material. Besides wanting to be helpful to Shockley, as I would to anyone, I also had another motive for wishing to discuss these articles with him. For a good many years, I had been curious about how a first-rate physical scientist would think about research problems in psychology. I had met physicists previously, but they had so little interest in psychological research that I could never engage them in any really thoughtful discussion about the problems of interest to me. Now, I realized, I had my chance. I could discuss these matters, not with just *any* physicist, but with a Nobel laureate who was clearly involved with the very kinds of problems that had quite recently become of great interest to me. Naturally I anticipated our meeting with some excitement.

Discussing technical matters with Shockley could be intimidating. He was extraordinarily quick at grasping anything of a quantitative nature. When a theoretical question came up, his first impulse was usually to try to frame it in a mathematical or mechanical model. He didn't quite trust verbalizations. More than once, as I was trying to explain something to him, he said, "If what you're telling me really makes any sense, you should be able to draw a graph of it." At our first meeting in my office at the Center, he pointed to one of the articles on the heritability of IQ estimated from data on identical and fraternal twins, and asked, "Exactly what is this statistic used here called the *intraclass correlation*?" (It is the type of correlation coefficient commonly used to index the degree of resemblance between twins.) He said he knew Pearson's *product-moment correlation*, and he wrote the definitional formula for it on the blackboard. He wanted to know how it differs from the intraclass correlation. So I wrote the definitional formula for the intraclass correlation on the blackboard. The two formulas, side-by-side, had no resemblance to one another, the first consisting of cross-products, the second of variance components. I had hardly begun to explain the difference between the two types of correlation, when Shockley interrupted, "Don't tell me. Let me figure it out." After about a one-minute pause, he said, "Oh, I see." And he then explained it, succinctly, perfectly, not missing a single essential point. He had clearly grasped the

whole idea of the intraclass correlation and the rationale for using it, rather than the Pearsonian correlation, in twin studies. Having taught this material in my university courses, I knew it took a great deal of explanation, along with worked examples, for bright graduate students to be able to grasp the whole picture that Shockley was able to see in about one minute without any help. I had a similar experience another time, when he asked me about factor analysis, a highly complex mathematical technique – only then being developed – for analyzing a correlation matrix. He got the essential gist of it in a matter of minutes and began to ask so many highly technical questions about it that I referred him to the chapter on factor analysis *The Advanced Theory of Statistics* by Kendall and Stuart. I can readily recall any number of similar examples, because they always struck me as rather amazing. I had never before met anyone who caught on so quickly and easily to things that involved statistical and quantitative reasoning. Of course, he came well-equipped, with his highly practiced background in mathematics, including probability theory and matrix algebra, which were like "second nature" to him. In general, whatever technical information he needed to understand anything that was of interest to him, he was capable of learning with remarkable speed and thoroughness. One could refer him to an article or book chapter on some topic, and the next day he would know it completely. He also had an extremely sharp eye for spotting lapses in logical or quantitative reasoning, either in scientific papers or even (heaven help you) in conversation. I mention all this because, having observed Shockley in these "learning situations," I was always both amused and annoyed by the ludicrous charge of critics and the media to the effect that, since Shockley was a physicist talking about IQ and genetics, he was "out of his field," hence presumably unqualified – as if a person with his intellectual ability and discipline were incapable of studying and understanding subjects such as psychometrics, statistics, and quantitative genetics!

During my year at the Center, I enjoyed rather frequent discussions with Shockley, and, after I returned to Berkeley, these continued, off and on, mostly by telephone, although I also continued to visit him occasionally at Stanford. During those 22 years, I was always impressed, not just by Shockley's scientific acumen, but also by his personal and intellectual integrity, which was so absolute as to be almost eccentric. I once remarked to a colleague who had asked me something about Shockley, "Ninety-nine percent integrity is admirable; one-hundred percent is frightening, and that's Shockley." Some persons couldn't take it. Many offered him their advice about how he might be more

diplomatic, or more sensitive, or suggested clever strategies for getting his message across, specially tailoring the style of his presentation for each particular audience, or tried to sell him on acquiring more political savvy, and so forth. He usually responded by saying he wasn't "smart enough" for that sort of thing, and the best he could do was only to speak his mind as directly and clearly as he knew how.

There is no point in disguising the fact that, personally, Shockley could be "difficult." Anyone who knew him more than casually and who would write about him would agree that any impulse toward hagiography would run the risk of painting a false picture of his unique, intellectually intense personality. He was deeply passionate about problems, ideas, and ideals. And he may have loved humanity in the abstract. But he was not sociable in the ordinary sense, and personal tact and social adroitness, it seemed, were, consciously or unconsciously, low in his own hierarchy of values. Those who were able to maintain a personal relationship with him for any length of time could not possibly be at all thin-skinned. I often noticed, however, that he was generally kind and polite, at times even charming, toward anyone present who was not really involved with him intellectually, that is to say, those who would want seriously to discuss the things of greatest interest to him. Those who did would have to face the "real" Shockley, an experience which occasionally could be quite ego-bruising, though nearly always highly instructive. He could be coldly insulting, perhaps unintentionally, but, to me at least, the value of having his incisive and unfailingly accurate criticism always far outweighed any anxiety about risking the possibly sharp, even rather ruthless, manner in which it might be delivered. If you brought up a subject that was not really of interest to him, he would tell you immediately, and that would end it. It obviously would have pained him to be superficial, and he was impatient with those who were, at least in his perception of them. If he was not inclined to invest his full mental effort in a topic brought up for discussion, he preferred to leave it alone. But if something interested him, look out – his interest was phenomenally intense and probing, and any discussant would be on the spot. He perused some of the literature in my field, differential psychology, or the study of individual and group differences in human behavioral characteristics, and was impatient and disdainful of any conclusions, whether they favored his hypotheses or not, if they were based on methods or data which in his judgment were deficient in scientific rigor. He once asked me a possibly revealing question: "Is there any psychologist that all other psychologists would *have* to respect, even in spite of the fact that they may totally dislike him?" A bit taken aback

by what seemed more like a Rorschach inkblot than an answerable question, I hesitated. "You mean you can't think of any?" he said. "Well, there *are* people like that in physics. If there aren't any in psychology, wouldn't that tell you something?"

Shockley's interest in racial differences in mental ability was not really central in his thinking, although it was usually the chief topic of the media's stories about him. Long before he ever got into the "IQ controversy," he evinced a strong concern about the future welfare of humanity and sought ways that he might be able to make a significant contribution toward it. As a result of an assignment on a U.S. Government scientific mission in India, he became concerned about the world's population explosion. The problems he saw in India, largely related to its proliferating population (then nearly 400 millions), alarmed him. (Since then India's population has more than doubled.) Shockley began speaking out on the threat of overpopulation, and became a public advocate for more strenuous government efforts to promote birth control, especially in those parts of the world where the population was growing fastest. He favored U.S. financial and technical aid to this effort. In the United States, other voices also were beginning to be heard on this subject. So Shockley turned his attention to the most controversial aspect of the issue, at least in the U.S., and became an advocate for liberalized abortion laws. A few years later, when it was evident that public opinion was increasingly in agreement with his positions on birth control aid to Third World countries, and liberalized abortion laws were being adopted by many states in the U.S., and advocacy of these causes was no longer so controversial, Shockley decided to shift his possible influence as a Nobel laureate from what he called the "population *quantity* problem" to what he realized would be much more controversial – the "population *quality* problem." This led him inevitably to the subject of intelligence variation, its genetic aspect, and the possibility of a dysgenic trend in the nation's level of intelligence, which was suggested by U.S. Census statistics showing an inverse relation between educational levels and birthrates. According to Shockley, the question of race differences in IQ, particularly the black-white difference and what he termed its "heredity-environment uncertainty," could not be sidestepped. It had to be dealt with directly, because, in the 1960s, this question was such an extremely taboo subject for public discussion (or scientific research) that it would completely block all rational consideration of the question of a possible dysgenic trend in the U.S. population. If such a trend in fact existed, Shockley argued, its probable consequences for America's future were so dire as to warrant public concern. Therefore,

he believed, there was no choice but to face the race-IQ question head-on, and it became a part of his mission to force public discussion of the matter.

In all the years I knew Shockley, I never detected, in anything he ever wrote or said, publicly or privately, that he showed the slightest interest or attitude about the subject of race, or any particular racial group, that was not directly related to this specific context, that is, his concern about a dysgenic trend in *any* sector of the population. During the decade of the Great Society programs initiated in the Kennedy-Johnson era, the term "*culturally* disadvantaged" was much in the air, especially in the field of education. Shockley acknowledged it, and proposed for consideration what he thought was an essential parallel term: "*genetically* disadvantaged." The concept, narrowly misconstrued by some of the media as "racist," was badly received at the time, as the incidents related in this book's Introduction amply attest.

The media's most common reaction to Shockley was to paint him as "far out," a virtual loner, divorced from the consensus of the scientific community, promoting zany ideas about the heritability of IQ and its possible connection with racial differences in scholastic performance and other socially and economically important variables. This popular but mistaken notion that he was a maverick in the scientific community for his beliefs about IQ, heredity, and race figured prominently in newspaper and magazine articles throughout the 22 years of his activity in this field. It even appeared in some of his obituaries, in 1989. Yet, a questionnaire that was responded to anonymously by a representative sample of 661 experts canvassed in several fields most relevant to major issues in the "IQ controversy" showed that the mean or modal opinions of this sample were essentially in agreement with Shockley's position on the same questions (Snyderman, M., & Rothman, S. *The IQ Controversy: The Media and Public Policy*. New Brunswick, NJ: Transaction Books, 1988). Among the questions the experts were asked: "To one significant decimal place, what is your best estimate of the broad heritability of IQ in the American white population?" The mean of the experts' estimates of IQ heritability was .60, that is, they attributed 60 percent of the variance in IQ to genetic factors. Another question: "Which of the following best characterizes your *opinion* of the heritability of the black-white difference in IQ?" The percentage of experts who selected one of the five alternative answers was as follows:

- (1) 15% The difference is entirely due to environmental variation.
- (2) 1% The difference is entirely due to genetic variation.

- (3) 45% The difference is a product of both genetic and environmental variation.
- (4) 24% The data are insufficient to support any reasonable opinion.
- (5) 14% NQ ["Not Qualified" or "No Opinion."]

The broad heritability of IQ (meaning the percentage of IQ variance associated with all its genetic determinants) is now well established as something near 70 percent, when the appropriate kinds of data on which the estimate is based are properly controlled for subjects' age and other factors. That is to say, about 70 percent of the variance in IQ among individuals of the same race is attributable to genes and about 30 percent to all nongenetic factors, such as aspects of the prenatal and postnatal environment that affect mental development.¹

Although most of the studies of IQ heritability are based on samples of the white population, there are also studies which show comparable IQ heritability in black Americans.

But it is frequently emphasized by geneticists that the heritability of IQ has been established only *within* particular racial groups (mainly whites and blacks), and knowledge of the heritability of IQ *within*-races does not (and, in principle, cannot) answer the question as to the degree to which the mean difference *between* different racial groups in a given trait is heritable. Even if the heritability *within* each group were 100%, a difference *between* the group means theoretically that it could be due entirely to environmental causes, and so the heritability of the difference between the groups could be zero.

¹ It is practically impossible to discuss accurately the concept of *heritability* without using the technical term *variance*, which precisely quantifies the amount of variation or dispersion among a number of measurements. *Variance* has a precise definition in statistics, viz., given a number of measurements of a particular variable (e.g., IQ), the *variance* is the mean of all the squared deviations of each of the measurements from the overall mean of all the measurements. (What is called the *standard deviation* of a number of measurements is simply the square root of their *variance*.) *Heritability*, then, is defined as the genotypic variance divided by the phenotypic variance, or the proportion of the phenotypic (i.e., observed or measured) variance that consists of genetic variance. (This proportion is often multiplied by 100, converting it to a percentage.) It is absolutely crucial to note that *heritability* refers, not to the *amount* of the trait itself in any individual that is attributable to genetic factors, but to the *proportion of the phenotypic variance* in the trait *among individuals* (sampled from some specified population) that is due to *genetic variance* among the individuals. Also, the term *heritability* should never be confused with the term *inherited*. The simple fact that a trait is *inherited* tells us next to nothing about its *heritability*, that is, the relative degrees to which genes and environment affect variation among individuals in the phenotypic expression of the trait.

Shockley, of course, understood this point as well as the experts. It should also be noted that he was not asking the question of whether the heritability of IQ is essentially the same or different in the black as in the white population. The evidence shows that IQ has about the same heritability in both racial populations. What Shockley considered to be the high plausibility that genetic factors are involved in the average IQ difference between certain racial groups was based on a convergence of numerous other lines of evidence that are not based on the methodology of quantitative genetics *per se*, which is incapable of addressing this question. His proposal that the National Academy of Sciences should address the "heredity-environment uncertainty" regarding racial differences in IQ did not specify the application of any particular methodology. He simply wanted to see the NAS bring to bear the full force of its best scientific thinking on the problem. In any case, the main thrust of his proposal concerned the investigation of a possible dysgenic trend with respect to general mental ability which would cut across all racial and ethnic groups, and depends only on the fact of the well established heritability of IQ within groups, regardless of the degree of heritability of the observed IQ differences between groups. But the whole issue was too much a political hot potato for the NAS to recommend federal funding of the kind of concerted research effort Shockley had envisaged, although the NAS formally acknowledged the scientific legitimacy of the questions he had raised.

Many people mistakenly believed, however, that what Shockley had termed the "heredity-environment uncertainty" regarding racial differences in IQ persisted as an uncertainty only because the experts in behavioral genetics and quantitative genetics either refused, or were afraid, to use their methods to come up with a definitive answer. I believe this calls for some explanation for those who may wonder why the specialists in quantitative genetics have not applied their expertise to testing the hypothesis that racial differences in IQ are heritable, just as they had established that individual differences in IQ are heritable. The answer is simply that, even if they had wanted, they couldn't have done so – regardless of threats that someone might try to stop them, or because such research could not be funded, although that also may have been the case. But, from a purely scientific standpoint, the reason it cannot be done is simply because the methodology of quantitative genetics, which can be used to estimate the heritability of individual differences *within* racial groups, is intrinsically incapable of estimating the heritability of the difference *between* racial groups, regardless of the trait in question, whether it be IQ, height, skin color, or any other phenotypic

trait that is susceptible to environmental influence. Why should this be the case? The answer has two parts:

(1) Heritability analysis is essentially an application of a statistical technique (invented by the great geneticist Sir Ronald A. Fisher) known as *analysis of variance* (ANOVA). There is simply no way that ANOVA can partition, or fractionate, the difference between two racial group means (say, the black mean IQ and the white mean IQ) into genetic and environmental components, even though such a fractionation can be accomplished rather easily between individual differences *within* a given racial group.

(2) The information needed for estimating the heritability of any trait, including IQ, is prior knowledge of the precise degree of genetic kinship between particular sets of persons, for example, monozygotic (MZ) twins compared to dizygotic (DZ) twins, full siblings compared to half siblings, half siblings compared to cousins, parents and child compared to uncles/aunts and nephews/nieces, etc. For example, by comparing the degree of similarity (indexed by the intraclass correlation) between MZ twins and between DZ twins one can obtain an estimate of the degree to which their theoretically known genetic similarity is reflected in their observed phenotypic similarity, say, in IQ. We know that MZ twins have all of their genetic variance in common and DZ twins have only about half of their genetic variance in common. The observed twin correlations indicate how much of the phenotypic variance the twins have in common. Hence the difference between the observed MZ and DZ correlations divided by the difference between their corresponding theoretical genotypic correlations is an estimate of the proportion of genetic variance in the trait in question. Obviously, it is completely impossible for twins to have different ancestry, and this one insurmountable fact precludes using the twin method, as well as all similar methods based on the comparison of various kinships, for analyzing mean racial group differences into their genetic and environmental components. This is an intrinsic limitation only of the methodology of quantitative genetics, not of human will or scientific ingenuity. Adoption studies, in which children of one race are reared from infancy by adoptive parents of another race, cannot be definitive, but, under very special and practically unattainable conditions, may only increase (or decrease) the plausibility of the hypothesis that genetic factors are involved in the phenotypic racial difference. Shockley's idea for reducing the "heredity-environment uncertainty," by obtaining the correlation between IQ and degree of Caucasian admixture (which can be determined from analysis of blood groups) in hybrid black Americans, would not be compelling without

evidence that the Caucasian and Negro ancestors of the present hybrids in the study group were random or representative samples of each population with respect to genotypic intelligence level. But this evidence, unfortunately, is not attainable.

The closest that present genetic methodology could possibly approach a definitive answer would require a controlled genetic experiment, consisting (in ANOVA terminology) of a "fully balanced design," in which the following conditions would have to be met: (1) random or truly representative samples of each of two racial groups are cross-mated in every possible race x sex combination; (2) the offspring are cross-fostered by every race x sex combination of parents; (3) all prenatal effects are controlled by *in vitro* fertilization and cross-racial transplanting of the fertilized ova; and (4) the offspring are shielded from the larger social environment outside the experimental sample, as by having all the experimental families isolated in an artificial community in which the racial attitudes of the members could be controlled throughout the offsprings' development. The offspring would be tested only after they had reached the age at which mental abilities, including IQ, can be measured with high reliability. Assuming a large enough subject sample for statistical reliability, a proper ANOVA of the test data would yield estimates of the proportion of the total variance in the trait in question (say, IQ) attributable to the direct effects of differences in (a) racial heritage, and (b) conditions of rearing, and also to the effect of interaction between *a* and *b*. Obviously, this kind of experiment, though it is routine in agricultural genetics, would be unfeasible with human beings, to say nothing of the ethical objections. In the distant future, however, the field of molecular genetics may be able to identify within the human genome the specific genes – we have little idea how many would be involved – that affect mental ability. If that could be known, it would afford the possibility of a definitive answer to Shockley's "heredity-environment uncertainty" regarding racial differences in IQ. Meanwhile, hypotheses about the role of genes and environment in racial differences can merely have varying degrees of plausibility, and discussions of social policy now must deal with the *phenotypic* realities. The observed parent-child correlation for any physical or behavioral trait is phenotypic, of course, whatever its cause. It affords a basis for reliable predictions, assuming the absence of any radical inter-generational change in the trait – relevant environment. A physical or behavioral phenotype can be studied with respect to its sensitivity to certain environmental, or non-genetic, influences, some of which may be amenable to intentional manipulation. A phenotype's persisting resistance to change when subjected to a wide

range of environmental conditions which are hypothesized to affect it, further enhances the plausibility that genetic factors are predominant, but does not prove the point, because not all of the possibly conceivable non-genetic influences could ever be investigated. In reality, however, practical predictions and decisions based on scientific evidence typically depend, not on definitive proof, but on a high degree of plausibility within a theoretical framework that has an empirically well-substantiated track record. That was the scientifically realistic goal towards which Shockley's campaign in the NAS was aimed. But it was perhaps not a politically realistic goal, as the prevailing climate precluded an official recommendation for government funding of any research that risked in the least touching on questions relating the subjects of mental ability and genetics to race.

It should be recognized that Shockley's critics, whether in public or in private, were mostly of two kinds: those who *disagreed* with him on substantive issues, and those who *disapproved* of his provocative "style" and penchant for polemics and publicity, regardless of whether they essentially agreed or disagreed with his position. Many of those who disagreed with Shockley were simply uninformed or misinformed about the state of knowledge on the measurement of mental ability and the genetics of intelligence. Buoyed by self-righteous moral indignation, they spouted unfounded criticism laced with egalitarian platitudes and Pollyanna. Then there were the other, tougher types who objected to Shockley on ideological or political grounds, finding his views on intelligence and genetics in conflict with their purely political and economic explanation of society's problems. They were mainly the ones who staged demonstrations against Shockley, reviled him at public appearances, distributed pamphlets, scribbled graffiti, and burned him in effigy. That Shockley attracted the wrath of these political yahoos was not unappreciated by some researchers in behavioral genetics, who saw him as a lightning rod deflecting ideological attacks away from them.

But there were a good many others, scientists and other intelligentsia, who were truly knowledgeable about the issues involved and were essentially in agreement with Shockley's position, but who strongly disapproved of what might be called his "style." His speeches and writings, some complained, had a provocative bluntness, or abrasiveness, or combativeness they considered terribly wrong for dealing with a socially sensitive issue. One journalist, in reviewing Shockley's articles, quipped that he had obviously not won his Nobel Prize in literature. Both in speaking and in writing, Shockley only aimed for precision, without diplomacy or literary finesse. After one of Shockley's talks, a

well-recognized scientist who was known to agree with the essential substance of Shockley's position stated he could not offer his support, unfortunately, he said, because he thought Shockley's personality brought "negative charisma" to the discussion. I heard another Nobel Prize winner, as famous as Shockley but in a different field, who was not in the least anti-hereditarian and was notably far from "Left," say that, while he agreed that the questions Shockley was concerned about are of great importance and warranted serious research, he wished Shockley would stay out of this field completely, because, he said, "I think he comes across as a fanatic." Shockley's involvement, he feared, would only make a touchy problem even more untouchable. The present collection gives readers a basis for gaining their own impression on these matters. It seems significant, however, that so exceedingly few of those who disapproved of Shockley's "style," yet agreed with him in principle, ever gave any public utterance to their own thoughts about the issues. With rare exceptions, their own "style" evinced only guarded silence.

William Shockley's honored place in history is secure – as one of the world's great physicists and inventors. On that, there is no argument. The ultimate importance of his later effort to promote research and education on eugenics and dysgenics, however, is still to be assessed. If his ideas in this vein should seem less shocking to readers now than many regarded them two decades ago, it is assuredly not because the human conditions that prompted his endeavor are any less troubling today or that his daring thoughts about them have become any less relevant.

Arthur R. Jensen

Berkeley, California, June 12, 1992

INTRODUCTION

William Shockley may be described best in the words of the renowned Berkeley psychologist, Arthur Jensen, as "truly a genius." In his altruistic concern for the future of humanity he attempted to draw the attention of his colleagues, and of the American public in general, to evidence for a threatening nationwide decline in genetically transmitted intellectual ability. His effort to awaken the public to the pressing need for research into the problem of dysgenics – the inter-generational deterioration of the genetic heritage – was perceived by Shockley to be of far greater importance than the development of the transistor, for which he and his two co-workers had been awarded the Nobel Prize. Without intelligence there could be no transistors or equivalent human creations, and the very survival of civilization is dependent upon the genetic endowment that each generation transmits to succeeding generations.

Born in the year 1910, William Shockley was descended from a New England whaling family of English stock. He obtained a B.Sc. in physics from the California Institute of Technology in 1932, and a doctorate from the Massachusetts Institute of Technology four years later. From MIT he went to the Bell Telephone Laboratories, where he had the privilege of working with C. J. Davisson, who was awarded the Nobel Prize for research in electron diffraction. By the time America entered World War II, Shockley's remarkable scientific abilities were already sufficiently well recognized for him to be appointed director of research at the U.S. Navy Anti-Submarine Warfare Operations Research Group. He became an expert consultant for the Office of the Secretary of War, and even after 1945 his services remained in demand with the U.S. Government as deputy director of the Defense Department's Weapons System Evaluation Group. His services to his country during this period were recognized by the award of the Medal of Merit by President Truman, the Citation of Honor from the U.S. Air Force Association, and a Certificate of Appreciation from the U.S. Army.

Returning to the Bell Telephone Laboratories in 1945, as director of solid-state physics research, Shockley became the leader of the three-man team which in 1948 created the point contact transistor, and personally invented the junction transistor, the analog and the junction field-effect transistor. He and his co-workers were awarded the Nobel Prize in

in 1956. In addition, Shockley was awarded the Maurice Liebman Memorial Prize from the Institute of Radio Engineers, the Oliver E. Buckley Solid State Physics Prize from the American Physical Society and the Cyrus B. Comstock Award from the National Academy of Sciences, in addition to a dozen or more other highly respected scientific awards from around the world.

As an experienced scientific researcher, Shockley was of necessity a thinker who had learned to question suspicious ideas which had won broad acceptance without critical examination, and in the tradition of all competent scientists he was quick to identify problems the very existence of which remained unnoticed by others.

Following his pioneer work in electronics – some ninety fundamental U.S. patents were recorded in his name – Shockley left Bell Laboratories in 1958 to head up the Shockley Transistor Corporation in California. Indeed, it was the Shockley Semiconductor Laboratories that pioneered the California-based complex of transistor companies popularly known as "Silicon Valley." However, the Shockley Laboratories were eventually bought by ITT, and in 1963 Shockley was named the first Alexander M. Poniatoff Professor of Engineering and Applied Science at Stanford University where he had lectured from 1958-63.

Teaching solid state physics and related subjects, Shockley continued to conduct research and to publish in these areas, but his attention now began to turn to nagging social problems, notably those whose causes could be traced to what he chose to call dysgenics – a decline in the intelligence of the nation. He was conscious of the fact that further technological advance would be futile if society did not pay heed to what he detected as a serious threat to the intelligence of future generations.

Indeed, Shockley increasingly came to share Herbert Hoover's view that "the great human advances have not been brought about by mediocre men and women." He was also believed Hoover may have been right when the latter added that: "There exists in this country, today, a cult of mediocrity which caters to the prejudice that no one person can be much more able than another." (*Men of Space*, Shirley Thomas, 1962, p. 191)

And so it was that after achieving fame in his own discipline, Shockley began to turn much of his attention to the relationship between heredity, intelligence and human demography, and the resultant impact of these factors upon the well-being of humanity. As that great eighteenth century British man of letters, Dr. Johnson, once said, if a man has the ability, he can walk up one hill just as well as another. Like Alexander Graham Bell before him, Shockley recognized the importance of preserving the gift of intelligence for future generations, and from

1965 he increasingly devoted his attention to publicizing the urgent need for further scientific research into the relationship between heredity and intelligence, and to alerting the public to dysgenic trends which he suspected were already threatening the well-being of posterity.

Shockley and the Problem of Dysgenics

Immersing himself in the problem of how to avert the human suffering that was inherent in the condition of those born with exceptionally low intelligence, Shockley became further convinced that contemporary Western society was already undergoing rapid changes of a severely dysgenic character.

Shockley defined dysgenics as "the study of mechanisms adverse to human genetic quality, particularly retrogressive evolution through excessive reproduction of the genetically disadvantaged." The less intelligent who inhabited America's miserable inner city slums were reproducing at above-replacement levels, he observed, while the more intelligent members of society were under-reproducing. Inevitably, with the resultant increase in the proportion of people of low intelligence in the population, and corresponding decline in the numbers with high intelligence, prosperity would be harder to maintain and poverty would surely become more widespread in future generations.

On the other hand, Shockley believed, science could be harnessed to protect mankind, and the well-being of posterity could best be served if government were to commission a detailed and competent investigation of the entire question of heredity, intelligence and demographic trends so as to arrive at a broadly acceptable consensus regarding the facts. It would then be possible to introduce policies that might effectively and humanely counteract the dysgenic process that promised a future of socio-economic misery for many.

Shockley began his crusade at a time when the radical Left was at the height of its influence on American campuses, and the academic world was reeling under the twin blows of Court-enforced racial integration and Marxist-inspired campus riots, with many faculty members of liberal sentiment and others openly committed to Marxist causes. Professor Shockley's efforts to awaken academic and public opinion to the role of genetic factors in determining the level of intelligence in future generations could not have come at a worse time, and resulted in his becoming the victim of a determined assault kindled by Marxist activists both inside and outside the academic world. So vicious was this *ad hominem* attack that shortly after his death – when he was no longer around to respond personally – one long-time opponent, Frederick Seitz, wrote a snide

letter to the editor of *Science* magazine, which purported to be a tribute to his memory but actually suggested that the Nobel Prize-winner's views on race and intelligence may have resulted from some kind of head injury, probably incurred in a road accident which had once put him in hospital. (*Science*, January 1990). In its drive, extent, and style, anti-Shockley propaganda was typical of the character assassination so popular with political radicals.

During his twenty-five years of research into the cause of human misery, Dr. Shockley was frequently advised by friends that "this" was not the "right" time to raise the subject of intelligence and heredity or of human dysgenics. As his writings show, he kept hoping that the "right" time would occur, and that his efforts might help to usher it in. All he asked for was open discussion and unbiased research on the subject of human quality and the genetic transmission thereof. It is notable, however, that the scandalous campaign of denigration which Shockley withstood without flinching failed to produce any rational critique of the reasoned arguments and statistical evidence which he presented to support his views.

Shockley's thesis, which scared the political Left, was simple: intelligence is a quality which is of prime importance to humankind in the struggle to survive – but it is not evenly distributed between individuals and races. The available scientific evidence indicated that the level of an individual's intelligence is predominantly determined by heredity, and also that the less intelligent members of the American population are reproducing more quickly than those who are genetically better endowed in this vital area of human competency!

Shockley's attempts to bring these facts to the attention of the public, and his campaign for a top-level, government-funded scientific enquiry into the question of human quality, was anathema to liberals and to those on the political Left. The liberals felt that his ideas challenged the doctrine of equality to which they were wedded, and the political Left quickly recognized that they challenged their traditional argument that poverty was due solely to class exploitation rather than, as Shockley implied, the low intelligence of the inhabitants of the inner city slums who were unable to find employment they could handle in the increasingly technical world of modern America.

In pre-industrial agrarian societies, even individuals of low relatively low intelligence had little difficulty in finding useful work. Hoeing fields, for example, did not demand a high level of intelligence. But the adoption of increasingly advanced technology had not only reduced the proportionate size of the agrarian labor force but had also raised the

level of skills required in farming, as in virtually all other occupations. Consequently, Shockley observed, low intelligence individuals were tending to become hereditary paupers; a new underclass was emerging as the nature of the world economy changed – an underclass whose offspring were likely to remain forever dependent on charity or on government welfare. Furthermore, and more frighteningly, the members of this class, who were genetically under-privileged from birth, were proving themselves to be far more prolific than the higher IQ producers who had to bear the increased burden of supporting them. In our modern society where free education provided substantial equality of opportunity, the more intelligent were tending to rise into higher income groups in which they barely replaced themselves, while the less intelligent tended to remain in the lower paid income groups, in which they tended to reproduce more heavily. Thus, Shockley pointed out, while black rural farm workers produced on average 5.4 children per adult woman, black college graduate females produced only an average of 1.9 children. Among whites the story was much the same, even though the gap was narrower, with rural white women producing 3.5 children per head, and college graduate women producing only 2.3 per head. Clearly, this situation augured badly for the future, particularly for the future of the black community, and since then, especially among the whites, fertility has fallen further among the better educated.

For the political Left, the stakes were high. Shockley's warnings were logical and he expressed them in simple and easy-to-understand language. As such they constituted a serious challenge to the tenets of class warfare that Leftists had espoused since the days of Karl Marx. His status as a major public benefactor (as co-inventor of the transistor and other research achievements) and Nobel Prize-winner inclined some of the public to listen sympathetically to what he had to say. The answer of those with deeply-held egalitarian convictions was to portray him not as a benefactor of mankind, who sought only to contribute to the well-being of future generations, but as a racist and a bigot.

In an age when progress in genetic science was already advancing at an explosive rate, egalitarians were placed in an awkward position, and were obliged to fall back on claims that eugenic measures lacked a moral basis and merely reflected the prejudice of those who favored a hierarchical and élitist society. To Marxists, those who emphasized the role of genetics in determining human behavior were "fascists." Worse still, Shockley's observation that significant intellectual and personality differences separated the diverse races of mankind – and that these differences reflected evolutionary realities – was denounced as mere

"prejudice."

Yet so notable were Shockley's scientific achievements that his critics were obliged to resort to attempts to undermine his plausibility with the public by obfuscation – and by claiming that since his background was in mathematics and physics, he was incompetent to express opinions in the area of the "social sciences." Charging him with ignorance of the traditional teachings of anthropology and psychology – much affected, as these were, by Leftist ideological bias – they alleged that his emphasis on the link between heredity and intelligence was motivated by nothing more than personal prejudice. Apart from ignoring the scientific evidence contained in the studies of heritability that Shockley cited, they also conveniently overlooked the fact that modern social science research relies primarily on statistics; and that Shockley was a superb mathematician. Shockley based his own appraisal of his competence to do research on human quality problems not so much on his mathematical skills as on his experience in "operations research," acquired during World War II. As he said in the course of a lecture delivered to the Fresno Forum on 19 March, 1967:

My qualifications to reach conclusions in the field of human genetics are not those of a geneticist, a psychologist or an anthropologist nor have any of my statements suggested that I thought I was so qualified. I do, however, bring the qualifications of a scientist, an educator, an engineer, and specifically, my operations research experience in World War II. The phrase 'operations research' was invented in World War II to describe scientists working with military commanders to analyze statistical and scientific aspects of combat operations ... I regard my role in respect of human genetics as being professionally similar to my wartime experiences in the sense that detailed knowledge of the intricacies of the field may even distract attention from the central issue to important but irrelevant details. It is my experience in operations research that I believe best qualifies me to reach the conclusions and recommendations that I shall state today.

From Physicist to Eugenicist

Shockley's interest in heredity, population and the possibility of dysgenic trends in our modern society essentially began as early as World War II, when he was engaged in operations research with the Army Air Corp B29 forces in India. There he became aware of the misery that can accompany over-population, and from then onwards he became increasingly interested in the problem of over-population. It was not long, however, before he noticed that while many were rightly concerned

about the questions concerning the *quantity* of the world's population, few were prepared to give much thought to the problem of its *quality*. He himself recounts that his own attention to the latter issue was partially the result of his reflections on a news item about a teenager of exceptionally low IQ who had been hired to throw acid into the face of a San Francisco delicatessen proprietor. The perpetrator of this heinous crime was the son of a woman whose own IQ was only 55 and who could remember only nine of the names of her 17 illegitimate children!

Disturbed by the implications of these facts, Shockley began to enquire more deeply into the heritability of IQ. He was already familiar with the Terman studies on gifted children and he quickly noted that there was uncomfortable evidence which suggested that in our modern welfare society, low-IQ individuals tended to procreate at an above average rate, a trend which if continued would cripple the ability of the much slower-reproducing higher-IQ productive elements in society to care for them. Realizing what this meant for the future of humanity, he began to devote an increasing proportion of his time to studying intelligence, heritability and demographic trends among the different segments of the American population. Arthur Jensen's work in the relation between heredity and intelligence soon came to his attention, and a meeting with Jensen introduced him to the Coleman Report, and began a subsequent life-long relationship between the two exceptional scholars.

It was in 1965 that statements by Shockley about the implication of the high inner-city slum birthrate, in light of the strong evidence for a negative relationship between intelligence and fertility, first attracted the attention of the media. The flashpoint was a paper he presented at a Nobel seminar held at Gustavus Adolphus College in Minnesota. His paper was entitled "Population Control or Eugenics?" and drew attention to the Third World population explosion, which he subsequently recognized was being replicated in America's inner city slums. It stressed the urgent need for some form of eugenic stimulus to negate the serious dysgenic trends which he detected. This paper is reproduced as **Document One** in our selection of Shockley lectures, interviews, manuscripts and press releases.

The Gustavus Adolphus lecture impacted upon the media like dynamite, because it dealt with an issue that was taboo. Shockley received a request for an interview by *U.S. News and World Report*, which he granted, and the result was published by that magazine on November 22, 1965, under the title "Quality of U.S. Population Declining?" This allowed his message to reach some 400,000 readers of what was then the third largest magazine in the U.S. The full text is reproduced in this

collection as **Document Two**.

In that interview, Shockley sought to discuss dysgenics and the dark prospects facing humanity if existing demographic trends were permitted to continue unchecked. But the interviewer wished to place emphasis on Shockley's reference to low black performance in IQ tests. Shockley was never a man to hide what he believed to be the truth. His statement that "babies too often get an unfair shake from a badly loaded parental genetic dice cup" had repercussions for groups as well as for individuals. Consequently he was also challenging the environmentalist theories favored by those who had succeeded in generating the billions in domestic social welfare spending programs that were actually promoting and nurturing the high reproduction rate which characterized, and still characterizes, America's less intelligent citizens.

Contrary to popular assumptions, Shockley was no "rightist." He is on record as having endorsed the controversial Head Start program, opining that remedial educational assistance for low-achieving children was desirable, and that it was morally right to remedy any environmental circumstances that were adverse to human development. Many so-called conservatives disliked his tolerance for medically justifiable abortion, and he publicly battled William F. Buckley, who joined forces with liberals in the attack on Shockley's supposed "racism." But Shockley was a patriot, and wanted the best for America, as also for the world. He sought to make the political process responsive to the real threats that faced the future of America. Too many politicians put themselves and their ill thought-out goals ahead of real issues, and it became his ambition to encourage scientists to research the problem of the dysgenic trends which threatened the future of American society and to persuade politicians to attack this problem – armed, as he hoped, with sound information supplied by honest and unbiased scholarly research. When Hayakawa left office, Shockley even made a run for the U.S. Senate, making his concern for the genetic future of the nation his prime agenda. Needless to say, he did not win. He used the political campaign as a way of drawing attention to what he correctly realized was a prime but widely unrecognized problem.

As media reporting increasingly emphasized Shockley's references to the disproportionately high rate of reproduction among the lower IQ residents of America's inner city slums, Shockley found himself obliged to spend more time explaining how the increase in the black ghetto population was dysgenic. The more intelligent blacks were taking advantage of increased equality of opportunity and, he warned, were producing fewer children as they moved into professional occupations.

In consequence, he pointed out, the average level of black intelligence would decline still further in the future, as subsequent generations of blacks were produced in higher proportions by the less intelligent and this in itself would result in an increasingly high proportion of the black population being found in the ghetto welfare class, despite all efforts to change this ratio by governmental intervention.

Shockley's Effort to Stimulate the National Academy of Sciences to Action

Shockley's research was based upon studies by respected scientists and on U.S. Government statistics, demographic studies, studies of identical twins, the Terman Gifted Children studies, etc., – now fully confirmed by twin studies and parallel research – which revealed that whites and higher income blacks were on average much more intelligent than the inhabitants of the impoverished inner-city slums, and that the former were producing proportionately far fewer offspring than the latter. Perceiving that this represented a serious dysgenic trend, and believing that it was the responsibility of scientists to investigate any problem that threatened the quality of human life in future generations, Shockley sought to draw the attention of members of the National Academy of Sciences (NAS) to the need to investigate this dysgenic trend.

Refusing to believe that scientists would fail to put the search for truth above all other considerations, from October 1966 through April 1973, Shockley tried to interest the National Academy of Sciences in his research into dysgenics, especially as applied to intelligence and the many human quality problems that faced and still face the U.S.A. At each successive Academy meeting, Shockley presented a research paper in physics and a research paper on human quality problems. Many times he sent a letter with supporting documentary enclosures to each member of the Academy (about 800 members at one time) that discussed the research he was conducting. Many times he attempted to introduce a resolution in favor of further enquiry into the problems he was outlining. For example, on April 24, 1968, he presented a third paper before the Academy based on a research project in which he was engaged at Stanford. This was entitled "Proposed Research to Reduce Racial Aspects of the Environment-Hereditry-Uncertainty." Reproduced here as **Document 3**, it stressed the need for scientific responsibility among the "brotherhood" of scholars. It paid tribute to what Shockley described as the well-meaning efforts of Martin Luther King to alleviate black ghetto suffering, but emphasized the fact that the persistent problem of poverty

could only be solved if the root causes were attacked – and a major contributor to such causes was the heritability of low intelligence. Shockley again called for a broad-based scientific enquiry into the degree of genetic responsibility for poverty, *via* low intelligence, so as to determine whether poverty could be alleviated by eugenic methods.

But his paper met with bitter hostility orchestrated by a small but vociferous and determined group of Leftist scholars, and Shockley decided that the time had come to denounce the pattern of "Liberal dogmatism" which was blocking his proposals for a broad-based scientific enquiry into the significance of heredity. Consequently he produced a paper entitled "The Entrenched Dogmatism of Inverted Liberals" (**Document 4**), parts of which were read at the University of California Medical School in San Francisco on 29 November, 1967. The full text was presented, under the title of "City Slums, Eugenics and Research Taboos," at McMaster University, Hamilton, Ontario, on December 11, 1967.

In this attack on "liberal" dogmatism, Shockley prophesied that the medical arguments favoring eugenic measures were so compelling that despite the dogmatic but misconceived humanitarian ideals of many activists, some form of eugenic policy would eventually win acceptance among the educated peoples of the world. At that time, he made no specific eugenic proposals, but stressed that what was urgently needed was scientific enquiry into the overall nature of the dysgenic threat so that decisions could be made on a rational and well-informed basis. Liberals, he correctly stressed, were dogmatically opposed to even researching the extent of dysgenic trends, and were consequently responsible for perpetuating human suffering from one generation to the next. Twenty years later, it is interesting to note, the medical profession has come to admit that it already makes everyday decisions affecting life and death, and ongoing medical research has since demonstrated that eugenic considerations are the only practical response to the more serious genetically transmitted diseases.

Shockley, in fact, was right. But contrary to his repeated recommendations no organized research has yet been conducted on the social implications of dysgenic trends, and the present debate is therefore still disorganized, notwithstanding the rapid advances being made in mapping the human genome.

Shockley's efforts to induce the scientific establishment to investigate the seriousness of the dysgenic threat to modern America, and to determine the degree to which intelligence was an inherited quality and to what extent it depended on environmental factors, were condemned

by the organized Left and shunned by scholars who feared adverse publicity if they supported his proposal for a government funded NAS investigation into "human quality." Such research, Shockley argued, offered humanity the chance to ensure a sound future for posterity by reducing dysgenic trends if the role of genetics in determining intelligence proved to be as great as he and other experts believed. Conversely, if the heritability of IQ were found to be low, at least the study would dispel any false notions about the genetic component of intelligence (*The New York Times*, "Nobel Prize Winner Urges Research on Racial Heredity," Oct. 18, 1966).

Five successive attempts, from 1967-72, pitted the eminent physicist against not only the politically-motivated bias that had infiltrated into the world of academe, but also against academic administrators who were fearful of adverse media exposure. It is worth remembering that as a federally-funded entity, the NAS and its elected officers were subject to much the same pressures as those experienced by Congressmen. In order to retain the good will of a minority-conscious Congress, NAS officers discreetly sought to distance themselves from Shockley once he had been lambasted in the media.

Concentrating on the need to promote clear thinking on dysgenic trends, Shockley produced a "Ten Point Position Statement on Human Quality Problems" (**Document 5**), based on a talk which he gave to the Educational Records Bureau Conference in New York on November 1, 1968. Again he expressed his support for whatever environmental programs could be developed to help alleviate poverty and compensate for learning disabilities, but he warned that the disparate birthrate between the prolific low IQ segment of the population and the less prolific high IQ segment must inevitably promote the "genetic enslavement" of future generations to a life of poverty and misery.

Shockley repeatedly stressed his sympathy for inner city babies born "enslaved in a slum environment," but his expressions of sympathy were ignored by those who had surrendered to the wave of Leftist social activism prevalent at that time. Environmentalism "commands the heights of the 'social sciences'," observed columnist Mike Culbert in 1970. Its supporters were "wary of the incursions by those few upsetting voices suggesting that heredity is responsible for at least 80 percent of intelligence and of certain success-getting attitudes that go with it." While Culbert stressed the estimate of 80 percent heritability, it is important to remember that even if heritability were only 5% we would still have to take heed of eugenic considerations. Only if the hereditary component of intelligence were zero could we afford to ignore it. Naturally,

therefore, Shockley – who clearly saw the dysgenic threat as the prime cause of poverty in America – was not going to be well-received by liberal and Leftist-influenced social scientists any more than by open Marxists. The latter were determined to suppress his call for research that would determine the facts, since in their hearts they knew that such research might indeed prove that only a eugenic program could finally solve the problem of inner city poverty.

Thus, Shockley declared:

The fact that black Americans are educationally and socially disadvantaged, causes nobly-motivated – but wishful-thinking – intellectuals to vehemently oppose demands, like mine, for the evaluation of the role of genetics in social performance. A consequence is that the dysgenic threat to the blacks is overlooked. Census Bureau reports reveal that this threat is real: Black women college graduates average only 1.9 children, not enough to maintain their fraction of the population, whereas black rural farm women (near the bottom of the socio-economic ladder) average 5.4, nearly three times as many. (For whites, the threat is less: 2.3 and 3.5.) I have not found comparable statistics for trans-generational AFDC families but fear that they would be even more threatening, as suggested by the factor of six that I deduced from Professor Segalman's percentages. (W.S. Personal Papers)

A few prominent scientists had the courage to associate themselves with Shockley's proposals, and a joint press release dated April 28, 1969, entitled "An Analysis Leading to a Recommendation Concerning Inquiry into Eugenic Legislation" – essentially a brief statement calling for an enquiry into the magnitude of present dysgenic trends – was signed by a number of eminent research scholars. These included Nobel Laureate John H. Northrup, Walter C. Alvarez, Professor Emeritus of the Mayo Foundation, and Professor of Physiology Dwight Ingle of the University of Chicago (**Document 6**).

Academic sympathy for Shockley's position was in reality more widespread than was evident from press reports. With most of the press – and diverse leaders of the liberal establishment, such as Yale University President Kingman Brewster, taking up a prominent position in the anti-Shockley camp – few of those scholars who might have come to Shockley's support dared publicly admit to sharing his beliefs. Their grants, foundation support, and their acceptance in the "mainstream" media could be jeopardized should they choose to make a principled stand. Indeed, as the collection of Shockley's personal papers in my possession reveals, numerous prominent scientists privately informed him

of their support, but most refrained from supporting him publicly. Unfortunately, most cannot be quoted here, since they were of a private nature and Shockley wished their confidentiality to be honored, at least while the writers were still alive. It was difficult for people to rally to the cause of a man repeatedly described as a bigot. As will be seen, many leading newspapers echoed *The San Francisco Chronicle*, when it described him as "the *controversial* scientist who *thinks* black people are born mentally inferior [our italics]" (May 18, 1970). A far more comprehensive, technical and footnoted document, entitled "Human Quality Problems and Research Taboos," was prepared by Shockley at this time, and presented at the Thirty-Third Educational Conference sponsored by the Educational Records Bureau (**Document 7**).

To Shockley's intense disappointment, however, numerous NAS scientists continued to refrain from publicly expressing support for his proposals, not because they were politically-biased liberals or because they disagreed with his logic, but simply out of fear of being accused of racism and attacked in the media. They were dependent upon their salaries as employees of public institutions and, given the bias and often open ferocity of the media, were fearful of the threat posed by adverse publicity to their careers, afraid of losing their friends if they, like Shockley, were painted as "untouchable," and some of the more junior even feared for their very livelihood.

In his efforts to persuade the National Academy of Sciences to undertake a major study of the heritability of intelligence and the extent of dysgenic trends in the U.S.A., Shockley therefore faced rising media criticism which froze out any public display of support for his proposals by the majority of other scholars. Few media commentators cared to recognize the underlying issues, and NAS members were consequently under massive pressure to distance themselves from his recommendation that the NAS should sponsor research into this most important of subjects.

Considering the NAS to be "the nation's highest scientific conscience," Shockley still persisted in his efforts to persuade it to sponsor some kind of enquiry into the heritability of intelligence, dysgenic trends and related issues, but the forces behind American Lysenkoism succeeded in blocking him at several subsequent meetings. Thus, in 1969, a Shockley resolution that an unbiased team of scientists should be appointed to investigate the dysgenic threat was tabled by a 200-10 vote. The language of Shockley's resolution reflects his humane and forward-looking views, although mention of these was rarely made in press accounts:

I propose as a social goal that every baby born should have a high probability of leading a dignified, rewarding, and satisfying life regardless of its skin color or sex. To understand hereditary cause and effect relationships for human quality problems is an obligation of the scientifically responsible brotherhood. I believe also that this goal can best be achieved by applying scientific inquiry to our human quality problems. (W.S. Press Release, April 28, 1969)

The general timidity of the NAS membership is well reflected in a letter sent to Shockley by W.D. McElroy, chairman of the Biology Department at Johns Hopkins University, who was director of the National Science Foundation at that time. This letter expressed the fear that silenced many prominent intellectuals who might otherwise have spoken out in support of Shockley's proposals. "I did not disagree with your proposal *per se*," he wrote to Shockley on May 13, 1969, "But I felt ... that it would be interpreted by the press and the general public in a racist way."

A further attempt by Shockley, in 1970, to persuade the NAS to pass a resolution affirming the need for research into the subject of intelligence and heredity was again defeated. A draft of this resolution, as proposed by him at Rice University on October 19, 1970, is presented as our **Document 8**. Indeed, this new attempt to win the support of the NAS for a government-funded investigation of the relation between intelligence, heredity and environment was made the occasion of a counterattack by a minority faction within NAS, which unsuccessfully sought to persuade the NAS to censure Shockley for "racism."

Realizing the need to confront the NAS with unchallengeable logic based upon irrefutable evidence, Shockley next presented the National Academy of Sciences (28 October, 1971) with a paper entitled "The Hardy-Weinberg Law Generalized to Estimate Hybrid Variance for Negro Populations and to reduce Racial Aspects of the Environment-Heredity Uncertainty" (**Document 9**). This time his arguments won the support of a specially appointed NAS investigating committee, whose members declared that it would be "proper and socially relevant" to undertake the research which the much-smearred Nobelism advocated. However, this was a victory in name only, since so vituperative were his opponents that the delegates to the assembly caved in to media and left-liberal pressure and simply voted to "receive" the committee's suggestion without "accepting" it.

Even then, Shockley did not abandon his determination to help the public realize that continued scientific progress would be unsustainable in the face of ongoing genetic deterioration in the quality of the U.S.

population. Society needed to take an interest in "the quality problem," he told the Cleveland City Club in 1975:

Dysgenics is the name for down-breeding, for retrogressive evolution, or population pollution, caused by excessive reproduction of the genetically disadvantaged.

If my fears about this threat are true, the taxpayer will suffer. But those who will suffer most are the babies, born in slum environments with statistically poor heredity from unfair shakes from the badly-loaded genetic dice cups of their parents. Few of these babies will reach the mainstream of society. The remainder will be, in effect, genetically enslaved for their lifetimes. Although I endorse welfare programs to reduce this misery, I hold that society has a moral obligation to analyze this potential genetic disaster. My faith in humanity supports my belief that establishing relevant truths will lead to truly humane courses of action (W.S. Personal Papers).

Fear was not the only motive for those scholars who failed to support Shockley. Although Shockley saw his crusade as an issue which would have a profound effect on the welfare of the nation and of posterity in general, his opponents saw it as an attack upon their carefully nurtured myth of egalitarianism. On September 7, 1971, Shockley delivered an address entitled "Dysgenics – a Social Problem Reality Evaded by the Illusion of Infinite Plasticity of Human Intelligence" before the American Psychological Association in Washington, D.C. (**Document 10**). Commenting on the left-liberal reaction to this address, *The Sacramento Union* (Nov. 23, 1971) correctly noted that Shockley "was publicly accused by some delegates of 'racism' and of promoting 'fascist' ideas associated with Nazi Germany."

Uncoerced, Shockley further developed his thesis in a comprehensive paper challengingly entitled "Dysgenics, Geneticity, Raceology: A Challenge to the Intellectual Responsibility of Educators" (**Document 11**), which was published in the *Phi Beta Kappan* in January 1972. Although his use of unfamiliar terms such as "dysgenics" and "raceology" possibly handicapped his ability to win public support, and caused the media to treat him with even greater antagonism than may otherwise have been the case, Shockley – a man who did not suffer fools gladly – was steadily coming to realize that some kind of shock therapy was necessary to waken the broader public to reality.

Never a man to give up on a cause so important to posterity, Shockley still persevered with his NAS tactics, and on 23rd April 1972 presented yet another resolution, "Regarding the 80% Geneticity

Estimate for Caucasian IQ" (**Document 12**). Ultimately, the Academy, by implication, conceded the validity of his demand for a broad-based scientific enquiry, and formally agreed to establish a seminar on behavioral genetics to investigate the problems he had outlined. However, the method of selecting those who would participate in this research project was left unclear, and in the course of time nothing came of the resolution. Shockley's NAS campaign was finally stymied (*The San Francisco Chronicle*, "Shockley Wins Partial Victory," Oct. 18, 1972).

Shockley nevertheless continued to advocate the establishment of an impartial, nationally-funded search for answers – scientific and not ideological – to the root causes of today's social maladies. He regularly reminded audiences that crime rates in Denmark were only 2% of those in Washington, D.C. (since which time the crime rates in major American cities have soared to even more frightening levels). Denmark was a useful comparison, since that country had for several decades discouraged the procreation of individuals of hopelessly low IQ.

Despite the failure of the members of the NAS to actually investigate the dysgenic threat, some politicians took an interest, and Alaska senator Ernest Gruening, a consultant to the Population Crisis Committee, in a June 1971 letter to Maryland senator Joseph Tydings, noted that "not enough emphasis was given to the quality of mankind ... Without diminishing the emphasis on the quantitative aspects, the qualitative should have increasing attention, a view I fully share." Referring to the fear-filled response of the NAS, Congressman Charles Gubser (Rep. - Cal.) stated that he was "shocked that men who call themselves scientists are afraid to seek the truth" (*The Congressional Record*, July 15, 1971).

Shockley's Voluntary Sterilization "Thinking Exercise"

As for public qualms about the morality of eugenics, Shockley never advocated any program which would involve compulsory sterilization – only one "thinking exercise" which offered low-IQ members of society voluntary financial incentives if they would refrain from imposing the misery associated with their genetic limitations on future generations. Interestingly, in the post-Shockley era, another country has acknowledged the need for measures to fight dysgenic trends and to ensure the well-being of future generations. Singapore now openly encourages higher-IQ citizens to bear children and raise families as a result of the perceptive foresight of prime minister Lee Kuan Yew, in 1987. As the more-intelligent Chinese women attended university and entered upon professional careers in Singapore, Yew noted that the birthrate among these intelligent women fell dramatically – many never producing

offspring, and that the future of Singapore was bleak unless this dysgenic trend (which is present also in the U.S. and Western European nations) were reversed.

Armed with a penetrating scientific mind and an efficient control of statistical method, it seemed patently obvious to Shockley that eugenic measures were necessary to reverse what threatened to be a catastrophic decline in intelligence in Western countries. At the same time Shockley had concluded that it was necessary to adopt dramatic means to bring this subject to the attention of the public. In order to provoke scientists into examining the dysgenic threat and advancing plans to counter it, he consequently outlined his "thinking exercise" – a simple, practical and totally voluntary eugenic scheme whereby the government might offer financial rewards to low IQ individuals who voluntarily agreed to participate in a eugenics program. This has been referred to by some as Shockley's "\$1,000 Bonus Proposal." Even though he only advanced it as a "Thinking Exercise," intended to draw attention to the problem and to stimulate scientists, politicians and intelligent members of the public to perceive the dysgenic threat in real terms, it was nevertheless extremely logical in its simplicity.

Since intelligence was predominantly genetic, and society was presently suffering from severe dysgenic trends which would render modern science worthless if allowed to continue, a simple and humane solution was needed. With his ability to reduce the most complex problems to simple terms, Shockley's "thinking exercise" proffered a humane and morally acceptable solution – which was also economically sound. Rather than continue to bear the ever-increasing cost in social welfare expenses required to support the growing multitude of low-IQ children being born to low-IQ fathers and mothers on inter-generational welfare – a cost which was mounting generation by generation as the low IQ members of society multiplied – Shockley demonstrated that it would be cheaper for the state to pay a bonus of \$1,000 per IQ point below 100 to every low IQ individual who volunteered to be sterilized. His actual proposal was published as a press release on May 3, 1974, under the title "Eugenic, Or Anti-Dysgenic, Thinking Exercises," reproduced here as **Document 13**.

There was nothing inhumane about the solution Shockley asked people to think about. Participation would be wholly voluntary, and the proposal had, and still has, undoubted anti-dysgenic merit. In addition, it made sound financial sense, since the outlay involved would result in vast reductions in subsequent social welfare spending and remove what is threatening to become an unbearable burden on the economy by

reducing (in future generations) the number of those condemned at birth to be unemployable. Apart from the economic saving to society, the real virtue was in the decrease in human misery that would result. Low IQ individuals are becoming increasingly unemployable in a modern society, and consequently are prone not only to depend on others for their livelihood but to suffer intense frustration and anger at their state of dependency – frustration and anger which frequently gives way to bursts of destructive behavior.

But the blindly miscalculating sentimentality of the liberals was too strong. Seeing a sensational story, the media pounced on Shockley's wholly humanitarian thinking exercise. Some were reasonable, as exemplified in the article entitled "Shockley's Eugenics 'Bonus' Plan," published in the May 18, 1970 edition of *The San Francisco Chronicle*, but others called his ideas "Nazi" and "racist" and raised an outcry which was totally illogical being based on nothing more than pure histrionics.

Media Misrepresentation

Shockley believed from the beginning of his crusade that the fate of posterity rested in the hands of the media, who had it in their power to determine the way in which they would present the findings of science to the public. "I believe," wrote Shockley in February 1969, "that one of the most valuable services the press can perform ... is to convey ... the status of knowledge [in a way that] a useful and accurate analysis meaningful to the average reader could be achieved ..." (W.S. personal papers).

But because his scientific dedication to absolute honesty – even when the facts might be deemed unpleasant by some of his listeners – left him wide open to attack in the popular media, the misinterpretation and misrepresentation of Shockley's message steadily grew stronger year by year. When a famous man conveys a message which can injure the self-esteem of many, this makes an eminent news story in the eyes of most journalists. Frequent articles in respected scientific journals confirmed his views, even if the authors did not openly defend him by name. In 1975, for example, *Modern Medicine* (Feb. 1, 1975) discussed the issue in purely scientific, rational, and nonpolitical tones. But because persistent distortions in the popular media continuously misled the public about the nature of his crusade, an increasing amount of Shockley's time came to be wasted in efforts to neutralize charges of "racism," and "Nazism." Furthermore, his task was rendered even more difficult by the prevailing Leftist disruption of university life during the 60s and 70s, which rendered most faculty members fearful of Leftist agitation.

Attempts by Shockley to defend his thesis against such libels and

distortions, which became more apparent over the years, were largely ignored by the media. In many instances, when he asked that corrections be incorporated in newspaper and magazine stories to correct their accuracy, his requests were ignored, and in time he became so accustomed to biased coverage and media distortion that he would only answer the telephone to reporters on the understanding that they agreed to his taping interviews to ensure an accurate record. Reporters were then sent copies of the actual interview by registered mail as a means of ensuring that no distortions could appear in print by accident.

As the public debate over welfare programs intensified, William Shockley was hounded in much of the popular press, and his attempts to communicate his views to the general public were consistently thwarted by the media. This saddened him, because he knew that the future of humanity depended upon sound research into the relationship between genetics and intelligence, and on the ability of each succeeding generation to bequeath an adequate heritage of intellectual qualities to posterity. Some of the misreporting was due simply to the fact that most reporters were unable to understand the subject matter. As the *Los Angeles Times* remarked, "his writing is ... somewhat statistical, reading like a scientific treatise ... and packed with phrases that do not enhance clarity." Shockley, who had a highly developed if somewhat wry sense of humor, did not endear himself to the media when he retaliated by inviting reporters seeking interviews to read a selection of his published material on the subject and then submit to a written test to prove that they understood what he was writing about.

Serious questions arise about the intentions of many of the journalists who consistently misreported Shockley's views, and their refusal to acknowledge the political orientation of certain Marxist critics who were always ready to oblige reporters with criticism of Shockley, and whom the reporters so frequently chose to cite as "authorities" without ever mentioning their Marxist commitment. The events of the late 1960s and 1970s cannot be understood outside the context of what was taking place in society – and is still represented by what has popularly come to be known as the "political correctness" movement.

IQ tests had already become controversial because they posed disturbing questions for both liberal and the Far Left ideologues. In addition to affronting Leftist and liberal ideology, Shockley's genetic hypothesis made nonsense of the vast pattern of social spending which had already become institutionalized in America, and around which – for better or for worse – a major bureaucratic machinery had grown into being. If spending were unlikely to achieve the desired results of raising

the ghetto dwellers out of their poverty and converting them into self-respecting productive members of society, the virtue of the massive social welfare machinery would be in question, and those who had come to make a living as a part of this machine would not only be made to feel ridiculous, but *their* livelihood as redistributors of wealth and angels of mercy would be challenged.

The increasingly unfavorable media coverage which resulted included both crimes of omission and biased selectivity of reporting. For example, when *The Detroit News* carried a UPI syndicated story – "Why Does Prof. Shockley Think Blacks Are Inferior?" – it left out much of the original interview with the Nobel Laureate, and concluded its story with the totally ridiculous comment that: "If he is correct, the eugenic consequences are frightening. Unfortunately, we may never know the answer unless Prof. Shockley and his colleagues are liberated from prejudice" (*The Detroit News*, Sept. 15, 1974).

The tone of many media accounts also suggested that Shockley pitted the races of mankind against each other. The realities concerning the dysgenic trends Shockley warned against are far more profound than that – and Shockley readily pointed to "inferiority" when he found it among whites. Science knows no racial prejudice in the strictest sense. Whites were included equally with blacks in Shockley's proposals for financial incentives to reduce the procreation of those of extremely low intelligence, since both the white and the black population was threatened by the same dysgenic process. *The New York Times* was among those newspapers which, while editorially supporting the cause of free speech and Shockley's right to appear as an invited guest speaker on campuses despite Marxist disruption, inaccurately proclaimed that one series of Shockley's lectures was entitled "On the Superiority of the White Race." Needless to say, such extravagant misrepresentation in this key media vehicle did a tremendous disservice to Shockley and his humanitarian cause.

Increasingly, the press ignored a basic theme central to Shockley's writings and public utterances. This was his "concern for the wellbeing of disadvantaged minorities" and hence, his "insistence on the moral aspects of the obligation to diagnose." By omitting this essential principle from the coverage of his views, the press in effect censored – and, worse, deliberately distorted – the presentation of his opinions to the public.

Furthermore, reporters were generally ignorant of the scientific basis of the subjects he was discussing. They knew little of genetics or about the design of IQ tests. Had they contacted leading authorities on genetics, IQ testing, and similar subjects, they would have been better

able to construe the views of the scientific community. Yet they seem to have had no time for this, and thus an article in the *Washington Post* (April 30, 1969) erroneously reported that "[Shockley's] view is widely attacked by biologists and geneticists," and gave the impression that other scholars generally regarded Shockley's views as a "pseudo-scientific justification for class and race prejudice" (April 30, 1969).

Repeatedly Shockley's statements about racial differences in the IQ were referred to as merely "theory," despite the vast array of factual evidence of marked statistical differences in IQ scores which is now universally accepted as reality. Today, few if any scholars would seek to challenge the fact that a highly significant and consistent difference in scores has consistently characterized racial groups for the several decades over which reliable testing has taken place. But such misrepresentations, once they had appeared in print, tended to be repeated again and again in other publications. This was particularly the case when a publication as important as *Time* magazine declared that: "Virtually all scientists reject these views, of course, arguing that there is no sound evidence of intellectual differences based on race or of intellectual decline based on genetics" (*Time*, Dec. 19, 1977).

It cannot be overemphasized that, contrary to the statements of his critics, Shockley's dispassionate discussion of dysgenic heredity was never limited to any one racial group. Shockley forever placed whites along with other racial stocks in the same "control group" which would have formed the kernel of his recommended research. Indeed, he was as concerned about the possibility of a decline in the intelligence of whites as he was about the negative impact of the high birthrate among the black "ghetto" dwellers on the average IQ of the black population.

Also contrary to the image that has been conveyed to the public by the media, the validity of Shockley's assertions was seldom challenged by *unbiased* experts. This is in dramatic contrast to the impression created by sensational media accounts and by the media's favorable reporting of the propaganda of the small but active element of Leftists ensconced in academe. In the private world inhabited by true scientists, Shockley's views, based as they were on the research of IQ experts such as Arthur Jensen, were widely respected, as testified by the many congratulatory and sympathetic letters from scholars who dared not speak out publicly in his support for fear of jeopardizing their careers.

Some few whose reputations were already secure did speak out in his support, such as the Nobel Laureate Sir Andrew Huxley, who declared that: "Attempts to subordinate scientific judgement to political ends are misguided, even from a strictly practical point of view." Huxley likened

the failure of the domestic spending programs, geared to solving problems based on a purely environmentalist approach, to the fable of "the Emperor's clothes." "Policies based on untrue assumptions," he cautioned, "are likely to lead sooner or later to disaster." (*Palo Alto Times*, "British Nobel Laureate Rises to Shockley Defense," Sept. 1, 1977).

Shortly before Shockley's death in 1989, Mark Snyderman and Stanley Rothman (*The IQ Controversy: The Media and Public Policy*, Transaction Books, 1988) conducted an in-depth survey which revealed that most psychologists share the view that genetic factors play a *major* role in determining human personality and intelligence, just as genetic factors affect susceptibility to disease. As Shockley perceived, heredity directly influences *all* human abilities, including educational attainment, potential career advancement, and productivity.

Proof that hereditary considerations significantly affect an individual's potential ability "topples the Leftist view of society ..." wrote Vermont Royster, who dared to side with Shockley, in a *Wall Street Journal* article, "for if it [the heritability of intelligence] is true, it means that a large part of our public programs for welfare and for lifting up the disadvantaged are misdirected and possibly futile or even self-defeating, and that the whole national effort needs to be restudied and redirected."

While the media liked to stress Shockley's statement that genetic deterioration was "more widespread in the lower strata of the Negro population," Shockley by no means restricted his concern to the genetic handicaps suffered by the lower-achieving segment of the black population; he sought equally to direct attention to similar problems among the whites. To attract attention he frequently used anecdotal as well as statistical information to show that there was a strata of U.S. whites who could be clearly identified as intellectually handicapped, and whose performance, as judged by standard criteria, was dismal. Yet his critics, including large segments of the media, ignored this. As Royster wrote: "It seems to have done Shockley little good to assert his belief that [in regard to intelligence] 'many American Negroes are superior to many whites,' or to cite statistical studies showing that 'Negroes achieve almost every eminent distinction that whites achieve'... [or that] genetic deterioration occurs for whites as well as blacks." Marxists and fellow-thinkers preferred to ignore Shockley's objective presentation of the facts. They sought instead to discredit him by portraying him as biased, and to harass him so severely that other scholars would be fearful of pursuing his train of enquiry and of publicly expressing support for his views.

Student Disturbances

As is well-known, American colleges and universities were riddled with political troublemakers in the late 1960s and early 1970s. This made them ideal places from which the radical Left could launch its salvos against William Shockley. The educational establishment too often chose capitulation rather than the defense of academic freedom. Faced with the anger not only of the radical Left but also of a multitude of minority organizations that had been heavily influenced by radical Leftist propaganda, they feared for their jobs and took the easy way out. Professor Shockley thus became a target of radical Leftist student movement of the 1960s and 1970s as well as of the media.

Not surprisingly, the openly Marxist organization known as the Students for a Democratic Society (SDS), the kingpin of the organized Marxist Left on campuses during this period, selected the soft spoken, scholarly Shockley as a target against which to rally their forces. Through its ability to work with other student groups, SDS served as a catalyst for picketing, mobilization, and overt disruption undertaken by the various militant black groups. They had already shown their power by temporarily closing literally hundreds of campuses, and they had a permanent central organizing secretariat capable of coordinating activities on a nationwide scale. In particular they sought to stir up anti-white feeling among American minorities. The Far Left included black militant organizations as well as New Left groups, both claiming that capitalism was rooted in racial repression.

SDS was well-funded, highly organized, and commanded considerable sympathy within specific faculty and administrative circles on many "prestige" campuses. SDS was capable of generating widespread press attention, and for years prided itself on creating news by staging colorful dramas well suited to television. It was against this type of politically - motivated muscle that Shockley was forced to wage a protracted war.

In 1968, Shockley was invited to speak before the Brooklyn Polytechnic Institute in New York City on the subject of the intelligence. The tumult which erupted formed a pattern for years to come. When Shockley rose to address the gathering of some five hundred scholars – mostly scientists – his words were drowned by a cadre of some 50 militants who had obtained admission to the meeting only for the purpose of disrupting it.

Proof of the wide interest in Shockley's views terrified the Marxists. Only a scant number of anti-Shockley activists could be found on any one campus, but the Shockley campaign was considered important enough to warrant shipping in protestors from other universities, and even from off-

campus political organizations, with the object of preventing him from being heard on *any* campus.

In October 1969, over four years after the first nationwide publicity arising from the *U.S. News & World Report* interview, a speaking engagement for Shockley at Dartmouth College drew the attention of the radicals. Given its proximity to Metropolitan Boston – home of 26 colleges and universities – Dartmouth was an easy place at which to stage a major campus disruption. As the Nobel Prize-winner reached the stage, the mass of imported and experienced Marxist demonstrators rioted, threatening the few campus security officers and intimidating onlookers.

Disruption by political extremists now began to occur regularly in other instances when Shockley was allowed to reach the speaker's platform. A "violent disruption" occurred at Sacramento State College in 1971 (*Sacramento Journal*, June 1, 1971). Equally controversial speakers had been allowed to speak there without incident, but the Left knew what it was doing when it targeted Shockley but allowed others to speak. Many lecture invitations that might have been extended to Shockley from colleges all around America were never issued, and others that were issued were withdrawn. College president William Bierenbaum of Staten Island Community College invited Shockley to speak as part of a series that featured an array of "controversial" guests, including Bobby Seale, chairman of the Marxist Black Panther Party, on that publicly-supported campus. But charging that "the ruling class" sponsored Shockley as part of a "national movement of racism in the universities," a leader of the Marxist Progressive Labor Party warned that turmoil would ensue if the engagement took place. The administration lacked the courage to face such pressures and backed down. Harvard and Radcliffe similarly took scheduled Shockley debates off their program agenda.

At Princeton University in April 1975, activists sought to prevent him from debating Roy Innis, chairman of the activist group CORE (Congress of Racial Equality). When Shockley made it to Yale, a band of 70 students and non-students shouted down everyone at the podium, forcing Shockley to abandon hope of communicating with the audience of several hundred. A year later, at the University of Kansas, the threat of violence from howling youths advancing on the podium caused the campus authorities to request Shockley to leave the auditorium.

The branches of the Black Student Union (BSU) at different colleges and universities played a relatively small role in these disturbances – the demonstrators were generally outright Marxists. The BSU was a somewhat amorphous network of black college students containing both radical and moderate students. Only at Sacramento State was a small

contingent of the BSU responsible for the outburst. Here the press reported that "the president of the BSU grabbed the microphone" when Shockley was to begin his presentation (*The San Francisco Examiner*, "BSU Blasted for Preventing Shockley Talk," Dec. 15, 1971). Instead it was usually SDS agitators who led the attack. Thus, in 1972, Shockley's own class at Stanford was invaded by the SDS-linked Third World Liberation Front, who seized control of the classroom and read bombastic political statements, blocking an official lecture by Shockley on solid state physics. "We, the Third World peoples," they pronounced, "have found Shockley racist, not only for his writings and speeches, but also in his actions ..." Among those "actions" was allegedly the advocacy of "race theories to make killing the future generations of black and other poor people legal"! (*Palo Alto Times*, "16 Invade Shockley Class" Jan. 19, 1972).

A "Third World Coalition Against Shockley" surfaced briefly under radical Left tutelage at Stanford in 1972, but the rallies organized on his own campus drew meager attendance. "The group of about 80 marchers ... burned Shockley in effigy ... before dispersing," noted *The Stanford Daily* (Feb. 17, 1972). Other fringe groups such as the Revolutionary Community Youth (described by *The San Francisco Chronicle* as "a minority faction of SDS") worked to prevent universities from daring to issue invitations to Shockley after Harvard's cancellation of his invited lecture. Associated Press stories of the April 1972 disruption at Harvard described it as SDS-affiliated, and the SDS proudly claimed credit for issuing "WANTED: DEAD OR ALIVE" posters bearing a likeness of the Nobel Prize-winner (*The San Francisco Chronicle*, "SDS Faction Demands Action," Apr. 1, 1972).

An October 1973 decision by Harvard to prohibit Shockley's appearance typified the response of fearful university administrators. "The realities and exigencies of a less than free intellectual climate," stated a Harvard Law School memo circulated on the 18th of October, "outbalanced the desirability of our making a stand for freedom of speech." (*The Harvard Crimson*, Oct. 24, 1973) Thus Shockley's efforts to reach university audiences – as an invited speaker – were largely blocked by the radical Left.

Shockley's Actual Position Regarding the Disadvantaged

The reason Shockley gave so much of himself to this subject was well known to his colleagues, and cannot be repeated too often. As Shockley said repeatedly, the inter-generational transmission of genetically-based intellectual talent was essential to the well-being of posterity. The entire

future of humanity depended upon the willingness of each successive generation, including our own, to pass on a competent and healthy genetic heritage. So dependent has mankind made itself on science and technology, and so radically has mankind altered the earth's environment, that a posterity low in intelligence could have little to look forward to in its future.

In examining the attacks on the Nobel Laureate, it is important for serious students of the issue to understand Shockley's actual view of blacks. Most of the harshest criticism levelled against him concerned alleged bias, but as Shockley correctly emphasized, the dysgenic threat affects all races. Shockley provided both anecdotal and statistical information about dysgenic procreation among whites in order to drive home that message. The barrage directed against him, as he correctly implored observers to realize, led scientists and politicians alike to ignore the highly urgent nature of the problem. The "consequence," he warned, "is that the dysgenic threat to blacks is overlooked."

Leftist antagonists refused to acknowledge his compassionate motivation, however, and on September 15, 1974, violent heckling by organized Leftist groups at Case-Western University prevented Shockley from being heard when he tried to present his paper, entitled "Society has a Moral Obligation to Diagnose Tragic Racial IQ Deficits" (**Document 14**), in a scheduled debate with Roy Innis.

What Shockley termed "the dysgenic tragedy" facing America's black minorities is even more apparent today in the dysfunction of inner city ghetto communities where developments appear to be following the pattern prophesied by Shockley. Many blacks "suffer the misery of ... the tragedy [of dysgenics]," he wrote, citing statistics in unemployment, educational attainment, and other measurements of basic skills. A high rate of procreation among the less competent members of that community could only spell misery for the next generation. Those black families which had achieved economic success were tending to restrict the size of their families, while those who had failed continued to reproduce at high levels. This indicated that the problem would become worse, despite all attempts at environmental solutions. As the lower IQ levels of black society proliferate, this will also handicap the chances of the more intelligent blacks, since their public image will inevitably be adversely affected.

Shockley repeatedly warned that attempts to apply inappropriate remedies, based on inaccurate knowledge, would be ineffective and could make the problem self-perpetuating. Inadequately planned "band-aid" welfare programs, he felt, were actually accentuating the dysgenic trends

among Afro-Americans. "Untold harm" was being done by dysgenic trends *within* the black community, he warned a scientific conference in 1975, pointing out that American blacks as a group average about fifteen IQ points lower than whites. Research had established that cultural bias does not explain lower black IQ scores and, furthermore, that IQ scores *do* statistically predict educational achievement – and do so equally as well for both blacks and whites.

The IQ deficit explains the low educational achievement and, hence, inferior jobs, lower pay, and lower social status of the less intelligent segment of the black American population – exactly as detailed in NAACP leaflets. This situation will get worse if the average black IQ declined further over the generations. Shockley never for a moment denied that some factors of an environmental nature historically contributed to Afro-American deprivation, but he sought to emphasize that unless the IQ gap could be decreased, or at least be prevented from increasing, the elimination of massive areas of black poverty would be impossible.

This theme was well expressed in comments he made at the University of Texas, Dallas, Texas, at the invitation of the Master of the College of Natural Sciences and Mathematics, on September 12, 1978, entitled "Has Intellectual Humanitarianism Gone Berserk?" (**Document 15**). After some 13 years of harassment, Shockley had concluded that even the genuine humanitarians amongst his opponents had become so immersed in their emotions that they had lost the ability to rationally perceive the ultimate results of their actions. Without having studied the problem in a detached and scientific manner to determine the root causes of ghetto poverty, they were devoting the resources of society to help those disadvantaged "by an unfair shake from a badly-loaded genetic dice cup," to procreate and multiply, thereby passing on their burden of misery to an even greater number of unfortunates in subsequent generations.

It is little wonder that Shockley concluded that modern-day humanitarians had gone berserk. In a letter published in the American Anthropological Association newsletter of February 1970, the writer even urged the "destruction" of all Shockley's publications wherever they could be found, in both public and academic libraries. The author was perhaps particularly incensed because Shockley had determined that IQ was generally higher amongst those blacks who had a considerable admixture of white genes than among those who had few or no white genes. Shockley had also directed attention to the fact that degrees of racial admixture can be determined by blood group analysis and advocated that

studies should be made which would compare the IQ scores of broad samples of racially mixed individuals against their measured black/white ancestry.

Needless to say, this idea was anathema to the many liberals and outright Marxists who had attained dominant positions in departments of anthropology in America and Canada, and consequently were in a position to intimidate those who did not share their political and ethical orientation. Indeed, so prejudiced and/or fearful had the majority of American anthropologists become that on September 16, 1980 Shockley reacted to criticism by publishing a column entitled "Anthropological Taboos About Determination of Racial Mixes." This appeared in FREED, the newsletter of the Foundation for Research and Education on Eugenics and Dysgenics, located at Stanford. (**Document 16**)

His antagonists in particular delighted to attack Shockley on his advocacy of quality gene banks as a counter-dysgenic measure. These they liked to describe, not inaccurately, as "sperm banks" since this sounded more "kinky" and morally questionable. Dr. Robert Graham, author of the eugenic treatise entitled *The Future of Man*, and the inventor of a technique for protecting plastic eyeglass lenses from scratches, was another distinguished benefactor of mankind who was deeply concerned about the dysgenic threat. Dr. Graham realized that most human inventions were the product of a small percentage of high-IQ individuals, and that no civilization could survive unless supported by a sufficient number of such individuals.

In consultation with the now deceased Nobel Prize-winning geneticist, Herman J. Muller, of the University of Texas, Dr. Graham decided to put into practice an idea that Muller had long recommended – the establishment of a Germinal Repository from which wedded couples who were unable to have children because of the physical inability of the husband could obtain the sperm of highly intelligent and otherwise healthy donors to fertilize the wife. While thousands of children are born each year by artificial insemination with donor sperm, the parents generally have no idea as to the intellectual quality of the donor. Dr. Graham consequently established, with his own money, a Germinal Repository in California, from which married couples can now obtain sperm donated anonymously by either a Nobel prizewinner or by some other scientist of marked distinction.

This is an entirely voluntary and effective anti-dysgenic program which is now used regularly and with success. However, Shockley was critically attacked by sections of the media when in answer to reporter's questions he confirmed that he had been proud to assist Dr. Graham by

contributing to the Repository. Shockley himself contributed to the Repository, and expressing his support for the idea, criticizing those who opposed germinal repositories for high quality donors in a paper entitled "Sperm Banks and Dark-Ages Dogmatism," which he read to members of the Rotary Club of Chico, California, on April 16, 1980. (Document 17)

The Atlanta Constitution Case

Some sections of the news media did give Shockley fair coverage. *Leaders* magazine invited Shockley to write an article on his concerns and this was published under the title of "Intelligence in Trouble" in their April/June 1981 issue. (Document 17) Although brief, this summarized Shockley's views, and enabled him once again to point out that many opponents of eugenics were blinded by the belief that man was "the apple of God's eye," and therefore need not worry about the future, but simply leave everything to God. This did not serve to make him more popular with fundamentalist Christians, especially as he was a Darwinist through and through – not a Herbert Spencer Social Darwinist of the kind that emphasizes individualism, ignoring Darwin's emphasis on racial evolution. Shockley was a true Darwinist who believed in protecting the future of the nation and, indeed, of the entire human species.

Eventually, however, partly because of Shockley's emphasis on the well-being of the entire gene pool, or of the "race" as it was traditionally called, the level of media reporting and vilification sank so low that Shockley determined to sue one newspaper by way of a warning to others. Despite the fact that he had extended every courtesy to its reporter, to whom he had granted a lengthy interview, answering all questions freely (and carefully recording the full interview so as to discourage misrepresentation), *The Atlanta Constitution* published a totally outrageous account of the interview, accusing him outright of holding Nazi-like theories. The reporter further described his work in dysgenics as a "demagogic hobby," and referred to his highly detailed research and findings as "rubbish."

Apart from the calculated insults and deliberate choice of pejorative language in the article, Shockley was particularly concerned that "readers of the article will remain ignorant" of the solid data and of the mathematical analyses on which he based his views. No reference was made to his expertise as a mathematician, to the advanced statistical methods used by him to calculate the evidence for dysgenic trends, to his paradigm for analyzing IQ scores, or even to the observations of Jensen, Herrnstein and others. All information about the "scientific tools ...

available for research on hereditary factors in racial differences" was deliberately, Shockley concluded, withheld from the public. In its place there was only an unintelligent barrage of defamatory editorial remarks. Because so much of his research was omitted in any form, Shockley, with justification, saw this report as a "hatchet job" – and one far more sinister than had appeared in other papers. He decided to sue the newspaper for \$1.25 million to halt further instances of misrepresentation of this kind.

An example of distortion, he noted in the lawsuit he initiated in July of that year, was the allegation that his views were directly traceable to those of Adolf Hitler. No consideration was given, of course, to his service as Director of Research for the Navy's Anti-submarine Warfare Operations Research Group during World War II. "The article contains the most unwarranted derogatory presentation of my position that I can remember," Shockley declared. Left out of the story altogether was any reference to the voluntary nature of his call for participation in a eugenic program available to members of all races. Described as an "amateur geneticist," he was portrayed as a prejudiced racist throughout the content, and no attempt was made to secure balanced coverage.

The result of the long drawn out *Atlanta Constitution* trial, which cost Shockley some \$80,000, vindicated his position when the federal jury decided in his favor. But although Shockley's case was found to be valid, he was awarded only \$1 compensation – and no costs! In point of fact, those who had libelled him had won a partial victory. Other scholars learned that if they dared to emulate this great American scholar and defend politically unpopular facts, they could expect similar treatment from a media which had nothing to fear from the law.

Shockley's Personal Character

Despite all the harassment, insults and persecution to which he was subjected, Shockley was bolstered by a remarkable combination of intelligence and courage. Considering the barrage of criticism levelled against him during the 1960s and 70s, he stood proudly above the contemptuous canards and fallacious allegations heaped upon him. Most observers familiar with his work contend that he pursued his scientific inquiries in a dignified way throughout the protracted ordeal, never allowing public calumny to discourage him from his perceived duty to draw the attention of the public to the debilitating effect of contemporary dysgenic trends. True to his pioneering New England whaling forebears (he was himself a keen and competent sailor), Shockley himself was genetically of the "right stuff," and proved capable of withstanding the harshest forms of defamation and insult. An intellectual giant of proven genius, he viewed

with objectivity the poorly-reasoned broadsides that were levelled against him in both the media and the academic world, rejected these as lacking in merit, and continued to research into "human quality problems."

A revealing example of his ability to hold his own against the subtle methods of a biased, well-prepared and experienced media reporter is the interview which he agreed to give – some might think surprisingly – to a reporter from *Playboy* magazine (August, 1980, **Document 19**). Shockley granted the interview because he knew it would enable him to reach a large audience, and because *Playboy* agreed to publish the interview in its entirety. The reader will note the carefully planned traps laid by the interviewer – doubtless with the assistance of a team which would have thoroughly researched Shockley's life and writings in advance and the honest and straightforward way in which, as a man dedicated to truthfulness and fact, he replied to the interviewer's provocative questions.

Shockley's Personality and Motives

Lest the reader's mind should be poisoned by the *Playboy* interviewer's efforts to represent Shockley as a callous scientist whose dedication to ideas reflected a deficiency in personal sympathy, I would refer the reader to a paper, which has no scientific bearing whatsoever, but which reveals the very human character of the William Shockley that I knew. This is a paper published in the *Manchester Union Leader* on 23 April 1974. It was entitled "Notes on the Life and Death of Tabby II," and provides the reader with a window into the heart of the great crusader. Nobody who reads it can possibly regard Shockley, the man, as a cold-hearted scientist, detached from normal human warmth and considerations. Indeed, it cannot be stressed too often that it was his concern for humanity that was the driving force behind his unpopular campaign to combat dysgenic trends. Shockley's integrity also came over clearly to his students. There is a clear indication of their recognition of him as a caring human being and a true scientist in a letter published by students who volunteered to help his campaign, and who had every opportunity to know him well. It appears as **Document 20**.

What prompted Shockley to expose himself to the bitter wrath of those whose commitment to the present prevented them from ever giving consideration for the fate of the endless generations of mankind yet to be born? As he explained in his "death postulate," quoted earlier, his prime driving force was his sense of duty to humanity which required him to use his capacities "in keeping with the objective, like that of Nobel's will, of conferring the greatest benefit on humanity." To see it from a

more personal viewpoint, his wife, Emmy Shockley, once firmly asked him, at a time when his assailants were doing their utmost to make his life unbearable, "Why are you doing this?" His reply was: "For me. I wouldn't feel good about myself if I didn't try to do something about the problems that I see. I may not even make a dent, *but I must try.*"

Indeed, there is a paper which he entitled "Truth, Concern, Death," written by Shockley to explain why he felt obliged to give so much of his life to a campaign that brought him so much vexation and denigration, and in which he received so little public support, even from those notable scientists who wrote privately to express their support – letters which are still in the files which he copied for me but which, in the case of those still living, requested be kept private. Rather than include this as a document in its correct time order in the ensuing selection, I believe it would be appropriate to quote from it here, so that the reader can read Shockley's rationale for his crusade in his own words, before tackling the main body of selected papers. The occasion was a bitter but poorly reasoned attack on Shockley's message which had appeared in a liberal church newspaper (*Saturday Thoughts*, 15, October, 1971) likening him to Adolf Hitler. He responded as follows:

TRUTH, CONCERN, DEATH: These are the labels for my three slowly-formulated, moral postulates. They leave no choice but to continue to demand diagnosis of genetic factors in our nation's growing human quality problems. I believe that these principles are most intimately interwoven with the best to be found in humanity. I believe that they are so elemental that they apply with equal force for a devout Christian and for an atheist.

A coincidence at my *alma mater*, the California Institute of Technology, brought the *truth postulate* into focus for me and led to my analysis of it. In late October of 1966, I was one of the first group to receive the Alumni Distinguished Service Award. One week earlier at a meeting of the National Academy of Sciences, I had presented my first appeal for research on the possibility of dysgenics, the threat that the voluntary sterilization bonus plan is intended to answer. Another award recipient, also an Academy member, wanted me not to mention race in future research proposals. I said that making research subservient to popular opinion was revolting to me. Later, in the light of our argument, I contemplated the motto on the award medal: "The truth shall make you free."

My contemplation led as an article of faith to what I call the truth postulate: "The truth shall make you free" signifies that man has the obligation to use his brain for the welfare of humanity. He cannot in good conscience avoid the unnerving questions inherent in my voluntary

sterilization bonus plan. If one believes that man's brain was part of his original creation in God's image, then a divine intelligence must have put it there to serve God's will by thinking. On the other hand, if man's brain was developed by the superior evolutionary fitness of those apes with the more inventive brains who devised weapons to eliminate duller apes, then the urge to use the brain is instinctive. But these same cruel elimination mechanisms of evolution can also account for the humanness that civilized people express through their concern for the feelings of the battered child and of the abandoned pet animal: those tribes who took best care of their wounded and their farm and combat animals were also more fit to survive than their less humane competitors. The truth postulate's demand to use the brain for the welfare of all creatures thus seems to me to lie deep at the core of humanism.

Either God's creation of man in his own image or the greater evolutionary fitness of the more humane tribes can be taken as the origin of the *concern postulate*: the basis of a humane civilization is a human being's concern for the emotions experienced by his fellow creatures. Both Christians and atheists are sensitive to this concern – not everyone in either case, but in both cases overwhelming majorities in civilized societies. A cat is different. It cannot effectively keep its hunting skills at high efficiency if conflicted by concern about the feelings of the injured mouse it uses for practice. One theorem that follows from the concern postulate is Christ's Golden Rule and another is Schweitzer's reverence for life. But the concern postulate qualifies Schweitzer's reverence for life significantly: for example, nerveless bacteria killed by an antibiotic and weeds destroyed in agriculture warrant little reverence for their forms of life, because neither has emotions worthy of concern. The concern postulate also puts human abortion in perspective: before a human embryo has developed a nervous system that can record memories of emotions, its death is of less concern than the suffering of a trapped mouse recording in its memory for minutes or hours the agony of a broken back and ruptured kidneys.

The *death postulate* interprets what it's all about – the final balance sheet of life –the appraisal of contributions to the concern and truth postulates. Here is my version of the death postulate: During the last rational five minutes of life, should I happen to have my intellectual powers intact, I hope to consider that by demanding objective inquiry and open discussion of human quality problems I have used my capacities in keeping with the objective, like that of Nobel's will, of conferring greatest benefit on humanity. This terminal self-esteem is an appropriate objective for an atheist whose last rational five minutes are the ultimate termination of thought and being but it can equally well be the highest religious objective of a believer in a day of judgment that determines the quality of an after-life. What better goal for an agnostic?

On the basis of the three postulates, I view with consternation – even

abhorrence – the attitude of those wishful thinkers – I call them inverted liberals – who maintain that all babies are born equal. To me, it seems immoral not to view with concern, and perhaps not to try to prevent, the birth of humans destined with high probability to feel that a malevolent conspiracy ruthlessly contrives their frustration. I am thinking here of those human beings forced by the improvidence of their mothers, and the obtuseness of society, to emerge into the world endowed with emotions, aspirations, and capacity to remember, but so disadvantaged by an unfair shake from a badly loaded parental genetic dice cup that they have mental capacities frustratingly inadequate for our complex modern society. The *Saturday Thoughts* of 15 October 1971, contributed to social obtuseness by extolling those of low IQ and denigrating the brilliance that gave us bifocals, telephones, a piece of the moon in our hands, and control of famine and pestilence.

There is another paper that explains Shockley's deeply humanitarian convictions at greater length, but this cannot be included in this introduction, otherwise we shall never get to his other papers. This was entitled "True (not Berserk) Humanitarianism: A Positive Absolute Value That Unites Religion and Science." Presented by Shockley before the Fourth International Conference on the Unity of the Sciences in November 1975 at New York City, it is included in Vol II of the proceedings of that conference, and was widely circulated by him during his lifetime. I have used this, as **Document 21**, to conclude the present collection of William Shockley's views on the subject of race and eugenics. I believe that it is self-explanatory, and needs no further comment from me.

In conclusion, I should like once again to recall my favorite story that illustrates perfectly William Shockley's attitude toward knowledge, the world around him, and humanity – so oft-reflected in his own references to Alfred Nobel's wish that scientists should dedicate themselves to improving the lot of mankind. This is an anecdote recounted to me by the eminent Berkeley psychologist, Arthur Jensen, whose work was of deep interest to Shockley. It is a story I included in my chapter on Shockley in *Race, Intelligence and Bias in Academe*, but I cannot refrain from citing it once more. As a scientist and devoted scientist, Shockley was rather irritated by such terms as "Left-Right" and "Liberal-Conservative." Thus, Professor Jensen recollects:

One night at a dinner party at which I was present with Shockley and several others, someone said to Shockley: "Bill, I just can't figure you out. On some issues, such as your advocacy of liberalized abortion laws, you seem to be on the Left and take an extreme liberal position, and on other issues, such as your interest in eugenics and belief in the impor-

tance of heredity in human quality, you seem to take a Rightist or very Conservative position."

Shockley looked a bit annoyed by this observation and replied rather impatiently: "My position on various issues may seem inconsistent to you, but it's because I simply don't operate on the lowly X-axis of Left-Right or Liberal-Conservative. I operate entirely on the upright Y-axis."

"And what is that?" his questioner asked.

Shockley replied: "The application of scientific ingenuity to the solution of human problems."

Roger Pearson

DOCUMENT 1

Population Control or Eugenics

Paper presented to the 1965 Nobel Conference on Genetics and the Future of Man Nobel Conference, held at Gustavus Adolphus College, St. Peter, Minnesota.

The subject *Genetics and the Future of Man* demands consideration by all responsible people. My personal active concern in this subject arose in considerable degree through specific observations. These personal experiences do not qualify me as an expert in the fields of genetics and sociology and my credentials are not of comparable standards with other speakers of this symposium. However, my views and thoughts are probably typical of many thoughtful people who are worried about these problems and for this reason may add perspective to the report of the Nobel Symposium.

The reality of the problem of over-population was thrust on my consciousness by a wartime experience in India. As a civilian scientist, I was assigned to work with radar bombing problems with the Army Air Corps B-29 Forces in India. The base at Karagpur was located about 100 miles west of Calcutta in the Bengal area in eastern India. I had a number of occasions to fly between Calcutta and Karagpur and each time I was struck by the monotony of the scenery. As far as the eye could reach from the low-flying transport airplane, I was surrounded by rice paddies which stretched out into a continuous plane, much like an ocean of grass. Occasionally, in this ocean, small islands in the form of clumps of trees arose. These trees represented villages of mud houses.

In these villages, the appearance of the thoroughfare was different from that in any American village. There was none of the customary rubbish or litter on the streets. A tin can, a bottle, or a newspaper was valuable to these people, and would be collected and put to use. Even the droppings of animals in the street were promptly picked up, flattened into cakes and stuck upon the walls of houses to dry, so that they could be used as fuel for fires.

There was no room for additional expansion as there is almost everywhere in our own America. There were no hillsides which could be terraced and put under cultivation and there were no forest regions which simply needed to be cleared. The only space left over was possibly the narrow mud dikes separating the irregularly-shaped rice paddies. A

better geometrical pattern of these could, at most, provide 1 or 2% more cultivatable area.

In Calcutta itself the density of the people was depressing. Many appeared to sleep in the streets or in the shelter of doorways of buildings.

After I returned to the United States, I read a booklet¹ discussing the world population problem and in particular the availability of calories from agriculture. It pointed out that approximately seven calories of grain or its equivalent must be raised to feed an animal in order to produce one calory of meat for a person to eat. In America, we eat approximately half our calories as grain and half as meat, so for each calory that we eat, approximately four calories of grain equivalent must be produced. In other words, by going on an all-vegetable diet, our present agriculture could produce food for approximately four times as many people. In India and China, practically none of the food consumed is processed by animals. There is no slack in the agriculture. Consequently, if there is a failure of crops in one year, the people cannot continue by living on animal flesh until a good crop returns.

On the basis of these ideas, I at first felt that I would not be in favor of sending food to relieve a famine in India. To do so would simply make the situation worse between that famine and the next. Until some way of controlling the population growth had been developed, it seemed to me that relieving a famine was worse than hopeless; it would even make progress more difficult in the future.

A few years after I had been through the reasoning I have just described there was a famine in India; we had surplus wheat in this country, and our Government sent some to India. Did I write to my Congressman to object to this? No. At this time, I did not feel that my reasoning ability as to future developments was as sound as my feeling that we should not have our surplus food in storage while it could be used to relieve starvation.

I mention my own personal conclusion in regard to withholding help from an Indian famine in order to illustrate how difficult have been my own attempts to reach sound conclusions in respect to these difficult problems involving people.

I have similar difficulties in coming to clear views regarding qualitative aspects of humanity just as I have had with the quantitative

¹ Guy Irving Burd and Elmer Pendell, *Population Roads to Peace and War*, republished by Penguin Books: *Human Breeding and Survival*.

aspects I have discussed. But I feel it is of importance to think about the problems and provoke discussions so that wiser decisions can be made when it inevitably becomes necessary to make them.

For some years, I had wondered and worried in a general way about possible deterioration of the human race due to selective use of contraceptive devices by the more intelligent people who would then have smaller families. (Although this is an old worry, it is rarely discussed).² Then a specific incident brought my worries to sharper focus. A delicatessen proprietor in San Francisco was blinded a few years ago by an acid-thrower. The acid-thrower had been hired by an emotionally unstable individual who had a completely unjustified feeling of resentment toward the proprietor. To me, the impressive part of the story was the background of the teenager who threw the acid and blinded the proprietor. He was one of approximately a dozen illegitimate children of an irresponsible and destitute woman. This brought home to me the possibility that if we had a situation in which an irresponsible individual could produce offspring at a rate which might be four times greater than those of more responsible members of society, this was a form of evolution in reverse. It demonstrates a lack of elimination of the least fit, the opposite side of the coin of survival of the fittest, which has been the foundation of the evolution of the human race and other animals on earth.

When I started to prepare for the Symposium lecture, I attempted to gather relevant facts about human genetics. One of the most impressive stories involved a Dr X who came under consideration as a potential head for a new institute of human genetics. The man who told me the story had been in contact with Dr X briefly, between ten and twenty years ago. He had identified Dr X as a possible candidate because of Dr X's great interest in a disease closely related to Huntington's chorea, which Dr Reed has discussed in this Symposium. The disease that Dr X had studied had been imported to America by a family of immigrants three or four generations previously. Dr X had traced the genealogy of all of these immigrants and their descendants and had found that the disease was carried by a dominant gene which was not sex-linked. He had studied the entire genealogy of the family and had found that 50% of the children of some one afflicted with the disease would acquire the disease. This fact establishes the assumed genetic character. As for Huntington's

² A draft copy of this chapter was furnished at the request of an outstanding newspaper science editor. He wrote, 'So far I am having problems as to where it will be printed if at all. The opinion section of the Sunday paper thinks the subject is too hot to handle'.

chorea, the individual might reach the age of reproduction before the disease would strike and then a gradual deterioration lasting for one or two decades would set in, involving initially loss of muscular control and proceeding to helplessness and mental deterioration. The phrase 'a gruesome death' used by Dr Reed describes it well.

The man who told me the story described his recollections of how he had attended a meeting at which Dr X spoke. Dr X gave a thorough description of his research on the disease and how he had identified it. This was followed by some technical discussion and after this some one raised a new question. He said, 'Dr X, you have clearly identified this disease, and have shown its characteristics, but of what good is your work to humanity?'

Dr X was remembered to have replied that he was glad the question had been asked. He had talked to all of the people who might be carrying this disease. They had learned of its true nature. All who had a 50% chance of developing it had felt they did not wish to bring children into the world who would in turn have a 50% chance of having the dominant gene. All had been voluntarily sterilized. The spread of the disease had been stopped.

As Dr X descended from the platform, he had difficulty in walking. He held his legs in an awkward way. The man who told me this story turned to his friend who knew the candidate and said: 'Does Dr X's difficulty mean what I think it does? Is he a sufferer from the disease he has studied?' The friend replied, 'Yes he does, and he is fortunate to have been able to complete his important work on this disease before it was too late for him.'

I found real inspiration in this story of Dr X. I thought it would be one thing that my audience would always remember. It was a proof that at least in one case (i.e. an 'existence proof' in scientific vernacular) that the human spirit would overcome selfish, irrational personal motives so that 100% of a group of potentially genetically defective people would act in the interests of a better future for mankind.

Unhappily this existence proof was not founded in fact. Dr X actually *did not* stamp out the disease. He did not persuade other members of his family to become sterilized. There are now 70 descendants of his family, 35 of whom are statistically doomed to die a gruesome death.

These disconcerting refutations of the original story I learned from Dr Reed after arriving at Gustavus Adolphus for the Symposium. Dr Reed knew personally the details of this case of Marie's cerebellar ataxia. Dr X himself had been sterilized (this was probably the basis of my informant's recollection) and had earned an MD degree so that he could

do research on his family's disease, but he did not succeed in imparting his principles to his relatives.

The experience of Dr. X is consistent with that of Dr Reed as a genetic counselor. If the chance that a genetically defective offspring is 25% or less, then the parents will take the imprudent chance. (This Dr Ramsey has referred to as 'genetic imprudence' and evaluated as morally wrong.)

The story of Dr X is an existence proof of the need to apply human intelligence and human reason based on an objective, fact-finding approach to solve problems vital to the future of man. I believe that there are three chief threats that dim our hope of a bright future. All of these are the result of the shortcoming of man's ability to use his mind effectively to solve problems of his own creation. I consider that the three great threats man has created are:

- (1) The threat of a nuclear war.
- (2) The threat of famine, low standards of living and high death rates – all stemming from the population explosion.
- (3) The threat of genetic deterioration of the human race through lack of elimination of the least fit as the basis of continuing evolution. All three of these threats have arisen from man's creation of the exponential explosions of technology: the first from that in atomic physics; the second from that in medical technology and death control; the third from the second and the explosion of the growth of technology of production which have led to our abundant society.

All these problems have arisen from the power of the human mind. Can this same power solve them? Can men choose goals that can be reached without surviving the pains of any of these threats becoming a reality?

It is my conjecture that all of the speakers at this symposium do have a common set of values for goals desirable for the future of man. All would like to feel that the destiny which man must forge for himself on this earth is one in which the human race will progress toward a richer, intellectual and artistic life for men better endowed by their genetic constitution to participate in it. To choose wisely those courses and to establish those sets of values which will contribute towards progressing along such a path calls for education and understanding spread widely

throughout the human race. Two elementary but enormously important thinking tools directly applicable to these problems are the exponential explosion in man's affairs, and the nature of statistical probability for man's genetic structure. One of the chief objectives I have in preparing this contribution is to dramatize these two thinking tools with the hope this will increase their use in the thinking of the human race.

The Exponential Explosion

The concept of an exponential function is familiar in mathematics especially in relationship to compound interest and geometric series; however, in spite of its great importance, it is understood by relatively few people. An old fable, illustrated with Figure I is the best means I have found to make it vivid.

A philosopher in an eastern country is supposed to have taught the ruler how to play chess. Out of gratitude, the ruler offered to give the philosopher some great reward and asked him to name it. The philosopher said, 'Please, my family is poor, we would like to have some rice. Give me one grain of rice for the first square of the chessboard, two grains of rice for the second square, four grains for the third, eight for the fourth, and so on for all sixty-four squares, giving me for each following square twice as much rice as for the preceding square.' The ruler felt that the philosopher had not asked for enough but the philosopher insisted, saying, 'If what I have asked for is not enough, may I then please ask for a greater reward after you have given me the rice?' The philosopher was asking for the sum of sixty-four terms of a geometric series with the terms 1, 2, 4, 8, 16, 32, ... in which each successive term, corresponding to the grains of rice on a square of the chessboard, is twice as large as the preceding term and has twice as much rice.

Figure 1 illustrates this situation; showing each grain of rice up to thirty-two grains on the sixth square of the chessboard. The figure has been drawn as if 1000 grains of rice would completely cover one square, which will occur on the eleventh square after the original grain has been doubled ten times. After five more steps to the sixteenth square the rice will be deep enough to make a little cube with its faces the size of one square of the chessboard. In three steps more, the little cube will grow eight-fold and contain enough rice to make eight cubes which laid end-to-end will cover one row along the chessboard. The next three steps can produce eight rows so as to cover the whole board; and the next three steps will put such layers eight deep; thus in progressing nine steps from square sixteen to square twenty-five, the amount of rice increases

from a one square cube to a cube the size of the chessboard. In about ten more steps a cube can be made ten times as long as each edge as the chessboard, and this corresponds to the size of a room. In approximately seven more steps, about a hundred and twenty rooms can be made which is a fair sized building. And in another sixteen steps enough buildings can be put together to make a cube of rice about one city block long on an edge. And in the last five steps of the chessboard, this cube will become a cube one mile on an edge. This cube would contain enough rice to feed the entire present world population for several years. (The philosopher had asked for plenty!)

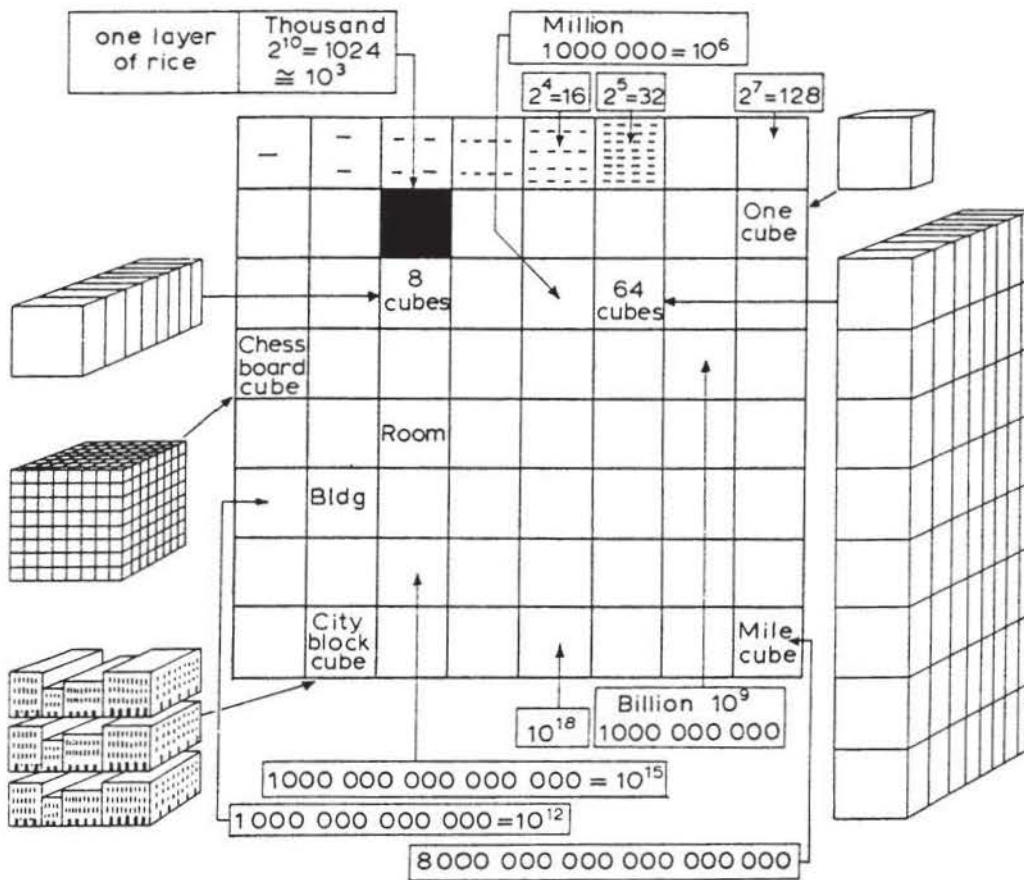


FIGURE 1: The exponential function as represented by the geometric series in the chess board fable.

Anything which increases by a constant factor or multiple in each step is an *exponential function* of the number of steps. Compound interest

in a bank is such an exponential function of the number of years in the savings account. The present rate of growth of world population is such an exponential function.

(exponents)

$$2 \text{ steps: } 2^2 = 2 \times 2 = 4$$

$$4 \text{ steps: } 2^4 = 2 \times 2 \times 2 \times 2 = 2^2 \times 2^2 = 4 \times 4 = 16$$

$$8 \text{ steps: } 2^8 = 2^4 \times 2^4 = 16 \times 16 = 256$$

$$10 \text{ steps: } 2^{10} = 2^2 + 2^8 = 4 \times 256 = 1000 + 2.4\%$$

$$10 \text{ steps of } 2 = 3 \text{ steps of } 10 \text{ (plus } 2.4\%)$$

FIGURE 2. The meaning of the word exponent and exponential as illustrated by powers of two.

Numbers which you write above and to the right of another number to mean that the lower number should be raised to that power are called 'exponents'. This is illustrated in Figure 2, as well as in Figure 1. A helpful and simplifying feature of making the calculations of Figure 1 is the fact that ten steps of two is almost exactly the same as three steps of ten; on Figure 1, I have neglected the 2.4% difference. This is brought out on the chessboard so that you can see that for every ten steps along the board the number of grains of rice is raised 1000 fold over its value ten squares earlier.

At the present time, world population is increasing at about 2% per year. If this rate remained constant for 35 years, the population would increase by 70% if it were not for an effect like compound interest which gives interest on previous accumulations of interest. As a result the growth of the 70% which is added is just enough to count for another 30% and the population will actually double in 35 years. It will increase by a factor of 10 in 116 years.

People who are acquainted with the nature of exponential functions are quick to perceive that a population growth rate of 2% per year is a ridiculous impossibility over a long period of time. This conclusion is so important that I shall treat it as an example of the type of rational reasoning which the human race must accomplish in one way or another if it is to avoid long term catastrophe. We shall start with two premises:

PREMISE (1) – *The present population of the world is 3 billion – 3,000,000,000.*

PREMISE (2) – *The rate of population increase is 2% per year and this rate has held in the past and will hold in the future.*

From these two premises, we can derive some theorems which are quite untenable. This kind of reasoning is known as the method of '*reductio ad absurdum*'. When premises are shown to lead to an absurd conclusion, then one can conclude that something must be wrong with the premises. (In this case, the thing that is wrong, of course, is Premise (2). It is quite impossible that the world population could increase at 2% per year over an indefinite span of time.)

Starting with Premise (2) and the reasoning of Figures 1 and 2, we can at once derive two theorems:

THEOREM (1) – *In 35 years, the population doubles.*

THEOREM (2) – *In 116 years, the population is multiplied by 10.*

From Theorems (1) and (2) and Premise (1), it is straightforward to prove Theorems (3) to (6):

THEOREM (3) – *895 AD or 1070 years ago, there were only two humans.*

(To go back from 3,000,000,000 to two requires a little more than nine steps of ten-fold each. Each ten-fold step requires 116 years.)

THEOREM (4) – *2665 AD, or 700 hence there will be one square foot per person on every continent.*

THEOREM (5) – *2895 AD, or 900 years hence there will be one square foot per person on Earth, Jupiter, Saturn, Venus, and Mars.*

THEOREM (6) – *3665 AD, or 1600 years hence, the mass of the people will equal the mass of the earth.*

It is evident from Theorems (3) to (6) that something is wrong with the premises. Theorem (3) puts the Garden of Eden at 895 AD. The thing which is wrong is that the 2% population growth has not actually continued over a long period of time, nor can it continue into the distant

future. Table 1 gives some idea of what has actually gone on. It shows rough estimates of average rates of growth that have extended over certain periods.

TABLE 1
Population explosion;³ long term average growth of human population on earth

Percent per year	Doubling years	Time period
0.001	70 000	1 000 000 BC to 1965 AD
0.02	3 500	50 000 BC to 1965 AD
0.3	330	1650–1750 AD
0.9	76	1900–1950 AD
2.0	35	1965 AD

TABLE 2
Current growth rates for the seven largest nations (28 Dec. 1964)⁴

	Population in millions	Growth % per year	Double time (yrs)
Japan	97	0.9	76
USA	192	1.6	44
USSR	229	1.7	41
China	690	2.1	32
Pakistan	101	2.1	32
India	468	2.3	30
Brazil	80	3.0	23

³ See Marion Jones, *Does Overpopulation Mean Poverty*. Center for International Growth, Washington DC, 1962, page 13 for estimates from 1650. Prehistoric estimates are based upon approximate population estimates or roughly a hundred thousand at these dates.

⁴ Based on *World Population Data Sheet*, Population Reference Bureau, Washington, DC, December, 1964.

TABLE 3

Underdeveloped nations with population explosion; growth rate greater than 3% per year – population above four million⁵

3.2 Guatemala	3.0 Morocco	3.0 Thailand
3.1 Mexico	3.3 S. Rhodesia	3.4 Vietnam (N)
3.0 Brazil	3.3 Upper Volta	3.7 Vietnam (S)
3.2 Ecuador	3.2 Syria	3.6 Taiwan
3.0 Peru	3.3 Malaysia	3.3 Korea
3.4 Venezuela	3.2 Philippines	

TABLE 4

Smaller population growth rates 0.4% to 0.8% per year
85-170 years to double⁶

0.5 Belgium	0.8 United Kingdom	0.6 Italy
0.8 Denmark	0.6 Austria	0.7 Portugal
0.8 Finland	0.7 Czechoslovakia	0.8 Spain
0.8 Norway	0.4 Hungary	
0.5 Sweden	0.8 Greece	

At the present time it is 2% per year for the world, or 35 years to double. However, the average rate of increase from 1900 to 1950 AD, was less than half as much, and if we go back to earlier centuries and to prehistoric times it is seen that the rate of increase was extremely small indeed. This very rapid rate of the increase of the population is the cause of what is now so often referred to as the population explosion. Table 2 shows the rates of growth of the larger countries having populations greater than 80 million. We see that the rate of growth varies by a factor of more than three, being less than 1% per year in Japan, and up to 3% per year in Brazil.

⁵ *World Population Data Sheet.*

⁶ *Ibid.*

Countries having serious difficulties in raising their standards of living due to high rates of population growth are shown in Table 3. Their serious difficulties arise in large measure from the fact that when populations grow as rapidly as 2% per year or more, very large percentages of the population are children; the additional requirements for housing, clothing, schools and so on, cannot be met while the low rates of economic growth prevail.

TABLE 5
Year of birth and life expectancy (average)⁷

1850	38.3 years
1890	42.5 years
1920	53.6 years
1940	60.8 years
1950	65.6 years
1960	67.3 years

Some of the more civilized and advanced countries have succeeded in maintaining their rates at less than 1% per year as has Japan. These are shown in Table 4. Control of the population growth in a number of these has been accomplished both by the advance of utilization of contraceptive technology and also by legalized abortion. Statistics are available for Denmark, Sweden, Czechoslovakia, Hungary and Japan,⁸ and these show that the number of legal abortions is quite comparable to the number of live births; being in fact about two-thirds in Japan and even somewhat larger at some times in Hungary. The laws are so phrased that an unmarried woman not wishing to have an illegitimate child can be treated in a regular hospital rather than being involved in illegal and criminal actions, as is the case in America.

Abortion under favorable conditions is quite safe. The actual risk of death from a legal abortion in these countries is substantially lower than that resulting from the complications of pregnancy under normal

⁷ *Biological Sciences – Molecules to Man*, Biological Study Committee, Houghton Mifflin, 1963.

⁸ *Human Fertility and Population Problems*, Schenkman Publishing Co., Cambridge, Massachusetts, 1963. See Christopher Tietze, *Some Facts about Legal Abortion*.

circumstances in this country. Figures available for 1919 show a mortality rate of 22 per 100,000 for births in America, by far the lowest rate among major countries. The mortality rate for abortions in Czechoslovakia, Yugoslavia and Hungary are about four times less than this, due partly to the restriction of legal abortion to the first three months of pregnancy.

The cause of the world population explosion has been the technology explosion, particularly the explosion of death control due to the advances in medical technology. Evidence for this explosion is clearly given in the variation of life expectancy from 1850 to 1960 in this country (Table 5; the figures apply to white males born in the United States). These increases in life expectancy are evidence of the death control that has resulted from developments following Pasteur's epoch making work which eliminated confusion about the spontaneous generation of life and laid a foundation for modern sanitation. The effect has been to cause a great discrepancy between birth rates and death rates in underdeveloped nations, where the death control has come relatively suddenly. For them the birth rate has remained high and with the death rate dropping the population growth has soared, as has been shown in Table 3.

The technological developments in death control have been in keeping with other technological developments which characterize the exponential explosion of our technology. These appeal in terms of standards of living also.

The best measure of true economic growth⁹ that I have found is the measure of improved standards of living given by the increase in 'real wages'. Real wages may be described in a simplified form as follows: in 1890 an industrial laborer earned about 15 cents an hour, and eggs cost 20 cents a dozen, so that a laborer could buy 0.7 dozen eggs for an hour of wages. In 1917 the corresponding values were \$2.00 an hour and 57 cents a dozen; consequently, in 1917 the laborer could buy 3.6 dozen eggs per hour, so that 'real egg-wages' went up by a factor of 5. Figure 3 represents real wages based on a far more representative cross-section of items than simply dozens of eggs. The unit used is real wages in 1914 dollars, and a curve has been constructed on the basis of data obtained by Stanley Lebergott.

⁹ The material on real wages and economic growth is based on my article *Scientific Thinking and Problems of Growth in The Impact of Science*, University of California Printing Department, 1964. See also Stanley Lebergott, *Manpower is Economic Growth; the American Record Since 1800*, McGraw-Hill, 1964.

I shall discuss the part of the curve from 1860 to the present in more detail below, but first I should comment that the earlier part of the curve is based on a qualitative judgment together with the fact that it is hard to see how a laborer could have supported his family on an income of less than 150 1914 dollars per year. If this value corresponded to the year 1100 as shown on the chart, then the rate of increase of real wages in the middle ages was only 0.13% per year, so that approximately 100 years are required for real wages to double.

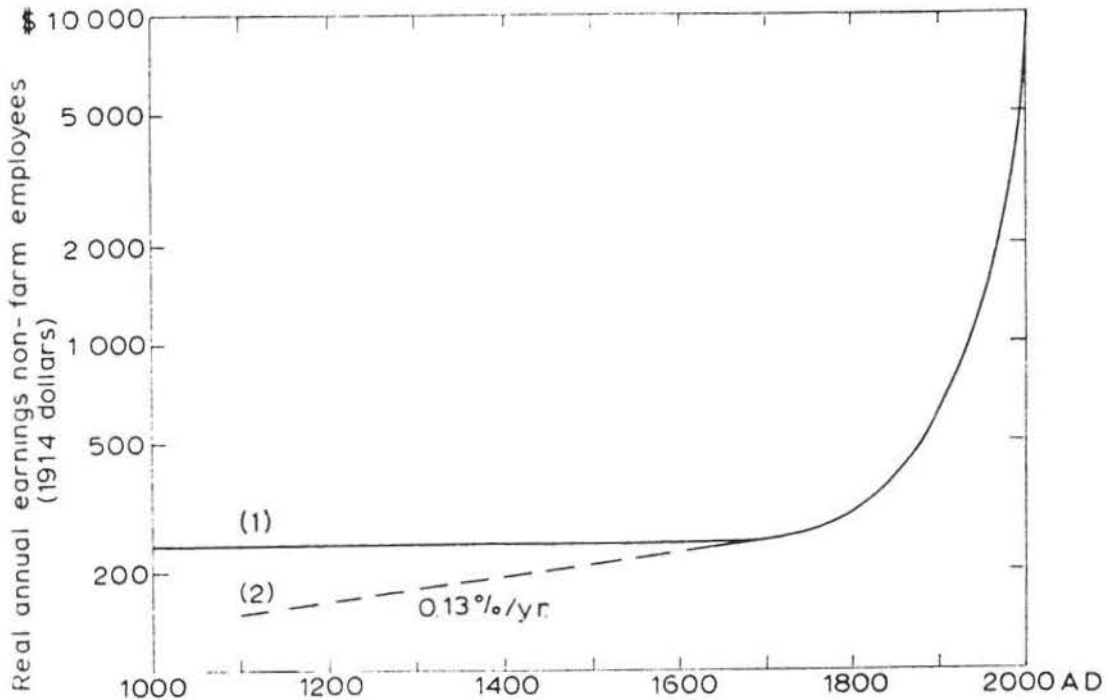


FIGURE 3: Real annual wages estimated back to approximately 1000 AD.

Figure 4 shows the actual data on which the curve of Figure 3 was based. (This curve has been fitted by a simple analytic formula based on the concept of the 'engineer multiplier'.) The analytic curve of Figure 4 is actually simply the 'exponential' function discussed in Figure 1; however, the real wages values on figure 4 are actually themselves exponential functions of the rise of the curve on the figure. What this means is that the *rate of increase* of real wages *itself increases exponentially* so that the real wages themselves are the *exponential of an exponential*. To sum up, this is indeed a very rapidly increasing rate of growth. What has produced such *striking increases in the rate of increase* during the last century? Why, from 1100 to 1800, did real wages increase so little?

There can be little doubt in the minds of technologically competent analysts that the major cause of the growth of real wages is the *exploitation of science by engineers*. Further evidence that this is indeed the case is found by comparing the doubling time for the rate of growth of real wages, shown in Figure 4, and the rate of growth of engineers in this country. It is found that the time of 49 years required for the fraction of the population with engineering training to double matches with a high degree of accuracy the years required to double the rate of increase of real wages in Figure 4.

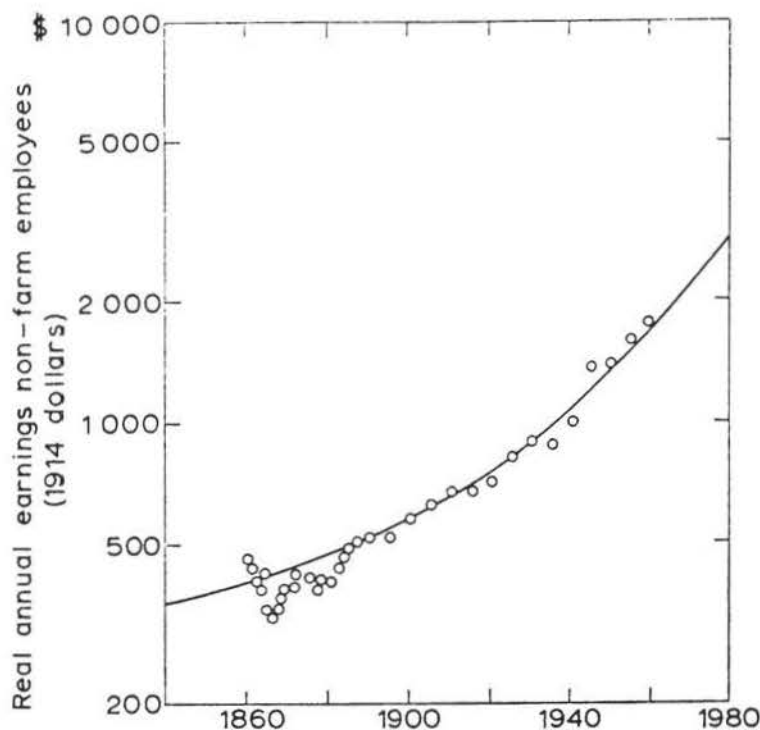


FIGURE 4: Real annual wages of 1940 dollars from Stanley Lebergott's table.

It can of course be argued that greatly increased production of trained engineers is only an effect rather than the chief cause of economic growth. In fact, some economists argue that the chief cause of economic growth is simply the accumulation of capital. This argument appears to me to be a ridiculously untenable view if one considers the flatness from about 1100 to 100 shown in Figure 3. It takes a fantastic naivety to assert that during these centuries the economic balance happened to be so perfect that the availability of capital investment remained so precisely balanced with depreciation over this long span of

time that real wages changed only 0.13% per year, whereas now they are increasing at about 2% per year. Instead, I believe that the cause of the flatness was that there were simply no scientific discoveries and technological applications of sufficient importance to enable man's labors to be used more effectively to increase the items needed for his welfare; without technological inventions, like the steam engine, more capital could add little.

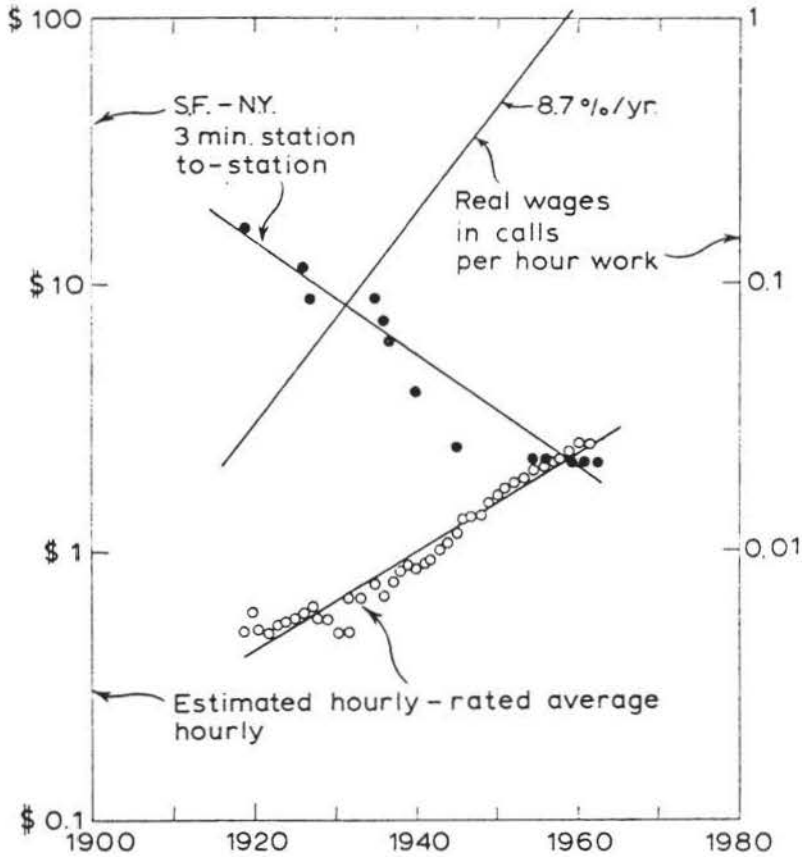


FIGURE 5: The growth of real wages as expressed in terms of long distance telephone calls.

As a concrete example of the way in which real wages have increased because of technological progress, whereas they could not have increased significantly without it, let us consider real wages in terms of telephone calls. This is shown in Figure 5. In this case two numbers are compared, the hourly earnings of 'hourly-rated' Western Electric workers who manufacture telephone equipment and the cost of a three-minute-transcontinental-station-to-station telephone call. It is seen that in about 1920 a worker could buy only 0.02 telephone calls per hour of work; in other words, a week's wages would be sufficient to buy only one such transcontinental telephone call. On the other hand, by 1960 he could buy more

than one such telephone call per hour of work. There can be no doubt that this fifty-fold increase in real wages in terms of phone calls resulted from improved technology with reduced costs of telephone service. Without this improved technology capital investment could not have produced anything like the same effects.

Similar exponential explosions are to be found in the rapid increases in the scientific literature. In Professor Tatum's lecture he made reference to the 'compound interest' effect in pointing out that the rate of progress in genetics was increasing rapidly as more scientific developments were founded on all past scientific developments.

Prospects for population control and competitive exponentials

The exponential explosions depicted in Figures 1 to 5 emphasize how rapidly have grown the rates of increase in percent per year of people, knowledge and things. So far as people are concerned, this is apparent in table 1 which shows that the doubling time for human population has decreased at least one hundred fold since about 50,000 BC, when man had essentially his present genetic constitution. An even more rapid change has occurred in respect to the advance of technology and the increase in real wages shown in Figures 3 and 4.

At the present time man's welfare is subject to the results of competition between several exponential explosions. If the population explosion proceeds faster than the economic and technological explosions, then certainly overcrowding, lower standards of living, and eventually increase in the death rate will occur. On the other hand, if the advance is rapid enough in technology and education, then the ability of the mind of man to deal with his problems may lead to keeping the population problems under control.

In any event, the exponential explosion of world population must inevitably be checked. Promise that man will find rational means to control the population explosion is given by recent¹⁰ technological advances in practical methods for birth control. The most promising of these have come from improvements in modern plastics technology, as exemplified by the 'Lippes Loop' and other intra-uterine devices. Real hope that such a technological breakthrough will amount to an exponential growth of population control has been given by developments in Korea and Taiwan during a six-months period in 1964. At the beginning of this period practically no application of these devices was made.

Applications have grown, however, in six months from nearly nothing to rates of about 80,000 per year in each country as of September 1964.¹⁰

Real encouragement that these rates will continue to grow so that the explosive growth of more than 3% per year in each of these countries will be checked is furnished by preference surveys. Interrogation of parents and potential parents in these countries, financed by the Population Council, showed that these parents wished to limit their families for very real and practical reasons. They will in this way be able to raise their personal standard of living by reducing expenses for non-supporting members of the family and at the same time be able to put their children into school and thus educate them better. These countries have seen the possibility of higher standards of living in economically developed countries through contacts with the West, and are eager to participate in their advantages.

The preference as shown in the survey by the Population Council is so strong and widespread, and the growth of the government-approved program is so rapid, that it is expected that within five years the explosive rate of population growth should be cut in half or less. It is evident that such control of population growth can enable the US Foreign Aid tax dollar to make real contributions to the economic growth of the country.

One of the reasons that the intra-uterine device represents a significant technical breakthrough is that it is extremely low cost and can be relatively easily applied. The skill required to apply it is typical of that which might be acquired by a high school graduate. Once installed, the Lippes Loop requires no attention and may remain in place for years.

About 15% of the women to whom it is applied cannot retain it. Whether this is a physiologic difference in women or whether it is simply that devices which fit properly have not yet been developed is not known.

Some religious questions may arise in connection with this device. It may possibly work in either of two ways. In one case it may prevent fertilization of the ovum by hastening the passage of the ovum through the uterus. On the other hand it may hasten the passage of a fertilized ovum so that it does not become attached. In this latter case its role may be regarded as a form of abortion at a very early stage. Under these conditions it is possible there will be religious objections to its use.

¹⁰ Personal Communication from Dr. Sheldon Segal of Population Council, New York City.

In addition to plastic intra-uterine devices a battery of scientifically developed methods of birth control are needed, because cultural and religious differences prevent any one method from being everywhere accepted. On the other hand, the advances of medical technology which have led to the population explosion are for all practical purposes universally accepted.

The possibility of significant contributions to the welfare of the human race from research sponsored in this country are great and have been significantly increasing since 1959. It is interesting to look at statements which were regarded as being highly controversial in 1959. At that time the report issued by General W.H. Draper's committee had the following recommendation regarding the 'population question' in Latin America. The relevant paragraphs of the report read as follows:

'That in order to meet more effectively the problems of economic development, the United States:

(1) Assist those countries with which it is cooperating in the Economic Aid Programs, on request, in the formulation of their plans designed to deal with the problem of rapid population growth;

(2) Increase its assistance to local programs relating to maternal and child welfare in recognition of the immediate problem created by rapid population growth; and

(3) Strongly support studies and appropriate research as a part of its own mutual security program within the United States and elsewhere leading to the availability of relevant information in a form most useful to individual countries in the formulation of practical programs to meet the serious challenge posed by the rapidly expanding populations.'

It is hard to believe now that this relatively conservatively worded section produced in 1959 general consternation on a national scale, and provoked a government position that nothing could be 'more emphatically a subject that is not a proper political or governmental activity of function or responsibility'.

Since that time attention to the population explosion has been given by responsible individuals and organizations, and it has been discussed openly in the press. A significant step was the preparation by the National Academy of Sciences in April 1963 of a report entitled *The Growth of World Populations*.

The effects of these many efforts which have been given publicity by the press are seen in President Kennedy's forthright statement on

population problems in the spring of 1963. More recently additional support was given in President Johnson's January 4, 1961, State of the Union Address:¹¹

'I will seek new ways to use our knowledge to help deal with the explosion of world population and the growing scarcity of world resources.'

Many millions of dollars have been available at the National Institute of Health and the Agency for International Development to support basic and applied research on population control. Further evidence of public attitudes on these subjects is given by the Gallup Poll, which shows that since 1945 the percentage of the public that actually favor making birth control information available anywhere in the United States has risen from 61% to 81%. At the same time those who are unfavorable have fallen from 23% to 11%.

Thoughtful people can draw great reassurance from the fact that these significant changes in public understanding and public attitude and response of the government have moved in such a direction that an existence proof now exists in Korea and Taiwan that this serious problem of the population explosion may really be solved.

As another example of *reductio ad absurdum* reasoning which is intended to interlock quantitative and qualitative thinking about genetic aspects of the human race, I would like to consider an alternative to controlling the population explosion by the means of birth control. In particular, I would like to show the difficulties which may be involved philosophically in trying to set up a condition in which we try to maximize happiness without at the same time limiting the number of people. Specifically, let us pursue one possible line of thought provoked by taking as a premise that 'our goal is the most happiness for the most.' Possibilities of both measuring and producing happiness by electrical instrumentation attached to the brain have been given by the experiments of James Olds with rats.¹² As the result of a series of experiments and developments, Olds found that if an electrode was appropriately implanted in the brain of a rat, and the rat was given a lever so that he could shock himself, the rat became so enamored of doing this so as to

¹¹ On June 25, 1961 President Johnson said at the anniversary of the United Nations: 'Let us face the fact that less than \$5 invested in birth control is worth \$ 100 invested in economic growth.' In the 1966 State of the Union: 'To help countries trying to control population growth by increasing our research, and we will earmark funds to help their efforts.'

¹² See D. E. Wooldridge, *The Machinery of the Brain*, McGraw-Hill, 1963.

receive the pleasurable effect of a shock that he would continue for 24 to 48 hours continuously, stopping only when physically exhausted. A rat which had previously learned the lever-pressing routine would ignore food despite hunger and indulge in a continued orgy of switch closing.

Let us now see how we may extrapolate from these observations to an imaginary situation producing the most happiness for the most. We shall imagine that there are electrical means of measuring the responses in the happiness centers of the brain. We imagine that it has become possible to grow isolated brains *in vitro*, to attach electrical leads to these brains, which are being fed by a computer. The computer, in turn, can sense the response of the brain and electronically program stimuli to it so that the brain feels that it is leading an optimum life. This optimum life may, of course, be programmed to have periods of hardships as well as periods of happiness.

The brains *in vitro* system does not represent the logical end of this line of thought since if electrical circuitry can be developed, as seems almost certain now, so as to simulate the functioning of brains, then it should become possible to make miniaturized circuits which will be able to reproduce mental processes, including those associated with sensations of happiness, at even higher rates than can human brains. It would then be possible to replace all of the human brains growing *in vitro* by small computerized duplicates so as to achieve even greater experiences of happiness for larger numbers.

I consider this reasoning to be another form of *reductio ad absurdum* argument: The premise that 'our goal is the most happiness for the most' lead to absurdities so far my own set of values is concerned. I therefore conclude that the premise is false.

I believe that most thinking people lean towards a set of values in which in the foreseeable future man will grow in competence by virtue of evolution. Man as a species is a genetically specified creature. I would like to think that evolution would develop this genetic specification to produce future men and women superior to us in all regards.

Is the competition between the exponential explosions now tending in this direction or the opposite?

Probability control or eugenics

Many thoughtful people are now concerned about possible genetic deterioration due to selective multiplication of less gifted members of society through extremely large families or high rates of illegitimacy. Where survival of the fittest would have favored selection of only the

best of these in past centuries, our abundant American society assures to all the privilege of reproducing their kind.

Evidence that human intelligence is largely genetically determined, although relatively scarce, is quite impressive. Especially convincing is that based on studies of the IQ of identical twins reared in different environments.¹³ These studies show that such twins have IQ's that are far closer together than even those of brothers and sisters raised together in the same family.

Further evidence that intelligence may be determined by breeding has been shown by an experiment with mice. Mice were selected on the basis of their speed or slowness in learning their way through a maze. Fast and slow learners were bred separately. In nine generations two groups were produced; one was decidedly smart at learning mazes and the other decidedly dull.

As is well-known, intelligence, like many other attributes of animals, is not determined by a single gene, but is polygenic, so that its value is determined by the combined effect of many genes. The statistical consequences of this fact have led to a general reluctance of many people to believe, on the basis of their experience, that heredity is in any significant way involved in intelligence. When one discusses this subject with people not well educated in the field of genetics, then they often counter any approach to the problem of genetics and intelligence by mentioning cases which appear to disprove the role of genetics in intelligence:

For example, it is pointed out that Leonardo da Vinci was the only really outstanding offspring of a patrician family and that he was the bastard son of an affair with a humble village girl. I was recently told that many of the Australian families were the descendants of criminals of Cockney background who had been sent to Australia as convict labor and that the high quality of Australians today was contradictory evidence that character traits had significant genetic aspects.

In view of these contradictory instances, should one take the genetic determination of intelligence seriously? Can polygenic traits like intelligence and integrity and social responsibility even conceivably be beneficially influenced by eugenic approaches?

Some geneticists and many others withdraw from the idea that any deliberate control can be exerted in these subtle polygenetic traits. They

¹³ B. Berelson and G. Steiner, *Human Behavior*, Harcourt, Brace and World, New York, 1964.

do not usually consider a generally revered emotional trait that has so clearly been produced by eugenic means – the magnificent loyalty of man's best friend, the dog.

In thinking about these controversial problems, I believe it is useful to introduce a *simple model* for purposes of illustration. Although a simple model may not be entirely accurate, it may still have sufficient essence of the real situation to be helpful in thinking about the problem and in discussing it with people who are not well informed. Fundamental to these problems is the fact that an enormous variety of individuals might be produced as children of any particular man and woman. Since the human cell has 23 pairs of chromosomes, the normal course of fertilizing an egg means a random selection of chromosomes 23 times over. The most simplified estimate is as follows: for the first pair of chromosomes in the fertilized cell there are four choices as to the selection from the parents: two choices from the woman and two choices from the man. The same is true for the second pair of chromosomes. Consequently, so far as the first two pairs of chromosomes are concerned, there are sixteen possibilities. The number of choices, taking into account all of the chromosomes, can be considered by the same line of reasoning as that shown in Figure 1. The possibilities introduced by each pair of chromosomes in the fertilized ovum multiplies the total number of possibilities as if one advanced two squares on the chessboard. In other words, the total number of possibilities that might result is the same as the number of grains of rice after 46 steps on the chessboard have been made. This means approximately 10^{13} , or about ten thousand billion possible offspring can result from making the random selection from the 23 pairs in the mother and the 23 pairs for the father.

For the purposes of the considerations here, it is not important whether the number of possibilities is 10^{13} or 10^3 or 10^{60} . The important feature is this: the number of distinguishable different genetic blueprints that a man and a woman may produce is so great that any family they actually have represents only a tiny fraction of the possibilities. This conclusion is not affected by including considerations of duplication of genes from common ancestors which reduce the number of possibilities, or of 'crossover' effects which increase them.

Intelligence is polygenic and is thought to depend in some complex way on the combined effects of many genes in many chromosomes. Speculations about heredity and evolution can be understood in terms of an analogy that brings out the statistical features. The analogy I shall use is that of a poker hand from a stacked deck of cards or a part of a deck of cards. No individual card can dominate the value of the hand.

In terms of this analogy, evolution works like stacking the deck of cards from which the hands are dealt. Suppose after each game we threw out the cards in the lowest hand and went on to deal with what was left in the deck. Obviously, we would get better hands than before – but *only on the average* and *not necessarily* for any *particular* hand. Even if the rejection process went on long enough to reject all the low cards, say all the two's to sixes, for example, the stacked deck could produce 'no-pair' hands with the highest card a queen and *such hands* could be easily *beaten* by hands from an *unstacked* deck - but *the probabilities would favor the stacked deck*. This is the sort of effect that is supposed to occur for selected breeds of plants and animals that are not pure strains.

The *lack of obvious causality* in parent-children relationships can be represented in general terms with the poker hand analogy by treating each parent as a poker hand and dealing the child as five cards from the two hands combined. Suppose the parents' hands are each full-houses (for example, three aces and a pair of jacks, three kings and a pair of queens), the chance of dealing a full-house from the two hands is less than 5% and hands as low as a pair of jacks and as high as three aces and two kings are possible. This model crudely represents two superior parents having a small probability of producing an equally superior child. On the other hand, consider parents represented by two low value hands each of which falls one card short of a flush in spades; combine these two hands and deal five cards, then 25% of the time the result will be a flush in spades. This corresponds to the case in which surprisingly superior children may come from relatively unsuccessful parents. But neither of these examples invalidate the conclusion that the probability of producing good hands will be increased by discarding poor hands as a mechanism of stacking the deck.

Polygenetic traits such as human intelligence must almost certainly be represented by enormously complex statistical factors. I am not aware that anyone can even make a good guess about how many cards (or genes) are needed to make a poker hand that would resemble the complex corresponding to intelligence. However there is no reason to doubt that the genetic aspects of intelligence are governed by such probability laws. As for height and physical strength, intelligence is influenced greatly by environment. So far as intelligence is concerned, a typical estimate is that intelligence is determined 75% by heredity, 21% by environment, and 4% by accidental factors.

From the point of view of evolution, it seems to me that the most important effect like rejecting the lowest hands to stack the deck can be described as '*extinction of the least fit,*' rather than '*survival of the fittest.*'

This emphasis takes into account the fact that most mutations are unfavorable and many are lethal. Thus, they die out before the individual has reproduced. At the present time, the medical and economic exponential explosions that have produced our abundant American society assure to all the privilege of reproducing their kind, even though in many cases they may have genetic defects which would result in inability to survive to the stage of reproduction in a more primitive environment. This line of reasoning is one of the causes for concern of many thinking people about possible genetic deterioration of the human race.

To sum up, there is no reason to doubt that genetic probability laws apply to human intellectual and emotional traits. An elementary consideration of the probability aspect of the laws of genetics shows that the counter instances, like Leonardo da Vinci, are to be expected. The puzzling apparent contradictions that confuse many people are of the same nature as the surprising conclusions of probability theory. For example, the conclusion that if a fair coin has come up heads ten times in a row (which it should do on the average more than once in ten thousand tosses), then the chance that the next throw will be a head is still 50%. That Leonardo da Vinci appeared when he did does not prove the laws were not working. In fact the laws should predict a proper number of such remarkable cases.

The importance of lack of education and of social attitudes in regard to genetics and probability is shown by the story of Dr X and his inability to persuade members of his family that they should be sterilized and not take the risk of producing children who would with about a 25% probability be destined to die a gruesome death from the deterioration of their nervous systems.

It seems to me that general education on the reasoning given above on the wide variety of children who may be produced by one couple would help to overcome prejudices of individuals in regard to their special interest as parents that their own offspring should result from their own genetic structure. It is evident that what they will conceive represents only a small fraction of the possible results of dealing the genetic poker hand that picks by chance the blueprint of their child. It is even possible that some of the offspring that a couple might produce could have been produced by other members of their family, or even by quite other members of society around them. From the point of view of the long-term future of the human race they would often do much better with other genetic combinations than that particular chance combination

that produces their own personal offspring.¹⁴ Furthermore adopted and stepchildren are often very well adjusted and have as good relations with their 'parents' as do representative natural children.

All of these thoughts, I believe, produce feelings of uneasiness in people who think of them. I have found considerable uneasiness and discomfort in trying to think about this entire range of subject matter, and I suspect that most people who are not professionally in the field of human genetics or genetics in general, are similarly disconcerted and bothered by their own thought processes. I believe the difficulty is that we are forced to think of ourselves and other people as being not solely warm, living human beings with whom we can establish personal relationships, but as objects which can be thought of and dealt with statistically and analytically. My own reaction reminded me of a quotation expressing the same feelings in T.S. Eliot's *The Cocktail Party*.

'...Nobody likes to be left with a mystery,
but there's more to it than that. There's a loss
of personality; or rather, you have lost touch
with the person you thought you were. You no
longer feel quite human. You're suddenly reduced
to the status of an object – a living object,
but no longer a person. It's always happening,
because one is an object as well as a person.
But we forget about it as quickly as we can.
When you're dressed for a party and are going
downstairs, with everything about you arranged
to support you in the role you have chosen, then
sometimes, when you come to the bottom step there
is one more step than your feet expected and you
come down with a jolt. Just for a moment you
have the experience of being an object at the
mercy of a malevolent staircase. Or, take a
surgical operation.

¹⁴ Quite independently of my activities in this symposium, I have encountered first hand evidence that there exists an intelligent man who has independently reached this conclusion so definitely that he is actively seeking a sperm donor to improve the probable quality of his children. His wife shares his views. Their views are offensive to at least one eminent geneticist. They appear to be a very rare, perhaps unique, case.

In consultation with the doctor and the surgeon,
in going to bed in the nursing home,
in talking to the matron, you are still the
subject, the center of reality. But stretched
on the table, you are a piece of furniture in
a repair shop for those who surround you
all there is of you is your body
and the 'you' is withdrawn...'

I believe these uncomfortable feelings of being reduced to an object affect many people as they do me, when they try to think about problems of the future of the human race for this reason most people avoid them and feel it is wrong to approach them in the sense of objective inquiry. Yet, it is of utmost long-range importance that enough people think about them with an objective, fact-finding approach so that a sensible consensus is reached. This will be specially true in the field of eugenics. As things are progressing now in which no steps are taken to discourage such genetic defects as diabetes and certain circulatory problems that can be corrected by surgery in infants, the genetic deterioration will continue. If this occurs, the biochemist and geneticist may develop additional means, like those available for diabetes, for patching up genetically defective offspring so that they may be successful citizens in a progressively more artificial environment. I believe this is a possibility which appeals to few thinking people. It does not appeal to me.

I believe that one of the most important contributions that I as a scientist can make to the dignity of man is to help him develop his objectivity and powers of rational reasoning so that he can face most constructively any idea that may confront him. With this thought in mind let me close this section by touching on some of the ideas of eugenics which raise problems that have by no means been solved but which a democratic society must, for its own preservation, consider.

If we consider not the mechanism of extinction of the least fit but the opposite of selecting the most fit, then we enter a realm of speculation which covers a wide range of possibilities.

Since the time of Galton at the turn of the twentieth century, it has been proposed that the future evolution of man will involve his making these proper genetic selections from the most able and valuable people.

One of the obvious difficulties is that it may be very difficult to reach agreement as to what does constitute the ideal type of man.¹⁵

This would become extremely important if some of the more far-reaching proposals, like those of Muller, were to be followed.¹⁶ Muller proposes such things as growing germ cells of especially able men *in vitro* and using these for artificial insemination. Going even further, he proposes raising male germ cells and ova *in vitro*, accomplishing fertilization and raising offspring either *in vitro*, or by implantation into accepting foster mothers. In this way, individuals produced by genetic selection from especially able parents could become the foster children of wide numbers of people. Going still further, it has been proposed that the actual set of chromosomes from an unusually competent and gifted man might be surgically transferred from one cell to an ovum which would then grow so as to produce a twin of the exceptional man.

Muller's suggestions emphasize survival of the fittest versus elimination of the least fit. Such emphasis has foundation in theories of the evolution of man. Mayr in his book, *Animal Species and Evolution*¹⁷ points out that polygyny (many wives) is more or less developed in all anthropoid apes and that there are good reasons for postulating that it was prevalent in primitive 'hominids' or precursors of modern man. This would give the leader of a group tremendous genetic leverage on the next generation. Leadership of successful tribes would call for intelligence, judgment and other attributes we admire in modern man. Mayr proposes this accounts for rapid growth of human brain size during the last million years. Mayr analyses the present situation and concludes that in our society the superior person is punished by government in numerous ways, by taxes and otherwise, which make it more difficult for him to raise a large family. He suggests changing laws so as to make tax allowances for children a percentage of income rather than a fixed amount and making school tuition dependent on ability of the student to learn rather than on ability of the family to pay. He states, 'I firmly believe that such positive measures would do far more toward the

¹⁵ Footnote 14 furnishes a possible answer. The couple involved proposes to make their own decision as to a sperm donor based on all available information including interviews. This approach puts selection on an individual basis and eliminates the need for a universally accepted ideal type. The human race developed in the past on the basis of a multitude of such personal decisions (marriages for example).

¹⁶ *Man and Future*, Little Brown and Co., Boston, 1963. See H. J. Muller, *Genetic Progress by Voluntarily Conducted Germinal Choice*.

¹⁷ Ernst Mayr, *Animal Species and Evolution*, Harvard University Press, Cambridge, 1963.

increase of desirable genes in the human gene pool than all the negative measures proposed by eugenicists of former generations.' He supports Muller's 'sperm bank' proposal.

A grim possibility for continuing man's evolution is the threat of enormous genetic damage from a nuclear war. Eugenics would then be forced upon the human race in much the same way as infanticide was in more primitive times, as a necessary step in the struggle for existence. Evidence that such a course might well be followed is to be found, to a very limited degree, in the aftermath of Hiroshima and Nagasaki. In Japan one of the largest studies of human genealogy and genetics has already been undertaken, as a concomitant of studying possible genetic damage produced by the atom bombs.

A challenging idea designed to fit into our profit-motivated society has been proposed by Kenneth Boulding in *The Meaning of the Twentieth Century*. I offer it as a provocative possibility worthy of discussion.

'I have only one positive suggestion to make, a proposal which now seems so farfetched that I find it creates only amusement when I propose it. I think that in all seriousness, however, that a system of marketable licenses to have children is the only one which will combine the minimum of social control necessary to this problem with a maximum of individual liberty and ethical choice.

Each girl on approaching maturity would be presented with a certificate which will entitle its owner to have, say, 2.2 children or whatever number would ensure a reproductive rate of one. The unit of these certificates might be the "deci-child", and accumulation of ten of these units by purchase, inheritance, or gift would permit a woman in maturity to have one legal child. We would then set up a market in these units in which the rich and the philoprogenitive would purchase them from the poor, the nuns, the maiden aunts, and so on.'

An example of an attitude in this country which seems to me cannot stand up under the light of any really logical and dispassionate considerations is the requirement for continuation of pregnancy by a woman who is either unmarried or has sound reason to believe she will produce a genetically defective infant, or one who has been damaged by unfortunate incidents during pregnancy, such as the effect of thalidomide.¹⁸ Such cases should surely have the opportunity to have a legal abortion

¹⁸ A penetrating analysis of these questions has been presented in a reprint of a lecture at University of California, Berkeley, 29 April 1964. Garrett Hardin, *Abortion and Human Dignity*. Available from: Society for Human Abortion, P.O. Box 1862, San Francisco, California 94101.

in this country.

To a limited degree, some understanding of the importance of human genetics has arisen in respect to sterilization laws for mental defectives. In a Supreme Court decision, Oliver Wendell Holmes presented a thoughtful appraisal of the difficulties in a majority opinion upholding the statutes for the sterilization of feeble-minded persons in the State of Virginia. Justice Holmes' opinion read, in part:

'...That Carrie Buck is the probable potential parent of socially inadequate offspring likewise afflicted; that she may be sexually sterilized without detriment to her general health; and that her welfare and that of society will be promoted by her sterilization. ... We have seen more than once that the public welfare may call upon the best citizens for their lives. It would be strange if we could not call upon those who already sap the strength of the State for these lesser sacrifices often not felt by those concerned, in order to prevent our being swamped with incompetents. It is better for all the world if instead of waiting to execute degenerate offspring for crime, or let them starve for their imbecility, society could prevent those who are manifestly unfit from continuing their kind... Three generations of imbeciles are enough.'

This furnishes an instance of an attempt to set up laws which will contribute toward replacing the cruel natural mechanisms of extinction of the least fit as the means of continuing evolution. Although laws for sterilization of mental defectives are on the books of many states, they are of questionable effectiveness. Furthermore, the majority of cases of mental retardation are not of genetic origin so that the genetic aspects are not relevant. Changes in California legislation and an institutional medical policy during 1951 brought about a sharp decrease in the number of sterilizations performed in the state hospitals for mentally retarded. As a result, participation has dropped from between 200 and 300 per year to a mere handful. To me one of the most serious aspects of all this is that public interest and awareness in these problems is generally nearly negligible. At least one outstandingly competent and humanitarian physician friend of mine was unaware of the changes in California, although his early medical experience had put him in first hand contact with the problems. Mayr's proposals of changing laws to favor large families of superior people represents another possible interaction between legislation and man's genetic future.

Lack of a national attitude supporting the objective, fact-finding approach in the field of human genetics is furnished by reports from government sources. Although census bureau studies have shown poverty

and lack of education are passed on from generation to generation within families, research on genetic versus environmental aspects is apparently lacking.¹⁹

Secretary of Labor Wirtz is quoted as saying, "There is a strong indication that a disproportionate number of unemployed come from large families, but we don't pursue evidence that would permit establishing this as a fact or evaluating its significance."²⁰

What is needed is a continuing, objective, fact-finding approach to these enormously controversial, enormously significant problems. I question if the great society or the dignity of man can really be achieved without it.²¹

One of the most difficult facts to face is that man is a mammal and subject to nature's biologic laws. In many states in this country citizens are denied the opportunity to learn this fact from the study of evolution; they cannot face with dignity exploratory thinking and research concerning the genetic future of man. I hold the following views: the general applicability of rational reasoning is inadequately taught in our schools; to give each student the best opportunity to develop his inherent potential his teaching should be adjusted to his needs; in order to plan wisely for such an important target in the war against poverty, an objective, dispassionate approach should be made to the noblest study of man – man himself – his similarities and differences, hereditary and environmental.

My intent at this Nobel Symposium has been to recognize one problem, to describe steps in its solution and to underline another. The serious problem of the world population explosion has resulted from technological developments in death control. Six years after the Draper report our nation is at last acting to help solve the problem in underdeveloped countries by birth control aid. After a century and a half we are now taking Malthus seriously. Must another worry, also centuries old, now be taken seriously? Will the technological explosion which creates our great, abundant society remove the last vestiges of survival of the

¹⁹ See for example Sylvia Sidney, Financial pages, S.F. Chronicle, 2 December 1964.

²⁰ In reply to an inquiry of mine Secretary Wirtz wrote that he hoped this statement would encourage someone 'to ferret out the facts.' I know of no reason to believe that this is being done.

²¹ In an interview entitled 'IQ Quality of US Population Declining' in *US News & World Report*, November 22, 1965, I suggest that facts on environment versus heredity might be obtained from a long term statistical study of adopted children. (In response to this article I received about 70 letters, all but one favorable to airing the worries I expressed.)

fittest and lead to a reversal of evolution? Now that our 'real wages' are quadruple what they were a century ago and rising more than 2% per year, is this fear at last becoming a reality?

Man must forge his own destiny

It is clear that man's destiny will be shaped by the acts of man. The three great problems created by the exponential explosion of man's power over nature are nuclear war, the population explosion, and genetic deterioration. Lack of sufficient understanding of cause and effect relationships in human affairs and unwillingness to explore these with an objective, fact-finding approach constitutes an enormous threat to the future of mankind.

Thinking men prefer a destiny shaped by acts planned in terms of goals for human progress toward a richer, intellectual and artistic life for men better endowed to enjoy it. In performing acts planned for such goals, a society must inevitably subject its individuals to man-made laws, which should be based on rational understanding of the laws of nature which govern man's environment and his attributes as a form of life on earth. Wise legislation can best be made by governments supported by voting populations who use rational reasoning, based on known facts, to reach their decisions as citizens.

The central purpose of our educational system should be to develop a citizen's rational powers and to equip him to understand causal relationships, especially as they apply to man. The greatest obstacle in man's future evolution at the present time is lack of public education on the fact that man is a mammal and subject to the known biological laws. The uninformed attitude about the genetic aspect of man as an animal is reminiscent of the ignorance of a century ago about the nature of life. Educated people were slow to accept Pasteur's definitive experiments of disproof of the spontaneous generation of living organisms. In due course these experiments founded modern sanitation.

The coming generation in America will be far more objective about the genetic nature of man, because of the improvement in High School teaching about the biology of the human species. A great step forward has been taken by the textbooks prepared by the Biological Sciences Curriculum Study, of which Dr Bentley Glass of this symposium has been the Chairman. The forthright presentation of the possibility of genetic deterioration and of the population explosion and the relationship to human evolution brought forth in this book will contribute toward future generations the ability of to use their reasoning powers more wisely for the future evolution of man.

This symposium on *Genetics and the Future of Man* at Gustavus Adolphus College is a rationally-planned, farsighted and courageous act. It is the act of thinking men who prefer a destiny shaped by acts planned in terms of goals of human progress. It should contribute to the important goal of introducing subject matter relative to man's genetic future throughout the world. I regard it as a rare privilege to have had the opportunity as a participant to try to strike a blow intended to help forge a finer destiny for man.

DOCUMENT 2

Is the Quality of U.S. Population Declining?

An Interview with Dr. William Shockley published in
U. S. News & World Report, November 22, 1965.

Q *Dr. Shockley, is the quality of the human race declining in this country, or elsewhere in the world?*

A We have reasons to worry about that possibility, and I have found that many other thinking people are worrying seriously about it.

In fact, I understand there are people in our Government who feel that this whole question should be studied extensively and vigorously to get at the facts. But it's also my conviction that nothing of adequate vigor is being done now.

Q *Why do you say that this whole subject needs more study?*

A Last year Secretary of Labor Willard Wirtz made a statement to the effect that there were strong indications that a disproportionate number of our unemployed come from exceptionally large families. Now, I interpret this to suggest that a child of an exceptionally large family is less likely to be able to hold a job.

Then Secretary Wirtz went on to say:

"But we" – meaning the Government and the nation – "do not pursue evidence that would permit establishing this as a fact or evaluating its significance."

Secretary Wirtz wrote me that he hoped his statement would encourage others to ferret out the facts.

In other words, we're not finding out if this is true. We're not finding out what it means if it is true. But my great worry is that, if adequate research along this line were carried out, we might find that there is a strong genetic factor at work, and that heredity very much limits the improvement we can expect in such cases.

What I am suggesting is that, even if we overcome currently limiting factors – like accidental brain damage during pregnancy or at birth, and unfavorable environments – we may find that a dismal possibility turns out to be a fact: Many of the large improvident families with social problems simply have constitutional deficiencies in those parts

of the brain which enable a person to plan and carry out plans. And I also suggest that this characteristic, especially if found in both parents, can be passed from one generation to another.

But when I try to pin professional geneticists down on this point, the reaction is often: "We don't really know anything about it, and you shouldn't raise these possibilities." This withdrawal attitude does not fit my idea that progress is made by open-minded exploration.

Q Isn't it now the tendency to blame such attributes on environment - to say that a boy becomes delinquent because he lives in the slums?

A This is an assumption which many persons prefer to believe, and no doubt has some justification. On the other hand, there are some very definite things we know about the great variety of human brain cells and the enormous complexity of their organization. These things give us no reason to think that the distribution of these cells is not genetically determined.

It is my conjecture that people could have an inherited deficiency in frontal-lobe organization or other brain structure so that they act somewhat like patients with frontal lobotomies [in which nerve fibers in the brain are cut]. I would expect people like this to find difficulties in planning for careers or families. This is another area in which more active research could be stimulated.

Q Do such people tend to produce more children than persons of average or superior ability?

A That is my basic worry, and it was driven home to me by a specific instance in San Francisco where the proprietor of a delicatessen was blinded by a hired acid-thrower. Who was the acid-thrower? He was a teenager, one of 17 illegitimate children of an improvident, irresponsible woman with an I.Q. of 55 who could remember the names of only nine of her children.

The probable father died in prison, sentenced for murder. If that woman can produce 17 children in our society, none of whom will be eliminated by survival of the fittest, she and others like her will be multiplying at an enormously faster rate than more intelligent people do.

Is she an isolated statistic? Who knows? For myself, I fear it is not an isolated statistic.

I can see how, if this sort of thing can occur at all in our society, it could snowball so that the fraction of our population composed of such

people could double in less than 20 years and outnumber all the others in a few centuries.

Obviously, any substantial percentage of people like this could produce enormous social instability. There are some who deny these dangers on genetic and statistical grounds. But I have little confidence in the objectivity of their reasoning or the reliability of their optimism.

Q Just what is known about the relative importance of heredity and environment in such cases?

A Not nearly enough, but let me mention one item that seems to me quite telling. It comes from an article in *Science* not quite two years ago, collating the data on studies of intelligence quotients of identical twins, who, as you may know, are genetically identical. Now, broadly, the conclusions were these: If you had identical twins who were separated at birth and raised in different places, and you measured their I.Q.'s when they grew up, you would find much less difference between them than you would find between ordinary brothers and sisters who are genetically different but who are raised in the same environment. This small sample, about 100 individuals, impresses me enormously with the dominant importance of heredity on the individual's intelligence.

Really reliable facts along these lines could be obtained if the Government or some foundation sponsored a "controlled" program of adoption of abandoned infants to study the effect of differing environments on them.

Q A few moments ago you mentioned "survival of the fittest." Has that been pretty well removed as a controlling factor in the quality of the human race?

A I think so, at least in America. We live in such an abundant welfare state that the forces which, in the past, led to the evolution and development of man are playing a little role.

Maybe in some of the worst slums of great cities of the world, survival of the fittest is present. I don't know. If so, it may well be that some of the most effective improvements in the human race are occurring in the most dismal, unattractive areas of the world.

Q Does it follow that an affluent society like that in America may be most in danger of producing deteriorating human beings?

A I hear this is likely to be true. Proof, of course, does not exist, but the

fact remains that our competitive system has brought us the highest standard of living of any place in the world.

We are living in a society in which the achievements of the human mind have made it possible for people to survive with the help of machines and technology and welfare. Therefore, adverse things may take place genetically, and the unfit may increase faster in our population than ever was true in the past.

Q Just how much faster are people of inferior ability breeding than those of higher ability?

A As far as substantially retarded persons are concerned, there have been studies showing very little breeding. They simply don't succeed in finding mates. Furthermore, many of the cases are not hereditary but result from lack of proper prenatal care.

The real cause of worry is people of somewhat higher ability but still, say, near the bottom of the population in ability to learn to reason and to plan ahead – vigorous, capable of mingling with the general population, and not considered "defective" on casual appraisal. Not only are they dull but they need help to survive. Most cannot advance and some are a threat to other people.

One frightening possibility is that our humanitarian relief programs may be exerting a negative influence. These fears are supported by views like those quoted recently by the Associated Press: "I know a 16-year-old girl who was raised on relief. Now she has three illegitimate children and they are all being raised on relief." So far as I can find out, no Government agency is looking into the genetic aspects of this sort of thing.

Nor, of course, is there any discussion of what all-around benefits could come from more democratic contraceptive and abortion practices. Our present abortion customs insure the birth of the unwanted child of a poor girl who has made a sexual blunder, while permitting the rich – who at least could provide a better environment – to cancel a mistake. This makes no sense to me.

And we know about the families that are mired down in ail kinds of problems they can't solve – crime, poverty, delinquency, disease—from one generation to the next. Census Bureau studies have shown a high degree of inheritance in educational poor performance. Will all of these misfortunes be eliminated with increasing standards of living, or do we have a situation that is being perpetuated genetically and growing out of proportion? That is a very nasty question, indeed, and it is not getting an objective study.

Heredity and Crime

Q To what extent may heredity be responsible for the high incidence of Negroes on crime and relief rolls?

A This is a difficult question to answer. Crime seems to be mildly hereditary, but there is a strong environmental factor. Economic incompetence and lack of motivation are due to complex causes. We lack proper scientific investigations, possibly because nobody wants to raise the question for fear of being called a racist. I know of one man who is writing a book in this area, and I'm not sure he'll finish it because the subject is so touchy.

But let me say what I find in my own reading:

If you take the distribution of I.Q.'s of Negroes, and compare it with that of whites, you are going to find plenty of Negroes who are superior to plenty of whites.

But, if you look at the median Negro I.Q., it almost always turns out not to be as good as that of the median white I.Q. At least, this is so in the U. S. How much of this is genetic in origin? How much is environmental? And which precise environmental factors are to blame? Again, a "controlled" program of adoptions might give answers.

Actually, what I worry about with whites and Negroes alike is this: Is there an imbalance in the reproduction of inferior and superior strains? Does the reproduction tend to be most heavy among those we would least like to employ – the ones who would do least well in school? There are eminent Negroes whom we are proud of in every way, but are they the ones who come from and have large families? What is happening to the total numbers? This we do not know.

Q Is the possibility of genetic decline a new kind of worry for the human race?

A Not as an idea – the idea is old – but as a coming reality, yes. You see, with improvements of technology – especially in nations of the West – you have had declining death rates, so that inferior strains have increased chances for survival and reproduction at the same time that birth control has tended to reduce family size among the superior elements. Warnings about this were heard 100 years ago, but it is still as touchy a subject today as it was then.

Q Why is that?

A Oh, a deep, psychological reason, I think. People hate to feel that they are subject to the same laws of nature as "things" or "animals." It is unnerving to them. Furthermore, it runs counter to so much of our social doctrine – the belief that the poor are victims of hard luck and poor environment, and that all can be changed by giving them a helping hand and a change of environment.

Q *There are laws for sterilization of the unfit*

A Various States have these laws, but the degree to which they are effective is not well known, and they may not be well formulated in terms of what might be known about human genetics.

In California, I did learn from a very humanitarian and well-informed physician that the rate of such sterilization had been quite significant when he was a young doctor. I did some telephoning and found the rate had dropped by something like 10 times during the last decade.

But the whole subject is being swept under the rug, so we have no real facts on the situation. I am told Denmark has a sterilization system and there are reports and evaluations. I have not checked into this, but I know that this is a serious undertaking.

Q *Would there be a strong feeling against strengthening laws of this kind?*

A Well, I would hope that a great deal could be done through education and persuasion, and I think the steps that are being taken in some of our cities to liberalize the dissemination of information on birth control, or liberalize abortion laws, are a great thing.

Q *What about the majority of uneducated people? Would they cooperate?*

A I once argued with Gregory Pincus, the father of the birth-control "pill," that improvident people would not avail themselves of birth control methods nearly so much as they should. Pincus told me that, in fact, uneducated and impoverished women were the most assiduous users of the pill. They had less unexpected pregnancies than college graduates.

I can't remember being more encouraged by losing an argument! Still, in this area of human affairs, no universal and sweeping answers are likely to be available, so we're going to have to try many things that might add up to worthwhile results.

"We Want More Lincolns"

Q Mightn't restrictions in breeding by the poor deprive us of an Abraham Lincoln in the future? Didn't he come out of an unpromising background?

A Poor people can be quite gifted. Restrictions should be placed upon the basis of sound genetics without regard to income, class, race, religion, or national origin. The breeding of good genetic material, whether the people are rich or poor, is desirable. We want more Lincoln's, not fewer.

Q How sure can we be that this is going to happen?

A If a man is exceptionally superior to his family background, a lucky combination of genes passed on by his parents is responsible. How much of this luck he will pass on is uncertain. Where both parents are of superior quality the element of luck is reduced.

Luck in genetics can't be eliminated entirely, of course – which is why, even in a family of exceptional children, you will find the average or even retarded child occasionally – just as in a family of average children or dull children you will find the brilliant exception.

Much of this is a matter of statistics and probabilities. But we also need research to gain a better insight into the various genetic mechanisms. The more we all know, the wiser our population policies can become.

Q Don't children of superior ability sometimes turn out badly?

A There are some common misconceptions that brilliant youngsters are likely to make a mess of their lives. Well, it happens that many years ago there was a study at Stanford University of gifted children, and a follow-up on what happened to them afterward. This study showed that these children, on any basis of comparison with the rest of the population, did very well. Fewer became alcoholics, they earned more money than the average person, fewer entered mental hospitals, fewer had divorces, fewer went to jail.

Q How long do you think it will be before steps to improve the quality of the human race will become accepted on a wide scale?

A General acceptance may be quite a way off, but maybe-not so far off as we now think. I suspect that, if a study were made and we found out

that the acid-throwing teenager represented a hereditary class which is now doubling its members in less than half the time of the rest of the population, we would soon start looking for solutions. Why? Because it would clearly be a matter of life or death for our nation.

Q What do you think could be done in this country as a start on this whole problem?

A First of all, we must have more study, and more objective study, of all the questions you've raised: Are the less able people really multiplying faster? Are there significant genetic differences in the ability of various human groups? To what degree is environment responsible for our "problem" families, and what environmental factors are involved, and how? How successful are the programs we have in advancing such problem families? Are we developing methods of evaluating the significance of their effects?

That's No. 1: a national research effort, thorough and open-minded – objective, fact-finding approach.

Then, I think we need to improve our science education – with emphasis on the existence of objective reality and the power of rational reasoning. Our science teaching in public schools doesn't seem to be driving home adequately the point that reasoning can sometimes be applied to deal with very difficult and nebulous problems and, when it can, it is man's most powerful tool for thinking.

Q Is it education, broadly, that is going to be our likeliest solution to the problem – if there is a problem?

A I would say so. Certainly the public needs to be stirred up to think about this whole question objectively. That's what I'm trying to do in this interview. It is ridiculous that some States have laws against teaching evolution. Several eminent intellectuals have discouraged me from publicly expressing the ideas we have talked about. They feel the uninformed and prejudiced might react badly. But I have faith in the long-term values of open discussion.

Q As more and more youngsters go to college and marry fellow students, will that have some effect on the genetic balance?

A Yes, I would think that things will tend to move in that direction. In a modern society with high mobility, inbreeding is reduced to the

minimum.

Incentives for Education

Q Could some incentive be offered to such couples to have more children?

A I know of no really good answer to this important problem, but let me discuss one provocative possibility:

Ernst Mayr, a zoologist at Harvard, has proposed making tax exemptions for children proportionate to total income of parents, rather than setting a fixed sum of \$600 as at present. In other words, a family with an income of \$15,000 a year would get a much larger exemption than a family making \$5,000 a year.

Along the same lines, he proposes that allowances be given for educational costs that tend to be higher for parents of superior ability who want to give their youngsters a superior education.

This might work out well on the average by encouraging families that have shown above-average accomplishment to have more children and offset the situation where a woman of low intelligence can raise her income with each illegitimate child. Ideas like Mayr's need more public discussion.

Q Can a society becoming more and more technological afford to continue having large numbers of defective and dull people in its population?

A Certainly not. There will be less and less work that such people can do, and less and less that they are able to comprehend in the world about them.

Q They can be looked after by public welfare..

A It's perfectly true that an affluent society can look after such people through charity, but I don't like it, and I don't like the common and dangerous notion that we do not have to worry about defective people whom science can't "patch up" somehow.

Perhaps you can find employment even for the low I.Q.'s. But how is our democracy going to work if a large fraction of the electorate must be supported by the community and also lacks the brains and moral sense needed for good citizenship?

The more people we produce who are capable of higher education and are freer of defects, the more of our energy we can devote to the

improvement of our environment. The more people we produce who are incapable of voting intelligently, the greater the risk of economic trouble and war.

But these are my personal reactions. What I worry about most is that there is so little discussion of these matters that no worthwhile consensus is having a chance to develop.

Outlook: "I'm Hopeful"

Q How do you feel generally about the prospects of an improvement taking place in the quality of the human race?

A On the whole, I'm hopeful. You remember that about 10 years ago people were saying that Malthus in his 1798 prediction had overplayed the dangers of population growth. President Eisenhower said that population control wasn't something the government should concern itself with.

Now we find that Mr. Eisenhower changed his mind. And President Johnson is saying, in effect, that \$5 spent on population control would be worth more than \$100 spent on economic development.

In the broad field of population control, there has been an almost complete reversal in attitudes – and this, with the development of the intrauterine loop and other devices, suggest that the human race can solve the problem of growing populations.

This suggests to me that people will find sensible ways to solve the problem of the quality of the human race.

But there is another very grim possibility: A nuclear war might inflict so much genetic damage that it would become absolutely necessary to select from the survivors those persons with sufficiently undamaged genes to perpetuate a healthy human race. This would clearly require society to make complex eugenic decisions. I hope this task never will confront us, but this is one way in which the human race might be forced to resume its evolution.

I think our best chance for progress in human evolution without the eventual dismal detour of nuclear genetic damage is in more stress on research and public discussion.

My program for continued progress is: Let's ask the questions, do the necessary research, get the facts, discuss them widely – then either worries will evaporate, or plans for action will develop.

DOCUMENT 3

**Proposed Research to Reduce Racial Aspects
of the Environment-Heridity Uncertainty**

Proposal read by William Shockley before the National Academy of
Science on April 24, 1968.

1. *A Scientific Basis for Humanitarian Religious Principles.* My talk today is based on two postulates that I hold to be fundamental for civilized men:

- 1) The truth shall set you free.
- 2) The basis for a humane civilization is concern for memories of emotions stored in neurological systems of earth's hereditary sequence.

I propose the second postulate as a scientific, modern day foundation for the principle formulated by Christ in the golden rule and by Schweitzer in his reverence for life. I regard it as logical to take "concern for memories of emotions stored in neurological systems of earth's hereditary sequence" as a postulate that leads to the golden rule of Christ as one theorem and as another to Thomas Aquinas' conclusion that abortion of an early foetus is not murder. I feel deep concern for the memories of frustration that will be stored in the neurological systems of babies now alive or about to be born as an unforeseen consequence of our well-intentioned welfare programs that may be unwittingly encouraging our most improvident to have large families. I urge once more that this Academy set up a study group to inquire into ways to determine how many probable misfits regardless of race will be born into our potentially great society as a result of present population patterns.

To understand these problems is what I consider Scientifically Responsible Brotherhood.

2. *Scientifically Responsible Brotherhood.* A few days after the assassination of Dr. King, I received a telephone call from Harold Urey who felt that his fellow Nobel Laureates should express their feelings in some organized way. In response I suggested this statement;

We abhor the assassination of fellow Nobel Laureate Martin Luther King, Jr. We grieve at the silencing of his eloquent humanitarian voice. We enshrine in our memories the goodness of his intentions to confer greatest benefit on mankind by increasing the brotherhood of man.

My intentions today are precisely what I attribute in the phrasing of Nobel's will to Dr. King. I propose as a social goal that every baby born should have a high probability of leading a dignified, rewarding and satisfying life regardless of its skin color or sex. To understand hereditary cause and effect relationships for human quality problems is an obligation of Scientifically Responsible Brotherhood. I believe also that this goal can best be achieved by applying objective scientific inquiry to our human quality problems. My beliefs in this social goal and in the use of science to achieve it are what motivate me to speak here today.

The three Nobel Laureates whom I consider to be the most distinguished for their decisions to set personal service to their fellow men clearly above self interest are Dr. King, Dr. Bunche and Dr. Schweitzer.

Albert Schweitzer devoted his life to personal service to man. I deem that his intellectual powers and his capacity for detailed personal observations of African Negroes are unquestionably of the highest order. Schweitzer wrote:¹ "With regard to Negroes, then, I have coined the formula: 'I am your brother, it is true, but your elder brother.'" Schweitzer was labelled a racist for this view. Academy member Carleton Coon tells me he was persecuted for publishing in his *Origin of Races* scientific speculations that Negroes are the younger brothers of Caucasians on an evolutionary basis by about 200,000 years.

If these conjectures are true that Negroes are evolutionary adolescents, then to demand that a younger brother perform beyond his basic inherent capacities is a most irresponsibly cruel form of brotherhood.

To fail to urge a sound diagnosis, painful though it may be, to determine if our national Negro illness is caused by problems of evolutionary adolescence or by environmental disadvantages is an irresponsibility I do not propose to have upon my conscience nor upon the history of this Academy of which, save for this area of thought blockage, I am proud to be a member.

I sincerely and thoughtfully believe that my current attempts to demonstrate that American Negro shortcomings are preponderately hereditary is the action most likely to reduce Negro agony in the future. That the equality of intelligence potential for Negroes is not scientifically accepted is attested to by publicly recorded views of at least two of the most recent past twenty-four presidents of the American Psychological

Association and of the very famous E. L. Thorndike[†] before them. I believe that there is a most valuable intellectual endeavor that might give a basis for remedies for the growing national agonies associated with Negro frustration. The Negroes themselves would I believe be the greatest beneficiaries. I propose a serious scientific effort to establish by how much the distribution of hereditary potential for intelligence of our black citizens falls below whites. Furthermore, if it is really scientifically impossible to prove that there is any deficit whatever, then establishing the underlying causes of this impossibility would be, I believe, of enormous value to mankind. If the impossibility of proving the significantly lower average potential for Negro intelligence was indeed because as a matter of demonstrable scientific fact the average deficit were zero, then the resultant contribution of this new knowledge to overcoming prejudice would be great in influencing responsible thinking men. If differences are found, then social actions can be based on sound methodology rather than emotionally prejudiced racism.

The philosophy of scientifically responsible brotherhood embraces these principles: the courage to doubt in the face of the desire to believe is the true mark of the scientist. The truth shall set you free. The proper study of mankind is man.

In preparing this paper I concluded that I would indeed violate the principle of Scientifically Responsible Brotherhood if, as a consequence of personal fear, I failed to state what during the last two years of my part-time investigations I have come to accept as facts, not yet perhaps as facts at the level of pure mathematics or physics, but nonetheless facts that I now consider so unassailable that I present them before fellow members of the National Academy of Sciences with a clear scientific conscience.

The basic facts are these: Man is a mammal and subject to the same biologic laws as other animals. All animals, including man, have inheritable behavioral traits. The concept of complete environmental plasticity of human intelligence is a nonsensical, wishful-thinking illusion. Let me note that in comparisons between men and animals there are close parallels in those admirable emotional traits of loyalty and courage between men and dogs and that it is reasonable to extend these parallels to races and to breeds since both are mammalian forms of life.

[†] E. L. Thorndike (19) estimates relative importance as follows: genes: training: accident = 80:17:3 and Negro overlap in IQ as 10% (10% means offset of 1.28 σ) See H. E. Garrett (20). For other references see Aubrey Shuey (21) and H. F. Harlow's position is quoted by W. Shockley (22), and by D. Perlman (23).

The most dangerous illusion or nonfact facing humanity today is the belief that most scientists lack the courage to doubt, at least for the record, typified by the expressions of our government through its Department of Labor and echoed by the Office of Education; I quote:²

There is absolutely no question of any genetic differential: Intelligence potential is distributed among Negro infants in the same proportion and pattern as among Icelanders or Chinese or any other group.

The only reason that I do not characterize this statement as a lie, and in my opinion a damnably evil lie, is that I have no way to appraise the intellectual acumen of its authors. They may actually believe it.^{††}

I credit the Council of the National Academy of Sciences for saying that there is no scientific basis for the Department of Labor statement. However, I condemn the N.A.S. statement on Human Genetics and Urban Slums for obscuring relevant facts. Significant research results can be found if one has the courage and initiative to look for them. Dr. Robert E. Kuttner, whose paper³ I introduce following Dr. Jensen, has had the ingenuity to extract from the massive and expensive Coleman report the obvious, but previously overlooked, fact that American Indians overcome greater environmental disadvantages to outperform Negroes on achievement and ability tests.

Let me compare Dr. Kuttner's ingenuity with that portion of the N.A.S. statement that I shall name the research blinders dictum because it espouses a flexibility of inquiry as trammelled as the motive power of a one-horse shay. Here is the research blinders dictum:⁴

In the absence of some now unforeseen way of equalizing all aspects of the environment, answers to this question [about racial differences in intelligence] can be hardly more than reasonable guesses.

Dr. Kuttner's title "Utilization of accentuated environmental inequalities in research on racial differences" shows that he was not trammelled by the research blinders dictum.

^{††} I have heard of the existence of a document that is alleged to attribute to the author of this statement the assertion that he did not believe it and made the statement (no doubt with good intentions) for political purposes.

3. Evidence for Racial Influences on the Development of Intelligence

An objective examination of relevant data leads me inescapably to the opinion that the major deficit in Negro intellectual performance must be primarily of hereditary origin and thus relatively irremediable by practical improvements in environment. I shall support this opinion by stating a set of prevalent illusions that I shall call Nonfacts and refuting them with a set of well-established Counterfacts. I call this reasoning an opinion and not a proof less because I doubt its soundness than because it has not yet been subject to the test of objective, open-minded appraisal by a competent scientific tribunal.

Nonfact Number 1. Negro IQ deficits are caused by prenatal, perinatal or early environmental disadvantages that permanently damage learning potential.

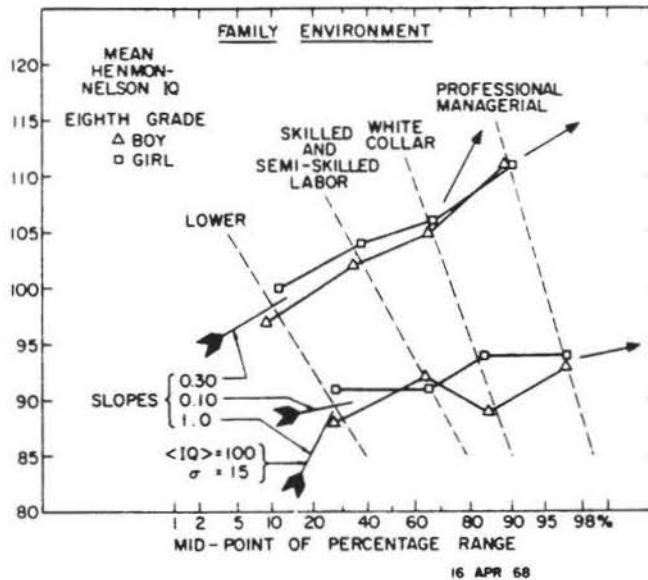


FIGURE 1: Dependence of IQ score upon race, sex and socioeconomic status. (The percentile positions are based on the numbers of subjects reported in the relevant tables presented by Wilson¹⁰ and since the Wilson study selected these numbers for a different purpose they are only approximate. It is improbable that a more precise revision would alter the conclusions.)

Counterfact 1A. Negro babies during the first 15 months show no environmental damage to mental development as reported in a study⁵ of a representative sample of 1400 babies, published in 1965 by Nancy Bayley of the National Institute of Mental Health. The 600 Negro babies outperformed on the average the 800 white babies in that they matched in mental and surpassed in muscular neurological development. Negro babies are thus superior with an N.Q. or overall neurological quotient of

about 105 compared to 100 for white babies, to put it simply in my own words.

Counterfact 1B. Extreme environmental deprivation has been experienced by monkeys from birth to 12 months by raising them in individual isolation in a patternless world of solid steel-walled cages the chief stimuli being presence of light and automated mechanical feeding and cage cleaning. This profoundly disadvantaged environment produced social behavior deficits but did not produce any measurable loss of learning ability for mental tasks.⁶ Twelve monkey months represent four human years.

Counterfact 1C. Similar conclusions are reached from studies of inhumane environmental deprivation of children that have accidentally occurred. In one well-documented case Isabel,⁷ an illegitimate white child, was raised in a dark room by a deaf-mute mother so that at age 6-1/2 Isabel had no speech, an IQ of about 30, and rachitic physical handicaps. After being discovered and given intensive training, two years later at 8-1/2 her IQ had trebled to a normal value. Isabel's case, a rare though not unique example of extreme human primate deprivation, is thus quite in keeping with the well-controlled extensive deprivations at the animal primate research centers. It is evident that Negro IQ deficits can not reasonably be blamed on preschool environmental disadvantages.

Counterfact 1D. The famous and uncontested Skeels study⁸ of a group of environmentally deprived orphanage babies shows that an environmentally induced loss of at least 30 IQ points at 19 months was with improved environment wiped out at age 6 years. This significant finding of substantially complete IQ recovery from Skeels research is in effect suppressed by its omission from most discussions of Skeels important contributions.

Counterfact 1E. A unique case of overcoming in half a lifetime a cultural gap of centuries or even millennia including a session of slavery involves a professional engineer recognized at an historic anniversary of his university by an honorary Sc.D. as one of six distinguished service alumni. His story, as I heard it by phone last week, was that until age six he was an Aztec Indian at a blow-gun and stone-axe level, isolated from modern civilization for four centuries since his tribe escaped from Cortez. His father explored, was captured and enslaved. After escaping he brought his family to America and the engineer entered school at age ten and the second grade two years later at age 12. Yet at 21 he had an Electrical B.Sc. and Physics M.Sc. His brother has been comparably successful. Both worked their way through college. This example supports my conviction that fantastic cultural deficits can be overcome in a

fraction of one generation by individuals of outstanding inherent determination and intelligence.

Nonfact 2. This nonfact blames the Negro IQ deficit on cultural disadvantages, specifically those involving language and verbal skills so that, as clearly enunciated as a conjecture by anthropologist S. L. Washburn⁹ "given a comparable chance to that of the whites, [the Negroes] IQ's would test out ahead."

Counterfact 2A. Relationship of Negro children's IQ to home environment as measured by socioeconomic class of parents showed in A. B. Wilson's San Francisco Bay Area Study¹⁰ an incremental difference in eighth grade IQ of only about 4 points from 90 to 94 with a socioeconomic difference that for whites corresponds to a three times greater increment of 13 points from 98 to 111 as shown in Figure 1. The obvious inference is that if intelligence is determined entirely by environment then these facts require that Negro professional and managerial families provide a substantially poorer intellectual environment than do white families rated one step lower than semi-skilled labor. At a sixth grade similar results are obtained with increments of 12 points for whites and 4 for Negroes associated with family status increments from a minimum of lower than semi-skilled labor to a maximum of professional and managerial. For primary grades, the results show again an IQ increment for whites but no increment whatever for Negroes.

These statistics indicate such a fundamental difference between the ways in which white and Negro IQ distributions are related to family classifications that they imply to me a basic racial or racial-hybrid difference in the laws governing distributions of intelligence. This aspect of Counterfact 2A constitutes a Counterfact to my next Nonfact; namely:

Nonfact 3. There is no scientific evidence for racial differences in intelligence. (This is a position that I deplore as scientifically untenable in the N.A.S. statement on Human Genetics and Urban Slums.¹¹

Counterfact 3A. Patterns of relative competence for various mental abilities for Negroes differ distinctly from whites in that, contrary to the general impression, Negroes perform relatively better, not worse, on items more dependent on verbal skills than they do on nonverbal items. A significant test¹² was reported in 1958 on 7 to 10 year old children of low socioeconomic status including 440 white and 349 Negro. The two groups had nearly equal Stanford-Binet IQ. They were also given a version of the Progressive Matrices Test designed by Raven incorporating colored diagrams. This CRPM test is recognized as an important nonverbal test. If Negro Stanford-Binet IQ is artificially lowered by verbal disadvantage, then Negroes would be expected to score relatively

higher on the nonverbal Raven's Matrices. However, the Matrices involve more sophisticated logical processing and thus are a measure of a more advanced reasoning ability than occurs in the Stanford-Binet. Whereas white students had on the average, as a consequence of standardizing the scoring system, the same IQ on the Stanford-Binet and the Matrices, Negro IQ was unexpectedly 9.83 points lower on the matrices at a level of significance with more than six zeros.

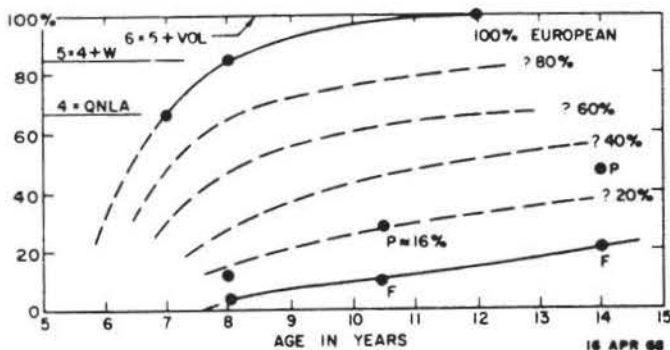


FIGURE 2: Dependence of performance on the Piaget conservation principle tests upon age and racial composition. (Tests concern Quantity, Number, Length, Area, Weight and Volume. The Full-blood and Part-blood points are deduced from de Lemos tables and the European points from her report of Piaget's findings. The dashed curves are linear interpolations between F and 100% European.

This result is in keeping with the statistical finding I reported here one year ago¹³ that the offset in distribution of Negro performance on science is about 0.8 of a standard deviation or 12 IQ points more than the offset of about 1.2 standard deviations for other high levels of social achievement. This difference in pattern of ability means, I believe, that there is racial genetic difference in the biological organization of neural functioning in the brain.

Counterfact 3B. Results showing that ethnic differences in patterns of relative intelligence for different abilities are independent of socioeconomic status are well documented in New York¹⁴ and Boston.¹⁵

Counterfact 3C. Children of primitive Australian aborigines score at about ten percent compared to European children's one-hundred percent on six tests that measure comprehension of conservation laws¹⁶ defined by Piaget¹⁷ such as conservation of volume of sugar when poured into a different shaped glass. Evidence that the test performance deficit

is racial and not cultural is furnished by the improved performance of approximately 20 percent compared to 10 percent for the racially-diluted portion of the environmentally integrated population that had one European grandparent or great-grandparent. The 38 children averaging 16 percent European dilution out performed the 42 children of one-hundred percent aboriginal ancestry at a high level of significance as shown in Table I (below).

COMPARISON OF PART-BLOOD (P) AND FULL-BLOOD (F)
CHILDREN ON CONSERVATION TESTS

CHILDREN	8 to 11 years			12 to 15 years		
	F	P	Sig.	F	P	Sig.
NUMBER	25	17	Lev.	17	21	Lev.
QUANTITY	2	< 6	<0.1	2	< 15	<0.01
WEIGHT	9	< 11	<0.1	7	< 17	<0.01
VOLUME	0	< 5	<0.05	2	< 4	N.S.
LENGTH	10	= 10	N.S.	3	< 13	<0.05
AREA	1	< 4	N.S.	2	< 8	N.S.
NUMBER	0	< 4	<0.05	3	< 8	N.S.

TABLE I: M. de Lemos, Thesis (1966) Australian National University

As shown in Figure 2, these results are consistent with the approximately linear metallurgical model for effects of racial mixing on mental performance I proposed in 1966.¹⁸

4. *Conclusion.* As the pattern of counterfactuals I have presented illustrates, my chief proposal for research consists of establishing orderly relationships between independent studies. I point out that in the research on existing research that I have discussed, eight of my fourteen counterfactual references were published after 1964. My failure to provoke in the Academy any inquiry or recommendations for similar research makes me fear that the research blinders for the life sciences may now support programs doomed to fail because they are against nature much as were those supported by Lysenko-biologists in Russia.

Time limits me to proposing only one new research suggestion as follows: I have heard that the drastic environmental change of adoption from a Negro Ghetto into a middle-class New York Jewish family has actually occurred for some 70 orphans. Studies of the resulting changes of their intelligence patterns might replace uncertainty with quantitative numbers in the environment-heredity uncertainty.

To avoid misinterpretation, let me state my position on several relevant social items.

- 1) I favor welfare programs in general and Headstart in particular, the latter because it may contribute to emotional and motivational factors, even though its effects on IQ may prove insignificant.
- 2) I believe that many Negroes are superior to many whites but I fear that on a per capita basis Negroes are relatively losing ground because of the anti-evolutionary effects of welfare programs.
- 3) I advocate inquiry into and discussion of eugenics but no action programs, except possibly sterilization after the n'th successive illegitimate child on relief with n to be determined by national vote and possibly constitutional amendment.
- 4) It is my confidence in "the truth shall set you free" that makes me believe that the true brotherhood of man and the well-being of black America are best to be served by Scientifically Responsible Brotherhood.

References

1. Schweitzer, Albert. "On the Edge of the Primeval Forest" quoted in Gerald McKnight, *Verdict on Schweitzer*, John Day Co., N.Y., p. 55 (1964).
2. *787The Negro Family, The Case For National Action*, Office of Policy Planning and Research, U.S. Department of Labor (1965).
3. Kuttner, Robert E. "Utilization of Accentuated Environmental Inequalities in Research on Racial Differences", *Science*, Vol. 160, No. 3826, pp 439-440, 26 Apr 1968.
4. *Proc. N.A.S.* 59, 652 (1968). The "Introductory Remarks" imply that the research efforts presented in papers like this one are "heedless of opinions or hazards", "attracted by emotional attention" and reminiscent of the song stanza "The French they are a funny race." The relevance to the present author is recognized as clear in *Science*, Vol. 178, No. 3083, pp. 892-893 (1967). Coupled with the words "prescience" and "sixth sense" the Introductory Remarks appear to me to exhibit a low point of national scientific leadership.
5. Bayley, Nancy. *Child Development*, 36, 379 (1965).
6. Personal communication from M. Harlow, Wisconsin Regional Primate Research Center.
7. Davis, Kingsley, *Am. J. of Sociology*, 52, 432 (1947).
8. Skeels, H. M. *Child Development Monographs*, 31, No. 3, Serial No. 105 (1966).
9. Washburn, S. L., *Am. Anthropologist*, 63, 571 (1962).
10. Wilson, A. B., Racial Integration with Public Schools, *U. S. Commission on*

- Civil Rights*, Vol. II, p . 165 (1967).
11. *Science*, Vol. 158, No. 3083, p. 892.
 12. Higgins, C. and Sivers, C. H., *J. Cons. Psych.* 22, 465 (1958).
 13. Shockley, W., A "Try Simplest Cases" Approach to the Heredity-Poverty-Crime Problem. Reprinted from *Proc. National Academy of Sciences*, Vol. 57, No. 6, pp. 1767-1774, June 1967.
 14. Lesser, G. S., Fifer, G., Clark, D. H., *Mon. Soc. Res. in Child Dev.*, 30, No. 4 (1965).
 15. Stodolsky, S. S., Lesser, G. S., *Harvard R&D Center on Ed. Diff.*, Reprint No. 6.
 16. de Lemos, M.M.M.P., *The Development of Conservation in Aboriginal Children*, Ph.D. Thesis, Australian Nat. Univ., Nov. 1966. The writer appreciates the cooperation of Dr. de Lemos, the National Australian University and the San Francisco Australian Consulate.
 17. Piaget, J., Inhelder, B., *Le Development dec quantites physiques chez l'enfant: Conservation et atomisme* (Second Revised Ed. Delachaux and Tiestle: Neuchatel (1962).
 18. Shockley, W., Possible Metallurgical and Astronomical Approaches to the Problem of Environment Versus Ethnic Heredity, *Science*, 154, 3747, p. 428 (1966).
 19. Thorndike, E. L., *Human Nature and the Social Order*, McMillan, New York, 1940, p. 321.
 20. Garrett, H. E., *Scientific Monthly*, 65, pp. 329-333 (1947)
 21. Shuey, Audrey, *The Testing of Negro Intelligence*, Social Science Press, New York, (1966).
 22. Shockley, W., *Science*, 156:3774, p. 542.
 23. Perlman, D., *San Francisco Chronicle*, 18 Jan. 1967, p. 42.

DOCUMENT 4**The Entrenched Dogmatism of Inverted Liberals**

Manuscript by William Shockley from which major portions were read in lectures: "Entrenched Dogmatism and Human Agony" University of Calif. Medical School, 29 Nov. 67-San Francisco, California on 29 November 1967, and as presented in full as the Redman Lecture at McMaster University, Hamilton, Ontario, on 11 December 1967, under the title "City Slums, Eugenics and Research Taboos."

During the last thinking five minutes of my life I hope to consider that during 1967 I used my capacities to their maximum potential with the aim, as phrased in Nobel's will, of "conferring greatest benefit on mankind". I have sought facts and deliberately exposed the widely-shared but seldom-mentioned worries that a democratic society must in the interests of its own preservation thoughtfully consider and objectively discuss both privately and publicly.

I greatly appreciate this opportunity to discuss these worries at this distinguished medical school. Let me state my credo: I adhere to the principle that man's destiny should be shaped by application of intelligence to determine realistic goals for human progress, rather than by forces man has let get beyond his control. My appeal today is for vigorous attempts to establish fact, not for any form of social action. Any social-action decision should follow prolonged public debate. I shall propose some specific subjects for debate.

Let me first ask you to focus your thoughts on these three concepts:

- First: Impartial analysis of objective realities,
- Second: Entrenched dogmatism, and
- Third: Human agony.

Specific examples of human agony relevant to this discussion are the burning at the stake of heretics during the inquisition and the genocide of Jews in Hitler's Germany. My interpretation of what historians tell me is that these are two examples of an historical law: when entrenched dogmatism blocks impartial analysis of the objective realities of human beliefs, a consequence is often human agony. My intuitive appreciation of the relationship between dogmatism, objectivity and agony that I have just expressed was what impelled me to rebel at the appraisal of an eminent scientist friend that in the future my research

efforts would be doomed to attack with emotional slogans no matter how objectively they were conducted because I had had the temerity to mention Negroes and I.Q.'s in the same paragraph of a *U.S. News & World Report* interview. Coupled with the advice to avoid controversial racial areas, this appraisal portrayed a degree of entrenched dogmatism that was practically intolerably offensive to me.

My instinctive rebellion against this situation I now analyze as being due to my feeling that it may well typify the same kind of subservience to entrenched dogmatism that permitted German scientists to stand aside during Hitler's Jewish purges, that made Russian scientists tolerate the distortion of the laws of genetics during the Lysenko era in Russia, and that probably similarly supported the American bigots during the Salem witchhunts in Massachusetts.

The entrenched dogmatism that I have called inverted liberalism is caused by [a] microbe. This ideological microbe is the wishful thinking microbe that causes the illusion of unlimited plasticity of intelligence. This illusion of unlimited plasticity of intelligence assumes that life is basically fair and that all babies are born pretty much alike so that the only difference in their mental and moral development are steady application and moral effort. I have employed phrases here that have been publicly refuted for almost a century – starting with Sir Francis Galton in 1869 and continuing in 1966 with Professor Curt Stern¹ a human geneticist at the University of California in Berkeley. Babies are not born pretty much alike either physically or mentally and strong evidence is slowly accumulating that chromosomal abnormalities have dominant personality effects over and above sex differences.

Inverted liberalism was eloquently described in a recent *Time* magazine Essay entitled "Race and Ability."² This essay quoted the typical inverted liberal position regarding human quality questions: namely "No one knows," "there is no way to tell," "any inquiry is felt to be dangerous." These can't – don't – shouldn't slogans characterize inverted liberals. A true liberal asserts "the truth shall set you free" and "the ability to doubt in the face of the desire to believe is the true mark of the scientist."

Does the entrenched dogmatism of inverted liberals now prevent an objective analysis of our city slum problems? I assert that it does and that I have documentary evidence that makes an overwhelming case for

¹ Curt Stern, *Genes and People*, Manuscript presented at the 3rd International Congress of Human Genetics, Chicago, 9 September 1966.

² *Time's* Essay, "Race and Ability," 29 September 1967, pp. 46-47.

my assertion.

Available time today forces me to restrict this documentation to only a few examples. First correspondence concerning the following statement made by Secretary of Labor Willard W. Wirtz in 1964.³ "There is a strong indication that a disproportionate number of unemployed come from large families, but we do not pursue evidence that would permit establishing this as a fact or evaluating its significance." In January 1965 I wrote to Secretary Wirtz saying that in my paper on "Population Control or Eugenics" I had quoted this sentence from his OECD speech. The Nobel Symposium at Gustavus Adolphus College where my paper was presented was entitled, "Genetics and the Future of Man." In this context, Mr. Wirtz replied:

Unfortunately the Labor Department does not have the resources or the money to undertake a serious study of the population problems that I mentioned in my OECD speech. It was my hope that remarks on the subject would encourage others to ferret out the facts. I would certainly agree that it would be useful for you to stress the need for research in these areas....

This reply seemed to me straightforward and constructive. However, my subsequent communications to the Department of Labor produced answers from Deputy Assistant Secretary King Carr that emphasize that Secretary Wirtz had not suggested any relationship between genetics and unemployment:⁴

The Secretary was speaking of population as distinguished from genetic problems: I do not think his comments have any relationship to your concern.

And again, on December 6, 1966,

Undoubtedly the Secretary was interested...in an environmental factor.... He certainly was not suggesting that children in large families might be genetically inferior.⁵

These letters, in their complete context, demonstrate to me that

³ Wirtz letter to W. Shockley, 4 February 1965.

⁴ Carr to W. Shockley, 21 April 1966, 6 December 1966.

⁵ Department of Labor, March 1965, Report entitled: *The Negro Family, the case for National Action*, Chapter 4, page 35.

the Department of Labor disavows any competence about genetic factors and poverty. Yet a Department of Labor report is quoted as gospel precisely on the subject of genetic factors in a report from the Office of Education of the Department of Health, Education and Welfare.⁶ The quoted statement is as follows:

There is absolutely no question of any genetic differential: 'Intelligence potential is distributed among Negro infants in the same proportion and pattern as among Icelanders or Chinese or any other group.' No factual basis for this statement exists, according to Professor Curt Stern, whom I quoted before; a conclusion that was repeated in a recent position statement of the National Academy of Sciences entitled 'Human Genetics and Urban Slums.'⁷

I shall not take time to extend my documentation of the existence of entrenched dogmatism in other government departments and in Universities save to read one letter that will illustrate in addition to entrenched dogmatism both the moral and factual support that I have received as a result of reports for my demands for objective search for relevant facts. The letter is from a young M.D. who is a Fellow at the Johns Hopkins University School of Medicine.⁸

I would like to extend my congratulations on your speech before the National Academy of Sciences as excerpted in *Medical World News*.

Your questions are excellent, but almost seem unaskable in our contemporary intellectual climate. The rather violent letters that followed Dr. Ingle's comments in *Science*⁹ [parenthetically Ingle is a physiologist member of the National Academy of Sciences who commented on possible racial differences in intelligence] struck me as being but a pale reflection of the hostile scholasticism of the so-called liberal intellectual community. I pray that you will be able to withstand the onslaught, for these questions must not only be asked but answered.

I would like to close with a personal anecdote concerning

⁶ H.E.W. See American Education published by *U.S. News & World Report*, 17 October 1966, p. 78.

⁷ See *News Report*, National Academy of Sciences, National Research Council, National Academy of Engineering, November 1967, XVII #9, pp. 4-5.

⁸ The writer is Perry A. Lombird, M.D.

⁹ See *Science* for Dwight J. Ingle, "Racial Differences and the future", 16 October 1964, Vol. 146, pp. 375-379. Ingle replies to attacks, 18 Dec 64 and 1 Jan 65.

'proof' in the field of genetic variability and intelligence. Some years ago as a medical student I sat in a pediatrics lecture at this institution and listened to a distinguished professor state that despite very real differences between white and Negro school children on IQ testing, both races were of equal intelligence. To support this contention, he stated that Negroes performed better than white children on tests given in the pre-school age group (2-3). The subsequent differences, 'therefore', reflected environmental disadvantage. Later in the course of the same lecture he discussed species variation in development and pointed out that on manual intelligence tests apes in the 12-18 month age group performed better than human children of identical ages. At the conclusion of the lecture, I facetiously made the 'obvious' association and inquired if he had just proved that apes were only environmentally disadvantaged. For this attempt at levity, I was almost asked to leave the medical school.

If I can ever be of any assistance, please let me know.

The writer has assisted me by permitting me to quote him to you today. At this point it is appropriate for me to report on my views concerning the American press. In the last two years I have acquired enormous respect for the wisdom that our founding fathers showed when they added the freedom-of-speech-and-of-the-press First Amendment to our Constitution. With one prominent exception, I have found that when I have carefully organized my thoughts, put them down on paper and responded thoughtfully to interviews, the reporters have given an accurate and unbiased report of what I was endeavoring to say. The outstanding exception is Mr. David Perlman, the generally highly competent science reporter for the *San Francisco Chronicle*;¹⁰ I still wonder what factors, personal or professional, kept Mr. Perlman from fulfilling his obligation as a reporter to print what he at the time was probably the only newsman to know, namely that two of the past twenty presidents of the American Psychological Association publicly disagree with the Department of Labor statement about equality of intelligence for all races:¹¹ Harry F. Harlow of Wisconsin and Henry Garrett,¹² emeritus of Columbia, both assert beliefs, of varying degrees of strength,

¹⁰ *San Francisco Chronicle*, 14 Jan 67, pp. 1 and 12. Letters to the Editor, 17 Jan 67, p. 34; 18 Jan 67, p. 42 and 30 Jan 67, p. 40.

¹¹ See W. Shockley, *Proceedings of the National Academy of Sciences*, June, 1967, pp. 1767-1774.

¹² Henry E. Garrett, Patrick Henry Press, various publications.

that in genetic potential for achieving IQ scores people labelled black are at least 7.5 IQ points lower than people labeled white.

To return to the press, I credit the *Chronicle* with giving me Letter to the Editor space to reply to Mr. Perlman's biased report of my Commonwealth Club talk and am waiting to see if they will give space for my reply to a letter that appeared last week labeling me "a blithering idiot or careful mischief maker."¹³ I asked that the *Chronicle* readers be allowed to judge from my own statement of my position. I shall now read this statement as an introduction to the substantive part of my talk – material that I shall present, by the way, as much in the role of a reporter as a scientist – in my own evaluation I now regard myself as possibly the best informed reporter in this area of subject matter. Here is my position as recently submitted to the *Chronicle*.

With racial strife escalating at probably more than 50% per year, I demand as a citizen, a scientist and an inventor that imaginative, intellectual approaches be addressed to a central problem: Have our well-intentioned humanitarian welfare-programs led our nation unwittingly to enslave genetically our Negro minority by encouraging disproportionate multiplication of their most improvident members? *The Negro American* (Houghton Mifflin, 1966) reports that the average number of children per family classified by parent's occupation and by race are 2.4 for skilled white, 3.7 for unskilled white, 1.8 for skilled Negro and 5.3 for unskilled Negro. I know of no comparable statistical data on fatherless ghetto children and I fear what such statistics might show.

If Negro genetic potential for intelligence has dropped five I.Q. points compared to whites between World War I and 1966, as my generally disregarded studies suggest, the supply to demand ratio for leadership in the Negro minority will have become about five times smaller as a result. Are we now seeing this shortage of wise leadership in riot situations? I believe that asking this question is more in the interests of continuity of the splendid progress of the Negro middle class than are the sanctimonious, name-calling assertions of inverted liberals to the effect that any inquiry is dangerous because it will be misused.

I conjecture that the final consequence of established facts and public discussion will be eugenics laws. The lesson to be learned from Nazi history is the value of free speech, already embodied in our constitution, not that eugenics is intolerable. About Denmark's

¹³ *San Francisco Chronicle*, Letter to the Editor, 21 Nov 67 from a reader re: "blithering idiot."

thirty-year old eugenics program Danes say: "It is clear to us that many children who would have grown up in miserable conditions or would have suffered from hereditary diseases have never been born – and living conditions for tens of thousands of people have improved due to our sterilization practices."¹⁴

What, I demand, is the relevance of this quotation to the hospital for the mentally retarded at Sonoma? An eminent San Francisco pediatrician and expert on handicapped children has said to me: "What we need is a Luther Burbank for people."¹⁵

So much for my position as sent to the *Chronicle*. I shall discuss some aspects of its basis shortly.

I have often been asked why I, a physicist with the established expertise of one of the Nobel Laureates honored for creating the transistor, have taken the initiative to become the most prominent American scientist publicly to demand that objective, interdisciplinary research be directed at questions of human quality, including racial differences and hereditary factors in poverty. In this area I find I have little choice consistent with my intent to have the clearest possible conscience during my last thinking five minutes of life. Concerning the circumstances that have enmeshed me in this field, let me say that accident has played a large role. For example, I might never have released for printing my 1965 *U.S. News and World Report* interview "Is Quality of U.S. Population Declining"¹⁶ had not a clerical error accidentally placed the unfinished rough draft in the hands of Merritt Holman, then editor of *Stanford M.D.*, the Alumni journal of the Stanford Medical School.¹⁷ This chance happening and its consequences, also involving chance factors, brought me face to face with the objective reality of our inverted liberal atmosphere – a situation that I found and still find intolerably offensive and cannot leave unattacked and remain at peace with my conscience.

It is my hope that in this audience I shall today probe brutally into a soft spot of another person's intellectual conscience and provoke at least one young man with longer future prospects than mine to face the fact that competent brains have an obligation to use intelligence to reduce uncertainty about the cause of illness, no matter whether the uncertainty is the cause of sickness of a patient or the environment-her-

¹⁴ *U.S. News & World Report*, The "Unfit":Denmark's solution", 27 Mar 66, p. 74.

¹⁵ W. Shockley letter to the Editor, *San Francisco Chronicle*, 22 Nov 67.

¹⁶ *U.S. News & World Report*, 22 NOV 65, P. 68.

¹⁷ *Stanford, M.D.*, Jan 1966 and letters to the Editor, Oct 1966.

edity uncertainty of our nation's sickness in our city slums. Accurate diagnosis is necessary in order that our problems, be they medical or social, will be attacked on the basis of objectively established facts and sound methodology.

Before discussing my own research and what other facts might be established, let me close this appeal to conscience with a telling quotation from Professor Kingsley Davis, the noted demographer at Berkeley:

"When man has conquered his own biological evolution, he will have laid the basis for conquering everything else. The universe will be his, at last."¹⁸

II. The Environment-Heredity Uncertainty and the Negro Ghetto

I shall now discuss the environment-heredity uncertainty as a research problem.

The human quality problem of the United States is on the front pages nearly every day. The focus is on the disadvantage of the American Negro. The central core of this problem is the urban slum or Negro ghetto. Is the failure of the Negro to escape from the ghetto a consequence, as Whitney Young of the National Urban League has suggested in *Civil Liberties* November issue,¹⁹ a consequence of 300 years of legal inequality that may take 300 years of legal equality to correct? Or is there a significant racial genetic component? Equally frightening, can the genetic disadvantage be increasing?

What are any relevant statistical facts? Can the analytic tools of scientific research give a meaningful answer?

In scientific philosophy, I am a follower of the late P. W. Bridgman of Harvard; I hold that either a question is meaningless or a definitive methodology must exist, at least in principle, for answering it.²⁰

Here is a typical, and to me striking example of the data that calls for an explanation. The American press, it seems to me, has been sympathetic and responsible to the civil rights movement.²¹ Yet out of 50,000 professional newsmen in metropolitan dailies, only 100 are Negro. This means that on a per capita basis a Negro has a forty times smaller

¹⁸ *Genetics and the future of man*, North Holland Press Pub. Co., New York, 1966, p. 204.

¹⁹ *Civil Liberties*, No. 250, Nov 1967, P. 3.

²⁰ P. W. Bridgman, *The logic of modern physics*. McMillan Co., New York, 1961, paperback Orig. 1927.

²¹ Newsmen, *New York Times*, 13 OCT 67, P. 28.

chance to get such a job than the average citizen. Furthermore, on mental ability tests Negro school children show relatively better on verbal ability tests than on tests for ability in reasoning, number, or spatial relations. (Parenthetically in passing I note that patterns of ability for Chinese American students are lower in verbal compared to reasoning, number and space.) Does the forty-fold disadvantage for Negroes on metropolitan dailies signify discrimination, is it purely poor environment, or is it a feature of a general genetic pattern?²²

It was towards a statistical study of a sort that had not apparently been done before that I directed my research effort that resulted in two papers presented at meetings of the National Academy of Sciences, last being published in the June issue of the Proceedings under the title "A 'try simplest cases' approach to the heredity-poverty-crime problem."

In my published analysis I also report on much less extensive data on two other minority groups: Chinese and Japanese Americans and Jewish Americans.²³

Here are some of the broad features of the statistics: All three of the minority groups I studied have members who achieve the highest distinctions. Ralph Bunche and Martin Luther King are Negro American winners of the Nobel Peace Prize. Chinese Americans, C. N. Yang and T. D. Lee have won the Nobel Prize in Physics. There are many Jewish American Nobel Prize winners in science. All three minority groups are represented in the prestigious *International Who's Who*.

What is very different for the three minorities are the frequencies. In scientific eminence, Jewish Americans do about 30 times better per capita than the average non-minority citizen, Chinese and Japanese 10 times better and Negroes nearly 100 times less well. On the negative side for social behavior, Chinese and Japanese are significantly less likely to be arrested than Negroes. For illegitimacy, narcotics addiction, arrest, and murder, Negro probabilities are seven to ten times larger per capita than the average.

In respect to crime figures let me note in passing that statistics show that the average citizen of Washington, D.C. has one chance in a hundred of being murdered in 60 years of life, a probability eighty times larger than for the average citizen of Sweden.²⁴

I shall not take time in this lecture to discuss the details of the

²² Patterns, See G. S. Lesser, G. Fifer, D. H. Clark, *Monographs, Soc. for res. in Child Development*, 1965, 30, No. 4.

²³ Nobel Prizes, See *World Almanac*. Shockley's estimate on Jews.

²⁴ Sweden, See *U.S. News & World Report*, 7 Aug 67, p. 72. and *World Almanac*.

statistical analysis that I undertook to see if an all genetic model made any sense in describing minority statistics compared to non-minority citizens. The answer was that it did. I tried to find a single universal mathematical pattern of what I called social capacity index that was supposed to describe the statistical distributions of all the minority and non-minority groups for which I had data. The answer was that I found one which is essentially normal distribution out to two standard deviations and then became a straight line on semi-log paper. The details are in my published paper. This distribution accounted for the different statistics of the different groups simply by an offset. In other words it was as if the Negro distribution was shifted downwards 1.2 standard deviations and the Chinese-Japanese Americans up 1 standard deviation.

The estimated offset of 1.2 units was not consistent for all measures of Negro performance. Negro performance is actually a few tenths of a unit better than whites for medals in Olympic games, only about three tenths worse than whites for unemployment and about two units worse for scientific eminence.

The general consistency of the model for other measures of performance than sports, unemployment and science is consistent with a racial genetic offset in social capacity in our modern technological society equivalent to about 18 I.Q. points for a median I.Q. of 82.

I do not conclude that my studies prove that a genetic offset actually exists. The conclusions are consistent with a model that assumes that a genetic offset of 1.2 units equivalent to about 18 I.Q. points is the principal cause. However, the agreement of this model with the facts does not prove that the effects are not principally environmental, although it is in accord with Professor Harlow's conjecture: "It is my opinion, and it is the opinion of many psychologists, that the average intelligence scores of people labeled 'black' are lower by about one standard deviation than the average of those labeled 'white' and I believe at least half of this difference is related to genetic variables."²⁵

My attack on the statistics of racial differences was provoked in part by my finding (Fig. 1) that at present only 7 percent of the Negro scores on the Armed Forces mental tests exceed or overlap the white median score. Fifty years ago, the overlap was 13 Percent. This decrease in overlap from 13 Percent to 7 Percent would be expected if the difference between median I.Q.'s for Negroes and whites had increased by five I.Q. points during the intervening two and one-half generations.

²⁵ Harlow, See quote in 1-7 (b).

The facts of behavioral genetics and what information I could obtain relevant to Secretary Wirtz's large-families statement, led me to conclude that a drop of five I.Q. points in average Negro intelligence could easily have occurred in the course of the two generations since World War I as a result of higher birth rates of disadvantaged, improvident people. My inquiries to eminent anthropologists convinced me further that objective studies were not in progress and were [not] even being discouraged.

If the distribution function I discovered is correct and if average Negro genetic intelligence potential has dropped 5 I.Q. points since World War I, then a mathematical theorem is that the ratio of high to low social capacity index individuals will as a result have been reduced six times. If such effects are occurring and if entrenched dogmatism is blocking their discovery, then the consequence may be a cruel form of genetic enslavement that could provoke extremes of racism. I intend my actions in raising these questions to have the effect of a visitor to a sick friend who strongly urges a diagnosis painful though it may be that seeks to expose all significant ailments. I feel that no one should be more concerned with these possibilities than Negro intellectuals.²⁶

What I do conclude is that the mainly genetic model cannot now be rejected by an impartial appraisal of existing data.

Let me list some of the principle research tools that could be employed in a more vigorous attack on the environment heredity uncertainty:

(1) The statistical distribution of I.Q. scores including the effects of genetic defects and environmental damage that produce the extreme retardation with I.Q. below, say, 55.

(2) The results of identical twins studies, not now adequate for Negro twins, that from my engineer's viewpoint seem to show conclusively that under a meaningful range of conditions heredity is more than three times as important as environment in controlling intelligence and that I.Q. tests do significantly read through environment to measure a genetic component.²⁷

(3) The law of regression to the mean for I.Q. scores that states to a good first approximation that the average I.Q. of children will fall half-way between the average for their parents I.Q. and the average for the population involved.²⁸

²⁶ *Behavior Genetics*: Personal communications, T. Dobzhansky and H. F. Harlow.

²⁷ Identical Twins, See A. R. Jensen, *Proc. Nat. Acad. Sci.*, July 1967.

²⁸ Personal communication, A. R. Jensen.

(4) Pattern-of-ability techniques in analyzing individual differences and group differences in mental abilities.²⁹

(5) The apparently well established biological fact that Negro children mature more rapidly and outperform white children, even when climatic factors are controlled, for the first two or three years of life.³⁰

(6) Genetic blood type data and other genetic information that enables conclusions to be reached about average racial composition – for example in 1953 Baltimore Negroes had thirty percent of their genes from white ancestors.³¹

(7) Behavior genetics shows that selection of parents for extremes of any behavioral traits for even as few as three successive generations leads to offspring whose average behavior differs markedly from that of the original population. Removal of artificial selection results in a rapid return to the statistics of the original population.³²

This last tool is the one that causes me worry in respect to possible unwitting selection for improvidence by our well intentioned welfare programs.

In respect to these tools let me say again, I am now as much a reporter as a specialist scientist. I report these tools as being valid instruments and insist that an interdisciplinary evaluation of them and their implications is called for and is not now being adequately made.

Let me suggest how to apply these tools to the following statement.

"Until all environmental differences and injustices have been eliminated, no valid conclusion can conceivably be reached about relative genetic potential for intelligence between Negro and white Populations."

This typical inverted-liberal position is unimaginative and intellectually untenable. Before suggesting how to demolish it, let me make it quite clear that I am against injustice and I favor all environmental improvements possible; I support welfare and head start programs; but I also endorse birth control clinics and favor complete liberalization of abortion laws.

Now to come back to the statement that no valid conclusion is possible before remedying all the environmental aspects. Here is the relevant observation: The extensive Coleman report, prepared for the

²⁹ See 2.2.2 A.

³⁰ See Nancy Bayley, "Comparisons of mental and motor test scores for ages 1-15 months by sex, birth order, race, geographical location, and education of parents", *Child Development*, 1965, 36, pp. 379-411.

³¹ See Bently Glass and C. C. Li, *Am. J. Human Genetics*, Vol. 5, pp. 1-20, 1953.

³² See 2.2.5 (a).

Office of Education based on a study of 600,000 children, also includes data on another minority group even more environmentally disadvantaged than American Negroes.³³ In fact estimates of this environmental disadvantage from criteria reported in the Coleman report and from other independent criteria on family income etc., indicate that American Indians are farther below Negroes than Negroes are below whites. Yet on the Coleman tests, taking 9th grade data as an example, American Indian children have average scores that are substantially above Negroes and on the non-verbal tests come approximately half-way between Negroes and whites. This apparently overlooked feature of the Coleman report seems strongly to suggest a basic genetic advantage for performance on the Coleman tests of the Indian over the Negro.

Let me next mention four items relevant to population distributions. In Orinda, a Berkeley faculty residential area, I am told that psychologic research has not revealed any children in regular school with I.Q.'s below 80. This is generally consistent with the regression law if the parents average I.Q. is above 130. The tail of the distribution for the children would thus be negligible below 80.³⁴ However, the proportion of severely retarded children, I.Q. below 55, is the same as in other groups. Genetic assembly errors and birth damage produces these very low I.Q.'s.³⁵

The next two items are heresay and suggest the kind of research possibilities I believe are overlooked or suppressed. In an integrated school whose location I shall not name for retarded children, the white children look like genetic assembly errors; there is obviously something wrong. The Negro children appear healthy and normal. Are they simply the low end of a normal distribution centered at a median of about 82 I.Q. such as the 18 point offset would suggest? This would be significant information about the low end of the distribution of I.Q. and would give a significant estimate of the offset.

In a study by Professor A. B. Wilson of University of California at Berkeley carried out on a contract with the U.S. Commission on Civil Rights,³⁶ there is data relevant to the regression thinking tool. This study shows children's I.Q. classified according to family status for the following four classes: First, Professional and Managerial; Second, White

³³ *The Coleman Report*, U. S. Office of Education.

³⁴ Orinda, personal communication regarding research in progress.

³⁵ Retarded school, as for 2.2.8 (a).

³⁶ A. B. Wilson, See "Racial Isolation in the Public Schools", *Report U.S. Commission on Civil Rights*, Vol. II p. 165, Washington, D.C., 1967.

collar; Third, Skilled and semi-skilled manual; Fourth, lower. In each of these classes, assuming that Negro and white parents are of comparable I.Q., the regression of the Negro children is typically 10 to 15 points more than for the white. This is again consistent with a Negro population mean eighteen points or so below the white mean.

What frightens me most about this situation is that almost no one appears to be attempting to interpret data on any basis save the environmental one. I am, myself, prepared only to conclude that the data are consistent with a major genetic racial offset. Further than that, I simply repeat my demand that these problems must not remain blocked from impartial appraisal by any form of entrenched dogmatism.

The environment-heredity uncertainty exists. While such uncertainty exists it leaves prejudices, both antiblack and antiwhite, free from attack by facts. This uncertainty can cause agony to all concerned. To make no vigorous attempt to urge its resolution is an irresponsibility I am *not* willing to have on my conscience.

III. Eugenic Laws

Let me repeat that what I urge today is the impartial appraisal of objective realities about the genetic quality of our population and the open, exploratory, discussion of possible eugenics programs.

I have no eugenics recommendations save that as a nation we start to explore publicly possible solutions to human quality problems. I think sensible actions will then develop just as they have for human quantity problems.

Consider the recent changes in viewpoint on human quantity problems. Less than ten years ago President Eisenhower, and with him the majority of the nation, held that population control aid to underdeveloped nations was and I quote "emphatically a subject that is not a proper political or governmental activity..."³⁷ Eisenhower has publicly changed his stand. We are furnishing birth control aid abroad, and two months ago the United Nations at long last reported, through its Food and Agriculture Organization, that birth control is necessary to save half the world from increasing hunger caused by human quantity problems.³⁸

Human quality discussions among inverted liberals are blocked by two cliches: Who will decide who should reproduce? and When the

³⁷ United Nations, *Wall Street Journal*, 12 Oct 67, p. 1.

³⁸ Boulding, "The meaning of the Twentieth Century Time Capsule," *Newsweek*, 20 Nov 67, p. 59.

committee to decide on the perfect man is organized, be sure to get appointed to it.

If these two cliches impress you in the least, you need to broaden your perspectives on these difficult problems. Let me give you a thinking exercise consisting of a combination of Kenneth Boulding's deci-child certificate plan and the Population Council's time capsule for temporary sterilization.³⁹

Here is the plan divided into five steps:

Step 1: The public votes for the rate of population increase, say one-third percent per year so that population will double in two centuries.

Step 2: The census bureau computes that this means on the average 2.2 children per each girl that reaches maturity.

Step 3: The public health agencies ensure that every girl becomes sterile by subcutaneous injection at any early age of the time capsule. The time capsule is a small silicon sponge providing a slow seepage of the contraceptive hormone being developed by Dr. Sheldon Segal, the Population Council's biomedical research director. She will then remain sterile until the sponge is removed.

Step 4: Upon reaching maturity every girl is issued 22 deci-child certificates. A married couple could use ten of these to pay for sponge removal until after birth of a child. Then a new time capsule is installed.

Step 5: After two babies, the couple can either sell the remaining two deci-child certificates through any member firm of the N.Y. Stock Exchange or buy eight more on the open market and have a third pregnancy. In fact, a girl intending to become a nun could sell her certificates immediately upon their receipt.

After you have recovered from any emotion provoking jar from this unfamiliar combination of concepts, do apply your brain to the time-capsule deci-child certificate proposal. What would be its consequences? Only people who want and can afford children have them. Of what relevance are thought blocking cliches of who-decides and what-is-the-perfect-man?

My main purpose in proposing this example of eugenics is to provoke you to search your own conscience. Are you thinking seriously about these questions most important for the humans who will live in the world predominately shaped by the decisions of your generation? How will your conscience be during the last five minutes of your life?

³⁹ *Time Capsule*, Newsweek, 20 Nov 67, p. 59.

IV. Concern for Memories of Emotions Stored in Neurological Systems.

The human quality problems that I have endeavored to open for discussion have forced me to look for a basis for a set of human values. I have found it necessary to formulate a philosophy consistent with my physicist's picture of the world and with my unhappiness at the prospect of seeing the growth of preventable human agony. I have found these thoughts sufficiently appropriate for my own needs that I shall present them, even though it carries me out of my self-proclaimed role as scientist-reporter and their expression is to some degree repetitious with what I have already said.

Man is an animal possessing the most complex neurological brain structure so far produced on this planet - a structure developed as a consequence of the interaction of mutations in the genetic code with evolutionary selection. This I hold to be a basic scientific premise of abstract but unquestionable reality.

Man's neurological structure is capable of processes that are experienced as sensory impressions, logical relationships, and emotions. Memories of these processes are stored, in some way not yet understood, in nerve cells in our brains.

I shall now endeavor to put in perspective in terms of these concepts, the Golden Rule of Christ, the reverence for life of Albert Schweitzer, and the conviction of Thomas Aquinas that the foetus in a pregnant woman does not become a human being before several months of life. These religious principles have been outstandingly successful in guiding the actions of thinking men so that they can be at peace with their consciences in their relations with their fellowmen.

The underlying key attribute of these principles is, I believe, the capacity of a neurological system to remember emotional experiences. The more this capacity resembles that of man, the greater is a human feeling of kinship with the organism involved.

Let me illustrate in terms of my own personal reactions and show how they fall into a continuously graded sequence through the array of living things.

It does not distress me in the least to pull a dandelion because it has no neurological system to record the agonizing experience of imminent destruction. I do not like to kill a spider or a fly because I sense a similarity of their neurological systems to mine - they also see and hear and respond to threats by flight and to some degree they probably also store emotional memories.

I would not trouble, as I judge Schweitzer might, to spend energy to oppose a man who would spray aphid. Their neurological systems are

so limited that I feel negligible concern for what they may record in their rudimentary memories. But I would exert myself to prevent cruelty to a dog, a monkey, or a dolphin with whose neurological systems I feel great kinship. A cat expresses happiness and companionship with humans that I emotionally sense. This emotional bond I logically interpret as an objective – although intuitive – appraisal of a community of neurological functions between myself and our orange-striped Tabby. Prevention of storing unhappy memories for even a few moments is accomplished when an animal is humanely put to sleep. Society has not yet faced this moral question for incurable forms of human suffering.

The abortion of a foetus whose neurological system is not functioning is less offensive to me than the trapping of a mouse that dies slowly recording in its memory for minutes or hours the agony of a broken back and ruptured kidneys.

The Golden Rule of Christ is in keeping with this sense of neurological kinship. To me it seems that concern for the neurological emotional memory capacity of fellow humans is the key attribute that Christ has embodied in the deep insight of, "Do unto others as you would have them do unto you." The self-esteem of a person guided by these principles will be based on what he has caused his fellow humans to record in their memories of emotions.

Schweizer has, I believe, carried sympathy for living things to an absurdity when he advocates – in keeping with his principle of reverence for life – transplanting a weed rather than throwing it on the compost heap. Did Schweitzer withhold antibiotics from a sick patient because of his reverence for the life of bacteria?

I propose that neurological systems [are] a key attribute of morality.

On this premise of concern for memories of emotions stored in neurological systems of those mammals with whom I feel the closest kinship, I view with great consternation – even abhorrence – the attitude of inverted liberalism that maintains all babies are born equal. To me it seems immoral not to view with concern, and perhaps not to try to prevent, the births of humans whose nervous systems can be reliably predicted to have a high probability of being destined to feel that a malevolent conspiracy ruthlessly contrives their frustration. I am thinking here of those human beings forced by the improvidence of their mothers, and the obtuseness of society, to emerge into this world with a genetic mix of neurological connections that gives them emotions, aspirations, and capacity to remember; but such inferior logical capacities that in our

technologically based society their lives are spent in recording memories of frustrating experiences.

If, indeed, such individuals are now being produced in our city slums in disproportionately rapidly increasing numbers by our humanitarian – but witless and irresponsible, I fear – welfare programs that have now continued for several generations, then the results may be the infliction of agonizing experiences and the recording of unhappy memories in human neurological systems, and this infliction of neurological insult may never have occurred at the same quantitative scale in the entire history of the human race.

It is towards an objective appraisal of these possibilities that I urge the exploration and controversies of university students of today. If the questions I raise are unanswerable, let us find what natural principles make them so. If it cannot be proven that they are unanswerable, let us then vigorously seek to make logical structure patterns about them valuable to man's future. It is my personal prediction that some form of eugenics will be the outcome and that the sooner it comes, the more will be the avoidance of human agony.

Let me summarize my views:

In this great United States we are almost certainly the most powerful form of organized life that has ever existed in our solar system. Mankind has, I conjecture, passed the point of no return in the evolution of intelligence. Mankind in nuclear weapons is very near to having the power of its own extinction. This physical power seems inevitably destined to grow. Only the development of the applied intelligence capable of logically predicting the effects of various courses of action seems likely to forestall catastrophe. I ask, "Is it probable that our national intelligence will increase if, because of the entrenched dogmatism of inverted liberalism, we are indeed playing a witless, irresponsible God with our own genetic future?" I worry if our young minds can soundly obtain insight into these unpalatable questions from an academic community that, I fear, is characterized accurately by what *ME* magazine has recently described as maintaining that "no one knows," "there is no way to tell," "any inquiry is felt to be dangerous." I urge students to seek the meaning of objective reality by asking:

How can I prove to myself by my own sense and own reasoning, what works? Can I validate conclusions by demonstrating them to be transmittable to others who find my results to be reliably reproducible?

These are the questions not only for today's students, but of man since the first human brain matured.

My prediction that some form of eugenics will become law in the United States within a generation is founded on the tentative conclusions resulting from my own attempts to establish objective realities about human quality problems. I also believe that a fundamental principle that can help resolve the conflicts in formulating such eugenics laws is the principle that I have just expressed – concern for memories of emotions stored in neurological systems of earth's hereditary sequence.

It has been a privilege that I appreciate to have had the opportunity to share with you my concerns for the genetic future of man and to ask you also to seek paths likely to confer the greatest benefit on mankind.

DOCUMENT 5**Ten Point Position Statement on Human Quality Problems**

Revised by William Shockley from a talk which he presented on "Human Quality Problems and Research Taboos" presented at the Educational Records Bureau Conference in New York on 1 November, 1968.

1. "The truth shall make you free" implies to me that man's brain should endeavor to understand and to solve the quantity and quality problems of mankind. This is true no matter whether man's brain was placed in his head when God created man in his own image or was developed by the evolution of a territorially-united weapon-using ape.

2. I believe that the voting citizens of the United States can and should endeavor to make their government seek objectively to formulate programs so that every baby born has high probability of leading a dignified, rewarding and satisfying life. Letters from government organizations show that hereditary factors are essentially excluded from present studies of our social problems.

3. Although I conjecture that some form of eugenics will be essential to achieving my second point, eugenics is now so shunned a subject for discussion that a foundation for wise action decisions is lacking. I do urgently advocate inquiry into and discussion of eugenics but no action programs, except possibly sterilization after the n th successive illegitimate child on relief with n to be determined by national vote and possibly constitutional amendment.

4. I favor welfare programs in general and Head Start in particular; the latter because it may contribute to emotional and motivational factors, even though its effects on I.Q. may be negligible.

5. I do favor complete availability to all citizens of birth control information and supplies and complete liberalization of abortion laws.

6. Although the white illegitimacy rate has increased at a higher compound-interest rate than the Negro rate, my attention in the last three years has been brought to focus on the genetic potential for intelligence

of the illegitimate, slum Negro baby for two reasons:

First, the sickness of our nation shown by the problems of racial unrest are agonizing to all responsible citizens and are obviously most acute for the disadvantaged Negro minority.

Second, the available facts lead me to fear that illegitimate, slum birth rates are lowering Negro hereditary potential for intelligence so that the result may be a form of genetic enslavement that may provoke extremes of racism with resultant misery for all our citizens.

7. Although I do not believe that it has been proved, I do conjecture that it can be proved on the basis of now available facts that an actual loss of ground for Negro genetic potential for intelligence has indeed occurred during the last 30 years as an unforeseen by-product of the encouragement that our welfare programs have given to the least effective elements of our population to have large families; this probably occurs for white as well as black but disproportionately more for the black. Let me emphasize again that I endorse welfare programs. What I urge is objective inquiry to see if my fears are justified. If my fears are justified and their recognition leads to remedial changes in welfare programs, then all citizens, again regardless of race, will benefit more from the abundance made possible by our outstanding national productivity.

8. My position is not that all Negroes are inferior to all whites; instead I do believe that many Negroes are superior to many whites. In fact my statistical studies show that American Negroes achieve almost every eminent distinction that whites achieve and are ten times more successful per capita in winning Olympic gold medals. However, so far as distinction dependent upon mental powers is concerned, the probability on a *per capita* basis is between ten and one hundred times smaller for Negroes than for the national average and it is this probability that I fear is falling as a result of the high birth rates of the most disadvantaged.

9. I believe my actions in raising these questions are like those of a visitor to a sick friend who urges a thorough diagnosis, painful though the diagnosis may be, so that remedial steps may be based on objectively established facts and sound methodology. To fail to raise these unpopular questions because of fear of the resentment towards me that may ensue is an irresponsibility I am not willing to have on my conscience. I believe and hope that my determination to see that these questions are

faced and answered may be the greatest contribution anyone can make to American Negro welfare for the next generation.

10. During the last rational five minutes of my life I hope to consider that during 1968 I used my capacities close to their maximum potential with the aim, as phrased in Nobel's will, of "conferring greatest benefit on mankind."

DOCUMENT 6

**An Analysis Leading to a Recommendation
Concerning Inquiry into Eugenic Legislation**

Press Release by William Shockley, Stanford University, 28 April 1969

We feel compelled to endeavor to increase public awareness of what we believe to be rapidly growing, vital national problems.

We call attention to the fear expressed in the Winter Issue of the Harvard Educational Review by Arthur R. Jensen – a fear not faced by the discussions of his article now in press for the Spring Issue. Jensen wrote:

Is there danger that current welfare policies, unaided by eugenic foresight, could lead to the genetic enslavement of a substantial segment of our population? The possible consequences of our failure seriously to study these questions may well be viewed by future generations as our society's greatest injustice to Negro Americans.

A frightening identification of a mechanism that may be making Jensen's fear a reality was perceptively expressed by Negro author Kristin Hunter in the January 1969 *Reader's Digest*:

How unimaginative are middle-class people who believe that poor women have babies for the sole purpose of increasing their relief checks. Poor women have babies because, in their bleak world, babies are the only dependable source of happiness.

If Kristin Hunter's observation is valid, such a baby ("a warm, cuddly, consoling creature who will accept all your devotion and do nothing in return to bring you anguish" in Hunter's words) is born enslaved in a slum environment and probably genetically enslaved by inherited mental traits causing lack of foresight and responsibility.

We believe that irrefutable evidence continues to accumulate for the inheritance of genetically controlled, socially maladaptive traits (see L. L. Heston, and D. Denney, *J. Psychiat. Res.* 1968, Vol. 6, (Suppl. I), pp. 363-374). These findings support the extensive family pedigree studies extending over six generations of the Jukes, Kalikaks, Nams, Ishmaelites and others reported by the Eugenics Record Office of the Carnegie

Institution of Washington up to about 1926.

Also frightening is the fact that the child-bearing rates of schizophrenic women in New York State increased by more than 50% between 1935 and 1955, (L. Erlenmeyer-Kimling, S. Nicol, J. D. Rainer and W. E. Deming, *Amer. J. Psychiat.*, 125:7, Jan 69, pp. 88-99).

These recent scientific findings emphasize the significance of the Congressional testimony of Dr. James A. Shannon, Director of the National Institutes of Health, March 2, 1966: "...to put it bluntly, Mr. Chairman...we are gradually weakening our genetic inheritance..."

We believe that adequate objective scientific and legislative inquiries are currently inadequate and are even discouraged by the same varieties of wishful-thinking illusions that were clearly defined in 1921 by many speakers, including Sir Charles Darwin's son, Leonard, at the Second International Congress of Eugenics presided over by Honorary President Alexander Graham Bell and held at the American Museum of Natural History in New York City. In his introductory address, Charles B. Davenport of the Carnegie Institution of Washington warned that: "...A failure to be influenced by the findings of the students of eugenics or a continuance in our present fatuous belief in the potency of money to cure..." human quality problems, including their racial aspects, might "...hasten the end..." of civilization.

Denmark has continued since 1935 programs having eugenic effects including, among other measures, sterilization for IQ below 75 and release of completely incorrigible prisoners only after their agreement to sterilization. United Nations statistics show that Denmark's homicide rate has decreased 50% between the decade ending in 1956 and that ending in 1966, whereas other nations have in general increased. The latest FBI report estimates that during the last four years the U.S. homicide rate has increased 33% so that it is now more than 10 times Denmark's.

We believe that genetic factors susceptible to eugenic legislation like Denmark's are probably involved in our nation's deteriorating social quality that make many of our cities streets unsafe, in some cases even by day.

We fear that "fatuous beliefs" in the power of welfare money, unaided by eugenic foresight, may contribute to the decline of human quality for both the black and the white segments of our society and that the fears of genetic deterioration expressed by Jensen and Shannon are sound and significant. In response to these worries we propose a recommendation.

Recommendation

We urge the public, the press, the government, and the scientific community to seek facts relevant to hereditary aspects of our national human quality problems. We believe that from such inquiry will inevitably come knowledge suggesting wise, humane and appropriate remedial legislation. We urge these inquiries because we are impelled by a sense of responsibility to the generation that we shall in a few years or decades leave behind us.

We concur in the ANALYSIS and the RECOMMENDATION:

Walter C. Alvarez, Emeritus Professor, Mayo Foundation, University of Minnesota; syndicated med. columnist 1951. Author many books. (signature authorized by telephone 20 Apr 1969.)

John H. Northrup, Nobel Laureate in Chemistry for 1946; co-winner with Wendell M. Stanley "for their preparation of enzymes and virus proteins in a pure form". (signature authorized by letter 23 Apr 1969.)

John B. de C. M. Saunders, Professor Anatomy; Professor Regents Chair of Medical History; Chancellor 1964-1968, University School of Medicine, University of California, Berkeley. (signature authorized by telephone 21 Apr 69)

William Shockley, Nobel Laureate, Physics 1956; member National Academy of Sciences, Poniatowsky Professor of Engineering Science.

We concur in the RECOMMENDATION without taking a position on the ANALYSIS:

Sheldon Glueck, Professor Criminology; Roscoe Pound Professor Law, Emeritus Harvard. Author "Unraveling Juvenile Delinquency," etc. (signature authorized by telephone 21 Apr 69)

Dwight Ingle, Professor and Chairman, Department Physiology, University of Chicago, Member, National Academy of Sciences, Editor, Perspectives Medicine and Biology. (signature authorized by telephone 21 Apr 69)

DOCUMENT 7

Human-Quality Problems and Research Taboos

Article by William Shockley in *New Concepts and Directions in Education*, 1969.

Blinding acid in the eyes of San Francisco delicatessen proprietor Harry Goldman thrown from a baby bottle by teenager Rudy Hoskins was the 1963 news story¹ that was probably more influential than any other single cause in initiating my active concern with the possible dysgenic (i.e., antievolutionary) effects of modern society. Rudy Hoskins, nicknamed "the Brute," had an I.Q. of 60 to 65 and was one of 17 illegitimate children of a woman reported to have an I.Q. of 55, who could remember the names of only nine of her children. I referred to this case in 1965 in a *U.S. News and World Report* interview entitled, "Is Quality of U.S. Population Declining?,"² saying: "Is she an isolated statistic? Who knows? For myself, I fear it is not an isolated statistic. I can see how if this sort of thing can occur at all in our society, it could snowball so that the fraction of our population composed of such people could double in less than 20 years and outnumber all the others in a few centuries.

"Obviously, any substantial percentage of people like this could produce social instability ..."

This interview, when it was reprinted in the *Stanford M.D.* (the medical school alumni magazine), brought me into first person contact with the taboos that inhibit research on human-quality problems and especially their racial aspects. A letter to the editor attacking my interview was submitted, signed by the Faculty of the Department of Genetics.³ This letter, in disavowing any acquiescence in my outlook, contained phrasing such as "malice," "mischief," "pseudoscience," "hackneyed," and "deplore his innuendos about the hereditary basis of the purported intellectual and social deficits of Negroes," and expressed this, to me still amazing, view: "The whole concept of 'bad heredity' is in any

¹ *San Francisco Chronicle*, 14 to 27 March 1963.

² W. Shockley, "Is Quality of U. S. Population Declining?" an interview in *U. S. News & World Report*, 22 November 1965.

³ The Faculty of the Department of Genetics, "The Issue of 'Bad Heredity,'" *Stanford M.D.*, Series 5, No. 2, October 1966, p. 41.

case a myopic one since the high values of one social milieu are the vices of another one, and our milieu is constantly changing."

In carrying out the inquiries upon which I based my reply,⁴ I obtained the following comments from the chairman of the Committee on Science and Public Policy of the National Academy of Sciences:

A close reading of the paragraph [in your interview] makes it quite clear that you used due scientific caution in your statements. If the statement about mean white and nonwhite I.Q.'s did not have such touchy implications, it would probably have remained unnoticed ... I am afraid at this point that any study, *no matter how objectively conducted*, with which your name is in any way associated will henceforth be doomed to attack as being 'racist.'

This viewpoint (with italicized emphasis added) appeared to me to be not only a clear recognition but also an acceptance of the research taboos, expressed in the Genetics faculty's letter. It provoked me to study in the writings of Carleton Putnam⁵ his analysis of what I have since labeled "inverted liberalism." I found it straightforward to confirm Putnam's reporting of how these taboos block the seeking of enlightenment about our human-quality problems, especially as they may have racial aspects. These taboos became dramatically evident in May of 1968 when, after several months of organizational planning, there was a sudden cancellation by telegrams with three days' notice of the 25th Anniversary Convocation of the Brooklyn chapter of the honorary scientific society of the Polytechnic Institute, Sigma Xi.⁶ The cancellation was provoked by my proposed lecture having the same title and covering essentially the same material that is presented in this paper. Since then some additional information has come to my attention that I shall add to this presentation.

Figures 1 and 2 show two depressing features of our human-quality problems. The FBI records⁷ show that between 1962 and 1967 violent crimes per capita have risen at more than 10 percent per year. The

⁴ W. Shockley, "Dr. Shockley Replies," *Stanford M.D.*, Series 5, No. 2 October 1966, p. 41.

⁵ C. Putnam, *Race and Reason*, (1961) and *Race and Reality*, (1967), Washington, D.C.: Public Affairs Press.

⁶ *New York Times*, 13,15,18 May 1968, Editorial Page; *The Wall Street Journal*, 22 May 1968, Editorial Page.

⁷ J. Edgar Hoover, "Crime in the United States," *Uniform Crime Reports*, Washington, D.C.: Government Printing Office, 1967.

intensity of riot violence has been increasing even faster; my best estimate of the trend for the last five years is a compound-interest growth rate of about 50 percent per year. The central question that I pose in respect to these trends is this: Do these indications of deterioration of the quality of our national social behavior have as an underlying cause the possible decline in quality of U. S. population that I emphasized in my *U. S. News and World Report* interview?

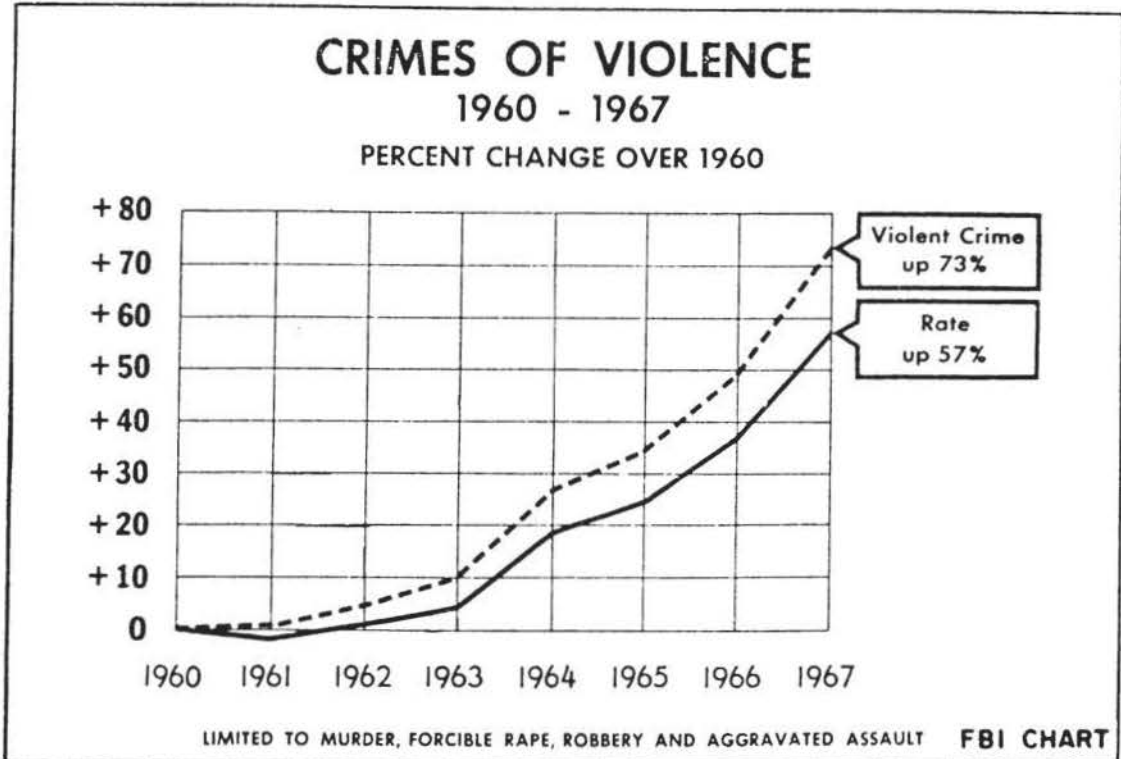


FIGURE 1: Crimes and violence from FBI Uniform Crime Reports.

One frightening indication that my concerns about hereditary factors in our human-quality problems may have a factual basis is the rapid increase in illegitimate birth rates. As shown in Table 1, the percent of white births that are illegitimate has been increasing at an effective compound-interest rate of 7 percent per year and the national total at 5.6 percent per year.⁸

⁸ If violent crimes (and also riots) require cooperation of n individuals, then a mass-action law, like that of chemistry, will cause the "cooperative" growth rates to be

Is there conceivably an hereditary connection between increasing illegitimacy and increasing crime? This is, I fear, another area of research taboo. Let me mention one study that came to my attention while preparing the final version of this paper. H. J. Eysenck in *Crime and Personality*⁹ has apparently established that two personality traits, neuroticism (emotional instability) and extraversion (carefree-ness), are both almost as heritable as I.Q.¹⁰⁻¹¹ As analysis of data like that presented in Figure 3¹²⁻¹³ shows, about 70 percent to 80 percent of the variance in I.Q. under normal conditions is genetically controlled.¹⁴

Furthermore, Eysenck has identified some groups of people characterized by social problems for whom the occurrence of neuroticism and extraversion is significantly higher than for the average of the population. Among these groups are automobile drivers with high incidence of traffic accidents and also, among women, both unwed mothers and women prisoners. Can it mean that unwed mothers do on the average transmit genetically controlled behavior traits that predispose the children to becoming prisoners? Now that Turner's Syndrome (a chromosome abnormality for women with a total of 45 instead of 46 chromosomes caused by a single X where XX should be) has shown a clear genetic control of patterns of mental ability¹⁵ (compare Counterfact 3B in Part III), the "whole concept" of bad heredity conveyed by Eysenck's findings becomes harder to reject as "myopic."

approximately n times higher than the population growth rates, i.e., 5.6 percent might lead to 10 percent for violent crimes and 50 percent for riots. This observation is a research suggestion rather than a conclusion.

⁹ H. J. Eysenck, *Crime and Personality*, Boston: Houghton Mifflin Company, 1964 (particularly p. 90 et seq.). Also, for a contrasting discussion of biological differences see: Charles C. Thomas, *The Biological Basis of Personality*, Springfield, Illinois, 1967.

¹⁰ H. J. Eysenck and D. Prell, "The Inheritance of Neuroticism: An Experimental Study," *J. of Mental Science*, 97, 1951, 441-465.

¹¹ H. J. Eysenck, "The Inheritance of Extraversion-Introversion." *Acta Psychologica*, 12, 1956, 95-110.

¹² A. R. Jensen, "Social Class, Race, and Genetics: Implications for Education," *Amer. Educ. Res. J.*, 5, 1968, 1-42. (a)

¹³ C. Burt, "The Inheritance of Mental Ability," *Amer. Psychol.*, 13, 1958, 1-15; "The Genetic Determination of Differences in Intelligence: A Study of Monozygotic Twins Reared Together and Apart." *Brit. J. Psychol.*, 57, 1966, 137-153; "The Evidence for the Concept of Intelligence," *Brit. J. Educ. Psychol.*, 25, 1955, 158-177.

¹⁴ For a review see A. R. Jensen, "Estimation of the Limits of Heritability of Traits by Comparison of Monozygotic and Dizygotic Twins," *Proc. Nat. Acad. Sci.*, 58, 1967, 149-158.

¹⁵ J. Money, "Two Cytogenetic Syndromes: Psychological Comparisons 1. Intelligence and Specific Factor Quotients," *J. Psychiat. Res.* 2, 1964, 223-231.

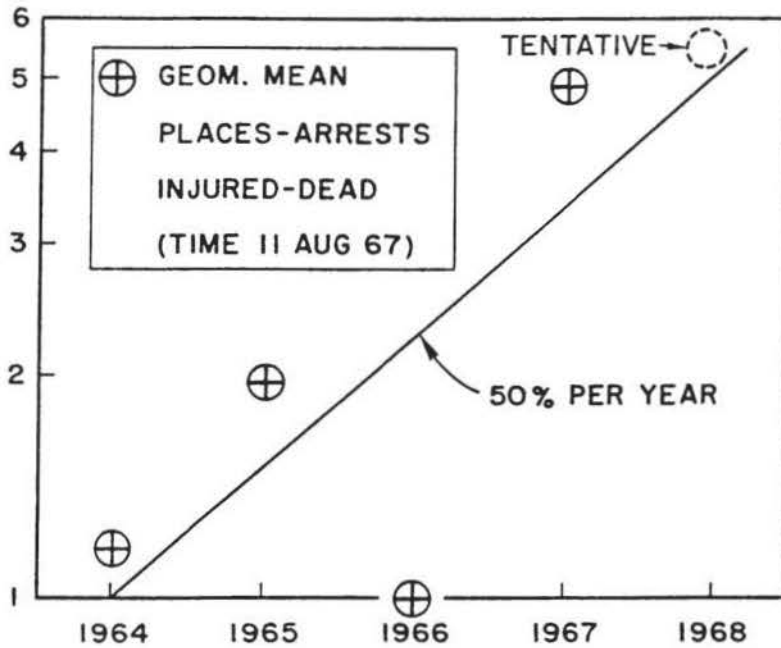


FIGURE 2: Increase of riot intensity since 1964 as calculated from the geometric mean of riot statistics.

TABLE 1
Statistics on Illegitimate Birth Rates^{16,17}

	Percentage of Births That Are Illegitimate		Rate of Growth	Doubling Time
	1952	1966		
White	1.6	4.4	7%/year	10 years
Nonwhite	18.3	27.6	3%/year	23 years
TOTAL	3.9	8.4	5.6%/year	13 years

¹⁶ U.S. Department of Health, Education, and Welfare, *Vital Statistics of the United States, 1966*, Washington, D.C.: Government Printing Office, Vol. I, "Natality," 1968; *The Biological Basis of Personality*, Springfield, Illinois: Charles C. Thomas, 1967. (For a contrasting discussion of biological differences see Roger J. Williams, *You are Extraordinary*, New York: Random House, 1967.)

¹⁷ The rates and doubling times have been calculated from the percentages quoted from Reference 8.

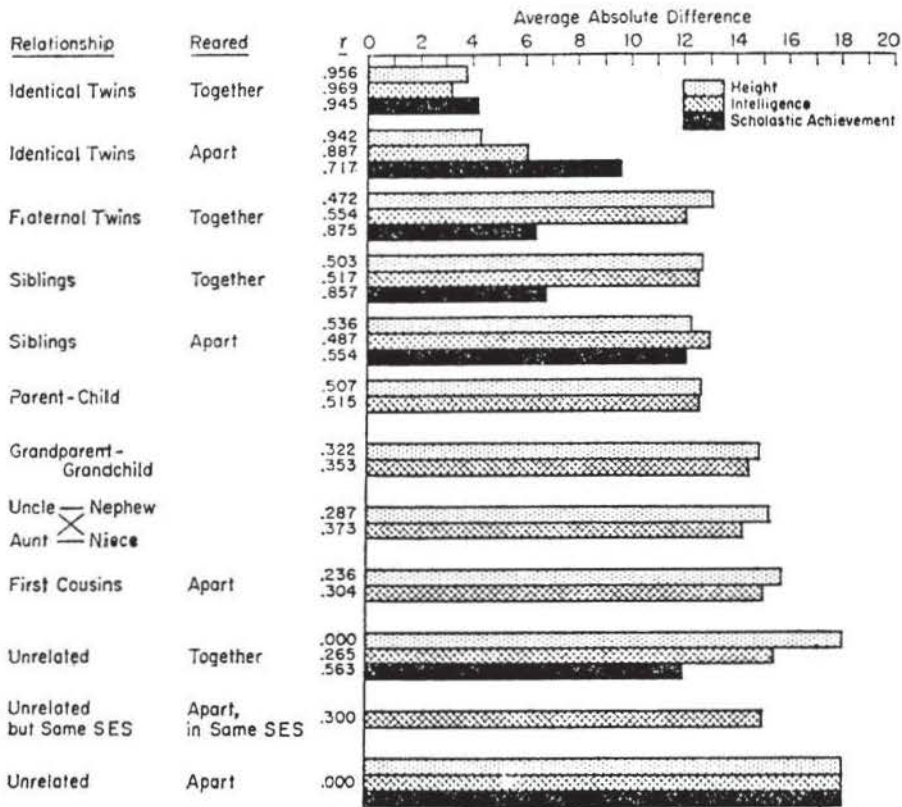


FIGURE 3: Influences of environment and heredity upon intelligence, height, and scholastic achievement. (The simplified form of presentation used by A. R. Jensen¹⁸ shows average values for differences [corrected for test unreliability] between two school children in London as reported by Sir Cyril Burt.¹⁹ For example, two randomly selected school children will have I.Q.'s that differ on the average by 18 points [corresponding to a standard deviation of 15 points] whereas identical twins raised in the same family have I.Q. scores that differ on the average by less than 4 points. That common environment is not the cause of the narrowed average difference for identical twins and is shown by the fact that rearing two unrelated children in a common family environment reduces by only 2 points the average difference between them, i.e., from 18 for two children at random to 16 when reared in the same family. For comparison with intelligence, average differences in scholastic performance and height are also shown, the scales having been adjusted to match the value of 18 for differences between random pairs of children [after correction for the effects of age differences]. It is apparent that intelligence and height behave much alike, the second biggest discrepancy being for identical twins raised apart; the difference in environment increases their difference on intelligence tests by approximately 50 percent but still leaves them only half as different as siblings reared together. Quantitative analysis of data of this sort leads to the conclusion that 70 percent to 80 percent of variance in intelligence in a population are caused by genetic differences.)

¹⁸ A. R. Jensen, "Social Class, Race, and Genetics: Implications for Education," *Amer. Educ. Res. J.*, 5, 1968, 1-42. (a)

¹⁹ C. Burt, "The Inheritance of Mental Ability," *Amer. Psychol.*, 13, 1958, 1-15; "The Genetic Determination of Differences in Intelligence: A Study of Monozygotic Twins Reared Together and Apart." *Brit. J. Psychol.*, 57, 1966, 137-153; "The Evidence for the Concept of Intelligence," *Brit. J. Educ. Psychol.*, 25, 1955, 158-177.

As a final introductory item, I present data of the sort that has aroused my concern for the welfare of the American Negro minority. Figure 4 is a year-by-year plot of the percent of all births that are nonwhite from 1914 to 1966.²⁰ The relationship of these data to problems involving illegitimacy is clear from the fact that the increase in the percentage of nonwhite births (i.e., about 92 percent Negro) since 1950 has resulted largely from the growth of the illegitimate fraction.

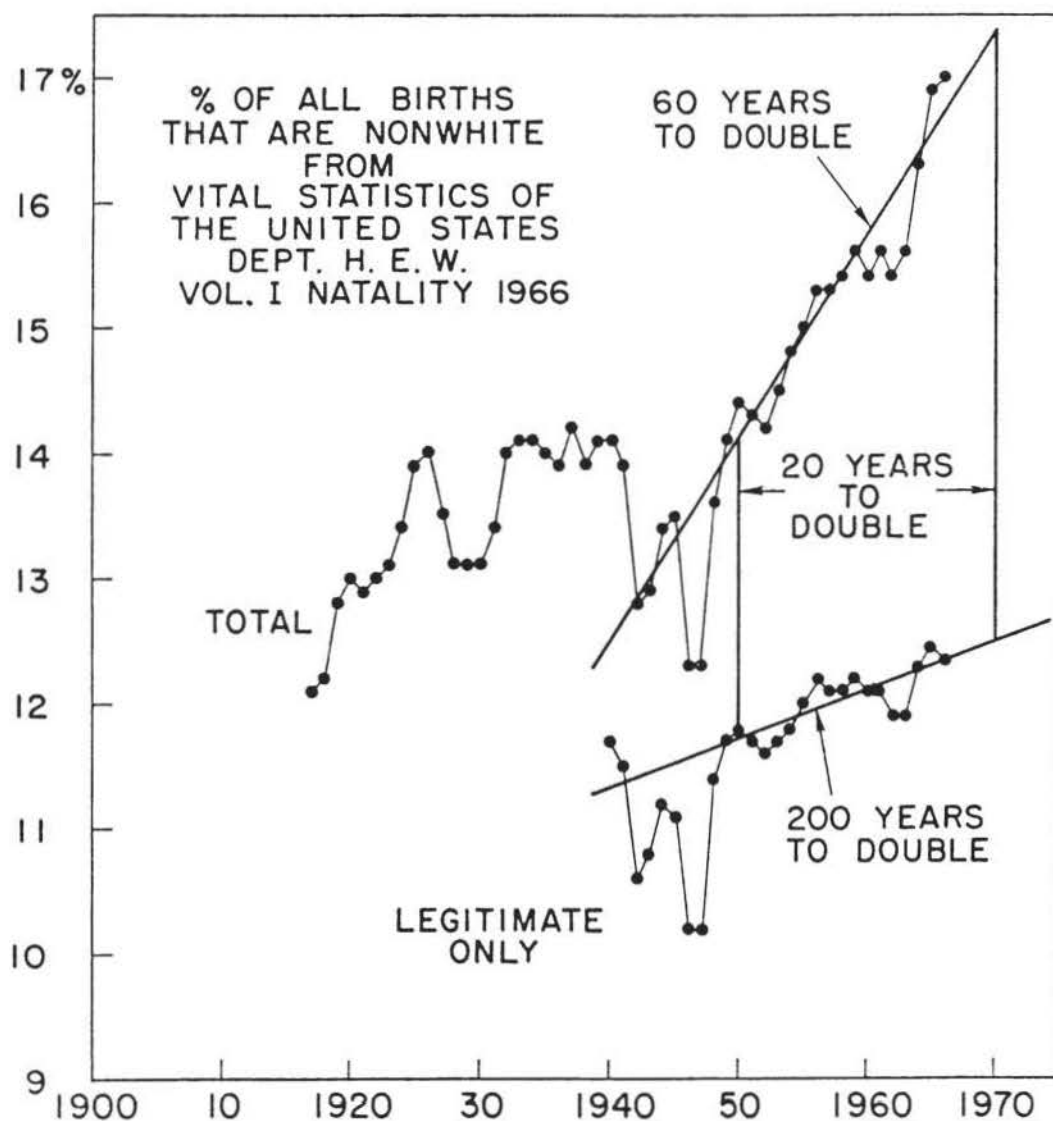


FIGURE 4: The growth of the percentage of all U.S. births that are nonwhite since 1940 has resulted chiefly from the doubling of the illegitimate portion.

²⁰ Computed from data in Reference 8.

These numbers suggest²¹ that 70 or more illegitimate slum Negro babies are born per day with genetic potential for I.Q. below 75, approximately the cutoff point for sterilization in Denmark's 30-year-old eugenics program.²² I shall present some of the facts upon which these estimates are based in Part III.

I find it most distressing that these indications of rapidly developing, serious, human-quality problems are not provoking vigorous and objective inquiry. I shall base the last two parts of this presentation upon two contributed papers that I have read at meetings of the National Academy of Sciences with the hope that they might encourage research in these areas. The response by the intellectual community appears to be what I diagnose in Part II as "unsearch" thinking. Before discussing the reactions to my public discourses, I shall clarify my approach in the form of a 10-point position statement.

Ten-Point Position Statement

1. "The truth shall make you free" implies to me that man's brain should endeavor to understand and to solve the quantity and quality problems of mankind. This is true no matter whether man's brain was placed in his head when God created man in his own image or was developed by the evolution of a territorially united weapon-using ape.

2. I believe that the voting citizens of the United States can and should endeavor to make their government seek objectively to formulate programs so that every baby born has high probability of leading a dignified, rewarding, and satisfying life. Letters from government organizations show that hereditary factors are essentially excluded from present studies of our social problems.

3. Although I conjecture that some form of eugenics will be essential to achieving my second point, eugenics is now so shunned a subject for discussion that a foundation for wise action decisions is lacking. I do urgently advocate inquiry into and discussion of eugenics but no action programs, except possibly sterilization after the n th successive illegitimate child on relief with n to be determined by national vote and possibly

²¹ 169,500 nonwhite illegitimate births in 1966 if with a median I.Q. of 90 (see Count-erfact 2A in Part III) implies 28,000 per year below 75 I.Q. or 76 per day; several times the rate of U.S. deaths in Vietnam (i.e., 14621 up to 11 November 1967 quoted in *The World Almanac*). These crude preliminary considerations are given to suggest the kind of research that should not be blocked by taboos.

²² "The 'Unfit': Denmark's Solution," *U. S. News & World Report*, 7 March 1966, p. 74.

constitutional amendment.

4. I favor welfare programs in general and Head Start in particular; the latter because it may contribute to emotional and motivational factors, even though its effects on I.Q. may be negligible.

5. I do favor complete availability to all citizens of birth control information and supplies and complete liberalization of abortion laws.

6. Although the white illegitimacy rate has increased at a higher compound-interest rate than the Negro rate, my attention in the last three years has been brought to focus on the genetic potential for intelligence of the illegitimate, slum Negro baby for two reasons: First, the sickness of our nation shown by the problems of racial unrest are agonizing to all responsible citizens and are obviously most acute for the disadvantaged Negro minority; and second, the available facts lead me to fear that illegitimate, slum birth rates are lowering Negro hereditary potential for intelligence so that the result may be a form of genetic enslavement that may provoke extremes of racism with resultant misery for all our citizens.

7. Although I do not believe that it has been proved, I do conjecture that it can be proved on the basis of now available facts that an actual loss of ground for Negro genetic potential for intelligence has indeed occurred during the last 30 years as an unforeseen by-product of the encouragement to have large families that our welfare programs have given to the least effective elements of our population. This probably occurs for white as well as black but disproportionately more for the black. Let me emphasize again that I endorse welfare programs. What I urge is objective inquiry to see if my fears are justified. If my fears are justified and their recognition leads to remedial changes in welfare programs, then all citizens, again regardless of race, will benefit more from the abundance made possible by our outstanding national productivity.

8. My position is not that all Negroes are inferior to all whites; instead I do believe that many Negroes are superior to many whites. In fact, my statistical studies show that American Negroes achieve almost every eminent distinction that whites achieve and are about 50 percent more successful per capita in winning Olympic medals. However, so far as distinction dependent upon mental powers is concerned, the probability on a per capita basis is between 10 and 100 times smaller for Negroes than for the national average and it is this probability that I fear is falling as a result of the high birth rates of the most disadvantaged.

9. I believe my actions in raising these questions are like those of a visitor to a sick friend who urges a thorough diagnosis, painful though the diagnosis may be, so that remedial steps may be based on objectively

established facts and sound methodology. To fail to raise these unpopular questions because of fear of the resentment towards me that may ensue is an irresponsibility I am not willing to have on my conscience. I believe and hope that my determination to see that these questions are faced and answered may be the greatest contribution anyone can make to American Negro welfare for the next generation.

10. During the last rational five minutes of my life I hope to consider that since 1967 I have used my capacities close to their maximum potential – with the aim, as phrased in Nobel's will, of "conferring greatest benefit on mankind."

Can Objective Inquiries Be Promoted?

Since early in 1965 I have endeavored to provoke programs of inquiry as outlined in my preceding 10-point statement. One unexpected byproduct of my attempts has been my growing respect for the freedom-of-speech and of-the-press First Amendment to our Constitution. When I have carefully prepared my remarks and made copies and press releases available, the reporting has in general been accurate. Furthermore, in the areas of the problems of my human-quality concerns, news reports have proven to be a research tool. I have obtained more relevant pieces of information as a result of news stories based on public lectures than I have from my several publications in scientific journals related to meetings of the National Academy of Sciences. Earlier versions of my 10-point position statement have contributed to the accuracy of the reports of my talks. However, even though a similar position statement was part of one of my three Redman Lectures at McMaster University in December 1967, one of the two major national press services reported: "It can be proved on the basis of now available facts," the speaker said, "that an actual loss of ground ..." had occurred for Negro genetic capacity for intelligence. In response to my objections to having my seventh point misinterpreted an editor wrote me to the effect that the difference between, on the one hand, a "conjecture" that a proof might be possible and, on the other, a "statement" that it could be proved was too fine a distinction to cover in the press. *The Wall Street Journal* subsequently proved him wrong, at least for their readership, by writing:²³ "Even Dr. Shockley, incidentally, considers it 'not proved'; he

²³ Vermont Royster, "Thinking Things Over; The Lysenko Syndrome," *The Wall Street Journal*, 22 May 1968, Editorial Page.

does no more than 'conjecture' on the basis of preliminary studies that 'it can be proved.'" The National Academy of Sciences did not do as well as *The Wall Street Journal* and misquoted me in their 23 April 1968 minutes as referring to my 10-point statement as documents that could "prove a loss of ground in Negro intelligence."

I shall report in Part III on the effects of my attempts to provoke the National Academy of Sciences to sponsor inquiry into our nation's human-quality problems. However, one additional item not covered later is worth mentioning specifically in this introduction: In the preface to the "Growth of U. S. Population"²⁴ published by the National Academy of Sciences in 1965, the chairman writes: "The high birth rate of the impoverished does not constitute a major threat to overall national prosperity ..." After several exchanges of correspondence in which I stressed the high compound – interest rates of growth suggested in my *U. S. News and World Report* interview, I obtained this answer dated 8 December 1966:

As far as the evidence goes, I would still stand behind the statement, 'the high birth rate of the impoverished does not constitute a major threat to overall national prosperity..' This is not to say, of course, that those individuals will not be worse off by having more children, but their contribution to our overall population is so small as to make it insignificant.

This view is, I fear, typical of our intellectual community. I appraise it as *unsound* and *dangerous*: *Unsound* because it fails to emphasize that the phrase "so far as the evidence goes" simply means that no attempt to obtain evidence has occurred and not that good evidence strongly implies no need to worry...*Unsound* also because insignificant is not the adjective that properly characterizes the 8 percent of total illegitimate births quoted in Table 1; furthermore, the birth rate of the impoverished in New York City has not been "insignificant" in raising the requirement of welfare to a recently quoted figure of 26 percent of the city's budget. *Dangerous*, is how I appraise the failure of the National Academy of Sciences to assume intellectual responsibility to analyze these questions; the resulting ignorance may cause the future of our nation to be shaped by forces man has permitted to get out of control rather than by the

²⁴ Committee on Science and Public Policy, "Growth of U. S. Population," Washington, D.C.: National Academy of Science-National Research Council Publication 1279, 1965.

collective public wisdom of an objectively informed electorate.

My researchers have led me to believe that one important factor that has blocked objective inquiry is a form of thinking that can be identified and classified as "unsearch" dogmatism.

PART II-CONCEPTUAL EXPERIMENTS, BASIC INDETERMINACY, AND "UNSEARCH" DOGMATISM²⁵

Characterizing Unsearch Dogmatism

The coined word "unsearch" modifies "search" with the prefix "un" in contrast with "re" in "research." The "re" in research means "try again." In contrast, "unsearch" creates a rationale that inhibits trying at all.

I shall diagnose a case of "unsearch" thinking and attempt to demonstrate its cure, or at least a good possibility of cure, by a treatment involving conceptual experiments, the example being the classical physics problem of localization of electromagnetic energy in vacuum. I shall also suggest parallels with the environment-heredity uncertainty in what for brevity I shall call the "life sciences."²⁶

Specifically, I shall demonstrate that in a fair and sensible way electromagnetic energy and momentum in space can be said to be localized in a clearly defined sense – a conclusion in complete disagreement with some of the most eloquently phrased and ingenious examples of sophisticated un-search thinking that have developed in the course of the last 80 years.

My serious interest in unsearch philosophy was greatly stimulated two years ago when I proposed at the Fall Meeting of the National Academy of Sciences at Duke University that a study group be set up to reduce the environment-heredity uncertainty.²⁷ Unsearch thinking, such as I encountered directly and indirectly after this talk, is not restricted to

²⁵ Part II of this paper is essentially identical with a contributed paper read before the National Academy of Sciences, Autumn Meeting in 1968. Also, W. Shockley, "Conceptual Experiments, Basic Indeterminacy, and 'Unsearch' Dogmatism," abstract, *Proc. Nat. Acad. Sci.*, 61, 1968, 1155.

²⁶ By life sciences I imply genetics, psychology, anthropology, etc. (i.e., the biosocial sciences applied to human behavior).

²⁷ W. Shockley, "Possible Transfer of Metallurgical and Astronomical Approaches to the Problem of Environment Versus Ethnic Heredity," *Science*, 154:3747, 1966, 428.

the "life sciences" and can be exhibited more clearly and less emotionally in physics. The striking example that I shall analyze as follows stems from a problem that I encountered in the course of recent research on electromagnetic momentum. This problem was apparently first proposed by Oliver Heaviside 81 years ago and subsequently has developed into what I believe may be an outstanding and colorful example of unsearch thinking.

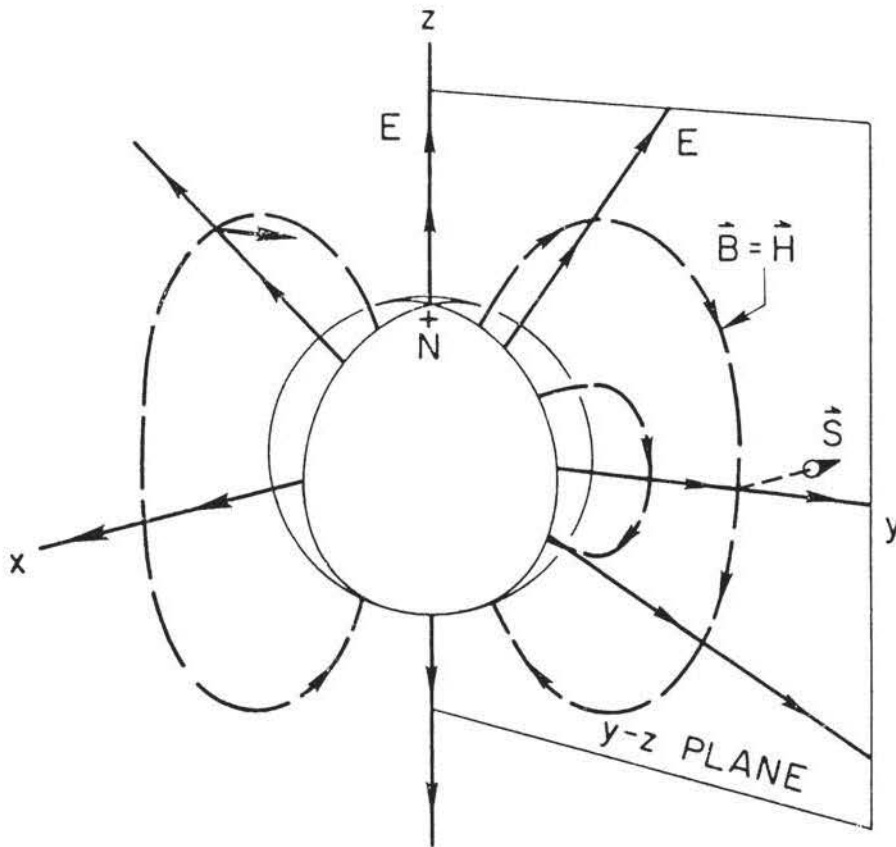


FIGURE 5: Heaviside's idealized limiting case showing electric and magnetic fields for electrically charged, uniformly magnetized sphere.

Heaviside discussed, as shown in Figure 5, a sphere uniformly magnetized throughout its interior in the vertical direction with the plus magnetic pole on top so that the magnetic field emerges from the top and forms the dipole field. The sphere is also uniformly and positively electrically charged over its surface and consequently a radially outward

electric field E also exists. The electric and magnetic field vectors lie everywhere in planes containing the axis from pole to pole of the sphere.

As Heaviside explained, the Poynting's vector field that is perpendicular to the E and B vectors, forms a pattern of closed circles, as shown in Figure 6, so that the "simplest case" interpretation is that there is a perpetual circuitual flow of energy along these circles in static conditions.

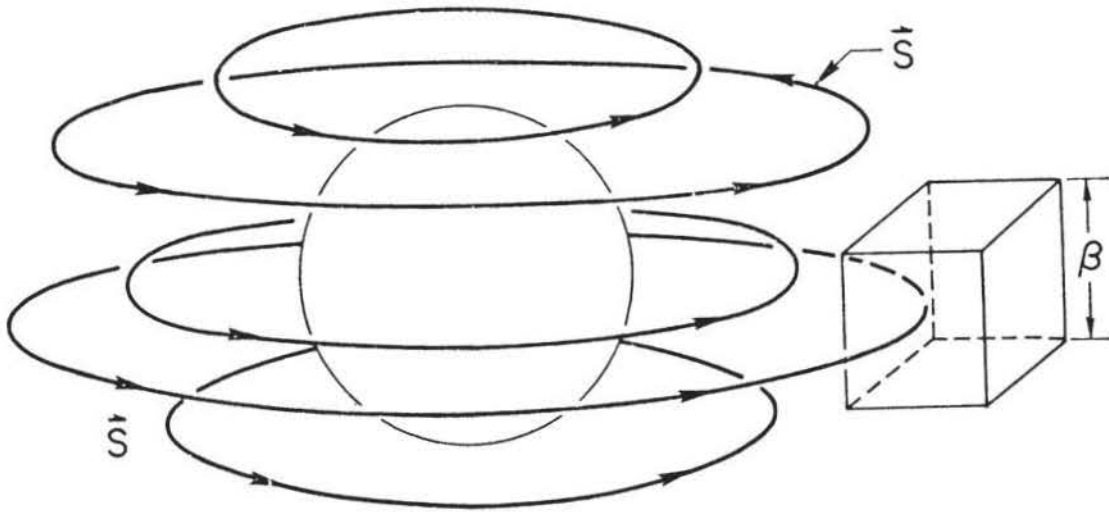


FIGURE 6: Perpetual circuitual energy in Poynting's vector and "conceptual experimental cube".

In 1887 Heaviside wrote:²⁸ "This circuitual flux is entirely though air or other dielectric. What is the use of it? On the other hand, what harm does it do?" Having expressed this open-minded attitude, Heaviside then went on to discuss clearly the application of Poynting's vector in the now classic case of power flow through space almost parallel to a two-conductor *dc* power transmission line.

What I diagnose as an unsearch viewpoint had begun to become evident by 1914 when J. H. Jeans in his classical treatise²⁹ wrote in respect to Heaviside's perpetual circuitual flow of energy that: "It is difficult to believe that this...can have any physical reality. On the other

²⁸ Oliver Heaviside, *Electrical Papers*, London: McMillan and Co., 1892, Vol. II, p. 94.

²⁹ J. H. Jeans, *The Mathematical Theory of Electricity and Magnetism*, Cambridge; At the University Press, 1915 (see Fifth Edition, p. 519).

hand it is to be noted that such a circulation ... is almost meaningless."

These "*difficult to believe*" and "*almost meaningless*" seeds of the unsearch viewpoint came to full flower 15 years later in an almost poetic gem of scientific writing in a text³⁰ that I believe is otherwise justly highly regarded. Here is the essence of the elegant paragraph of unsearch dogmatism in abbreviated form.

"The present authors are not able to ascribe any significance whatever to the phrase 'localized energy.' They do not believe that 'where' is a fair or sensible question to ask concerning energy. Energy is a function of configuration, just as the beauty of a certain black-and-white design is a function of configuration. The authors see no more reason or excuse for speaking of a spatial energy density than they would for saying, in the case of a design, that its beauty was distributed over it with a certain density. Such a view would lead one to assign to a perfectly blank square inch in one portion of the design a certain amount of beauty, and to an equally blank square inch in another portion a certain different amount of beauty."

I call your attention both to the phrasing of "*not able to ascribe any significance whatever*" and "*not a fair or sensible question to ask*" and also to the dubious comparison of two indistinguishable blank square inches with two regions of space in which the electric fields may be quite different. The attitude expressed about electromagnetic theory seems to me closely parallel to that described by the phrases "*no one knows*" and "*there is no way to tell*" that, as I pointed out in a letter to the editor³¹ just one year ago, characterized *Time* magazine's essay on "Race and Ability."³² Also just one year ago a similar implication of a basic indeterminacy in the environment-heredity uncertainty was endorsed in the Academy's position statement on "Human Genetics and Urban Slums" at the Fall Meeting:³³ "*In the absence of some now-unforeseen way of equalizing all aspects of the environment, answers to this question [about racial differences in genetic potential for intelligence differences] can be hardly more than reasonable guesses."*

³⁰ M. Mason and W. Weaver, *The Electromagnetic Field*, New York: Dover Publications, Inc., 1929, pp. 266, 267.

³¹ W. Shockley, "Race and Ability," *Time*, 27 October 1967, Letter to Editor.

³² "Race and Ability," *Time*, 29 September 1967, pp. 46-47.

³³ "Racial Studies: Academy States Position on Call for New Research," *Science*, 158:3083, 1967, 892-893; "Human Genetics and Urban Slums," *News Report*, Washington, D.C.: National Academy of Sciences - National Research Council, National Academy of Engineers, November 1967, p. 4.

Are the uncertainties or indeterminacies expressed in the preceding examples really basic and in principle unresolvable? Two famous names in science are associated with basic principles of indeterminacy: Einstein with the theory of the relativity of motion that asserts that in principle absolute motion is indeterminable and Heisenberg with the famous uncertainty principle of quantum mechanics. *Do the "not a fair question," "there is no way to tell," "at best reasonable guesses," examples discussed signify basic indeterminacies or are they unimaginative expressions of unsearch dogmatism?*

In the Feynman Lectures³⁴ published in 1964 the Heaviside problem was discussed not as a basic indeterminacy but as a challenge to ingenuity. Feynman said:

"How do we know that by juggling the terms around some more we couldn't find another formula for [energy density] and [energy flux]?... There are an infinite number of different possibilities ... and so far no one has thought of an experimental way to tell which one is right! ... So we too will take the easy way out and say that the field energy is given by [the simplest interpretation] ..."

Feynman's challenging words "so far no one has thought ... [how] to tell which one is right' added a real research provocation to investigations I was already undertaking. I shall today show how a set of conceptual experiments can give an operational definition to localized electrostatic energy density and also to the localized momentum density that the Einstein $E=mc^2$ relationship requires to be associated with Poynting's energy flow.

Conceptual Experiment to Establish Localization of Electrostatic Energy and Electromagnetic Momentum Densities

As shown in Figure 6 an imaginary cube of edge β is used to demonstrate that the electrostatic energy is distributed with precisely the density chosen by Feynman's "easy-way-out."

The structure of the cube is shown in Figure 7. It is built like a crystal model with the rods consisting of resistors and the atom positions occupied by clockwork switches all set to close simultaneously at $t = 0$. In the idealized limiting case, the lattice constant α is very much smaller

³⁴ Richard P. Feynman, Robert B. Leighton, Matthew Sands, *The Feynman Lectures on Physics*, Reading, Mass.: Addison-Wesley Publishing Co., Inc., 1965, Vol. II, p. 27-6.

than β so that the cube is effectively a continuum. The resistors are very thin and needle-like and disturb the dielectric constant of free space negligibly.

Alternatively, the cube can be a container of gas and the clocks can be laser radiators that ionize the gas at $t \geq 0$.

Granted that a conductivity σ suddenly appears at $t = 0$, the consequences follow from classical electromagnetic theory. The electric field well inside the cube decays exponentially and the conductivity σ absorbs the electrostatic energy density. The unfamiliar solution to this problem is related to a new pedagogical by-product.

This by-product is the simplest time-varying solution of Maxwell's equations. In this solution only the x-components of electric field and current density are different from zero; the current component is a constant and the electric field varies linearly in time. Thus, of the 10 dependent and 4 independent variables in Maxwell's equations, this solution is down to a count of three and in this sense is the simplest time-varying solution.

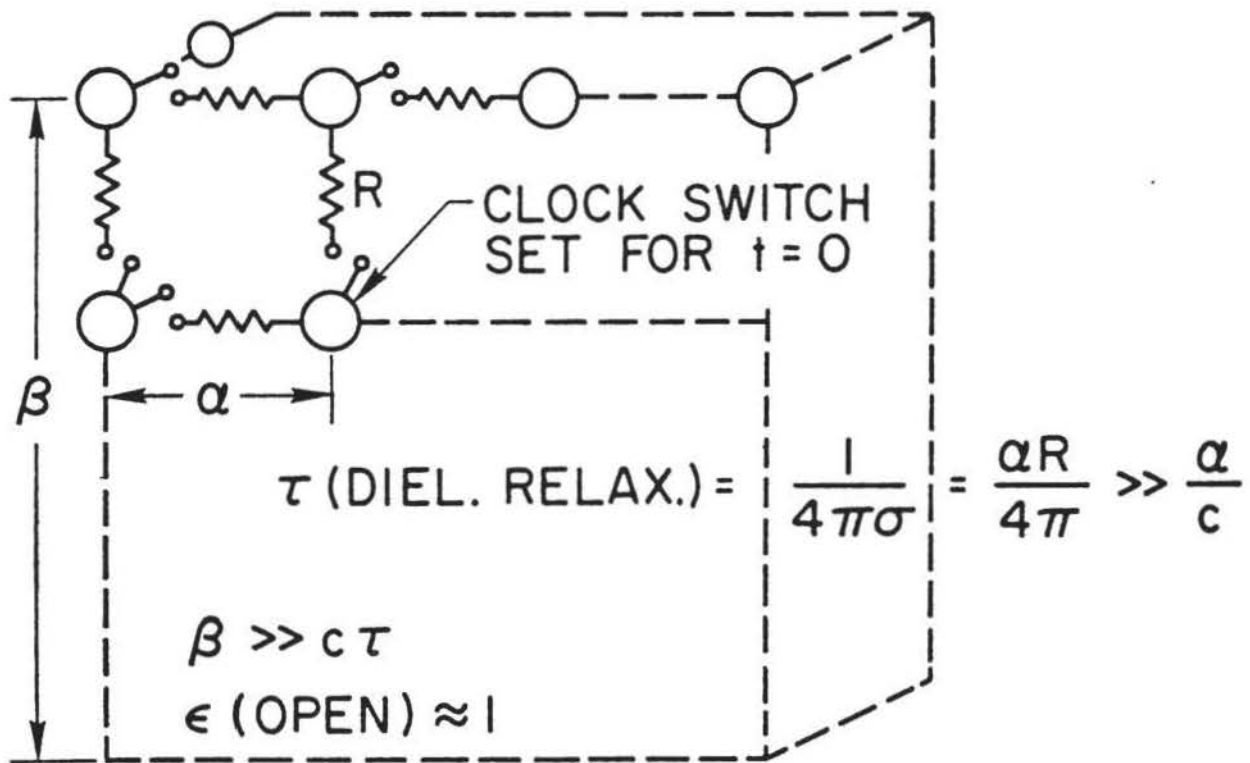


FIGURE 7: Conceptual cube to extract electrostatic energy density $W_e \equiv E^2/8\pi$ and Poynting's vector momentum $\vec{g}_p \equiv I \cdot \vec{E} \times -\vec{H}/4\pi c$.

For the αR cube, the time dependence is an exponential decay that, for the idealized limit, is so short that energy, even if moving with the velocity of light, cannot enter the cube from outside and be delivered in the interior.

Furthermore, the Lorentz force on the current that flows to cause the vanishing of the electric field, and consequently also of the Poynting's vector, exactly converts the momentum of the "meaningless" circuital flow of energy into the physical bodily motion of the resistors.

The foregoing constitutes, to my way of thinking, an operational definition of localization in terms of predictable experimental results obtainable as theorems from accepted postulates.

This reasoning can be extended to the localization of the power flow per se and the magnetostatic energy density.³⁵

Thinking About Conceptual Experiments and Human-Quality Problems

As my examples are intended to show, the theme of this presentation is that thinking about thinking improves thinking – a theme to which I have devoted increasing attention since I read my paper, "Proposed Important Mental Tools for Scientific Thinking at the High School Level," at the 1963 meeting of the National Academy of Sciences.³⁶ My research on electromagnetic problems and the resulting publications have been done partly as a practical validation of the creative search pattern approaches in my 1966 book *Mechanics*, co-authored with Professor W. A. Gong.³⁷

As my emphasis on the parallels between the "meaningless" and "no way to find out" phrases used in the electromagnetic theory and also in the "life sciences" examples suggest, I do conjecture that unsearch dogmatism rather than basic indeterminacies leads to the lack of vigorous effort to reduce the environment-heredity uncertainty. Let me stress in statistical form some alarming aspects of our national human-quality

³⁵ W. Shockley, "S-Ambiguity of Poynting's Integral Theorem Eliminated by Conceptual Experiments with Pulsed Current Distributions," *Physics Letters*, 28 A, 1968, 185.

³⁶ W. Shockley, "Proposed Important Mental Tools for Scientific Thinking at the High School Level," *Science*, 140:3565, 1963, 384.

³⁷ W. Shockley and W.A. Gong, *Mechanics*, Columbus, Ohio: Charles E. Merrill Publishing Co., 1966. See also *The Conservation of Energy Concept in Ninth Grade General Science*, Project No. S-090, Contract No. OE 6-10-026, Office of Education, U.S. Department of Health, Education, and Welfare; W. Shockley, "Thinking about Thinking Improves Thinking," *IEEE Student Journal*, 61:5, 1968, 11-16.

problems and point out that these involve possible genetic deterioration in white as well as nonwhite quality: our violent crime rate has been increasing at about 10 percent per year with the 1967 murder rate up to 6.1 per 100,000 population.³⁸ (For perspective I note that the per capita rate is about 10 times less in Sweden.³⁹) Can it be that the lack of foresight and responsibility that fail to recognize that "crime doesn't pay" is associated with the same genetic factors that are involved in high probability for illegitimacy? If so, we must view with great concern for the future the 7 percent compound-interest growth rate of white illegitimate births over the last 14 years,⁴⁰ a rate that has more than doubled the 1.6 percent of white births that were illegitimate in 1952 to 4.4 percent in 1966, the corresponding nonwhite figures being a 3 percent growth rate from 18.3 to 27.6 percent. Consequently, in 1966 one baby in 12, approximately equally divided between white and nonwhite births, was born without a legal father. So far as my inquiries reveal, only unsearch thinking is being applied to these statistics and their implications for genetic factors in the human quality of the next and subsequent generations.

To summarize: My research on basic electromagnetic theory has revealed a clearly defined unsearch dogmatism that has obfuscated attack on at least two basic problems. My examples from physics exhibit eloquent and scientifically obstructive phrasing paralleling the unimaginative "can't, don't, shouldn't" slogans used by "life scientists" in rejecting as impossible or worthless the questions that I have raised about the relevance to our present national human-quality crises of Pendell's Third Principle of Population,⁴¹ namely: "Problem-makers reproduce in greater percentage than problem-solvers, and in so doing cause the decline of civilization." I have found that conceptual experiments do solve effectively the two basic electro-magnetic theory problems that have been obscured by unsearch dogmatism, one for 80 and the other for 60 years. (Furthermore, confirmation of the consequences of the imaginary experiment that simply and completely eliminates the Abraham-Minkowski uncertainty about the correct formula for electromagnetic momentum in matter has been directly confirmed by an independent series of

³⁸ J. Edgar Hoover, "Crime in the United States," *Uniform Crime Reports*, Washington, D.C.: Government Printing Office, 1967.

³⁹ *The Social Structure of Sweden*, The Swedish Institute, Stockholm 3, Classification Oa, E97, 1967.

⁴⁰ *Ibid.*, footnote 8.

⁴¹ Elmer Pendell, *Sex Versus Civilization*, Los Angeles: Noontide Press, 1968.

extremely sensitive actual experiments made possible by modern electronics.⁴²)

The case put forward by "life scientists" that the environment-heredity uncertainty is a basic indeterminacy at the present state of our knowledge is weakened by the fact that their analyses seem characterized by a lack of attempt to imagine significant conceptual experiments. This lack, plus the fact that human hearts have actually been transplanted, provokes speculations about conceptual experiments involving brain transplants. Can we predict on the basis of known psychological laws, just as Einstein predicted the $E = mc^2$ relationship by applying existing theory to an impossibly demanding conceptual experiment, how the actually impossible conceptual experiment of a brain transplant might alter the mental powers and personality developed by the brain after transplanting into its new environment? In an intersex or interracial transplant how would the brain adapt? What facts about transvestites can be used as postulates for such conceptual experiments? Could imagination applied to create and analyze such conceptual experiments aid science in contributing valuable new wisdom to the crises in the human affairs of our nation? I believe that research imagination could indeed help and these suggestions are intended to encourage the replacement of "unsearch" by research in the relevant thinking about the pressing human-quality problems facing our nation.

PART III – PROPOSED RESEARCH TO REDUCE RACIAL ASPECTS OF THE ENVIRONMENT-HEREDITY UNCERTAINTY⁴³

A Scientific Basis for Humanitarian Religious Principles

My talk today is based on two postulates that I hold to be fundamental for civilized men: (1) the truth shall make you free, and (2) the basis for a humane civilization is concern for memories of emotions

⁴² R. P. James, "A 'Simplest-Case' Experiment Resolving the Abraham-Minkowski Controversy on Electromagnetic Momentum in Matter," abstract, *Proc. Nat. Acad. Sci.*, 61, 1968, 1149.

⁴³ Part III of this paper is essentially identical with a contributed paper read before the National Academy of Sciences, Spring Meeting, 1968. Also, W. Shockley, "Proposed Research to Reduce Racial Aspects of the Environment-Heredity Uncertainty," *Science*, 160:3826, 1968, 443.

stored in neurological systems of earth's hereditary sequence.

I propose the second postulate as a scientific, modern-day foundation for the principle formulated by Christ in The Golden Rule and by Schweitzer in his reverence for life. I regard it as logical to take "concern for memories of emotions stored in neurological systems of earth's hereditary sequence" as a postulate that leads to The Golden Rule of Christ as one theorem and as another to Thomas Aquinas' conclusion that abortion of an early foetus is not murder. I feel deep concern for the memories of frustration that will be stored in the neurological systems of babies now alive or about to be born as an unforeseen consequence of our well-intentioned welfare programs that may be unwittingly encouraging the most improvident members of our population to have large families. I urge once more that the National Academy of Sciences set up a study group to inquire into ways to determine how many probable misfits regardless of race will be born into our potentially great society as a result of present population patterns.

To understand these problems is what I consider Scientifically Responsible Brotherhood.

Scientifically Responsible Brotherhood

A few days after the assassination of Dr. King, I received a telephone call from Harold Urey who felt that his fellow Nobel Laureates should express their feelings in some organized way. In response I suggested this statement:

We abhor the assassination of fellow Nobel Laureate Martin Luther King, Jr. We grieve at the silencing of his eloquent humanitarian voice. We enshrine in our memories the goodness of his intentions to confer greatest benefit on mankind by increasing the brotherhood of man.

My intentions in publishing this paper in the proceedings of the Educational Records Bureau are precisely what I attributed to Dr. King in the phrasing of Nobel's will. I propose as a social goal that every baby born should have a high probability of leading a dignified, rewarding, and satisfying life regardless of its skin color or sex. To understand hereditary cause and effect relationships for human-quality problems is an obligation of Scientifically Responsible Brotherhood. I believe also that this goal can best be achieved by applying objective scientific inquiry to our human-quality problems. My beliefs in this social goal and in the use

of science to achieve it are what motivate me to make this presentation.

The three Nobel Laureates whom I consider to be the most distinguished for their decisions to set personal service to their fellow men clearly above self-interest are Dr. King, Dr. Bunche, and Dr. Schweitzer. Albert Schweitzer devoted his life to personal service to man. I deem that his intellectual powers and his capacity for detailed personal observations of African Negroes are unquestionably of the highest order. Schweitzer wrote:⁴⁴ "With regard to Negroes, then, I have coined the formula: 'I am your brother, it is true, but your elder brother.'" Schweitzer was, labeled a racist for this view. Academy member Carleton Coon tells me he was persecuted for publishing in his *Origin of Races*⁴⁵ scientific speculations that Negroes are the younger brothers of Caucasians on an evolutionary basis by about 200,000 years. If these conjectures are true that Negroes are evolutionary adolescents, then to demand that a younger brother perform beyond his basic inherent capacities is a most irresponsibly cruel form of brotherhood.

To fail to urge a sound diagnosis, painful though it may be, to determine if our national Negro illness is caused by problems of evolutionary adolescence or by environmental disadvantages is an irresponsibility I do not propose to have upon my conscience nor upon the history of the National Academy of Sciences of which, save for this area of thought blockage, I am proud to be a member.

I sincerely and thoughtfully believe that my current attempts to demonstrate that American Negro shortcomings are preponderately hereditary is the action most likely to reduce Negro agony in the future. That the well-established significant differences shown in Figure 8^{46,47,48,49} between the I.Q. distributions of Negroes and whites are not scientifically accepted as caused almost entirely by environmental inequalities alone is attested to by publicly recorded views of at least two

⁴⁴ Albert Schweitzer, *On the Edge of the Primeval Forest*, quoted in Gerald McKnight, *Verdict on Schweitzer*, New York: The John Day Company, Inc., 1964, p. 55.

⁴⁵ Carleton Coon, *Origin of Races*, New York: Alfred A. Knopf, Inc. 1962.

⁴⁶ W. A. Kennedy, V. Ran De Riet, and J. C. White, Jr., "A Normative Sample of Intelligence and Achievement of Negro Elementary School Children in the Southeastern United States," *Mono. Soc. Res. in Child Dev.*, 28:6, 1963.

⁴⁷ M. Deutsch, I. Katz, and A. R. Jensen (Eds.), *Social Class, Race, and Psychological Development*, New York: Holt, Rinehart & Winston, Inc., 1968. 40. Leona, E. Tyler, *The psychology of Human Differences*, New York: Appleton-Century-Crofts (3rd ed.), 1965.

⁴⁸ T. Pettigrew, *A Profile of the Negro American*, Princeton, N.J.: D. Van Nostrand Co., Inc., 1964.

⁴⁹ H. E. Garrett, *Scientific Monthly*, 65, 1947, 329-333.

of the most recent past 24 presidents of the American Psychological Association^{50,51} and of the famous E. L. Thorndike⁵² before them.⁵³ I believe that there is a most valuable intellectual endeavor that might give a basis for remedies for the growing national agonies associated with Negro frustration. The Negroes themselves would, I believe, be the greatest beneficiaries. I propose a serious scientific effort to establish by how much the distribution of hereditary potential for intelligence of our black citizens falls below whites. Furthermore, if it is really scientifically impossible to prove that there is any deficit whatever, then establishing the underlying cause of this impossibility would be, I believe, of enormous value to mankind. If the cause could be shown by new and unambiguous scientific demonstration to be that there were no racial genetic deficits whatever, then the resulting contributions of this new knowledge would probably go far in solving our racial problem, including prejudice and failure of our remedial education programs. If on the other hand basic mental differences were acceptably established, then social actions could be based on sound methodology rather than emotionally prejudiced racism.

The philosophy of Scientifically Responsible Brotherhood embraces these principles: the courage to doubt in the face of the desire to believe is the true mark of the scientist. The truth shall make you free. The proper study of mankind is man.

In preparing this present paper I concluded that I would indeed violate the principles of Scientifically Responsible Brotherhood if, as a consequence of personal fear, I failed to state what during the last two years of my part-time investigations I have come to accept as facts, not yet perhaps as facts at the level of pure mathematics or physics, but nonetheless facts that I now consider so unassailable that I present them with a clear scientific conscience.

The basic facts are these: Man is a mammal and subject to the same biologic laws as other animals. All animals, including man, have

⁵⁰ H. F. Harlow's position is quoted by W. Shockley, *Science*, 156:3774, 542, and by D. Perlman, *San Francisco Chronicle*, 18 January 1967, p. 42.

⁵¹ E. L. Thorndike, *Human Nature and the Social Order*, New York: The MacMillan Co., 1940, p. 321.

⁵² E. L. Thorndike estimates relative importance as follows: genes: training: accident – 80: 17: 3 and Negro overlap in I.Q. as 10 percent (10 percent means offset of 1.28σ). See E. L. Thorndike, *Human Nature and the Social Order*, New York: The Macmillan company, 1940, p. 321.

⁵³ For other references see Audrey Shuey, *The Testing of Negro Intelligence*, New York: Social Science Press, 1966.

inheritable behavioral traits. The concept of complete environmental plasticity of human intelligence is a nonsensical, wishful-thinking illusion. Let me note that in comparisons between men and animals there are close parallels in those admirable emotional traits of loyalty and courage between men and dogs and that it is reasonable to extend these parallels to races and to breeds since both are mammalian forms of life.

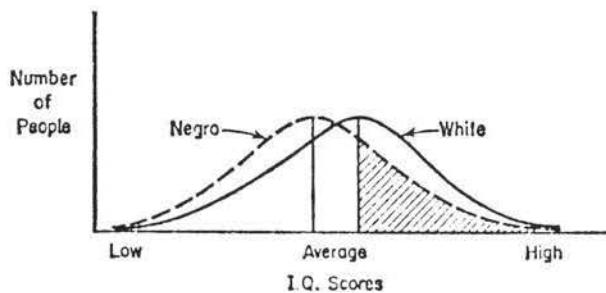
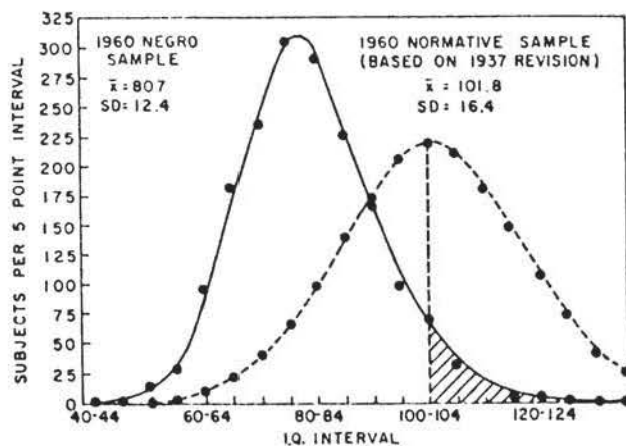


FIGURE 8. Negro and white I.Q. distributions. (a) A generally accepted best study by Kennedy, *et al.*,⁵⁴ that has been generally quoted^{55,56} showing an overlap of about 7 percent of Southern Negro scores above the national white median score. (For comparable regions the overlap is probably between 12 percent to 15 percent.) (b) A comparable figure from the well-known reference by Pettigrew⁵⁷ described as showing a 25 percent overlap but actually drawn for approximately 28 percent overlap; it also inaccurately represents the two distributions as having the same standard deviation; no specific source of data has been reproduced in this figure. (Reproduced from *A Profile of the Negro American* by T. Pettigrew, by permission of Van Nostrand-Reinhold Company, a division of Litton Educational Publishing, Inc., Litton Industries, Princeton, New Jersey, 1964.)

⁵⁴ *Ibid.*, footnote 46.

⁵⁵ *Ibid.*, footnote 47.

⁵⁶ *Ibid.*, footnote 48.

⁵⁷ *Ibid.*, footnote 49.

The most dangerous illusion or nonfact facing humanity today is the belief that most scientists lack the courage to doubt, at least for the record, typified by the expressions of our government through its Department of Labor and echoed by the Office of Education:⁵⁸

There is absolutely no question of any genetic differential: Intelligence potential is distributed among Negro infants in the same proportion and pattern as among Icelanders or Chinese or any other group." The only reason that I do not characterize this statement as a falsehood, and in my opinion a damnably evil falsehood, is that I have no way to appraise the intellectual acumen of its authors. They may actually believe it.⁵⁹

I credit the Council of the National Academy of Sciences for saying that there is no scientific basis for the Department of Labor statement. However, I condemn the N.A.S. statement on Human Genetics and Urban Slums for obscuring relevant facts. Significant research results can be found if one has the courage and initiative to look for them. Dr. Robert E. Kuttner⁶⁰ has had the ingenuity to extract from the massive and expensive Coleman Report⁶¹ the obvious, but previously overlooked, fact that American Indians overcome greater environmental disadvantages to outperform Negroes on achievement and ability tests.

Let me compare Dr. Kuttner's ingenuity with that portion of the N.A.S. statement that I shall name the research blinders' dictum because it espouses a flexibility of inquiry as trammelled as the motive power of a one-horse shay. Here is the research blinders' dictum:⁶²

⁵⁸ Office of Policy Planning and Research, "The Negro Family, The Case for National Action," U.S. Department of Labor, March 1965, Ch. IV, p. 35.

⁵⁹ I have heard of the existence of a document that is alleged to attribute to the author of this statement the assertion that he did not believe it and made the statement (no doubt with good intentions) for political purposes.

⁶⁰ Robert Kuttner and Albert B. Lorincz, "Utilization of Accentuated Environmental Inequalities in Research on Racial Differences," *Science*, 160:3826, 26 April 1968, 439-440.

⁶¹ James S. Coleman, *Equality of Educational Opportunity*, Washington, D.C.: U.S. Government Printing Office, 1966.

⁶² *Proc. Nat. Acad. Sci.*, 59, 1968, 652. The "Introductory Remarks" imply that the research efforts presented in papers like this one are "heedless of opinions or hazards," "attracted by emotional attention" and reminiscent of the song stanza "The 'French they are a funny race." The relevance to the present author is recognized as clear in "Racial Studies: Academy States Position on Call for New Research," *Science*, 158: 3083, 1967, 892-893. Coupled with the words "prescience" and "sixth sense" the Introductory Remarks appear to me to exhibit a low point in national scientific leadership.

In the absence of some now unforeseen way of equalizing all aspects of the environment, answers to this question [about racial differences in intelligence] can be hardly more than reasonable guesses.

Dr. Kuttner's title "Utilization of Accentuated Environmental Inequalities in Research on Racial Differences" shows that he was not trammelled by the research blinders' dictum.

*Evidence for Racial Influences on the
Development of Intelligence*

An objective examination of relevant data leads me inescapably to the opinion that the major deficit in Negro intellectual performance must be primarily of hereditary origin and thus relatively irremediable by practical improvements in environment. I shall support this opinion by stating a set of prevalent illusions that I shall call Nonfacts and refuting them with a set of well-established Counterfacts. I call this reasoning an opinion and not a proof less because I doubt its soundness than because it has not yet been subject to the test of objective, open-minded appraisal by a competent scientific tribunal.

Nonfact Number 1. Negro I.Q. deficits are caused by prenatal, perinatal, or early environmental disadvantages that permanently damage learning potential.

Counter Fact 1A. Negro babies during the first 15 months show no environmental damage to mental development as reported in a study⁶³ of a representative sample of 1,400 babies, published in 1965 by Nancy Bayley of the National Institute of Mental Health. The 600 Negro babies outperformed on the average the 800 white babies in that they matched in mental and surpassed in muscular neurological development. Figure 9 shows, for example, that the median Negro baby walks about one month earlier than the median white baby. Negro babies are thus superior with a N.Q. or overall neurological quotient of about 105 compared to 100 for white babies, to put it simply in my own words.

Counterfact 1B. Extreme environmental deprivation has been experienced by monkeys from birth to 12 months by raising them in individual isolation in a patternless world of solid steel-walled cages, the chief stimuli being presence of light and automated mechanical feeding

⁶³ Nancy Bayley, "Comparisons of Mental and Motor Test Scores for Ages 1-15 Months by Sex, Birth Order, Race, Geographical Location, and Education of Parent," *Child Development*, 36, June 1964, 379-411.

and cage cleaning. This profoundly disadvantaged environment produced social behavior deficits but did not produce any measurable loss of learning ability for mental tasks.⁶⁴ Twelve monkey months represent four human years.

Counterfact 1C. Similar conclusions are reached from studies of inhumane environmental deprivation of children that have accidentally occurred. In one well-documented case, Isabel,⁶⁵ an illegitimate white child, was raised in a dark room by a deaf-mute mother so that at age 6 1/2 Isabel had no speech, an I.Q. of about 30, and rachitic physical handicaps. After being discovered and given intensive training, two years later at 8 1/2 her I.Q. had trebled to a normal value. Isabel's case, a rare though not unique example of extreme human primate deprivation, is thus quite in keeping with the well-controlled extensive deprivations at the animal primate research centers. It is evident that Negro I.Q. deficits cannot reasonably be blamed on preschool environmental disadvantages.

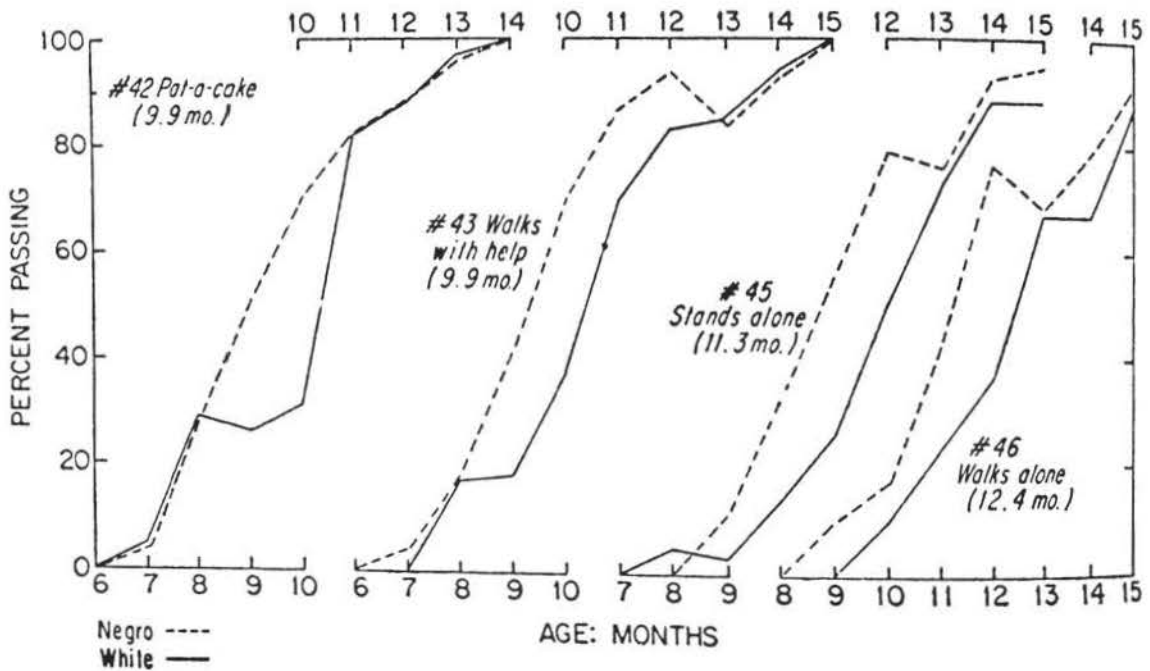


FIGURE 9: Motor test items on which Negroes do better than whites, percentage passing at each age.⁶⁶

⁶⁴ Personal communication from M. Harlow, Wisconsin Regional Primate Research Center.

⁶⁵ Kingsley Davis, "A Final Note on a Case of Extreme Isolation," *Am. J. of Sociology*, 52, 1947, 432.

⁶⁶ *Ibid.*

Counterfact 1D. The famous and uncontested Skeels' study⁶⁷ of a group of environmentally deprived orphanage babies shows that an environmentally induced loss of at least 30 I.Q. points at 19 months was with improved environment wiped out at age 6 years. This significant finding of substantially complete I.Q. recovery from Skeels' research is in effect suppressed by its omission from most discussions of Skeels' important contributions.

Counterfact 1E. A unique case of overcoming in half a lifetime a cultural gap of centuries or even millennia including a session of slavery involves a professional engineer recognized at an historic anniversary of his university by an honorary Sc.D. as one of six distinguished service alumni. His story (as I obtained it by telephone interviews) was that until age six he was an Aztec Indian at a blow-gun and stone-axe level, isolated from modern civilization for four centuries since his tribe escaped from Cortez. His father explored, was captured and enslaved. After escaping he brought his family to America and the engineer entered school at age 10 and the second grade two years later at age 12. Yet at 21 he had an Electrical B.Sc. and Physics M.Sc. His brother has been comparably successful. Both worked their way through college. This example supports my conviction that fantastic cultural deficits can be overcome in a fraction of one generation by individuals of outstanding inherent determination and intelligence.

Nonfact 2. This nonfact blames the Negro I.Q. deficit on cultural disadvantages, specifically those involving language and verbal skills so that as clearly enunciated as a conjecture by anthropologist S. L. Washburn,⁶⁸ "given a comparable chance to that of the whites, [the Negroes'] I.Q.'s would test out ahead."

Counterfact 2A. Relationship of Negro children's I.Q. to home environment as measured by socio-economic class of parents showed in A. B. Wilson's San Francisco Bay Area Study⁶⁹ an incremental difference in eighth grade I.Q. of only about 4 points from 90 to 94 with a socio-economic difference that for whites corresponds to a three times greater increment of 13 points, from 98 to 111, as shown in Figure 10. The obvious inference is that if intelligence is determined entirely by environment then these facts require that Negro professional and

⁶⁷ H. M. Skeels, "Adult Status of Children with Contrasting Early Life Experiences," *Child Development Monographs*, 31: 3, 1966, Serial 105.

⁶⁸ S. L. Washburn, *Am. Anthropologist*, 63, 1962, 521.

⁶⁹ A. B. Wilson, "Racial Integration with Public Schools," U. S. Commission on Civil Rights, 1967, Vol. II, p. 165.

managerial families provide a substantially poorer intellectual environment than do white families rated one step lower than semi-skilled labor. At sixth grade similar results are obtained with increments of 12 points for whites and 4 for Negroes associated with family status increments from a minimum of lower than semi-skilled labor to a maximum of professional and managerial. For primary grades, the results show again an I.Q. increment for whites but no increment whatever for Negroes.

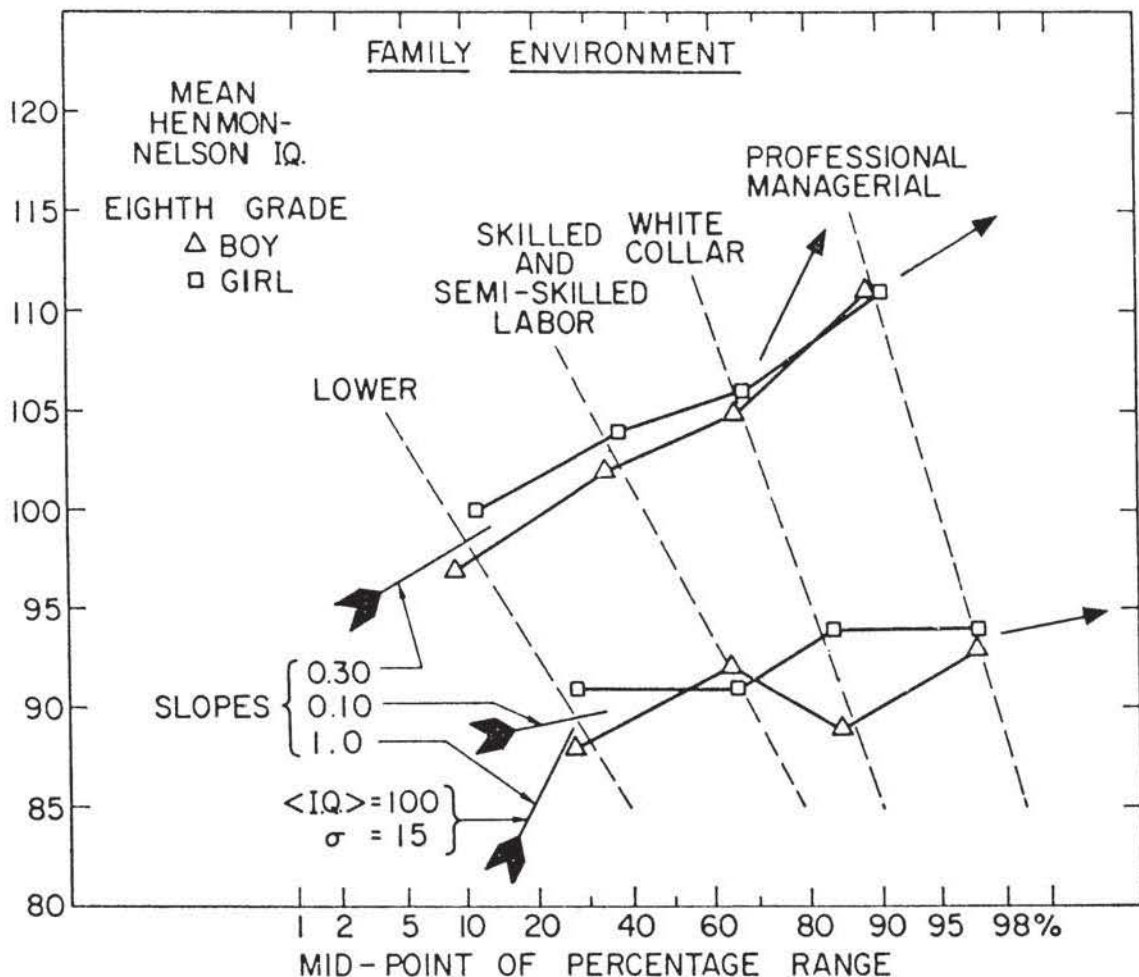


FIGURE 10. Dependence of I.Q. score upon race, sex, and socio-economic status. (The percentile positions are based on the numbers of subjects reported in the relevant tables presented by Wilson and since the Wilson study selected these numbers for a different purpose they are only approximate. It is improbable that a more precise revision would alter the conclusions.)

These statistics indicate such a fundamental difference between the ways in which white and Negro I.Q. distributions are related to family classifications that they imply to me a basic racial or racial-hybrid

difference in the laws governing distributions of intelligence. This aspect of Counterfact 2A constitutes a Counterfact to my next Nonfact.

Nonfact 3. There is no scientific evidence for racial differences in intelligence. (This is a position that I deplore as scientifically untenable in the N.A.S. statement on Human Genetics and Urban Slums.⁷⁰)

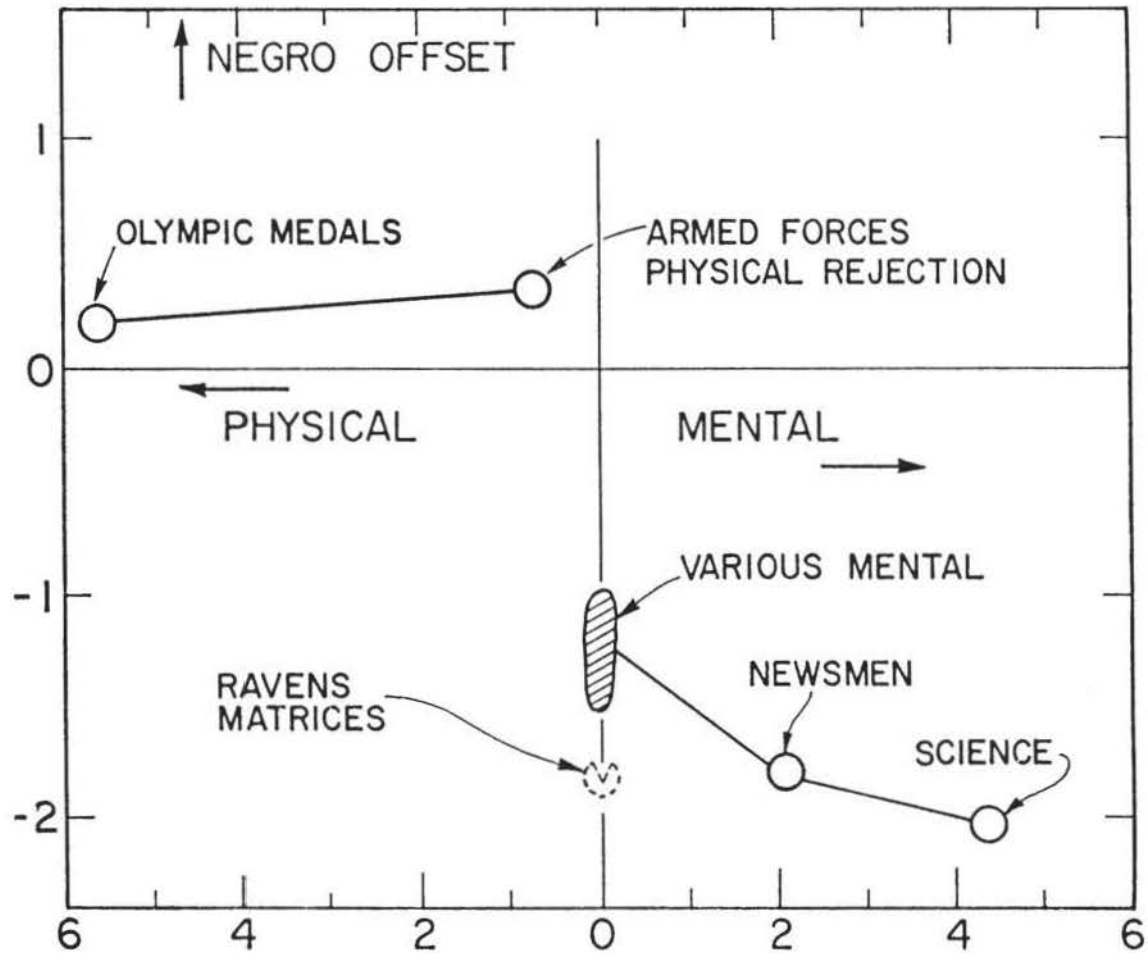


FIGURE 11: Offset-analysis using the "Social Capacity Index" method⁷¹ with the index values for the white population plotted to the right for intellectual performance and to the left for physical performance.

Counterfact 3A. Patterns of relative competence for various mental abilities for Negroes differ distinctly from whites in that, contrary to the general impression, Negroes perform relatively better, not worse, on items more dependent on verbal skills than they do on nonverbal items.

⁷⁰ *Science*, 158:3082, 1967, 892-893.

⁷¹ *Ibid.*

A significant test⁷² was reported in 1958 on 7-to-10-year-old children of low socio-economic status including 440 white and 349 Negro. The two groups had nearly equal Stanford-Binet I.Q. They were also given a version of the Progressive Matrices Test designed by Raven incorporating colored diagrams. The CRPM test is recognized as an important nonverbal test that is exceptionally effective in measuring the Spearman g-factor, or "general" intelligence. (A useful label might be "gentelligence.") If Negro Stanford-Binet I.Q. is artificially lowered by verbal disadvantage, then Negroes would be expected to score relatively higher on the nonverbal Raven's Matrices. However, the Matrices involve more sophisticated logical processing and thus are a measure of a more advanced reasoning ability than occurs in the Stanford-Binet. Whereas white students had on the average, as a consequence of standardizing the scoring system, the same I.Q. on the Stanford-Binet and the Matrices, Negro I.Q. was unexpectedly 9.83 points lower on the Matrices at a level of significance with more than six zeros.

This result is in keeping with some statistical findings that I reported in 1967.⁷³ The statistics that I analyzed showed that consistent with Figure 11 the Negro distribution of Stanford-Binet I.Q. was offset downwards by about 20 I.Q. points or 1.2 standard deviations compared to the white distribution. For higher levels of intellectual performance, such as recognition in science, however, the offset was even greater in keeping with the results for the Raven's Matrices. These data are shown in Figure 11 together with data on physical performance. On the winning of Olympic medals⁷⁴ the same type of offset analysis⁷⁵ shows that the Negro distribution is offset upwards compared to the white distribution by about 0.2 standard deviations. A somewhat larger favorable upward

⁷² C. Higgins and C. H. Sivers, *J. Cons. Psych.*, 22, 1958, 465.

⁷³ W. Shockley, "A 'Try Simplest Cases' Approach to the Heredity-Poverty-Crime Problem," *Proc. Nat. Acad. Sci.*, 57, 6 June 1967, 1767-1774.

⁷⁴ "Arthur Lentz, executive director of the United States Olympic Committee, said 'the Committee resents being used as an attention-getter.' He supplied figures; In the 1964 Olympics at Tokyo, 50 of the 362 U. S. athletes were Negroes. Of the 126 medals won, 22 were by Afro-Americans." Reported by Art Rosenbaum, *San Francisco Chronicle*, 25 November 1967, p. 38. (U. S. population in age range 15-29 in 1960 was 2.3×10^6 Negro and 17×10^6 white leading to a per capita ratio for medals of $(22/2.3)/(104/17) = 1.56$ corresponding to an offset (see footnote 72) of about 0.2 at a social capacity index of 5.6 corresponding (see footnote 72) to $(126-22)/(17 \times 10^6) = 6.15 \times 10^{-6}$. Draft board rejections for (physical) and (physical and mental) were 1.8%, 23.7% for a total of 25.5% for white and for Negro 5.6%, 10.1% and 15.7% giving 0.35 offset at 0.66. (Data from *Health of the Army, Supplement of September 1966*, Office of the Surgeon General, U. S. Army.

⁷⁵ *Ibid.*, footnote 72.

offset of the Negro distribution is also found on the basis of their lower rate of rejection by the armed forces for physical disability. These upward offsets are in keeping with Counterfact 1A. The pattern of Figure 11 of upward offset for physical performance varying towards progressively larger downward offsets for increasingly higher levels of logical performance appears hard to explain convincingly on any basis other than racial genetic differences.

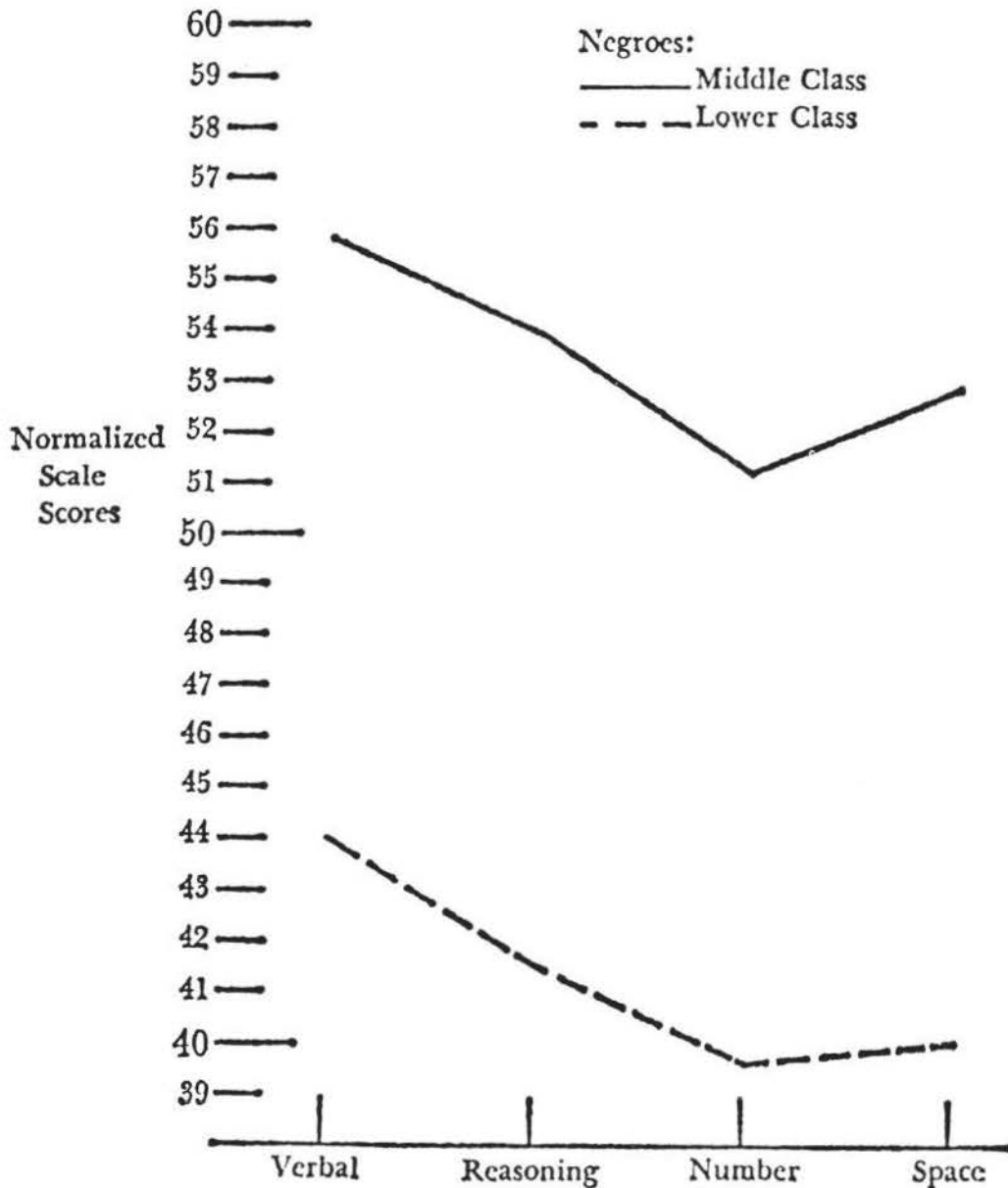


FIGURE 12. Patterns of normalized mental ability scores of middle- and lower-class Negro children. (Normalized scores are adjusted so that the average for the whole school population, i.e., all ethnic and social class groups, is 50 and the standard deviation is 10.)

Counterfact 3B. Studies in New York⁷⁶ and Boston show⁷⁷ clearly that changes in socio-economic status have little effect on ethnic differences in patterns of relative intelligence for different abilities. For example, as shown in Figure 12, Negro children, regardless of socio-economic class, average highest on Verbal and are lower for Reasoning, Number, and Spatial by about 0.2, 0.5, and 0.35, respectively, standard deviation units for the population as a whole. As shown in Figure 13, Chinese children in contrast are lowest on Verbal and approximately equal and about 0.5 to 0.7 units higher on Reasoning, Number, and Space. These observations lead to a new research proposal given in the conclusion.

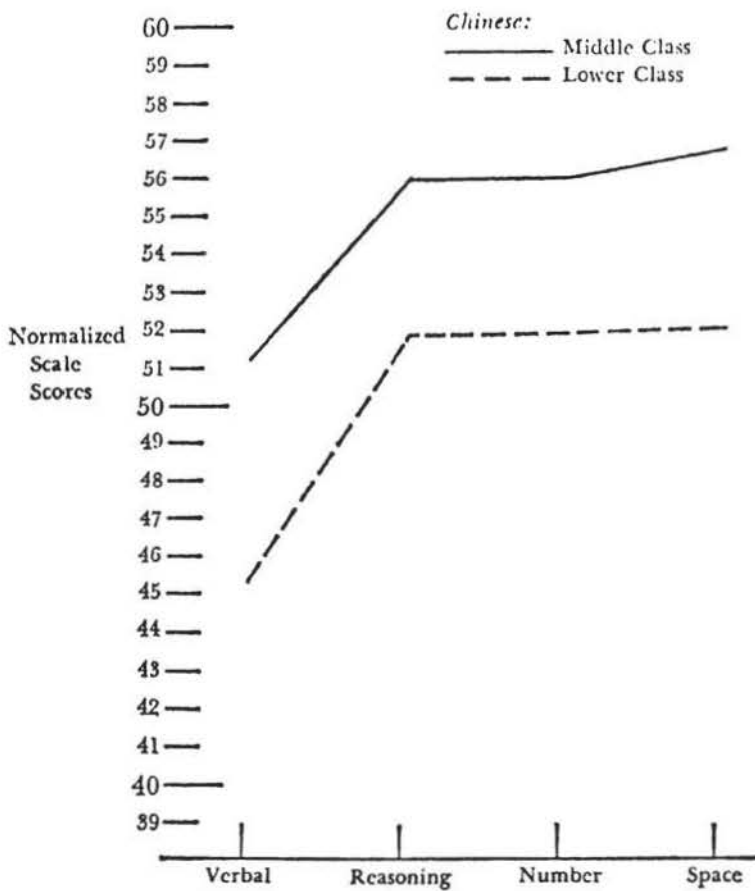


FIGURE 13. Patterns of normalized mental ability scores of middle- and lower-class Chinese children.

⁷⁶ G. S. Lesser, G. Fifer, D. H. Clark, "Mental Abilities of Children from Different Social Class and Cultural Groups." *Mono. of Soc. for Res. in Child Dev.*, 30: 4, 1965.

⁷⁷ S. S. Stodolsky and G. Lesser, "Learning Patterns in the Disadvantaged," *Harvard Educational Review*, Fall 1967, pp. 546-593.

Children	8 to 11 Years			12 to 15 Years		
	F	P	Sig. Lev.	F	P	Sig. Lev.
Race Number	25	17		17	21	
Quantity	2	< 6	<0.1	2	<15	<0.01
Weight	9	<11	<0.1	7	<17	<0.01
Volume	0	< 5	<0.05	2	< 4	N.S.
Length	10	=10	N.S.	3	<13	<0.05
Area	1	< 4	N.S.	2	< 8	N.S.
Number	0	< 4	<0.05	3	< 8	N.S.

TABLE 2. Comparison of Part-Blood (P) and Full-blood (F) Children on Conservation Tests.

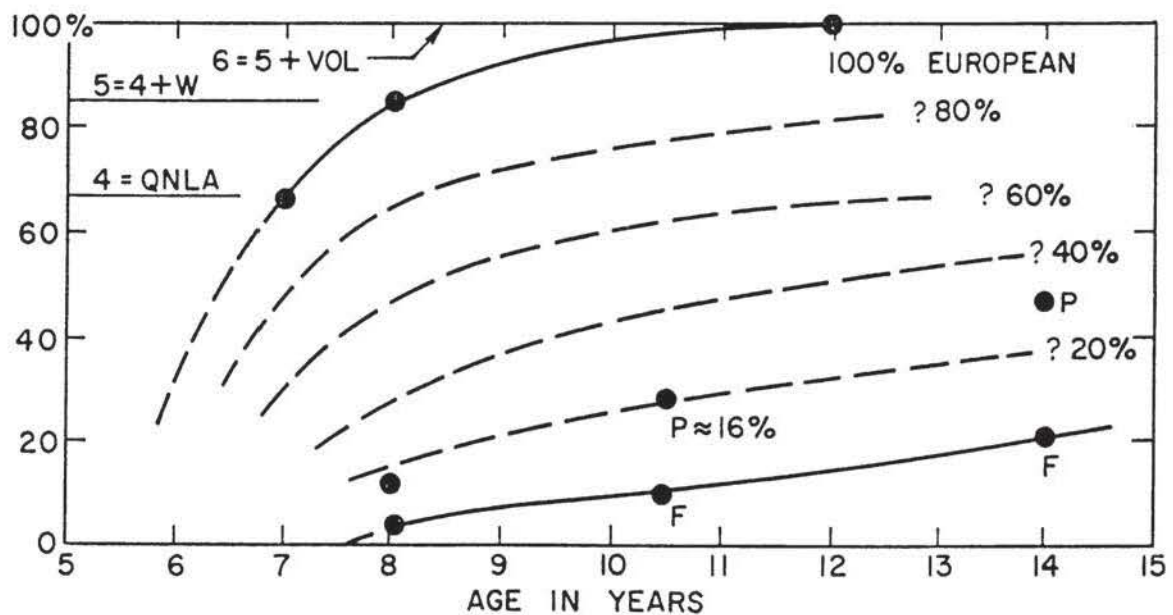


FIGURE 14. Dependence of performance on the Piaget conservation principle tests upon age and racial composition. (Tests concern Quantity, Number, Length, Area, Weight, and Volume. The full-blood and Part-blood points are deduced from de Lemos tables and the European points from her report of Piaget's findings. The dashed curves are linear interpolations between F and 100 percent European.)

Counterfact 3C. Children of primitive Australian aborigines score at about 10 percent to 20 percent compared to a reference standard of 100 percent for European children on six tests that measure comprehension of conservation laws⁷⁸ defined by Piaget,⁷⁹ such as, conservation of volume of sugar when poured into a different shaped glass. Evidence that the test performance deficit is racial and not cultural is furnished by the improved performance to a level of 20 percent to 40 percent for the racially diluted portion of the environmentally integrated population that had one European grandparent or great-grandparent. The 38 children averaging 16 percent European dilution outperformed the 42 children of 100 percent aboriginal ancestry at a high level of significance as shown in Table 2.

As shown in Figure 14 these results are consistent with the approximately linear metallurgical model for effects of racial mixing on mental performance I proposed in 1966.⁸⁰

Conclusion

As the pattern of counterfactuals I have presented illustrates, my chief proposal for research consists of establishing orderly relationships between independent scientific studies. I point out that in the research on existing research that I have discussed, 8 of my 14 counterfactual references were published after 1964. My failure to provoke in the National Academy of Sciences any inquiry or recommendations for similar research makes me fear that the research blinders for the life sciences may now support programs doomed to fail because they are against nature as were those supported by Lysenko-biologists in Russia.

One research proposal that might reduce the environment-heredity uncertainty regarding racial differences is suggested by the findings, quoted in Counterfact 3B, that school children in New York and in Boston show characteristic ethnic patterns of mental abilities. I have heard that the drastic environmental change of adoption from a Negro

⁷⁸ de Lemos, M. M. M. P., *The Development of Conservation in Aboriginal Children*, Ph.D. Thesis, Australian Nat. Univ., November 1966. The writer appreciates the cooperation of Dr. de Lemos, the National Australian University and the San Francisco Australian Consulate.

⁷⁹ J. Piaget and B. Inhelder, *Le Development des quantites physiques chez l'enfant: Conservation et atomisme*, Delachaux and Niestle: Neuchatel (Second Revised Edition), 1962.

⁸⁰ *Ibid.*, footnote 27.

slum into a middle-class New York Jewish family has actually occurred for some 70 orphans. The difference in the patterns of these ethnic groups are great as shown in Figure 15. What would be the patterns of the Negro orphans adopted into Jewish families? If there were significant alteration in the ethnic patterns, it would be strong evidence against a biological basis for the apparent racial differences. On the other hand, invariance of the pattern to drastic environmental change would suggest racial differences in neurological patterns.

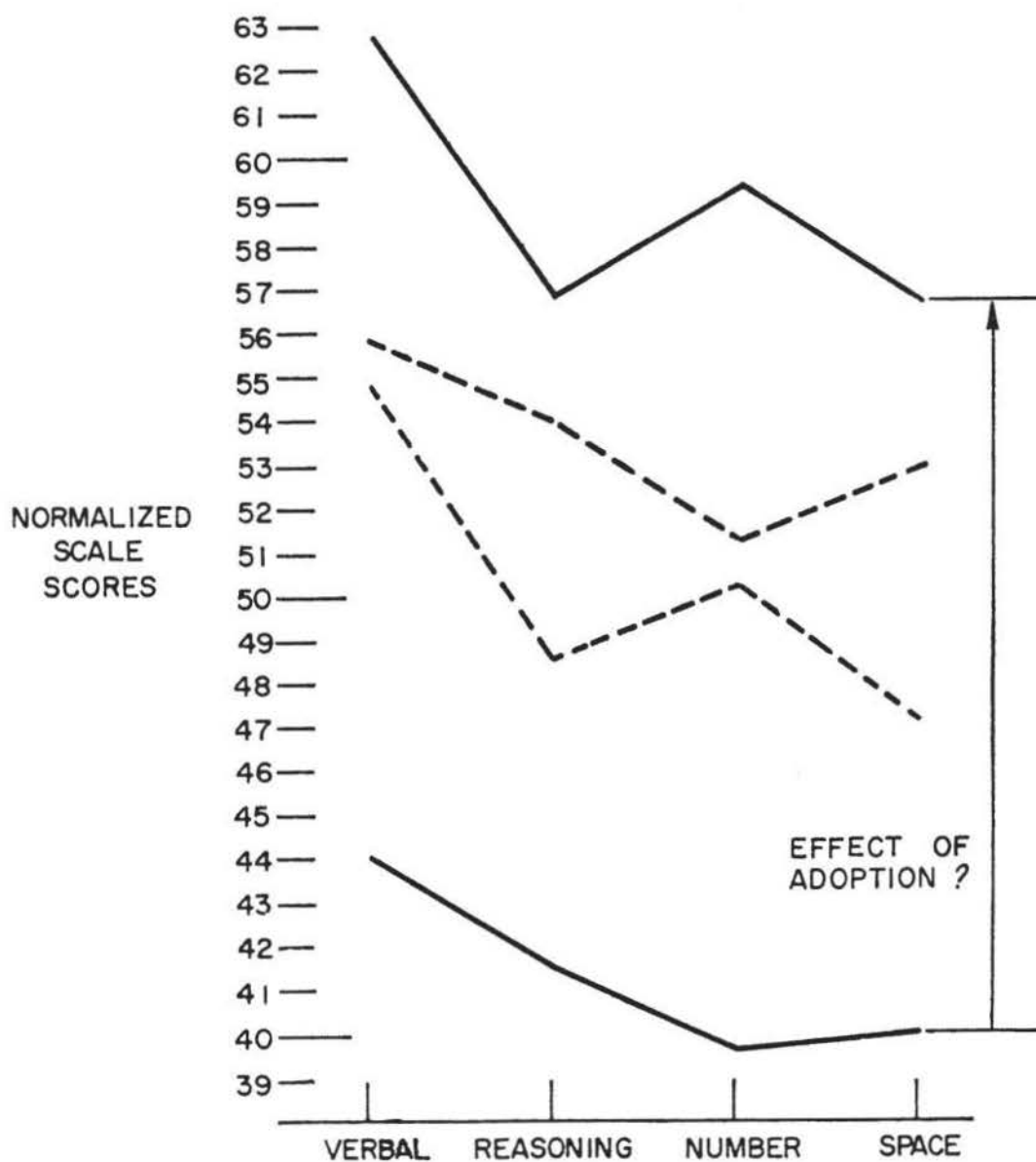


FIGURE 15: Comparison patterns between Negro and Jewish children showing effect to be expected if mental ability is determined entirely by environmental change on adoption. (For completeness, middle-class Negro and lower-class Jewish patterns are shown as dashed lines.)

A second approach worthy of investigation is outlined in my paper⁸¹ for the 1966 Fall Meeting of the National Academy of Sciences. I outlined a means whereby gene frequency information could in principle be used (more effectively than was done in the 1953 study that determined that 30 percent of the genes of Baltimore Negroes came from white ancestors⁸²) to permit determining with high accuracy what the racial fractions were for siblings in a given family group. In a family with an unmarried mother, the scientific tools of gene frequencies might now be capable of furnishing a scientific answer to effects of racial mixing on potential to develop intelligence, especially if significant hereditary differences should occur for the fathers of children of the same mother. Such gene studies might usefully be supplemented with morphological measurements.

My last recommendation is that a National Study Group should be set up to do research on the research that has already been done. The facts on which definitive conclusions may be based may already be available, not in this country, perhaps in Denmark's genetic records.

To avoid misinterpretation, let me refer the reader to my 10-point position statement of Part I with its demand for objective inquiry and creative thought on these difficult problems.

I urge the readers of this article to consider and test evidence that declining population quality may be an important cause of our national sicknesses. If they agree, I further urge them to apply the prescription implied by the First Amendment: to discuss openly conflicting opinions, and to petition our government actively to seek new ways to reduce the environment-heredity uncertainty.

Can significant results be found? I have confidence that the intellectual power of our nation that set up a 10-year program to place a piece of the moon in the hands of our scientists can also set up programs to establish facts in the environment-heredity uncertainty that will contribute to our competence to deal with the problems of the city slums – *but only if this intellectual power has the ability to surmount psychological blocks and to doubt, to express contrary opinion, and to search openly for truth through objective discussion of conflicting ideas.*

⁸¹ Ibid.

⁸² Bentley Glass and C. C. Li, "The Dynamics of Racial Mixture – An Analysis Based on the American Negro." *The American Journal of Human Genetics*, 5, March 1953, 1-20.

An ultimate accomplishment of such creative thought has been expressed by noted Sociology Professor Kingsley Davis:⁸³ "When man has conquered his own biological evolution, he will have laid the basis for conquering everything else. The universe will be his, at last." Speaking for myself, I believe man can.

⁸³ K. Davis, "Sociological Aspects of Genetic Control," *Genetics and the Future of Man*, Ed. by J. D. Roslansky, New York: Appleton-Century-Crofts, 1966.

DOCUMENT 8**Proposed NAS Resolution, drafted October 17, 1970**

Proposed by William Shockley before the National Academy of Sciences,
Rice University, 17 October 1970.

Paragraphs (A) to (F) constitute introductory remarks. Paragraphs (1) through (4) are planned as a motion for consideration at the Business Meeting.

(A) BECAUSE four years ago at the Autumn Meeting at Duke University, it was proposed that the determination of racial mixes of individuals by blood-type measurements might be used to resolve the questions of racial differences in intelligence, and

(B) BECAUSE in 1970 a related but independent proposal by L. L. Heston was appraised by the National Research Council as being adequate to establish scientifically, if it were indeed true, that American Negro IQ deficits are caused by racial genetic limitations, and

(C) BECAUSE the National Research Council rejected this proposal on the grounds that if the alternative environmental explanation were true, then the Heston study would not establish this decisively and, by so doing, the National Research Council inhibited research that might have yielded reproducible, reliable realities in an area of major concern to society, and

(D) BECAUSE since 1966 the problems associated with the unfair disadvantages suffered by the Negro minority have become progressively an issue of greater disturbance in all phases of our nation's social life and especially to the idealistic, intelligent college youth, and

(E) BECAUSE although dysgenic trends in our nation probably apply to whites as well as to blacks, these dysgenic trends are probably disproportionately more severe for blacks and thus are both more urgent to understand and more accessible to diagnose, and

(F) BECAUSE at business meetings of the Academy, proposals for the encouragement of research on human-quality problems have been considered less on the basis of their scientific feasibility and their relevance to problems of major concern to society than on confused mixtures of value judgments, including distrust of the ability of mankind to use the resulting findings wisely, and

(1) WHEREAS the obligation of intellectuals to seek facts relevant to problems of major concern to society has recently been eloquently

expressed by the self-condemnation of Albert Speer in his memoirs as Hitler's Minister of Armaments and War Production in the following sentences:

But in the final analysis I myself determined the degree of my isolation [from Hitler's 'final solution' of the Jewish problem], the extremity of my evasions, and the extent of my ignorance ... *Whether I knew or did not know, or how much or how little I knew, is totally unimportant when I consider what horrors I ought to have known about and what conclusions would have been the natural ones to draw from the little I did know.* [Emphasis added.] Those who ask me are fundamentally expecting me to offer justifications. But I have none. No apologies are possible,

and

(2) WHEREAS the intellectual community of the United States may experience similar self-condemnation if, as many thinking citizens now fear, the horrors of dysgenic trends are currently becoming evident and if in the future it is established that these dysgenic trends were accessible to diagnosis but that science did not encourage but rather inhibited such diagnosis, and

(3) WHEREAS it is an accepted article of faith, supported by many historical instances, that when science has made available new knowledge relevant to the problems facing mankind, this knowledge has with high probability been utilized for the net benefit of mankind by creating greater leisure, more freedom, longer life expectancy, lower infant mortality and such knowledge is expected to aid in solving the problems of population growth,

(4) THEREFORE IT IS RESOLVED THAT the National Academy of Sciences endorses two principles: First, science can most reliably contribute to the well-being of this nation and to that of humanity in general by seeking truth in those special areas that are both clearly relevant to problems of major concern to society and are also those in which reliable, reproducible realities can, at least in principle, be economically found; and second, that the social wisdom of scientists is not sufficient to enable them wisely to inhibit research in such special areas on any grounds whatever, including specifically the ground that the political climate is such that research in certain controversial fields will exacerbate delicate situations and will inevitably be denigrated by derogatory labels no matter how objectively conducted. [This resolution was prepared by W. Shockley with the support of R. W. Chaney.]

DOCUMENT 9

Hardy-Weinberg Law Generalized to Estimate Hybrid Variance for Negro Populations and Reduce Racial Aspects of the Environment-Heredity Uncertainty

Paper presented at the Spring meeting of the National Association for the Sciences, Washington, D.C., 28 April 1971.

My contribution today is a progress report on a proposal that I first made four and a half years ago at the Academy's autumn meeting. It adds definitive research results to what I presented last October at the meeting at Rice University. At that meeting I stated tentative findings that I can now say are supported, I do not say proved, by the research that I shall describe today. These conclusions can probably be refined by further research that can now be more specifically outlined.

The moral issues that are involved in justifying my demands that facts be established about the racial genetic intellectual disadvantages of our nation's black minority are painful ones to face. I have endeavored to face them and I assure you that I have not lightly concluded that the course I am following is the right one. Ten minutes allows no further time on this central issue; I did discuss it last fall and copies of that talk have been given to the Academy's news service together with this one.

If an individual labelled a Negro in Oakland, California were selected at random from the population, and if it were possible to trace one of his genes backwards through about ten generations, then as Professor T. E. Reed (*Science*, 22 Aug 1969) has established, the probability that the gene originated in a Caucasian ancestor is 22% with an accuracy of + 1%. I shall refer to this percentage as M the Caucasian proportion, or the "hybrid index." Reed uses Duffy's Fy^a and calls it a "Caucasian gene" because for Caucasians its frequency is 43% whereas it is missing from the original slave populations.

The first research result of my talk today, not previously presented at an Academy meeting, involves the relationship of physical and mental differences between the races. Evidence that increases in percentages of Caucasian genes in Negro populations improve mental performance and degrade physical performance is presented on Slide 1 that shows the preinduction test results reported by the Office of the Surgeon General,

Department of the Army. The 1968 results of Slide 1 show that Negroes in Georgia in the Third Recruiting District have a mental disqualification rate of 47.3% or an IQ of about 80 compared to 17.5% and 90 for California in the Sixth District. The superior performance of Negroes in California compared to Georgia supports the theory that Negro IQ is raised by an admixture of white ancestry. California Negroes have twice as high a percentage of their genes from white ancestors as do Georgia Negroes according to Professor Reed's findings of 22% Caucasian genes for Oakland, California and 11% for Evans and Bullock counties, Georgia. The trend shown by all the recruiting districts for both Negro and non-Negro inductees, suggests that the average IQ of Negro populations increases by about one IQ point for each 1% of added Caucasian genes and might match or even exceed the whites at 30 or 40%. The physical qualifications correspondingly drop.

An additional new research finding is that the visual acuity of Negro inductees is distributed according to the same law as for whites but is offset favorably by $0.65 + 0.05$ standard deviations of the underlying normal distribution.

The second and third new research results show how obvious shortcomings of the methodology of Slide 1 might be overcome. The most obvious shortcoming is that the effects might be caused by environmental differences among the various geographical regions. This difficulty would be greatly reduced if a region could be found which contained populations that differed substantially in their values of M . My second new result offers an existence proof for such a possibility.

My second research result is that a typical Negro population, specifically Oakland's, is indeed composed of sub-populations that have distinctly different hybrid index values. This conclusion is reached by making use of Reed's study of a second Caucasian gene system, the G_m system. I have found that by generalizing the Hardy-Weinberg Law to predict phenotype frequencies from gene frequencies, a discordance of Reed's values for M can not only [be] eliminated but used to estimate the extent of the spread of the hybrid index.

Reed's estimate for M based on G_m is 27.3% with a standard error of 3.7%, a result almost incompatible with the $22 + 1\%$ for Duffy's gene. My generalization of the Hardy-Weinberg law shows that these two values can be brought into harmony if it is assumed that the population is not homogeneous but varies from possibly less than 5% to more than 50%. The quantity deduced from the new calculations is a value of about 0.05 for the variance of M .

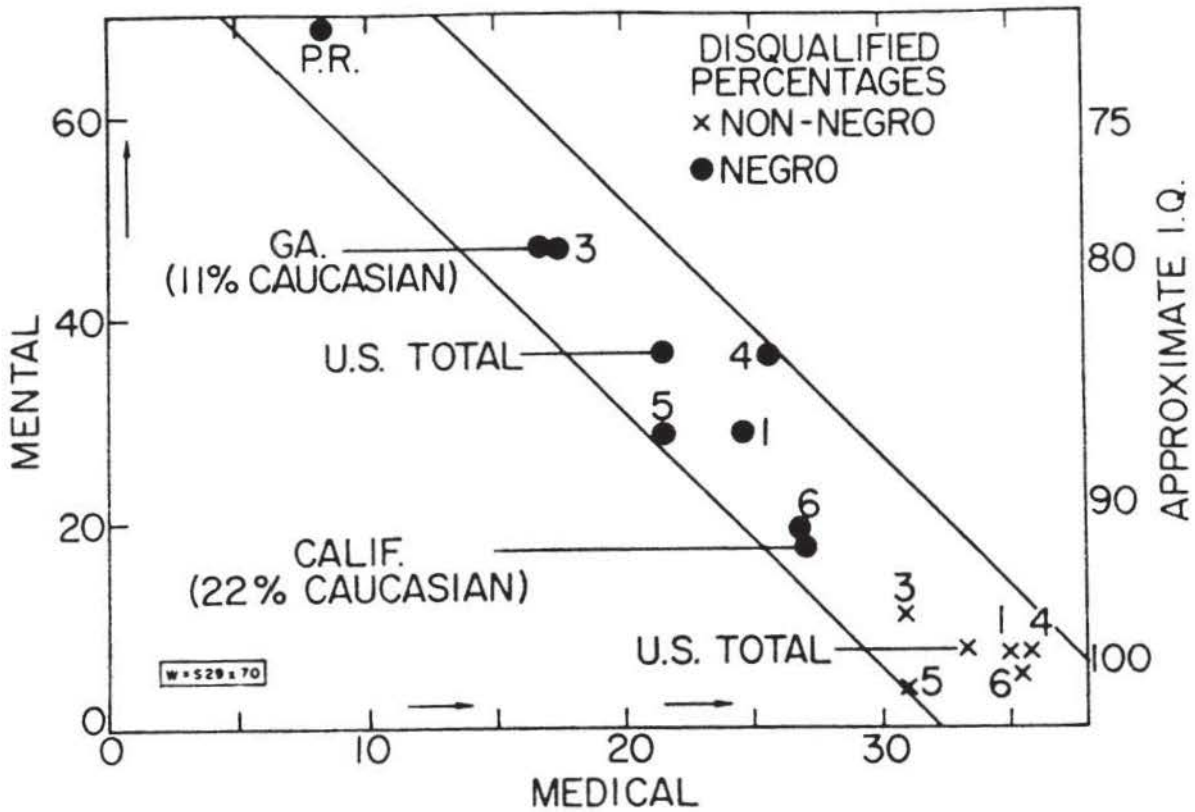


FIGURE 1: Evidence that increases in percentages of Caucasian genes in Negro populations improve mental performance and degrade physical performance is furnished by the preinduction test results reported by the Office of the Surgeon General, Department of the Army. The 1968 results show that Negroes in Georgia in the Third Recruiting District have a mental disqualification rate of 47.3% or an IQ of about 80 compared to 17.5% and 90 for California in the Sixth District. The superior performance of Negroes in California compared to Georgia supports the theory that Negro IQ is raised by an admixture of white ancestry. California Negroes have twice as high a percentage of their genes from white ancestors as do Georgia Negroes according to an estimate based on measurements by Professor T. E. Reed of the University of Toronto of 22% Caucasian genes for Oakland, California and 11% for Evans and Bullock counties, Georgia. Reasoning from the trend shown by all the recruiting districts for both Negro and non-Negro inductees, Professor William Shockley estimates that the average IQ of Negro populations increases by about one IQ point for each 1% of added Caucasian genes and might match or even exceed the whites at 30 or 40%. The physical qualifications correspondingly drop. Professor Shockley urges that his hypothesis should be tested by determining the percentages of Caucasian genes for representative populations of Negro inductees. Such research might also permit evaluating the claim that Negro-white differences in medical disqualifications are biased by the poor medical counseling available to the economically disadvantaged.

The mathematical development takes into account the fact that the frequency with which any phenotype will occur depends upon the hybrid index as a quadratic form. Consequently, the expected frequencies will depend upon the value of M and upon that of the square of M averaged over the sub-populations. These separate contributions are shown on three charts for the Duffy, the Gm and the ABO systems. It is seen that very satisfactory agreement between expected and observed frequencies is obtained for all three systems using the chi square test. In fact the two new values of 0.23 for M and 0.10 for the average of the square of M actually fit the observed Gm frequencies better than Reed's value of 27.3%.

The importance of establishing that the variance of the hybrid index is so large is that this then makes it natural to consider making observations on separate sub-populations located in the same geographical area. In fact, as I suggested at the last meeting, it may be possible to find populations in which the environmental factors may favor those sub-populations that have the smaller proportion of Caucasian genes.

The third new research result that I present today is evidence that in predominantly black colleges listed in the College Blue Book, attitudes towards racial differences favor the black students compared to others. Two undergraduate research assistants mailed a questionnaire to the presidents of the colleges requesting a response to the following:

Proposed Opinion Statement: In the college with which I am associated, the effects of attitudes towards racial differences is, in effect, substantially reversed so that majority students, who happen to be black in this college, are in a relatively advantageous position compared to minority students in terms of attitudes related to motivation and achievement in their academic pursuits.

Spaces were provided for strong or moderate agreement or disagreement and a fifth possibility of "neither agree nor disagree." Of the 23 responses mentioned in the abstract for this paper, 12 agreed with the proposed statement, three of these strongly. (This was a useful response rate of 38%; one president was unavailable and another school refused to hazard an opinion; five were neutral; and three each disagreed strongly and moderately; responses received since do not alter the results materially.)

These responses suggest that definitive research could refine or reject the estimate discussed earlier: Based on the relationship of rejection rates on the preinduction mental tests, each increase of one

percent of Caucasian ancestry raises average IQ by one point for low IQ populations. For this purpose the student bodies of several of the colleges from which responses were received would be classified into upper and lower halves on the basis of IQ scores, scholastic achievement tests or grade point averages. Next, the racial composition of each half would be determined using Duffy's or the Gm genes (i.e., Reed's "Caucasian genes" because the original slave populations didn't have them.) These genes are not related to physical appearance. If the lower group had the higher percentage of Caucasian genes, it would imply that prejudice was the main factor. But if the brighter ones had the higher percentage, this would support the old fashioned and currently rejected view that intelligent Negroes occur chiefly because of their white ancestry.

It would, of course, be desirable to broaden the sample of those polled on the "proposed opinion statement" by including students and by comparing the results of schools that differed significantly in their attitudes. My chief purpose in reporting these results at this time is the same as it has been since 1966: to establish existence proofs that hereditary aspects of our nation's human quality problems are accessible to conventional research methodology.

If what I fear is true, our society is being profoundly irresponsible. Our nobly intended welfare programs may be encouraging dysgenics – retrogressive evolution through disproportionate reproduction of the genetically disadvantaged. This national illness probably occurs for whites as well as blacks. But it may be much easier to diagnose for the blacks because of the research possibilities offered by the Caucasian gene effects.

To fail to use this method of diagnosis for fear of being called a racist is irresponsible. It may also be a great injustice to black Americans themselves. If those Negroes with the fewest Caucasian genes are in fact the most prolific and also the least intelligent, then genetic enslavement will be the destiny of their next generation. The consequences may be extremes of racism and agony for both blacks and whites.

DOCUMENT 10

Dysgenics – A Social Problem Evaded by the Illusion of Infinite Plasticity of Human Intelligence?

Manuscript planned for reading at the American Psychological Association Symposium entitled: "Social Problems: Illusion, Delusion or Reality." Washington, D.C., 7 September 1971.

1. Resolving the Environment-Heridity Uncertainty.

My chief contribution to this symposium is to ask a question – an unpleasant question but one that I believe must not only be asked but answered if our generation of citizens is to fulfill its responsibility to the next generation. My question is:

Do important social problems arise from dysgenic – retrogressive evolution through the disproportionate reproduction of the genetically disadvantaged?

Underlying this question is the nature-nurture issue. I described it in 1966 as the environment-heridity uncertainty in order to draw parallels with those uncertainty principles in physics that are basic. My thesis today is that the environment-heridity uncertainty is not basic and indeed it has really been resolved – at least for one significant case that I shall discuss – but that an illusion or a delusion prevents the acceptance of the reality of this resolution and blocks its application to the social problems being faced by this symposium.

The resolution of the environment-heridity uncertainty that I shall describe is limited to the IQs of individuals in one particular population; and further acceptable research is needed for a comparable resolution applicable to social problems for the U. S. population as a whole.

Because these limitations prevent evaluation of the dysgenic threat, I have demanded increased research on genetic aspects of human-quality problems. Four of the most frequent reasons given for rejection of my demands are these: (1) intelligence measured by IQ score is so complexly influenced by culture that genetic influences are not quantifiable, (2) IQ score has no relevance to successful living, (3) races cannot be meaningfully defined and all ethnic groups have the same genetic potential for intelligence and (4) even if the environment-heridity uncertainty,

including its racial aspects, were resolved, the knowledge would be worthless because the needed remedies would inevitably require quality control applied to human reproduction on the basis of genetics. This is nothing less than eugenics – a repugnant concept.

As I shall demonstrate in the remainder of my presentation, none of these four objections stand up under objective analysis.

2. *Geneticity of IQ and the Significance of the Gladys-Helen Case.*

Slide 1 is my answer to the first objection. I use published data to "predict" 122 "observed" IQs. The root-mean-square error of prediction is only 8.5 IQ points for the 122 cases that are distributed with a standard deviation of 15 points. The "prediction" is possible because four studies have matched each "observed" IQ with the IQ of an identical twin reared apart. This other IQ is my "prediction"; each point is a twin pair. I maintain, but most psychologists deny, that the details of these studies assembled by A. R. Jensen from England, Denmark and the U.S.A. validate this assertion:

Intelligence, measured by IQ, varies more than twice as much from genetic difference as from environmental ones for individuals from families like those that raise one of a pair of white identical twins. This assertion is conservative. The correlation coefficient between twins' IQs is 0.82: "geneticity" [i.e., my nondictionary word, like "culturology" of this symposium, for the fraction of population variance due to genes] is 82%; nongenetic factors cause only 18% of the variance.

If the results of Figure 1 are as obvious, why are they not accepted?

The twin data of Figure 1 can be differently – but not soundly, – interpreted. In fact, one pair of twins in the study of Newmann, Freeman and Holzinger have been repeatedly cited as evidence for what I label the *illusion of infinite plasticity of intelligence*. Gladys and Helen differed by 24 IQ points – much more than the average IQ difference between whites and Negroes. Obviously, it is asserted, environment has dominant control.

This reasoning, that is emphasized in many psychology texts, is superficial. Actually the Gladys-Helen case provides an exception needed to prove the 82% geneticity rule. Failure to interpret these results soundly seems to me an example of the myths about social problems that this symposium may dispel.

The correct reasoning is presented in Slide 2. In brief, what it shows is that nongenetic contributions to IQ differences between twins are accurately distributed in a normal distribution. One striking result on this

slide is that the famous pair of identical twins, Gladys and Helen of the well-known Newmann, Freeman and Holzinger study, do indeed provide the exception that proves the rule. In a distribution of 122 pairs of twins, *one pair differing by 24 IQ points should be found by the laws of probability if geneticity is 82%*.

The normal distribution of Slide 2 also warrants another important conclusion – one not previously presented at a scientific meeting so far as I know. This new conclusion is an evaluation of the confidence that one can place in the 82% geneticity value – always, of course, for populations like those that raise one of a pair of white identical twins. My own research on this older research reveals that *if all the nongenetic factors that affected the IQs added up to as much as 29% of the total variance, then there is less than one chance in two thousand that chance alone would have produced the smallness of the observed 122 IQ differences between the separately reared co-twins. In other words, the greater importance of genes compared to environment is established at a level of significance enormously higher than one in 2,000.* Geneticity is most unlikely to be less than twice as important as everything else always for the limited population considered. Further research shows that this conclusion is not a spurious consequence of similar environments for both twins of a pair.

One prediction from 82% geneticity is that a difference of approximately 25 IQ points between identical twins should occur if one is raised in the worst 1% and the other in the best 1% of the normal distribution of environments. This may be relevant to the recently publicized results for young slum children reported by Professor Heber of Wisconsin.

Regarding the second objection – IQ means nothing – I observe that IQ is positively correlated with many socially-accepted measures of human quality. I refer you to A. R. Jensen's well-known article, H. J. Eysenck's recent book and Richard Herrnstein's article in the current Atlantic Monthly for data on traits that I calculate have correlation coefficients of about 0.2 to 0.5 with IQ.

3. Raceology and the Moral Obligation to Diagnose

The third objection – that race is meaningless – is refuted by T. E. Reed of Toronto who has determined with a precision of 1% the Oakland, California Negro population is 22% Caucasian in ancestry. I have refined Reed's studies and used them with Army preinduction test data to estimate that for low IQ Negro populations, each 1% of Caucasian ancestry raises average IQ by 1 point. I have suggested ways of controlling for the environmental differences to test the reliability of

this estimate. An interesting question is the level at which diminishing returns set in; for example, at 40% Caucasian ancestry, would average IQ be 110?

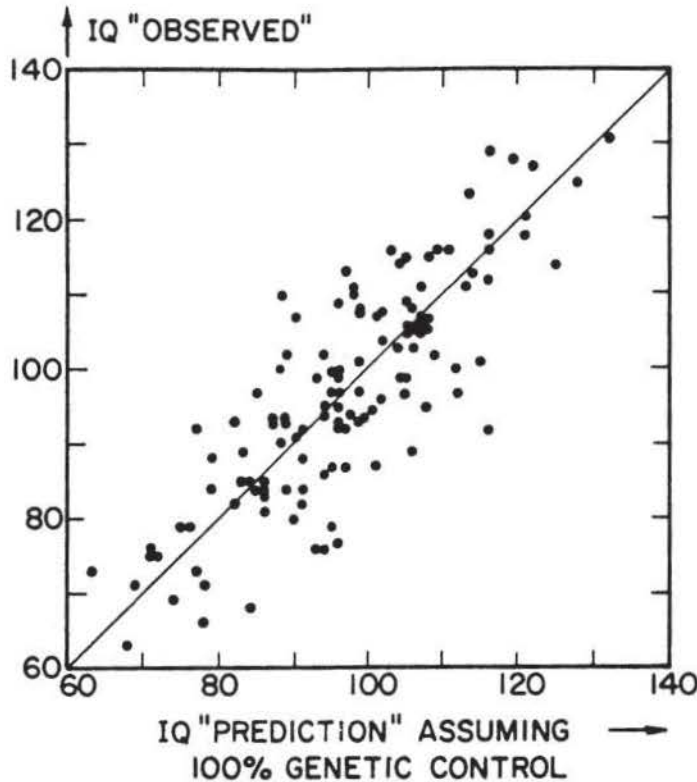


FIGURE 1: Actually each "prediction" is the IQ of one of a pair of separately-reared, white-identical twins. The "observed" value is the other. The correlation coeff. is 0.82 implying that only 18% of the population variance is nongenetic. Thus "geneticity" or fraction of variance due to genetic differences is 82%.

In respect to this symposium's concern with "social problems" and its goal of "the reestablishment of stability, order and meaning" I express this warning: To fail to use diagnosis based on racial differences in blood types for fear of being called a racist is irresponsible. It may also be a great injustice to black Americans themselves. If those Negroes with the fewest Caucasian genes are in fact the most prolific and also the least intelligent, then genetic enslavement will be the destiny of their next generation. The consequences may be extremes of racism and agony for both blacks and whites.

The word "raceology" has been proposed for studies like mine. They are not racism. They are motivated by concern – not by fear and hate. My research focuses principally upon white-Negro comparisons for two reasons: (1) Our national racial problems primarily involve the Negro

minority and (2) Negroes are the only racial group for which extensive published statistics are available. Therefore, my personal research on questions related to Negroes has far greater immediate promise of contributing to sound diagnosis of our human quality problems than, for example, would attempts to study hereditary factors for Appalachian whites, for whom I have found that statistical data is practically unobtainable. Although I emphasize the Negro area for these reasons, I continue to urge broad inquiry into hereditary aspects of human behavior for all racial groups.

As an example of raceology, I present in Slide 3 some new research results on Negro superiority that compares Negro and white visual acuity as based on Army tests. The points specify fractions of negroes and whites having various levels of visual acuity. From 20/20 to less than 20/200, the points fall accurately along a line. The interpretation of this analysis is that whites and Negroes are distributed in their visual acuity according to the same basic underlying normal distribution but that the distribution for Negro visual acuity is offset upwards by approximately 0.6 of a standard deviation – a value that if it applied for mental performance would be equivalent to about 9 IQ points.

The data of the figure warrant the assertion that *intelligence, measured by IQ varies more than twice as much from genetic differences as from environmental ones for individuals from families like those that raise one of a pair of white identical twins*. If genetic differences were less than twice as important as environmental ones, the probability is less than one in 2,000 that chance would have produced the good fit of the figure.

Where data have been available, I have tried to compare other racial groups. My findings do not support a theory of white Aryan supremacy: I have found and published the observation that American orientals are about ten times more successful than the national average on a per capita basis in achieving the distinction of election to the National Academy of Sciences. They are also about ten times more successful in avoiding citations in the annual FBI uniform crime reports. My statistics also show that Jewish Nobel Prize winners in science occur about ten times more often than expected on the basis of the population as a whole.

4. *The "Apple of God's Eye Obsession" – A Cause of Delusions About Social Problems?*

I shall now attempt an analysis of psychological factors underlying the four objections to my research demands. I shall start with the fourth – that knowledge would be worthless because any possible action would

involve intolerable eugenics measures.

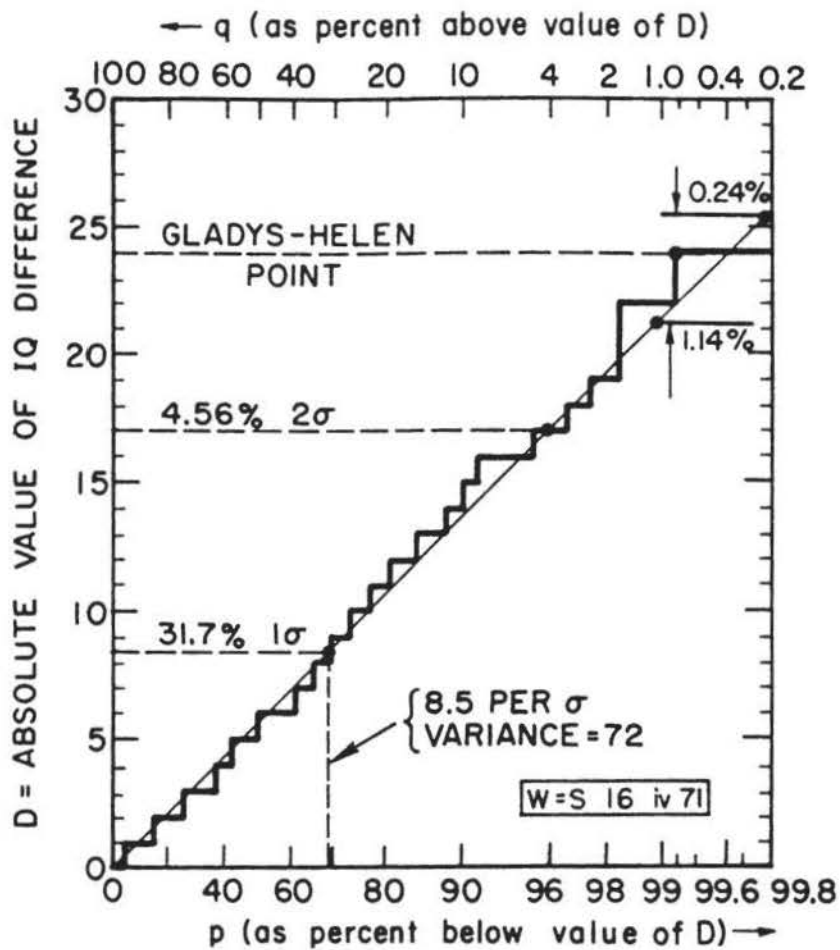


FIGURE 2: The above shows that differences in IQ between identical twins reared apart obey a basic statistical law known as the normal distribution. If the data that give the "staircase" of heavy lines fell so that a straight line cut each step in half, the fit would be perfect – in fact, too perfect – like perfect alternation between heads and tails for a tossed coin. The figure shows that Gladys and Helen, the identical twins famous for differing by 24 IQ points, are the exception that proves the rule – the normal distribution predicts one such case among the 122 pairs of twins just as six heads in a row occurs once in 64 tries.

Eugenics is a shunned word because it was a feature of Hitlerism. But the lesson of Nazi history is not that eugenics is intolerable. Denmark has continued since 1935 programs with clearly positive eugenic implications. One hundred and forty years before Hitler, our Bill of Rights anticipated the lesson to be learned from Nazi history by incorporating into our Constitution the First Amendment guaranteeing freedom of speech and of the press. Only the most anti-Teutonic racist

can believe that the German people are such an evil breed of man that they would have tolerated the concentration camps and gas chambers if a working First Amendment had permitted exposure and discussion of Hitler's "final solution" – the extermination of the Jews.

The First Amendment makes it safe for us in the United States to try to find humane eugenic measures. As a step in such search, I propose as a *thinking exercise* a voluntary, sterilization bonus plan.

Bonuses will be offered for sterilization. Income tax-payers get nothing. Bonuses for all others, regardless of sex, race, or welfare status, would depend on best scientific estimates of hereditary factors in disadvantages such as diabetes, epilepsy, heroin addiction, arthritis, etc. At a bonus rate of \$1,000 for each point below 100 IQ, \$30,000 put in trust for a 70 IQ moron of twenty-child potential might return \$250,000 to tax-payers in reduced costs of mental retardation care. Ten percent of the bonus in spot cash might put our national talent for entrepreneurship into action.

A motivation boost might be to permit those sterilized to be employed at sub-minimum standard wages without loss of a welfare floor income. Could this provide opportunity for those now unemployable?

I shall close with an hypothesis about the psychology of the critics of my concerns about dygenics. I doubt neither the sincerity nor the good intentions of these critics. I diagnose their obtuseness as caused by a theologico-scientific delusion. I call it the APPLE OF GOD'S EYE OBSESSION – God meaning for some the proper socio-biological order of the Universe. True believers of this obsession hold that God has designed nature's laws so that good intentions suffice to ensure humanity's well-being – a belief that satisfies a human need for self-esteem.

Any evidence counter to man's claim to be the apple of God's eye strikes a central blow at his self-esteem, and thereby provokes retaliation reminiscent of the prompt execution of a Greek messenger bearing ill tidings of defeat in battle. These parallels become clearer in the historical perspective of Galileo and Darwin. In each case they brought new knowledge that was incompatible with the then cherished interpretation of humanity's unique place in the universe. Either the new knowledge had to be rejected or else the APPLE OF GOD'S EYE OBSESSION had to be painfully revised.

I propose that illusions and delusions are important in the rejection of the relevance of genetics to social problems because the theory that intelligence is largely determined by the genes and that races may differ in distribution of mental capacity offends equalitarian-environmentalism – an important feature of the contemporary form of the APPLE OF GOD'S

EYE OBSESSION. The preponderance of the world's intellectual community resists the fact that nature can be cruel to the newborn baby. Babies too often get an unfair shake from a badly-loaded parental genetic dice cup. At the acme of unfairness are features of racial differences that my own research inescapably leads me to conclude exist: Nature has color-coded groups of individuals so that statistically reliable predictions of their adaptability to intellectually rewarding and effective lives can easily be made and profitably be used by the pragmatic man-in-the-street.

If, as many thinking citizens fear, our welfare programs are unwittingly, but with the noblest of intentions, selectively down-breeding the poor of our slums by encouraging their least foresighted to be most prolific, the consequences will be tragic for both blacks and whites – but proportionately so much worse for our black minority that, as I have said, the consequence may be a form of genetic enslavement that will provoke extremes of racism with agony for all citizens.

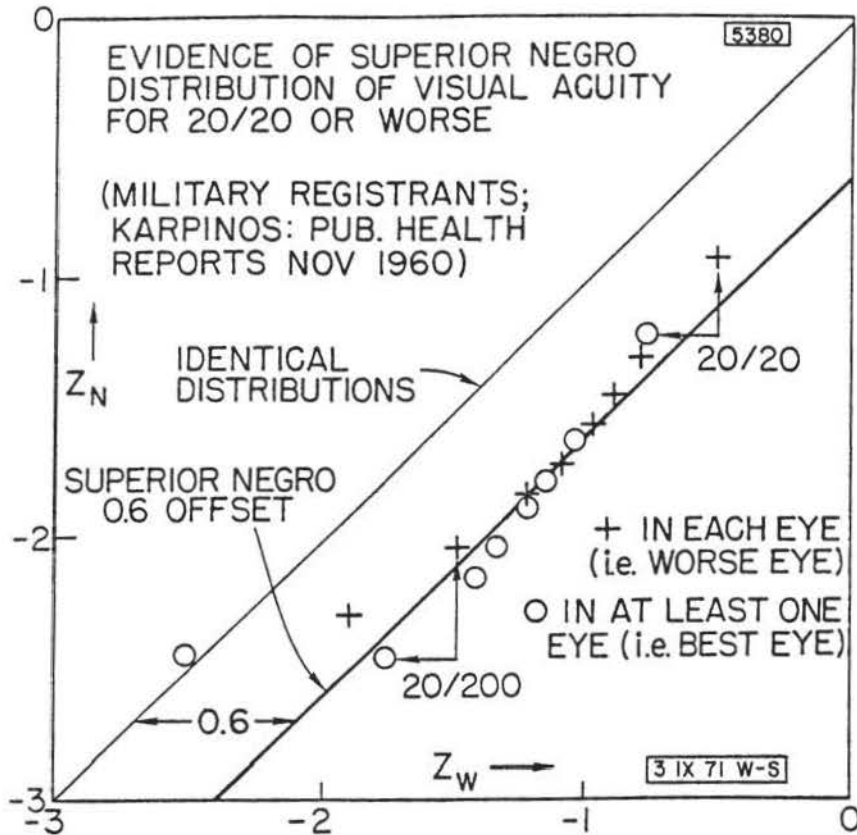


FIGURE 3: The Z_W values give normal distribution arguments that correspond to the percentage of white, military registrants who fail to meet the prescribed visual acuity. Z_N corresponds to Negroes. The unmarked visual acuities are in sequence 20/20, 20/40, 20/50, 20/70, 20/100. The extreme points that fall out of the pattern are 20/400. If the points fell perfectly on the line, it would imply identical normal distributions for both races except for an offset of 0.6 standard deviations.

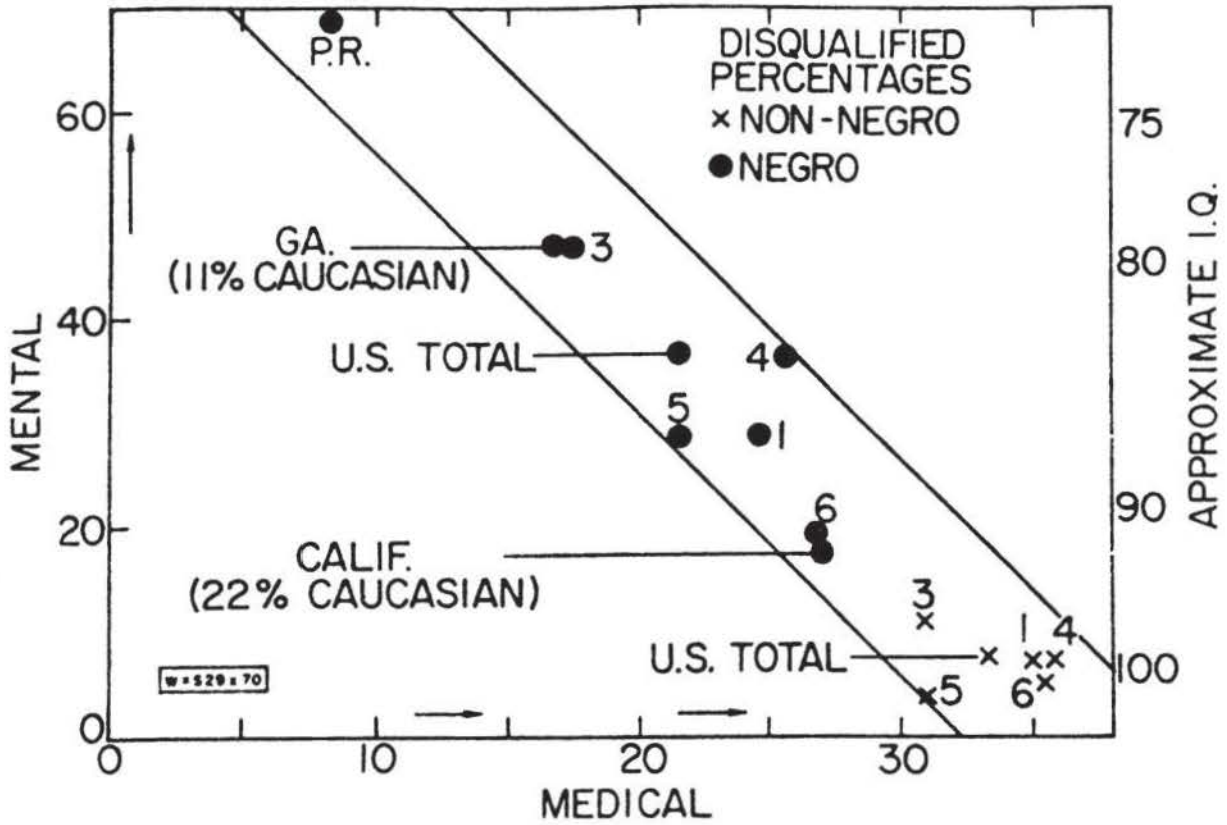


FIGURE 4: Evidence that increases in percentages of Caucasian genes in Negro populations improve mental performance and degrade physical performance is furnished by the preinduction test results reported by the Office of the Surgeon General, Department of the Army. The 1968 results show that Negroes in Georgia in the Third Recruiting District have a mental disqualification rate of 47.3% or an IQ of about 80 compared to 17.5% and 90 for California in the Sixth District. The superior performance of Negroes in California compared to Georgia supports the theory that Negro IQ is raised by an admixture of white ancestry. California Negroes have twice as high a percentage of their genes from white ancestors as do Georgia Negroes according to an estimate based on measurements by Professor T. E. Reed of the University of Toronto of 22% Caucasian genes for Oakland, California and 11% for Evans and Bullock counties, Georgia. Reasoning from the trend shown by all the recruiting districts for both Negro and non-Negro inductees, Professor William Shockley estimates that the average IQ of Negro populations increases by about one IQ point for each 1% of added Caucasian genes and might match or even exceed the whites at 30 or 40%. Professor Shockley urges that his hypothesis should be tested by determining the percentages of Caucasian genes for representative populations of Negro inductees. Such research might also permit evaluating the claim that Negro-white differences in medical disqualifications are biased by the poor medical counseling available to the economically disadvantaged.

My position is that humanity has an obligation to use its intelligence to diagnose and to predict in order to prevent agonies that lack of foresight can all too easily create. The ambition of this symposium to dispose of "illusions and delusions" by "delving deeply into the social issues of our day" and seeking "solutions...which draw from man's basic core: his meaning system..." are in keeping with my position. I consider it a privilege to participate.

DOCUMENT 11

Dysgenics, Geneticity, Raceology: A Challenge to the Intellectual Responsibility of Educators

This article is an elaboration of ideas presented in a paper by William Shockley before the American Psychological Association, Sept. 1971.

Do our nobly intended welfare programs promote dysgenics – retrogressive evolution through the disproportionate reproduction of the genetically disadvantaged? One incident that led me to express my worries publicly was a news story of an acid-throwing teen-ager, one of 17 children of a mother with an I.Q. of 55. Later I learned of Denmark's sterilization programs with their eugenic implications. The rising per capita homicide rate of Washington, D.C., is 50 times Denmark's falling one. Dysgenics?

My inquiries unearth no support of studies of dysgenics by a government agency or a major foundation. But conspicuous hints of dysgenic worries do occasionally emerge. In 1964 Secretary of Labor Willard W. Wirtz said: "There is a strong indication that a disproportionate number of unemployed come from large families, but we don't pursue evidence that would permit establishing this as a fact or evaluating its significance."¹ Early in 1971, Vice President Spiro T. Agnew mentioned forbidding welfare mothers to have more illegitimate children and suggested that welfare problems might require willingness "to take on the hard social judgments that very frankly no one that I know in elective office is willing to even think about."² This unwillingness is not restricted to politicians. Agnew's thoughts were rejected with the adjectives "punitive" and "inhumane" in an article in *Science*.³

Inverted liberals of our academic community encourage this *we-don't pursue, no-one-willing-even-to-think* avoidance of dysgenics by our political leaders. They devise such unsearch dogmatism as this rephrased thought-

¹ Willard W. Wirtz, OECD speech, 1964, and personal correspondence with the author.

² Earl C. Behrens, "Tough Agnew Proposals on Welfare," *San Francisco Chronicle*, January 15, 1971, pp. 1, 24.

³ Frederick S. Jaffe, "Toward the Reduction of Unwanted Pregnancy," *Science*, October 8, 1971, pp. 119-27.

blocker:

An individual's I.Q. is controlled by two variables, his environment and his genes. Separate control of these variables is neither practical nor humane. Therefore, to determine the 'geneticity' [my word for the genetic fraction of the spread, precisely of the variance or square of standard deviation] of I.Q. for any population is impossible. Environmental improvements in human quality so need resources that none should be wasted on 'bad heredity' research.

To refute the unsearch dogmatism of the above "two-variable-basically-impossible" thought-blocker, I exhibit Figure 1, showing my use of published research to "predict" 122 "unknown" I.Q.'s, together with the "observed" values.

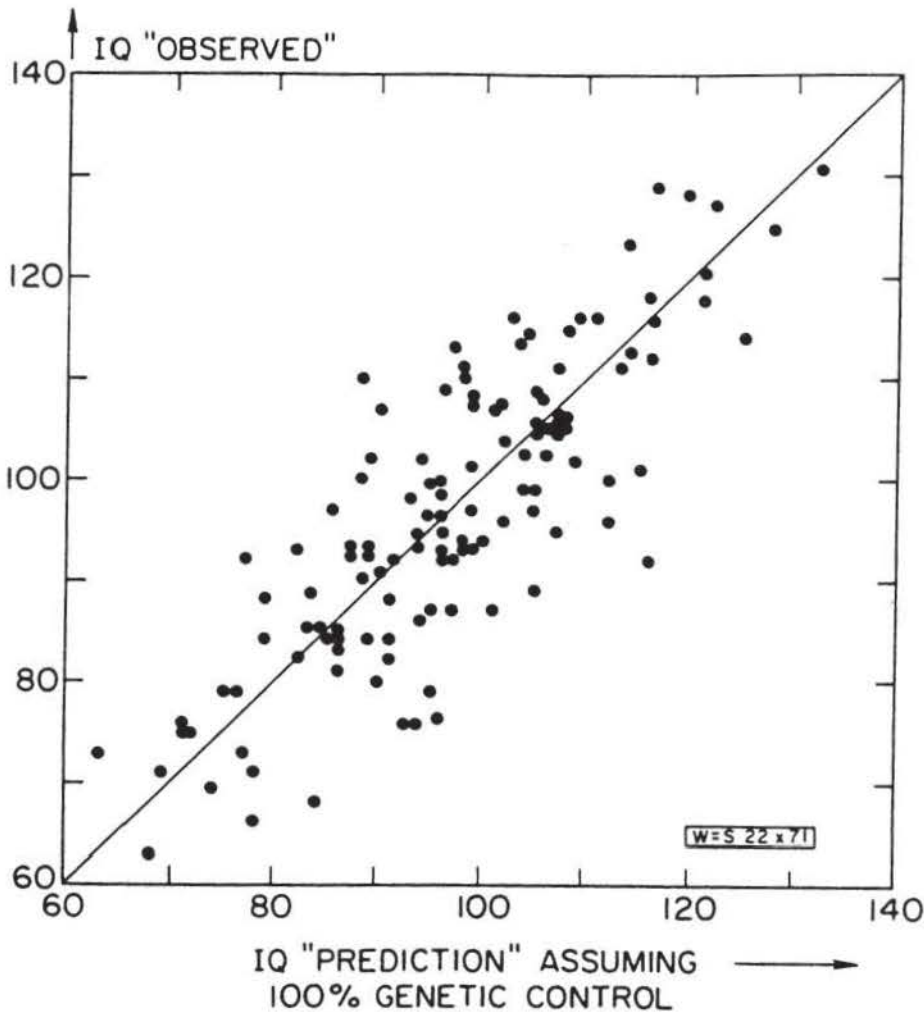


FIGURE 1: The challenge to *Kappan* readers: How could such accurate predictions of I.Q.'s be made on the basis of the assumption that I.Q. is 100% controlled by the genes?

A Challenge to the Reader

I challenge *KAPPAN* readers to answer this question: How can these genetically based "predictions" be possible? This is the question that my audiences ask me when I project Figure 1 as a slide. They ask: "Do you use the I.Q.'s of the parents?" I reply: "Parents' I.Q.'s do not permit such accuracy. The predictions of Figure 1 account for 82% of the I.Q. variance of the 'observed' population. There is only one way it can be done."

Dear reader, does a thought-blocker prevent you from recognizing the familiar because I have presented it in an unfamiliar light? These "100% genetic control predictions" – I phrase this with scrupulous precision – can be made in only one way – a way that you know if you remember a good psychology course. If you can't dispose of my challenge, is the "Apple of God's Eye Obsession" the cause of your thoughtblock? Will any of you suffer the "Speer syndrome" a decade or two from now? I define these concepts in my conclusion (page 305), "The Moral Obligation to Think."

Associated with my challenge are two questions: 1) On what do I base my "predictions"? 2) How can one sort out the environmental influences quantitatively after one does know the basis? I ask the reader to be my student while I elucidate a pedagogical methodology that permits the necessary analysis of variance to be understood by one whose mathematical skills are at the pre-college level. While you read, keep my challenge in mind. Perhaps, before my explanation leaves no challenge to meet, you will overcome the thought-block that most of my audiences experience on encountering Figure 1.

Now back to Figure 1. The average of the 122 "observed" I.Q.'s is 96.8 and the standard deviation is 14.2. Furthermore – and this is important in what follows – the distribution is typical of representative Caucasian populations and is accurately normal over the range covered by the 122 cases. The same applies to the "predicted" distribution. For simplicity, we round these off to an average of 100 with a variance of 200 ($14.2 \text{ squared} = 201.64$).

The "Las Vegas" method, my Americanized version of the Monte Carlo method of statistics, consists of creating a normal distribution generator in the form of a deck of cards from which randomly drawn cards produce a set of positive and negative integers that may represent genetic or environmental contributions to whatever pushes I.Q. up and down around the population norm of 100. Analysis of variance then consists simply of finding by trial and error what mix of environmental and genetic influences will duplicate the actual fact of Figure 1. The

result, which I shall teach you to duplicate on your own, is shown in Figure 2. In part (a), the genetic weight is four times the environmental weight, i.e., geneticity is 80%; environmental differences contribute only 20% of the variance. Part (a) was produced by drawing four genetic cards and one environmental card, all from the same deck, to get each "observed" I.Q. It is seen to represent Figure 1 very well. In part (b), the ratio is altered to three genetic and two environmental; it is obviously a poor fit; the predictions of Figure 1 could not have worked out so well had geneticity been as small as 60%.

I shall not at this point of my exposition explain exactly how to apply the card drawing ratios to represent the mysterious prediction process of Figure 1; to do so would deprive you of the opportunity to respond to my challenge. After the challenge is disposed of, the procedure for combining the genetic and environmental cards will be obvious. Next I shall explain how to mark 50 cards from an ordinary deck so that a random choice of five will give scores that on the average add to zero and have a variance of 200 and approximate a normal distribution. This is done by marking 50 cards (some felt-tip marking pens are excellent) as follows: Take 25 black cards and mark them with these numbers: 0,0;1,1,1; 2,2,2,3,3,3;4,4; 5,5;6,6;7,7;8,8;9;10;12;15. Do the same with 25 red cards. Count the black cards as plus and the red as minus – after all, being "in the red" is minus. The symmetry of plus and minus ensures that the average of many draws is zero. Tests will show you that the variance must be 40, because variances add for independent contributions and you will find that five cards do match the 200 variance of Figure 1.

To convince yourself that the geneticity of Figure 1 is about 80% – certainly more than 60% – you need not understand the theory of the S-N50-V40 deck – i.e., the Shockley Normally distributed 50-card deck with Variance of approximately 40; precisely, 38.9. The point of method is that random draws of four genetic cards to one environmental card does indeed match the reality of Figure 1. A ratio of three to two fails badly.

What about my challenge? The quotation marks on "observed" and "predicted" have been a broad hint. The next paragraph – STOP! *If you look before you resolve the challenge you become one more item of evidence for the thought-blockage that afflicts our nation's intellectual community on matters of human genetic quality* – gives the obvious and familiar answer that typically only 1 or 2% of my college audiences can produce when the projection of a slide emphasizes the shocking evidence for the dominance of genetic differences over environmental ones in pushing I.Q. scores around – especially shocking to the educational fraternity, whose

income would burgeon if they could discover how to convert retardates into geniuses.

Genetic Dominance of I.Q.: 'Las Vegas' Analysis, Significance Level

A dispassionate appraisal of the existing data (that of Figure 1 is the best and the easiest to understand, but the same conclusions can be reached without it) leads to the conclusion that intelligence, measured by I.Q., varies more than twice as much from genetic differences than it does from environmental differences for individuals from families like those that raise one of a pair of white identical twins. The only reason that the conclusion that intelligence, measured by I.Q., varies more than twice as much from genetic differences than it does from environmental differences than it does for individuals from families like those that raise one of a pair of white identical twins. The only reason that the conclusion of the preceding sentence is not printed in bold-face in a display paragraph is that it would have given away the answer to my challenge too easily.

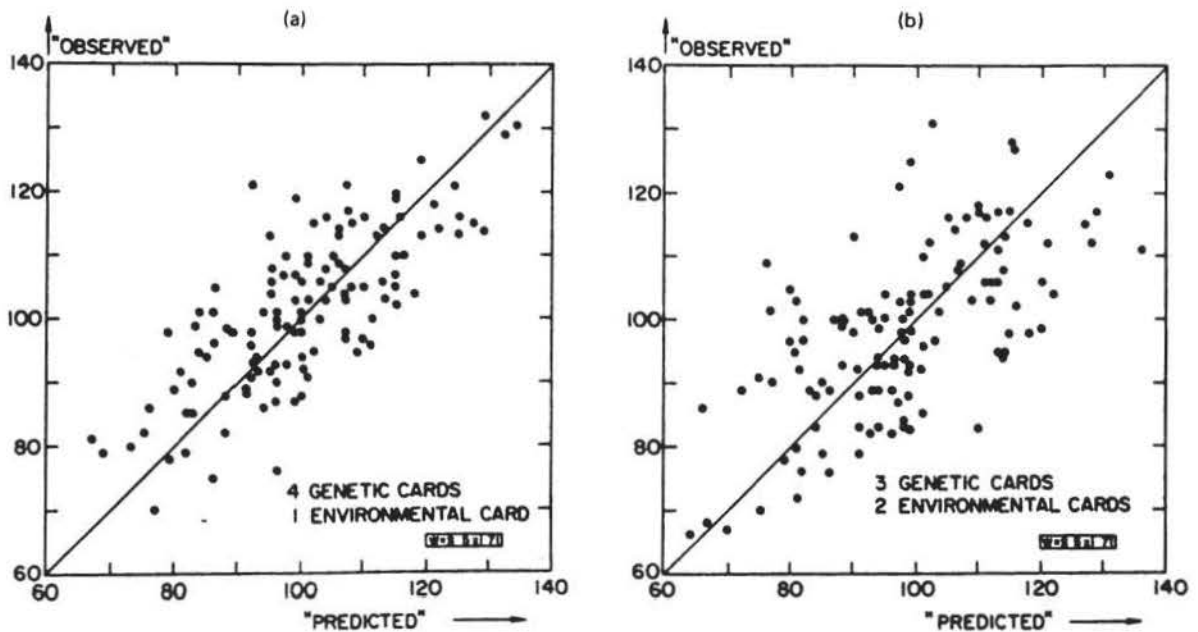


FIGURE 2: The challenge continued: By "creating" artificial individuals with randomly generated deviations from the population norm of 100 I.Q., scatter diagrams like Figure 1 are made. (a) Four parts genetics and one part environment is seen to match the real data of Figure 1. (b) Three parts genetic to two of environment gives less I.Q. predictability than is actually found.

Did you guess it? Identical twins, reared apart, are the naturally occurring experiment that get around the "two-variable-basically-impossible" thought-blocker discussed above. The 122 "predictions" of I.Q. are obtained by reading from one column of a compilation published by A.R. Jensen.⁴ If you cover the adjacent column, then the I.Q.'s of the other twin will be "unknown" to you. For example, take the highest I.Q. "predicted" in Figure 1: The uncovered column shows 132; the covered column is found, when uncovered and "observed," to be 131. The largest error of "prediction" is 24 points. This is the famous and often case of Gladys, I.Q. 92, and Helen, I.Q. 116, in the twins study of Newman, Freeman, and Holzinger,⁵ one of the four studies in the Jensen compilation mentioned above.

The Las Vegas method of analysis of variance in Figure 2a creates a twin pair with six cards: Draw four cards from the S-N50-V40 deck and add their integers with due regard to sign; the sum is disturbance from the population norm of 100 due to genetics that is common to both twins of the pair; draw one more card for the environment of one twin and add this to obtain that twin's I.Q. Draw one more and do the same for the other twin. Genetic cards have four times more influence than environmental cards on each individual's I.Q. An example: The highest "predicted" I.Q. of Figure 2(a) had a sum of 31 for genetics plus 3 for environment for an I.Q. of 134, and the other "observed" twin had 0 for environment for a total of 131. (A perfectionist shuffles after each card draw, although this is not really necessary; just put drawn cards back at random between twins.) For 60% geneticity, use seven cards; three for common genetics and two two's for environments.

On what basis are the obvious results of Figure 1 rejected? And they are rejected – believe me! Let me quote from a recent letter signed by a past president of the American Psychological Association in response to an inquiry a friend made about my reasoning:

When Dr. Shockley says that heredity is more than twice as important as environment in determining the I.Q., he doesn't know what he is talking about and doesn't understand the problem. Both variables are completely important. Any other statement is nonsense.

⁴ Arthur R. Jensen, "I.Q.'s of Identical Twins Reared Apart," *Behavioral Genetics*, No. 2, 1970, pp. 133-46.

⁵ H. H. Newman, F. N. Freeman, and K. J. Holzinger, *Twins: A study of Heredity and Environment*. Chicago: University of Chicago Press, 1937.

I have failed to detect any impressive capacity for analytic thinking behind such dogmatic assertions. I shall give two examples of the feeble thinking that accompanies the rejection of the "more-than-twice-as-much" conclusion drawn from Figure 1.

Here is a typical statement concerning my first example: "Identical twins are not absolutely identical. After all, nature must make occasional errors in perfect duplication of genes. The analysis of Figure 1 does not allow for such differences. Consequently, the deductions may be in error. Until you know how much error, the conclusion that geneticity is 82% may be way off. It might really be less than 50% if the genetic accidents were large enough."

I have heard this ridiculous argument seriously proposed by presumably competent biologists. I introduced it as a sort of I.Q. test for a group of able science writers at a seminar on the Las Vegas method; none of them got it. On another occasion I tried it on a group of Stanford biology majors; it was shot down by a freshman while an upperclassman remained baffled until after the answer was explained twice. Here is the answer:

If geneticity were really 80% but accidental gene duplication errors caused many of the twins to differ by, say, 10 I.Q. points, then this difference would not be allowed for in plotting Figure 1. Consequently, the error of prediction would be increased due to the unknown genetic differences. We would attribute these additional factors to environment. In other words, the effect would be to make us wrongly overestimate the effects of environment and underestimate geneticity. Thus if the neglected effects are really present, correcting for them could not lead to a lower correct value like 50% but only to a higher value than 80%.

Another standard argument for rejecting genetic dominance of I.Q. asserts that I.Q. is really controlled by environment; I.Q.'s of separated identical twins are nearly equal because adoption agencies succeed in placing the two twins of a pair in essentially identical environments. This "equivalent-environment" argument does not stand up against the facts. The best data is that of the late Sir Cyril Burt, whose 1966 paper⁶ supplied 53 of the pairs of twins in Figure 1. I had obtained these values from Sir Cyril to construct possibly the first scatter diagram plot like

⁶ Cyril Burt, "The Genetic Determination of Differences in Intelligence: A Study of Monozygotic Twins Reared Together and Apart," *British Journal of Psychology*, 1966, pp. 137-53.

Figure 1, thinking that the raw data would be a more eloquent witness to the realities of human intelligence than the usual tabulations of correlation coefficients. In response to my subsequent inquiries, Sir Cyril reviewed his reasons for refuting the equivalent-environment explanation. I select for my example of his comments the one on the previously mentioned 132-131 pair of Figure 1. About these twins he wrote:

They were children of an Oxford don [Burt rates this as occupational class '1,' the highest of the six he lists for home environments] who died a few months before their birth. Unable with her slender means to bring up two boys as she would desire, [the widow] secretly arranged for one to be 'boarded out': He was sent to a farmer in Wales (occupation class '4') and eventually became a successful farmer himself (Miss Conway gives his I.Q. in 1958 as 137; our final assessment was 132). The one who remained with his mother eventually obtained a first class degree (I.Q. 136 in 1958, 131 in 1956).⁷

This quotation illustrates two general conclusions of Burt's study: There is no significant correlation – indeed, the correlation coefficient is slightly negative – between the environments of Burt's separated twins. It also illustrates the typical range of test errors that may occur – on the order of five points. In the carefully controlled tests used in the four twin studies compiled by Jensen, test error is estimated to be normally distributed with a standard deviation of about 3.5 points so that it contributes about 5%, or 10 units, to the population variance of 200.

If the differences in environments between pairs of twins are compared with their differences in I.Q. for Burt's compilation, then it turns out – *as makes sense* – that better occupational class of home *does tend* to raise I.Q. – *but this tendency is not a certainty nor are the I.Q. increases very decisive*: Of the 35 cases in which co-twins differed in both I.Q. and occupational class, 23 were concordant – higher class with higher I.Q. – and 11 were discordant – lower I.Q. in the higher class home. The result is significant at the 0.02 level. Each upward step of one social class raises I.Q. on the average about one I.Q. point.

But what about Gladys and Helen, with their 24-point difference? The difference is often cited to show that environmental effects among Caucasians are so much larger than differences between racial averages that obviously environment can easily account for the generally accepted deficit of about 15 points for our nation's black minority. The Gladys-

⁷ Sir Cyril Burt, personal correspondence with the author.

Helen case warrants close scrutiny.

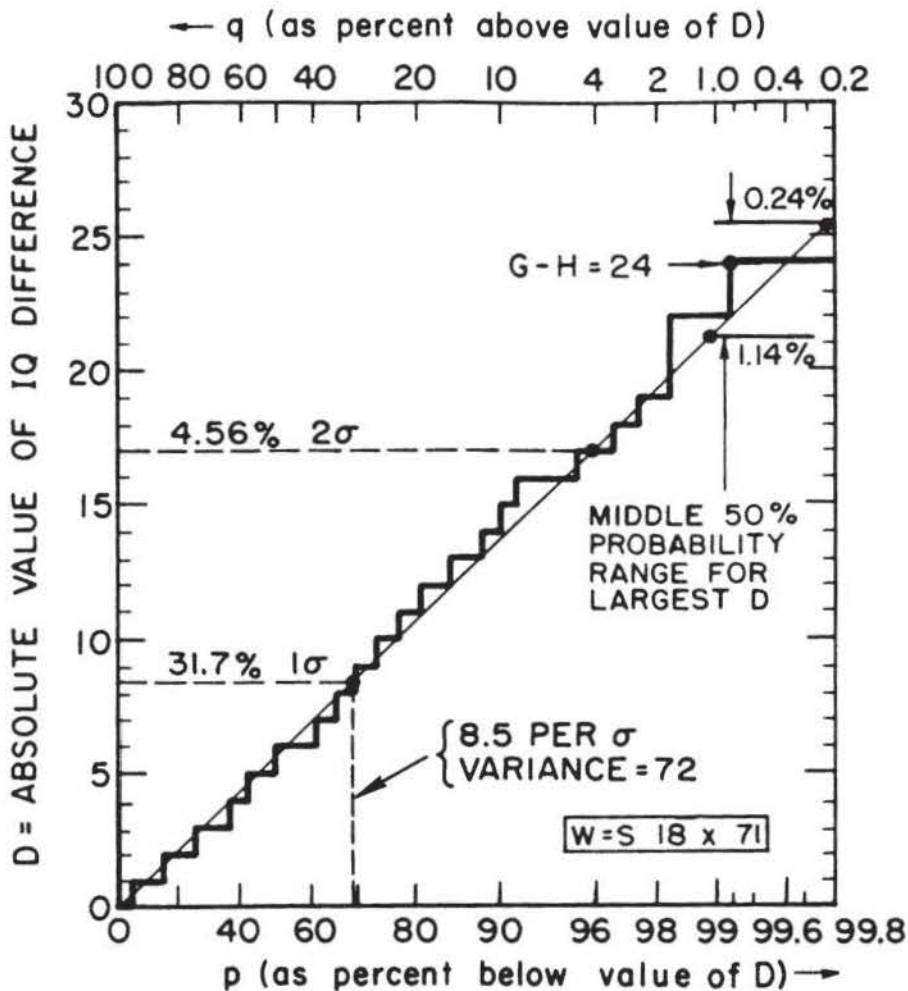


FIGURE 3: Nongenetic influences are seen to cause I.Q. differences to be accurately normally distributed. [Dear reader: If you are responding to my challenge, don't spoil my detective story by reading the answer in the text that explains this figure now!]

The Gladys-Helen 24-point difference is the exception needed to prove the 80% geneticity rule: It would be improbable if there were not one such case with a difference of about 24 I.Q. points in a sample of 122 pairs of twins. The reasoning is outlined on Figure 3. In brief, the method of plotting shows that the differences (D) in I.Q. between twins is as accurate a realization of a normal distribution as one could expect from 122 cases. Therefore, although we may not be able to identify what the exact causes are that push the I.Q. of one twin away from the I.Q. of his co-twin, there are apparently enough independent, additive causes to give a good normal distribution. If it is a normal distribution, then straightforward methods can be used to determine the range of I.Q.'s in

which the highest of the 122 differences has a 50% chance of falling – the probability being 25% that the largest falls above and 25% that it falls below this range. Gladys-Helen does fall in the proper range, as shown on Figure 3. There is only one chance in 100 that the largest value would have been smaller than 17 points.

One more logical consequence of Figure 3 is that one standard deviation of the environmental variable that influences I.Q. is worth five I.Q. points. Even though we cannot define what this variable may be – undoubtedly it is some complex combination of many components – it must account for some 25 units of variance for each twin to give the standard deviation of 8.5 in Figure 3 in combination with test error variance. Burt's occupational class variable only accounts for about one-fourth of this unknown environment composite.

Applied to Gladys-Helen, this five-point environmental variable accounts for a large fraction of the 24-point difference: Gladys had a sickly childhood and never finished third grade. Helen graduated from college. This large environmental difference, appraised using Census Bureau tables, corresponds to quite possibly three or four standard deviations of the distribution of educational environments – the 80% geneticity model can thus account for a substantial fraction of the 24 point difference. As Herrnstein's recent widely noted article in the *Atlantic* emphasizes,⁸ if such large environmental differences were eliminated by social progress, then the relative importance of genetic differences would increase.

One final significant point about Figure 3 and the accurate 82% geneticity value that can be deduced from it in conjunction with Figure 1: If the true value for geneticity were as small as 72%, then standard statistical theorems lead to the result that there is less than one chance in 2,000 that a value as small as the 8.5 for the standard deviation of Figure 3 would have occurred by chance.⁹ This is a typical level of significance statement. It says that the hypothesis that geneticity is 72% or less can be rejected at a significance level of 0.0005 so far as the null hypothesis that 8.5 of Figure 3 resulted by chance is concerned.

The Non-Genetic 20 Percent

My emphasis on the dominance of genes in controlling I.Q. has led

⁸ Richard Herrnstein, "I.Q.," *Atlantic Monthly*, September, 1971, pp. 43-64.

⁹ William Shockley, "On the Significance Level for Genetic Dominance of I.Q. and on the 24-Point Difference Between Twins Gladys and Helen," paper presented at October 27 meeting, 1971, of the National Academy of Sciences, Washington, D.C.

to the misunderstanding that I "treat I.Q. as a fixed characteristic, like eye color; susceptible of exact measurement" – to quote from an editor's reaction to one of my manuscripts. A distinguished psychologist, after seeing a diagram showing environmental effects based on the 80% geneticity presented above, wrote to me: "Your figure implies that no matter how bad the environmental restriction becomes it will have no effect whatsoever on the phenotype indicated by the I.Q. test score. This would mean that if William Shockley had been raised in a clothes closet from the time he was old enough to learn language, he would still have been able to win the Nobel Prize."

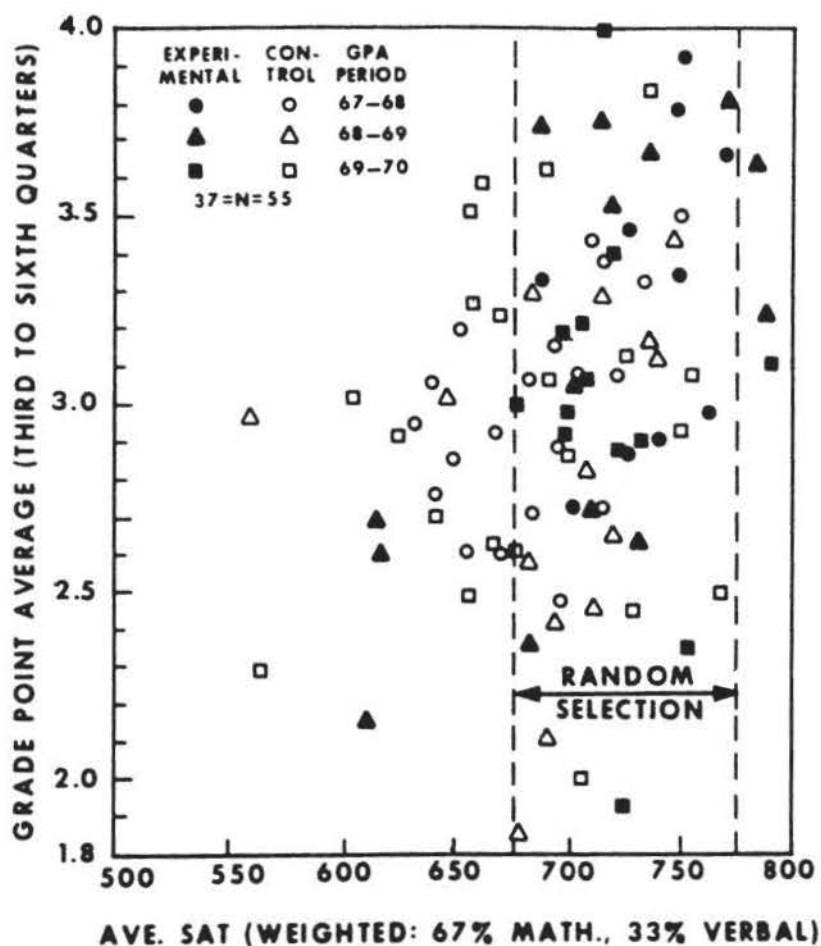


FIGURE 4: Results of a controlled experiment on randomly selected applicants for a Stanford University freshman seminar on *mental tools for scientific thinking*. In the four quarters subsequent to the two in which the seminar was taken, the "experimental" students outperformed the controls at a significance level of better than 0.05.

The fact is that, as for the Gladys-Helen case, small though the 12 to 15% of the variance attributable to environment may be, it can have large effects upon I.Q. and other behavioral traits. In fact, some of my

own educational experiments have been aimed at raising I.Q. or motivational or attitudinal factors. Figure 4 illustrates one surprisingly successful result. For a number of years my freshman seminar at Stanford was chosen by almost twice as many students as I could take in two sections. I rated them in groups having closely matched weighted averages of S.A.T. scores and from each matched group rejected about half by using random numbers. The experimental group was found to outperform the controls by about 0.6 of a standard deviation of grade point average for the four academic quarters subsequent to the two spent in the seminar.

A recent widely publicized example of exceptional environmental success in reducing mental retardation may fit into the 80% geneticity pattern. Professor Rick Heber has given an intensive educational enrichment program to slum children whose mothers have I.Q.'s below 75. At three and a half years of age, the Undersecretary of Health, Education, and Welfare has recently reported, these experimental children are averaging 33 I.Q. points above comparable controls.¹⁰ These findings are not incompatible with 80% geneticity. In fact, they may be almost predictable. The undisturbed home environments were probably in the lowest 1 or 2% of all home environments for intellectual stimulation. On the other hand, Heber's intensive program is probably in the top fraction of 1% for developing performance on I.Q. tests. This is equivalent to an improvement of perhaps six standard deviations of the distribution of environment, so that 33 points would correspond to about five points per standard deviation – a value quite compatible with 80% geneticity.

The economics of such remedial programs suggest mournful numbers. The initial cost was of the order \$10,000 per child year. Whether the effects will be lasting or in the end adverse because of untimely experiences – such is the case for laboratory experiments with primates – are important and researchable questions.¹¹ I discuss below the moral obligation to do quantitative thinking on human problems.

¹⁰ John G. Veneman, "Partial Text of Remarks by Undersecretary John G. Veneman, Department of Health, Education, and Welfare. Before the Pacific Forum on Mental Retardation, Honolulu, Hawaii, September 29, 1971." Released by Office of Public Affairs, HEW, Washington, D.C.

¹¹ Arthur R. Jensen, "Reducing the Heredity-Environment Uncertainty," *Environment, Heredity, and Intelligence*, Reprint Series No. 2, *Harvard Education Review*, Cambridge, Mass., p. 234. (Jensen's discussion is based on H. F. Harlow, "The Development of Learning in the Rhesus Monkey," *American Scientist*, 1959, pp. 459-79.)

Standard I.Q. Cliches

I have gone at length and with dramatized examples into the basis for my own conviction about genetic dominance of I.Q. because I believe that this is the cornerstone for all logical structures about human quality problems. I anticipate that many criticisms will be leveled at my reasoning. Some of these I shall respond to in detail below. Here I shall deal perfunctorily with some that space does not permit me to treat in depth:

"I.Q. has no relevance to successful living." My best answer to this is an analysis of the *Genetic Study of Genius*, the great work of Lewis M. Terman and his colleagues. The gifted children did outperform the population average across the board on all sorts of generally accepted and valued human quality measures.¹²

"Until you can meaningfully define exactly what you mean by intelligence and relate it to what I.Q. measures, your studies are not scientific." My answer is that I.Q. as used by Terman and others is meaningfully correlated with values that are generally accepted. I also turn the question: Until you can tell me what is gravity, why should I worry about falling?

"I.Q. tests are so culturally influenced that they cannot possibly tell anything about genetic potential and especially about racial differences. For example, monkeys could outperform humans on tests involving tree climbing." One answer that almost always reveals the unsearch dogmatism of the questioner is this: What is the best attempt that you know of to design a culture-fair test and what was wrong with it? I do not recall ever getting an answer. I shall discuss several research proposals on racial differences below.

"You have discussed geneticity; but what does this have to do with dysgenics – after all, dumb parents have bright kids and vice versa?" My answer: See any good psychology text on correlation of adopted childrens' I.Q.'s with natural and with foster parents. In fact, these comparisons are the independent way to arrive at the 80% geneticity figure without using identical-twin data. Let me express the conclusion by quoting again from the Sir Cyril Burt letter mentioned above: "But the strongest case for mental inheritance is provided by a comparison of data for *all* types of relatives."

The list is long. It may have no end. The "Apple of God's Eye

¹² Lewis M. Terman and Melita H. Oden, *The Gifted Group at Mid-Life: thirty-five Years' Follow-up of the Superior Child*, Vol. 5. Stanford, Calif.: Stanford University Press, 1959.

Obsession" may drive true believers tirelessly. For other answers I refer my readers to the references, particularly Jensen,¹³ Eysenck,¹⁴ Herrnstein,¹⁵ and my own writings with their reference lists.¹⁶

Forms of Dysgenic Threat

My concerns are based on my evaluation that in the intellectual community of the nation the emphasis on environmental aspects of human quality is so great that it excludes proper consideration of hereditary genetic factors. I appraise this unbalance as deplorable and dangerous. During the last half decade my studies have increased my conviction that concentration upon the environmental factors cannot solve the important problems of man's future and that adequate solutions to poverty, crime, illiteracy, and national security problems demand facing hereditary problems. I believe that to avoid very real dangers to worldwide human welfare, civilization, including particularly that of the United States, must face in a broader sense than it does now the problems raised in 1966 by James Shannon, then director of the National Institutes of Health, in congressional testimony: "The effect – if I may put it bluntly, Mr. Chairman – is that we are weakening our genetic inheritance."¹⁷ Dr. Shannon emphasized biochemical physiological traits. What my intellectual conscience impels me to demand is that we look objectively also on man's behavioral traits. This, my investigations lead me to conclude, is not being done adequately. I conjecture that this lack of needed effort is caused less by the great difficulties involved than by the unsearch dogmatism that produces thought-blockers.

With the advent of nuclear weapons, man has in effect reached the point of no return in the necessity to continue his intellectual evolution. Unless his collective mental ability can enable him reliably to predict consequences of his actions, it is possible that he may provoke his own extinction, or at least drastically modify the gene pool of humanity – and perhaps for the better.

¹³ Arthur R. Jensen, "How Much Can We Boost I.Q. and Scholastic Achievement?," *Harvard Educational Review*, Winter, 1969, pp. 1-123.

¹⁴ H. J. Eysenck, *The I.Q. Argument*, Freeport, N.Y.: The Library Press, 1971.

¹⁵ Herrnstein, op. cit.

¹⁶ William Shockley, "Models, Mathematics, and the Moral Obligation To Diagnose the Origin of Negro I.Q. Deficits," *Review of Educational Research*, October, 1971, pp. 369-77.

¹⁷ James A. Shannon, testimony before House Subcommittee on Appropriations, March 2, 1966. See *Washington Star*, March 25, 1966, p. 1.

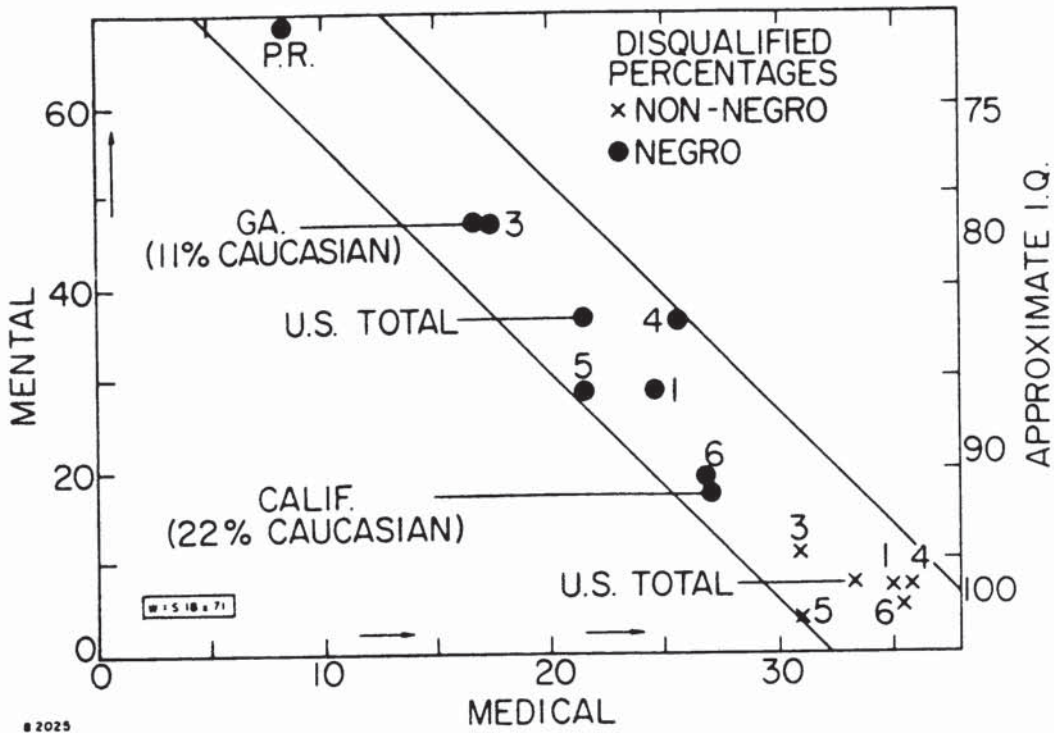


FIGURE 5: A plot of data from *Supplement to Health of the Army*, June, 1969 (Bernard D. Karpinos, Medical Statistics Agency, Office of the Surgeon General, Department of the Army). The data apply to pre-induction examinations of draftees in 1968. The numbers identify five recruiting districts; P.R. is Puerto Rico. Caucasian percentages are from T.E. Reed's values for Oakland, California, and two counties in Georgia. Mental and medical rejection rate coordinates include those rejected on both grounds. The approximate I.Q. scale is obtained by assuming a normal distribution with a standard deviation of 15 and 100 I.Q. for non-Negro U.S. total. (For citations, see footnotes 18 and 19.)

Let me illustrate by a specific speculation upon the evolutionary aspects of possible gene pool modifications: Sweden and Switzerland both have extensive shelter facilities that would save substantial fractions of their populations from death from worldwide fall-out in the event of an unlimited nuclear war involving "dirty weapons" that might destroy the preponderance of the human life on earth. A much less substantial fraction of our population would survive. This preferential survival of the most foresighted components of the human race is a form of "self-renewal" for human evolution that my intellectual conscience does not allow me to face complacently. I feel an obligation to try to increase the probability that man's destiny will be shaped by the application of intelligence to determine realistic goals for human progress rather than

by forces man has let get out of control. These speculations about man's future evolution accent my fears that contemporary United States population trends are such that we are disproportionately multiplying the least foresighted elements of our population.

A nuclear holocaust as a consequence of advancing weapons technology combined with a dysgenic decline in national foresight may present the most dramatic dysgenic threat. But increased welfare tax burdens and crime rates and lower productivity may act sooner to draw attention to the basic issues. I estimate that our nobly intended welfare programs may be encouraging the births of 100 babies per day who can be reliably predicted to face lives of frustration because of low genetic I.Q. potential. It is this estimate – I find no one in government who will check it – as much as any one thing, that underlines the urgent need for evaluation. I propose as a program for continued progress: Let's ask the questions, do the research, get the answers, discuss them widely. Then either worries will evaporate or plans for action will develop.

Raceology

A common objection to studies of racial genetics is that the concept of race is meaningless. This objection is refuted by research on blood type frequencies, most recently that of T. E. Reed of Toronto, who has determined with a precision of 1% – that the Oakland, California, Negro population is 22% Caucasian in ancestry.¹⁸ I have refined Reed's studies to estimate that the spread of the Caucasian ancestry in Oakland probably varies from a few percent to well over 50%¹⁹ and have combined Reed's findings Ninth Army pre-induction test data in Figure 5 to estimate that, for low I.Q. Negro populations, each 1% of Caucasian ancestry raises average I.Q. by one point.²⁰ I have suggested ways of controlling for the environmental differences to test the reliability of this estimate. An interesting question is the level at which diminishing returns set in; for example, at 40% Caucasian ancestry, would average I.Q. be 110?

¹⁸ T. E. Reed, "Caucasian Genes in American Negroes," *Science*, August 22, 1969, pp. 762-68.

¹⁹ William Shockley, "Hardy-Weinberg Law Generalized To Estimate Hybrid Variance for Negro Populations and Reduce Racial Aspects of the Environment-Heredity Uncertainty," *Proceedings of the National Academy of Sciences*, Vol. 68, 1971, p. 1390A.

²⁰ William Shockley, "New Methodology To Reduce the Environment-Heredity Uncertainty About Dysgenics," *Proceedings of the National Academy of Sciences*, Vol. 67, 1970, pp. 10A-11A (abstract).

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The possible relationship of blood type determination of racial mixes of populations and I.Q. may offer a unique opportunity to evaluate the reality of the dysgenic threat. To fail to use a potentially effective means of diagnosis for fear of being called a racist is irresponsible. It may also be a great injustice to black Americans themselves. If those Negroes with the fewest Caucasian genes are in fact the most prolific and also the least intelligent, then genetic enslavement will be the destiny of their next generation.²¹ The consequences may be extremes of racism and agony for both blacks and whites.

The word "raceology" has been proposed for studies like mine. They are not racist. They are motivated by concern for the feelings of all involved – not by fear and hate. My research focuses principally upon white-Negro comparisons for two reasons: 1) Our national racial problems primarily involve the Negro minority and 2) Negroes are the only racial group for which extensive published statistics are available. Therefore, my personal research on questions related to Negroes has far greater immediate promise of contributing to sound diagnosis of our human quality problems than, for example, would attempts to study hereditary factors for Appalachian whites, for whom I have found that statistical data are practically unobtainable.

Although I emphasize the Negro area for these reasons, I continue to urge broad inquiry into hereditary aspects of human behavior for all racial groups.

As an example of raceology, I present in Figure 6 some new research results on Negro superiority that compare Negro and white visual acuity, based on Army tests. The points specify fractions of Negroes and whites having various levels of visual acuity. From 20/20 to less than 20/200, the points fall accurately along a line. The interpretation of this analysis is that whites and Negroes are distributed in their visual acuity according to the same basic underlying normal distribution but that the distribution

²¹ That dysgenics is more threatening for Negroes follows from D. P. Moynihan, "Employment, Income, and the Ordeal of the Negro Family," in *The Negro American*, T. Parsons and K. B. Clark (eds.), and B. T. Osborne, "Population Pollution," *Journal of Psychology*, 1970, pp. 187-91. Moynihan reports that "in 1960 nonwhite women (married once, husband present) age 35 to 45 had 4.7 children as against 3.8 for white women in the same situation" (p. 148). For women in the same age bracket, married at age 22 or over to professionals or technical workers with one or more years in college, the numbers are 1.9 children for Negroes and 2.4 for whites. Osborne reviewed the standard treatments that reject all evidence for dysgenic trends. He presented new findings and came to the conclusion that prior studies were based on populations too narrowly selected and that dysgenic trends cannot be soundly rejected.

cases on the genetic basis that their families had high incidence of myopia. No reduction of myopia was found. The fact that gene pool effects are involved is further supported by the dominance of myopia over hypermetropia, or farsightedness, in studies of family patterns of poor vision.²²

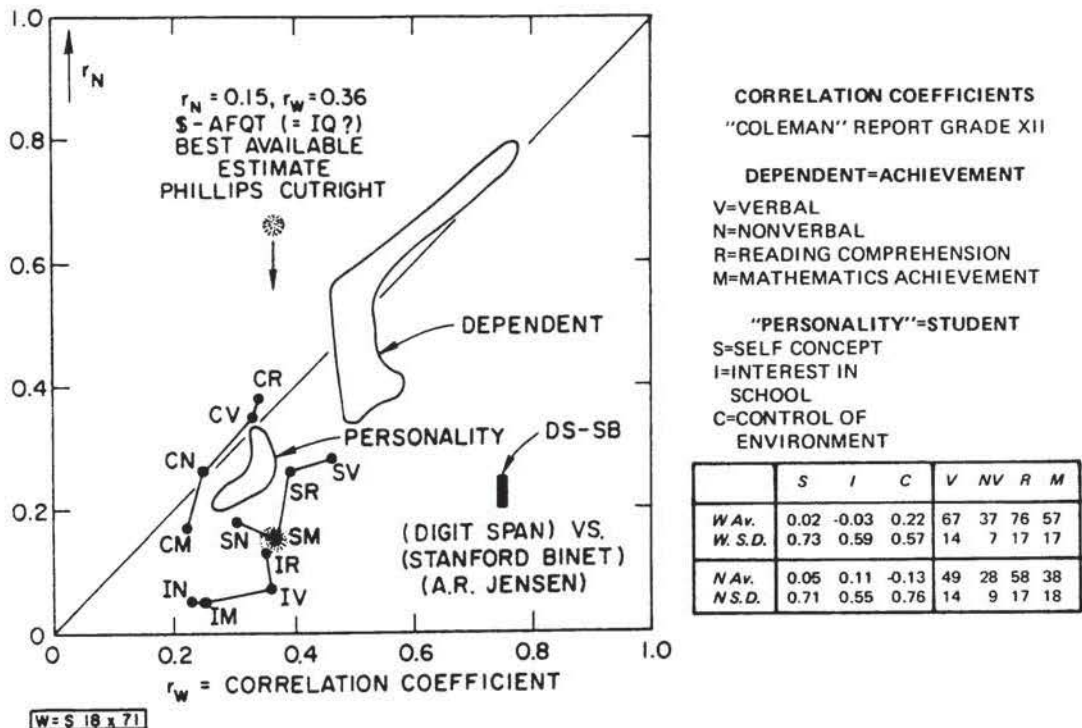


FIGURE 7: Comparison of correlation coefficients r_w for whites and r_N for Negroes for correlations between achievement variables and personality variables. The lower "cooperative correlation" is consistent with the Cutright estimate of lower effect of I.Q. on earnings for Negroes than whites. (Phillips Cutright, personal communication to W. Shockley, September 22, 1969.)

Correlation coefficients between behavioral traits were found to be smaller for Negroes than for whites²³ using data from tables in the Coleman Report.²⁴ Figure 7 presents these data so as to facilitate interracial comparisons of the correlation coefficients between "student" variables and "dependent" or achievement variables. As Figure 7 shows,

²² John B. deC. M. Saunders, personal communication to the author, based on his review of the problem at the University of California Medical School in San Francisco.

²³ William Shockley, "Cooperative Correlation' Hypothesis for Racial Differences in Earning Power," Proceedings of the National Academy of Sciences, Vol. 66, 1970, p. 245 (abstract).

²⁴ James S. Coleman et. al., *Equality of Educational Opportunity*. Washington, D.C.: Department of Health, Education, and Welfare, 1966.

except for the remarkable "control-of-environment" variable, the correlation coefficients between student variables and achievement variables are much lower for Negroes than for whites. The mean values of rich student "personality" variables as self-concept and interest in school as seen to be no lower for Negroes than for whites – in fact, they are slightly higher for Negroes. What is surprising, however, is the difference in the pattern of correlations between the personality variables and the achievement variables. Comparisons between Orientals and whites do not show the striking differences in values of correlation coefficients. Explanations of the lower correlation between I.Q. and earnings for Negroes than for whites usually lean heavily on the fact that blacks in our society are subject to racial discrimination. I have used my findings to offer an explanation of the lower correlation not involving discrimination.²⁵ The differences shown here are consistent with differences in Level I (rote memory) and Level II (conceptual) learning reported by Jensen.²⁶ The chief purpose in introducing Figure 7 here is to illustrate the existence of research possibilities on racial differences that may exist but are unexplored because of the prevailing unsearch dogmatism.

Where data have been available, I have tried to compare other racial groups. My findings do not support a theory of white Aryan supremacy: I have found and published the observation that American Orientals are about 10 times more successful than the national average on a per-capita basis in achieving the distinction of election to the National Academy of Sciences. They are also about 10 times more successful in avoiding citations in the annual FBI uniform crime reports.²⁷

My statistics also show that Jewish Nobel Prize winners in science occur about 10 times more often than expected on the basis of the population as a whole.

Quantifiable Humanism?

One form objections take to my demands that quantitative scientific thinking be applied to human quality problems was eloquently expressed in a listing of and comment on environmental variables in a letter by a black Ph.D. in education as part of his criticism of a paper of mine:

²⁵ William Shockley, "Dr. Shockley's Theory," *New York Times* Nov. 8, 1969, p. 32C.

²⁶ Jensen, op. cit. (fn. 13), p. 122.

²⁷ William Shockley, "A 'Try Simplest Cases' Approach to the Heredity-Poverty-Crime Problem," *Proceedings of the National Academy of Sciences*, Vol. 57, June, 1967, pp. 1767-74.

... devastation...has been wreaked . . . through the evils of slavery, ... intimidation, lynching, virulent job discrimination, segregation, ... How can the debilitating effects of such a legacy be couched in quantifiable terms?

I believe we must answer that we do not, nor shall we soon, know *how to quantify* such environmental factors. But the future of our nation's black minority does depend upon sound diagnosis. Wishful thinking and good intentions are not enough. *Quantified facts do describe* the agonizing disadvantages of Afro-Americans. Note this recent AP dispatch:

The NAACP's labor director, Herbert Hill, told the annual convention: "The rates of unemployment among black youth have now reached disaster levels. And if they continue . . . virtually an entire generation of ghetto youth will never enter the labor force. Their only future will be a marginal, alienated existence, separate and unusual within American society...."²⁸

Mr. Hill's concern over black unhappiness is supported by a Gallup poll of 1,517 adults. "Very happy" was the response of 46% of whites but of only 20% nonwhites; "not happy" percentages were 5% and 12%.²⁹

What do these quantitative findings mean? My "offset analysis"³⁰ of these percentages shows that the nonwhite happiness distribution is offset downwards, compared with whites, by about half a standard deviation for adults. What will it be for the next generation of black Americans whose employment disaster Hill reports? Will diagnosis reveal that racial dysgenics is a cause? Diagnosis of questions like those related to Negro unhappiness is what I believe will be the best insurance for our black minority's future and what I urge our nation's citizens, including the professional educators who read this journal, to demand.

The Moral Obligation To Think

1. *Hitler and Speer*. A familiar basis for rejecting my demands that research on dysgenics be undertaken is the assertion that any resulting knowledge would be worthless because all conceivable remedial actions

²⁸ Associated Press, *San Francisco Chronicle*, July 9, 1971, p. 7. Cited by Shockley in op. cit. (fn. 16).

²⁹ George H. Gallup, "Gallup's Poll: The Happiest People," *San Francisco Chronicle* January 14, 1971, pp. 1-2.

³⁰ William Shockley, "Offset Analysis Description of Racial Differences," *Proceedings of the National Academy of Sciences*, Vol. 64, 1969, p. 1432 (abstract).

would involve intolerable eugenic measures.

Eugenics is a shunned word because it was a feature of Hitlerism. But the lesson of Nazi history is not that eugenics is intolerable. Since 1935 Denmark has carried out programs with clearly positive eugenic implications. (Although a cause-and-effect relationship is uncertain, it is noteworthy that Denmark's per-capita homicide rate has dropped since World War II and is less than 2% of the rising rate of Washington, D.C., which was 20% higher in 1971 than in 1970.) The real lesson of Nazi history was anticipated 140 years before Hitler, when the Bill of Rights incorporated into our Constitution the First Amendment guaranteeing freedom of speech and of the press. Only the most anti-Teutonic racist can believe the German people to be such an evil breed that they would have tolerated the concentration camps and gas chambers if a working First Amendment had permitted exposure and discussion of Hitler's final solution – the extermination of the Jews.

I suggest that there is a significant parallel between the attitude of German intellectuals in Hitler's day and our intellectuals' unwillingness to face the dysgenic threat. Albert Speer, Hitler's minister of armaments and war production, wrote in his memoirs:

But in the final analysis I myself determined the degree of my isolation [from Hitler's "final solution" of the Jewish problem], the extremity of my evasions, and the extent of my ignorance.... *Whether I knew or did not know, or how much or how little I knew is totally unimportant when I consider what horrors I ought to have known about and what conclusions would have been the natural ones to draw from the little I did know.* Those who ask me are fundamentally expecting me to offer justifications. But I have none. No apologies are possible.³¹ [Emphasis added.]

I call this retrospection the "Speer syndrome." It is what I warned KAPPAN readers who failed my challenge that they might experience in future decades if – to paraphrase Speer – they are failing to draw the natural conclusions from the little – or much – they do know.

2. *A voluntary sterilization bonus plan.* The First Amendment makes it safe for us in the U.S. to try to find humane eugenic measures. As a step in such search, I propose as a *thinking exercise* a voluntary sterilization bonus.

Bonuses would be offered for sterilization. Payers of income tax

³¹ A. Speer, *Inside the Third Reich: Memoirs of Albert Speer*. NY: Macmil., 1970, p. 113.

would get nothing. Bonuses for all others, regardless of sex, race, or welfare status, would depend on best scientific estimates of hereditary factors in disadvantages such as diabetes, epilepsy, heroin addiction, arthritis, etc. At a bonus rate of \$1,000 for each point below 100 I.Q., \$30,000 put in trust for a 70 I.Q. moron potentially capable of producing 20 children might return \$250,000 to taxpayers in reduced costs of mental retardation care. Ten percent of the bonus in spot cash might put our national talent for entrepreneurship into action.

In Honolulu on September 29, 1971, John G. Veneman, Undersecretary of HEW, rejected this thinking exercise, saying:

And the more I thought about [the voluntary sterilization bonus plan], the less I liked that idea. All my instincts told me that the way to attack mental retardation is at its roots – not through its victims. For many years I was a fruit grower in California. And I've learned that you begin with good rich soil – not with the fruit....³²

He did not mention seed quality. This substitution of instinct for scientific analysis and emphasis on environmental soil to the exclusion of genetic seed quality reminded me of Lysenko in Russia. With Stalin's backing, he insisted that his Soviet biologists had discovered how to transform one species into another – wheat into rye, pines into firs, etc. Lysenkoism was a disaster in Russian agriculture.

One obvious area of tabooed research, comparable in emotional hazard to conventional genetics in Lysenko's Russia, concerns racial differences in brain anatomy. The most significant recent publication that I can find reports "unexpected variations in fine structures of the brain in Melanesians, including size and shape of septal nuclei,...and the frontal lobes."³³ Where has this research on racial frontal lobe differences, reminiscent of now rejected research on Negro brain differences, been published? Only in a conference report and an alumni magazine.

Another shocking speculation about dysgenics is provoked by news stories on the "battered child" syndrome. The battered child is becoming more prevalent. Who does the battering? Often it is grown-up battered children.³⁴ Heritability? Dysgenics?

³² Veneman, op. cit. (fn. 10).

³³ Carleton Gajdusek, "Physiological and Psychological Characteristics of Stone Age Man," *Engineering and Science*, April, 1970, p. 58. (Publication of the California Institute of Technology and the Alumni Association.)

³⁴ "Parents Who Beat Children," *San Francisco Chronicle*, August 30, 1971, p. 16.

3. "*Apple of God's Eye Obsession.*"

I shall close with a hypothesis about the psychology of the critics of my concerns about dysgenics. I doubt neither the sincerity nor the good intentions of these critics. I diagnose their thought-blockage as caused by a theologico-scientific delusion. I call it the "Apple of God's Eye Obsession" – God meaning, for some, the proper socio-biological order of the universe. The believers hold that God has designed nature's laws so that good intentions suffice to ensure humanity's well-being; the belief satisfies a human need for self-esteem. Any evidence counter to man's claim to be the apple of God's eye strikes a central blow at his self-esteem and thereby provokes retaliation reminiscent of the prompt execution of a Greek messenger bearing tidings of defeat in battle. The parallels become clearer in historical perspective. Galileo and Darwin brought new knowledge that was incompatible with the then-cherished interpretation of humanity's unique place in the universe. Either the new knowledge had to be rejected or else the Apple of God's Eye Obsession had to be painfully revised.

The thought-blockers and unsearch dogmatism that reject the relevance of genetics to social problems arise, I propose, because the theory that intelligence is largely determined by the genes and that races may differ in distribution of mental capacity offends equalitarian-environmentalism – an important feature of the contemporary form of the Apple of God's Eye Obsession. The preponderance of the world's intellectual community resists the fact that nature can be cruel to the newborn baby. Babies too often get an unfair shake from a badly loaded parental genetic dice cup. At the acme of unfairness are features of racial difference that my own research inescapably leads me to conclude exist: Nature has colorcoded groups of individuals so that statistically reliable predictions of their adaptability to intellectually rewarding and effective lives can be made and profitably used by the pragmatic man in the street.

If, as many thinking citizens fear, our welfare programs are unwittingly, but – with the noblest of intentions, selectively down-breeding the poor of our slums by encouraging their least foresighted to be most prolific, the consequences will be tragic for both blacks and whites – but proportionately so much worse for our black minority that, as I have said, the consequence may be a form of genetic enslavement that will provoke extremes of racism with agony for all citizens.

My position is that humanity has an obligation to use its intelligence to diagnose and to predict in order to prevent agonies that lack of foresight can all too easily create.

DOCUMENT 12

**Proposed Resolution Regarding the 80%
Geneticity Estimate for Caucasian IQ**

Advance press release concerning a paper presented by William Shockley before the National Academy of Sciences on 23 April 1972.

Since 1966, Dr. Shockley has maintained that the National Academy of Sciences has a responsibility inherent in the charter granted to it by Abraham Lincoln to evaluate and express quantitative facts on the behavioral traits of the human species. This proposed resolution concerns a cornerstone statement relevant to these biological facts. A version of this statement was proposed by Dr. Shockley in a paper read before the National Academy of Sciences in October 1966. It was subsequently transmitted in inquiries made to the Academy by two representatives in Congress in 1969. The responses did not give a definitive evaluation. It was an item discussed obliquely in the Davis Committee Report approved at the Annual Meeting of the Academy in 1971. At that meeting, in an evaluation of the Davis Report, Dr. Shockley requested permission to show a lantern slide on which he based his estimate of significance level at 1 part in 2000 as discussed in the resolution below. This permission was not granted. At the Fall Meeting of the Academy in 1971, Dr. Shockley presented the reasoning in a contributed paper. At the business meeting he proposed a similar resolution that was tabled. Dr. Shockley's position in regard to the Academy's position on these matters has been published in the Congressional Record of 20 December 1969 as follows: "I regard the Academy's position as being the most serious and obvious dereliction of intellectual responsibility in the history of science."

Dr. Shockley plans to introduce a reworded version of the resolution at the business session of the National Academy of Sciences at the Spring meeting of the National Academy of Sciences, 23-26 Apr 72. This resolution, *that does not bear on the emotionally-loaded racial issues involved in such questions as "busing", is as follows:*

WHEREAS, estimates of the level of significance by Academy member Shockley [See Proc., N.A.S., 68, 2899a (1971), *Phi Delta KAPPAN*, Jan 72, pp. 297-312; and *Phi Delta KAPPAN*, Mar 72, pp. 4-15-419] lead to the conclusion that,

if environmental influences on IQ variance were as large as 30%, then there is only one chance in 2000 that the tabulation by A. R. Jensen of the IQ's for 244 separately reared white identical twins, compiled from four independent studies from England, Denmark and the United States, would have been deceptively pure chance effects so as to mislead erroneously to an observed value of geneticity of more than 80% leaving less than 15% for environmental effects and

WHEREAS, the report of the Ad Hoc Committee on Genetic Factors in Human Performance [Proc., N.A.S., 69, (1972)] states that *all that can be said* is that with respect to some human quality problems genetic factors are highly important while with respect to others, they are unimportant and thus does not suggest that the important behavioral trait of IQ is ever dominated by genes; therefore,

IT IS RESOLVED that the Council of the National Academy of Sciences be requested to arrange for a review of the significance level calculations and to issue an appropriate statement to resolve the related environment-heredity uncertainty.

DOCUMENT 13**Eugenic, or Anti-Dysgenic, Thinking Exercises**

Press release by William Shockley dated 3 May 1974

An emotional cover-up prevails in academia about my concerns with dysgenics – retrogressive evolution through the excessive reproduction of the genetically disadvantaged. One excuse to support the cover-up is the claim that facts established by diagnosis of dysgenics would be useless because all conceivable remedial courses of action would be monstrous forms of neo-barbarism. To refute such unimaginative objections, I have proposed some hypothetical programs. Unfortunately, these thinking exercises of mine are often grievously misrepresented in reports of my position.

These distortions have taken many forms. Rather than attempting first to list them in detail and then to refute them one by one, I shall restate my position in almost the identical words that I have used for more than three years.

I urge the reader to note that my standard statement of my thinking exercise quoted below does not advocate an action program. Furthermore, it does not discriminate for sex, race or welfare status. My hypothetical, voluntary, sterilization-bonus plan is intended primarily to free now fettered minds and make them capable of at least thinking about eugenics.

Suggestions that eugenics measures should be thought about are often disposed of by these unimaginative, thought-blocking clichés: Who will decide who should reproduce? What is the definition of the perfect man? When the committee to define the perfect man is formed, how can you be sure to be appointed to it? Evolution did not develop man by using the principles suggested by these questions. Nor, as I next intend to make clear, do these questions need to be answered before starting to search for humane eugenic defenses against dysgenics. Dysgenics may pose the most severe pollution threat that modern civilization has to face.

Anti-dysgenic programs, rather than "perfect man" eugenic programs, are proper countermeasures for the dysgenic threat. It is not necessary to define the perfect man to know that perpetuation of genetic illnesses, both physiological and behavioral, should not be encouraged to spread. Anti-dysgenics is an attack on human misery.

Some historical observations may help to give perspective: Worries about dysgenics, or population pollution, are very old. They are now discounted. A related worry, the population explosion, now taken seriously, was generally shrugged off only fifteen years ago as a bad dream of Mr. Malthus. But now today, zero population growth is becoming a widely accepted goal for space-ship earth. A chief purpose of my campaign for analysis of genetic factors in human-quality problems is to provide perspective to responsible citizens so that they can think about the dysgenic threat as conscientiously as they now do about the population explosion.

I use the voluntary sterilization bonus plan as a goad to prod intellectuals to face the dangers of population pollution. This hypothetical program encourages search for remedies by answering the objection that any cure for population pollution would inevitably be worse than the illness itself. As printed in the *London Times Higher Education Supplement* it read:

"As a step in such a search, I propose as a thinking exercise a voluntary sterilization bonus plan. Bonuses would be offered for sterilization. Payers of income tax would get nothing. At a bonus rate of \$1,000 for each point below 100 IQ, \$30,000, put in trust for a 70 IQ moron, potentially capable of producing 20 children, might return \$250,000 to tax payers in reduced costs of mental retardation care. Ten percent of the bonus in spot cash might put our national talent for entrepreneurship into action."

I measure the objectivity of an individual with whom I discuss this thinking exercise by seeing whether or not he can discover one obvious, major flaw. The potential for bearing children decreases as age increases. Therefore, the bonus should decrease with age. But age is not mentioned in the plan. This is the obvious flaw that I use to test for thought-blocks.

A feature that might frustrate the plan is that those who are not bright enough to learn of the bonus on their own are the ones most important to reach. The problem of reaching such people is what might be solved by paying the ten percent of the bonus in spot cash. Bounty hunters attracted by getting a cut of the cash part of the bonus might then persuade low IQ, high-bonus types to volunteer. I do not advocate implementation of such a policy. But I do advocate objective inquiry.

DOCUMENT 14**Society Has a Moral Obligation to Diagnose Tragic Racial IQ Deficits**

Prepared William Shockley as a statement to be read during his debate against Mr. Roy Innis, National Director of the Congress of Racial Equality, on 15 September 1974 at Case Western Reserve University. He had also arranged to publish it as an advertisement in the *Observer*, the CWRU student paper, two days before the debate: however, when it was submitted, it was deemed "questionable" and publication was denied. The same decision was made about several items in the handout prepared for distribution at the debate including the Ten-Point Position Statement and the *Ameoba* column.

Introduction

Ten days ago in finalizing the arrangements for this evening, I proposed to Mr. Talbert that I debate for the affirmative on the following assertion: "Society has a moral obligation to diagnose tragic racial IQ deficits." I also summarized my position by quoting the title that I used at New York University: "The moral obligation to diagnose the American Negro tragedy of statistical IQ deficit." Because I support these views, professors and students have condemned my presence on campuses. The vehement rejection by academia of the need to research the role of genes and race in our nation's human-quality problems constitutes a cover-up that dwarfs Watergate in its implications for the future of our nation. During the last few minutes of this fifteen minute, initial statement, I plan to explain why I believe that my faith in man is what puts me so violently at odds with my critics.

To set the record straight on some aspects of my position, I state that I do favor welfare programs in general. I favor liberalization of abortion laws. My position is not that all Negroes are inferior to all whites. These brief remarks are discussed more fully in a Ten Point Position Statement that I published in 1968. It is part of the HANDOUT that I prepared for distribution to amplify what I could say during the debate. Although, as my HANDOUT emphasizes, similar problems apply to whites, I shall focus upon Black problems. In my own opinion, that the tragedy of the American Negro IQ deficit is preponderantly racially genetic is rejected by new scientific findings, then my distress over a scientific setback will be more than compensated by the knowledge that the new scientific facts will contribute to eliminating prejudice. Therefore, no matter what is revealed by the diagnosis that I affirm should be

done, the true facts will benefit all members of our society, regardless of race.

I shall next state four points that, I argue in this debate, do support my assertion that we, as members of American society, do have a moral obligation to insist upon sound diagnosis. I also argue that there are facts and reasoning, that I shall briefly outline, which do indeed establish the following four points:

First, our nation does have tragic human-quality problems, especially the American Negro tragedy of statistical IQ deficits.

Second, this statistical tragedy of American Negroes can be analyzed and, indeed, has been significantly diagnosed, although several additional avenues are clearly open for further definitive research.

Third, dysgenics (defined as retrogressive evolution through the excessive reproduction of the genetically disadvantaged – in brief – downbreeding) may be increasing human-quality tragedies and is probably doing so *far more for Negroes* than for whites.

Fourth, remedial actions can be invented that avoid the stupidities and the horrors of the superman programs of Hitler's Nazi eugenics.

Before supporting these four points by facts and reasoning, I wish to pay tribute to Case Western Reserve University, including especially Mr. Talbert, for the initiative and the courage required to organize this debate. Also I acknowledge that Mr. Innis insisted, one year ago, that I be invited by the Harvard Law School Forum to debate with him under their auspices. The outcome was the much publicized cancellation of our scheduled debate. That Harvard cancellation and subsequent developments, again stimulated by Mr. Innis, made significant contributions to my campaign to make open discussion and exploration possible for genetic aspects of *human-quality* problems. I believe this is a possible objective because I have seen realistic attitudes develop during the last fifteen years for the related *human-quantity* problem of the population explosion. Tonight's debate offers one more potentially significant contribution. It permits Mr. Innis and me to put our opposing ideas into combat to compete for victory before a university audience for the first time.

Case Western Reserve University, by the courage and initiative

displayed on this occasion does support freedom of speech.¹ But it has not, by this alone, done enough. Freedom-of-speech types, I have sadly found, are a dime-a-dozen compared to those who will seriously explore with me the facts and reasoning that impel me in my campaign. The thoughts that I have gathered or created and organized during the past ten years form a pattern that I cannot communicate adequately in less than several hours. This evening, during my limited time, I hope to make at most some of the audience become aware of the possibility of applying reason to human-quality problems and aware also of *the moral obligation to apply reason with courage – the courage to doubt in the face of the desire to believe that is the true mark of the scientist.*

- I shall, if requested, be glad to try to arrange for discussions in depth at a later time. I have faith that many members of this audience join me in *these beliefs*: We honor the First Amendment because it protects personal freedom of speech. But we honor it even more because *freedom of speech can aid in finding paths to truth*, as on this occasion, by providing the public arena for combat between opposing ideas. And *truth is per se a fundamental good.*

I shall be glad to send reprints and references that present my reasoning in greater depth in response to mail requests to me at Stanford University from the audience here and from those hearing this offer on radio and TV broadcasts.

Facts and Reasoning to Support the Four Affirmative Points

In regard to Point One of my argument: Human-quality problems for Blacks are obviously pervasive and severe. Educational shortcomings measured by test scores and related to IQ have recently been emphasized by outstanding Black columnist William Raspberry for students in Washington, D.C. Statistical disadvantages in income, housing, and employment are well-known and, at least in part, consequences of prejudice.

A less familiar, and possibly largely genetic, Negro disadvantage is mortality from homicide – essentially Negroes killed by other Negroes. A Negro male in an unfavorable precinct in New York City, aged 25 to 44, is, I estimate, more than 300 times as likely to die of homicide than

¹ In point of fact, freedom of speech was not honored by CWRU. Cleveland Press reporter Bud Weidenthal wrote: "...a small group of whistle-blowing, foot-stomping students...forced cancellation...A spokesman for CWRU said university officials had decided in advance not to use force to break up a disruption. They had anticipated trouble and police were alerted and in the area but were not used."

is a similar white male in Scandinavia or the Netherlands. This enormous difference is not simply a consequence of an abundance of hand guns. If only those homicides by "personal weapons", such as hands, fists, feet, etc. were counted, the Negro rate would still be 25 times larger than the Scandinavian one. Approximately one in twenty of these Negroes will die, these statistics say, of homicide during the twenty years from age 25 to 44. How is this related to IQ? How much is environmental? Must we not recognize that these facts are human-quality problems that constitute an American Negro tragedy and cry out for diagnosis? (For U. S. whites, the rates are much smaller than for Negroes but still much higher than for Scandinavians.)

For my second point, I assert that the influences of language and nutrition on Black IQ have been diagnosed. Furthermore, IQ does predict educational potential about as well for Blacks as for whites. I shall leave a discussion of culture-fair IQ tests for the question period. For nutrition, I shall take the time to support my assertion by quoting from Arthur Jensen's 1973 book *Educability and Group Differences*:

There are no data, however, which would support the hypothesis that malnutrition contributes any appreciable fraction to the average Negro-white IQ difference. In Negro communities where there is no evidence of poor nutrition, the average Negro IQ is still about 1 SD [one standard deviation is 15 IQ points] below the white mean. When groups of Negro children with IQs *below* the general Negro average have been studied for nutritional status, no signs of malnutrition have been found. Physical evidence of malnutrition found to be correlated with lower IQs in studies conducted in Africa, Mexico, and Guatemala have not been found even in the poorest and lowest IQ segments of the American Negro population. On the basis of present evidence, the hypothesis that lower average Negro IQ is due to poor nutrition is not tenable.

The nutritional and health care status of Indian children, as indicated by much higher rates of infant mortality, is much poorer than that of Negroes; yet Indian children in the first grade in school (age 6) have been found to score about 1 SD above Negroes on non-verbal ability tests.

I shall tonight once more appeal to Mr. Innis to help in the diagnosis of the problems of his fellow Black Americans by cooperating in organizing research studies on race and blood-types. During our debate last month in San Francisco, Mr. Innis rejected my appeal. One reason that he did was, as I shall shortly explain, that he focused upon

a non-existent error in my publications.

Anthropologists who assert that race is a myth are oblivious to the scientific fact that for American Negro populations, the fraction of white, or Caucasian, ancestry can be determined, indeed, with an accuracy of 1% using the Duffy or so-called Caucasian gene. Significant diagnostic possibilities about racial differences are possible because skin pigmentation is not uniquely determined by this Caucasian fraction. For example, among one hundred Negroes who are 50% white in ancestry, one may be as black as a pure-blooded Negro and another as white as a Caucasian. If color prejudice caused all of the Negro IQ deficit, then, on the average, these two extreme individuals should differ by about 20 IQ points. But if actual white ancestry were the dominant factor, then the difference should be less. To illustrate the research possibilities, I have estimated a difference of thirteen points by using my research comparison between Georgia and California Negroes. California Negroes on the average are 23% Caucasian and have an IQ on Army tests of about 90 compared to 11% and 80 IQ for Georgia thus suggesting an increase of one IQ point with each one percent of Caucasian ancestry – in this low IQ range. (My 13 IQ point estimate assumes six color chromosomes out of 46 corresponding to 13%.)

Mr. Innis, when debating with me in San Francisco, reiterated the previously published error of some of my critics by attributing to me the conclusion that an individual with 99.9% white ancestry would have an IQ of 160 – a conclusion so ridiculous that, if it were truly mine, it would discredit my entire analysis. These critics ignored a fact – the fact that my publications clearly state that my estimate of one IQ point for 1% Caucasian ancestry is valid *only before diminishing returns become important*.

The promise of diagnosis utilizing these scientific facts is now so shunned in the academic community that financial support is unobtainable. If Mr. Innis could induce a few hundred successful Black leaders to volunteer to give blood samples and, perhaps – but not necessarily – take IQ tests, then I believe that financial support would appear so that much could be learned. Mr. Innis' suggestion of studying the effects of fractions of Negro ancestry upon whites might be added to the program by studying white families exhibiting the sickle cell trait. For them the sickle cell gene is a Negro gene in the same sense that Duffy is a Caucasian gene in the study of American Negro populations.

My third point about the dysgenic threat is documented by these facts: Census Bureau reports show a worse dysgenic threat for Blacks than for whites. Black women college graduates average only 1.9 children

– not enough to reproduce their group. For the lowest socioeconomic black women, the rural farm group, the number is nearly three times as large, 5.4. The numbers are not as threatening for whites: 2.4 and 3.5. However, the dysgenic threat for some groups of whites may be just as adverse as for blacks, for example, in backwards pockets of Appalachia.

My fourth point is that humane, democratic, *anti-dysgenic* measures may exist. To demonstrate this, I urge again, as I have for several years, frank discussion – but no national action – about a voluntary sterilization bonus plan (VSBP) *thinking exercise*. The VSPB is not a Hitlerian super-race eugenic program. It is a plan directed against dysgenics. *Anti-dysgenics* is an *anti-misery* measure. According to the VSBP, graded bonuses would be offered for sterilization. Payers of income tax would get nothing. Bonuses for all others, regardless of *sex, race, or welfare status*, would depend upon *best scientific estimates* of hereditary factors in disadvantages such as bad eyes, bad teeth, allergies, diabetes, epilepsy, heroin addiction, Huntington's chorea, arthritis, etc. At a bonus rate of \$1,000 for each point below 100 IQ, \$30,000 put in trust for a 70 IQ moron, potentially capable of producing 20 children, might return \$250,000 to tax payers in reduced costs of mental retardation care.

Awarding ten percent of the bonus in spot cash might solve the problem that those who are not bright enough to learn of the bonus on their own are the ones most important to reach. Bounty hunters attracted by getting a cut of the cash part of the bonus might then persuade low IQ, high-bonus types to volunteer. I do not advocate national implementation of such a policy. But I do advocate objective inquiry and possibly some test cases.

My Three-Facet Faith In Man

I act upon a faith in man in my campaign to focus attention upon my concerns about the grim, genetic, human-quality problems that may face the next generation. My faith persists despite mindless derogation of my concerns. This faith in man also separates me from the vast preponderance of those self-appointed spokesmen for the intellectual community – most of whom have never had the satisfaction of seeing the seeds of their own intellectual efforts flower into anything really creative and valuable – a satisfaction that I have enjoyed – perhaps most for my contributions to the creation of the transistor.

There are three facets to my faith in man – the faith that supports me in my campaign for diagnosis of genetic factors in human-quality problems and sets me at odds with spokesmen for the academic community:

First, I believe that human evolution has so far advanced that educated men of modern technological societies do have the developed brain power to diagnose soundly human-quality problems.

Second, I believe that these civilized humans do also have an underlying true humanism and not merely a humanism gone berserk that sanctimoniously and self-indulgently suppresses evidence of tragic, human genetic defects. This true humanism coupled with intelligence will ensure, I believe, that efforts to diagnose and cure human-quality problems will be humane – indeed, far more humane than benign neglect which permits dysgenic forces to grow out of control.

But one more component is necessary. We have it in the United States. It is the First Amendment with its guarantees of freedom of speech and of the press that, as I have stressed in my introduction, make this debate possible. Such debates, before responsible audiences, will expose cover-ups of error and hypocrisy and keep open a path on the search for truth.

And now the third facet of my three-facet faith – the basic motivation for my campaign. It is my faith that the first two facets can become a driving force for true humanism. This belief asserts that applied intelligence, coupled with integrity and concern for the feelings of our fellow creatures, can transform the first two facets of my three-facet faith from philosophical ornaments into true humanism in action.

DOCUMENT 15**Has Intellectual Humanitarianism Gone Berserk?**

Introductory statement read by William Shockley prior to a lecture given by him at the University of Texas At Dallas, Richardson, Texas, to members of the College of Natural Sciences and Mathematics and the University Community on 12 September 1978.

Has intellectual humanitarianism gone berserk?

Humanitarianism is defined as beliefs and actions devoted to the welfare of humanity through the elimination of pain and suffering. The intellectual basis for the humanitarianism of many of our national social programs is the environmentalist premise that the personality of an individual is determined predominantly by the environment in which he develops rather than by his heredity. Heredity is now known to be transmitted by the genetic code established when the father's sperm fertilizes the mother's ovum. A small percentage of researchers, of which I am one, are convinced that human characteristics, like those of other mammals, are more strongly controlled by genes than by environment. The conflict between this view and the prevailing one is called the nature-nurture controversy. I hold that dogma, like that which faced Galileo and Darwin, prevents the resolution of this controversy and that this failure may lead to unsound social programs. These programs, although humanitarian in context, may be based on such erroneous premises, that they increase, rather than decrease, future human misery. In effect, misguided humanitarianism, which supports such programs and blocks objective analysis, has gone berserk.

A key example of a nobly-intended welfare program is AFDC (Aid For Dependent Children). Has this program been a temporary palliative with long-term adverse effects? Does down-breeding occur in impoverished slum populations? This is a problem more threatening to blacks than to whites.

If my fears about this threat are true, the taxpayer will suffer. But those who will suffer most are the babies, born in slum environments with statistically poor heredity from unfair shakes from the badly-loaded genetic dice cups of their parents. Few of these babies will reach the mainstream of society. The remainder will be, in effect, genetically enslaved for their lifetimes. Although I endorse welfare programs to reduce this misery, I hold that society has a moral obligation to analyze

this potential genetic disaster. My faith in humanity supports my belief that establishing relevant truths will lead to truly humane courses of action.

This obligation for analysis is now being shirked. The basic reason is misguided humanitarianism which opposes analysis. Why? Analysis will inevitably lead to a distasteful evaluation of genetic disadvantages and to the even more revolting questions of race and intelligence. The prevailing intellectual opinion is that it is cruelly insensitive to express such thoughts. This unwise sentimental avoidance of painful issues does prevent analysis and, in the end, will increase human misery. Such misguided humanitarianism has, indeed, gone berserk.

Society's allegiance to berserk humanitarianism as a "moral imperative" may cause civilization to self-destruct according to demographer Elmer Pendell. In his 1967 book, "Sex Versus Civilization", he added a third principle of population to those of Darwin and Malthus: "Problem makers reproduce in greater percentage than problem solvers, and in so doing, cause the decline of civilization" is a central thought further pursued in his 1977 book, "Why Civilizations Self-Destruct".

Dysgenics is the word which describes the mechanism of self-destruction of civilizations. *Dysgenics*, a word seldom used in academia, is best defined as retrogressive evolution caused by the excessive reproduction of the genetically disadvantaged. Indeed, *dysgenics* is such a fundamental concept that it might have been the title of this lecture. Berserk humanitarianism can promote *dysgenics*. *Dysgenics* can cause a wide variety of human problems and may ultimately cause the self-extinction of the human species.

For example, does *dysgenics* contribute to the adverse trends of rising crime rates, falling scholastic aptitude scores, and high unemployment of black youth? Those who even hint that genetic factors are involved are usually promptly discouraged. Those who persist are denied tenure and research funds, physically threatened, and shouted off platforms.

An example of an expressed need for research on related problems is provided by the 1964 statement of Willard W. Wirtz, then Secretary of Labor: "There is a strong indication that a disproportionate number of unemployed come from large families, but we don't pursue evidence that would permit establishing this as a fact or evaluating its significance." In response to my inquiry, Secretary Wirtz wrote that he hoped that others would "ferret out the facts". My further inquiries to the Department of Labor revealed no evidence that genetic disadvantages had been considered.

Fourteen years later, in the current (August-September 1978) issue

of The American Spectator, sociology Professor Ralph Segalman published a letter on transgenerational poverty, meaning specifically AFDC mothers who were themselves born in AFDC families. He reported that the percent of AFDC recipients who are transgenerational has doubled in each of the last two decades – from 5 to 10 to 20%, the present value. He also stated that this 20% represents 60% of the AFDC and related costs. (I note that 60% of costs for 20% for these transgenerational recipients is six times more per recipient than 40% of costs for the other 80% of recipients. Apparently it is not known whether this arises from six times as many children per transgenerational recipient or from other causes of higher cost). J. Segalman's letter *did not* suggest any effect of dysgenics but *it did* emphasize two of the threatening consequences that I have stated at the outset of this presentation and repeat again for emphasis: If my dysgenic worries are sound, the taxpayer will suffer, but the babies born into poor environments and with unfair shakes from badly-loaded, parental genetic dice cups will suffer most. They will be victims of dysgenics.

The intellectual community resists the pursuit of evidence that would evaluate the possible significance of dysgenic factors. For a decade, I presented papers related to these questions at meetings of the National Academy of Sciences (the organization most appropriately our nation's intellectual conscience) and proposed resolutions that such research be encouraged. Some of my resolutions were seconded and then were buried by tabling. One of my final efforts was countered by the announcement that the Academy was organizing a related "Behavioral Genetics Seminar". It was never held.

Essential to evaluating the significance of the dysgenic threat is the nature-nurture issue – the environment-heredity uncertainty. My own statistical research supports the conclusion that there is only one chance in 2,000 of being significantly wrong in stating that gene differences in representative Caucasian populations account for at least 80% of what makes individual IQ's different. My 80% statement has been misinterpreted by my critics. They assert erroneously that I "therefore" conclude illogically that 80% of the black IQ deficit compared to whites must be genetic. This is not so. My opinion that the black-white IQ difference is largely genetic is not a "therefore" from the 80% conclusion alone but is based on the pattern of many additional items of evidence.

The fact that black Americans are educationally and socially disadvantaged causes nobly-motivated – but wishful-thinking – intellectuals to vehemently oppose demands, like mine, for the evaluation of the role of genetics in social performance. A consequence is that the

dysgenic threat to the blacks is overlooked. Census Bureau reports reveal that this threat is real: Black women college graduates average only 1.9 children, not enough to maintain their fraction of the population, whereas black rural farm women (near the bottom of the socioeconomic ladder) average 5.4, nearly three times as many. (For whites, the threat is less: 2.3 and 3.5.) I have not found comparable statistics for transgenerational AFDC families but fear that they would be even more threatening, as suggested by the factor of six that I deduced from Professor Segalman's percentages.

As a lecture title or debate position I have often maintained that: "Society has the moral obligation to diagnose the American Negro tragedy of statistical IQ deficit". If such research succeeds, and I can illustrate promising and neglected avenues for this research, the truth should be good. If my opinion about genetics is proven correct, search for cures can be based on sound diagnosis. If proven wrong, my chagrin over a scientific set-back will be more than compensated by the knowledge that the new scientific facts will counteract prejudice.

DOCUMENT 16

**Anthropological Taboos
About Determinations of Racial Mixes**

Excerpt from press release by William Shockley on 16 October 1979

Most anthropologists are intellectually irresponsible about the problems of race and intelligence. A world-wide tragedy may grow because national leaders will be misled by trusting erroneous anthropological views. Of all the scientific disciplines, anthropology is most responsible for science about the biological basis for humanity's social structures – including the effects of racial differences. But many anthropologists assert that the concept of race is a "myth" and urge taboos against related research.

A significant exception is Dr. T. E. Reed, professor in the departments of anthropology and zoology at the University of Toronto. In 1969 he used racial differences to find that 22% of the heredity (genes) of some 3000 Oakland, California Negroes came from white ancestors by analyzing Duffy blood-type statistics with a probable error of only 1%. He also made a discordant but a less accurate estimate of 27% from a smaller sample using a different blood type. The discordance between 22% and 27% resulted from limitations in the theoretical methods then available. I published the theory in 1973 and eliminated the discordance by showing that the best value was 23% for both blood types.

Do those anthropologists who consider the concept of race to be a myth reject these research results for scientific reasons? For an answer, I persuaded an outstanding investigative reporter to select and interview a sample of anthropologists, excerpts from the interview report reveal, not science, but taboos:

Nine anthropologists were chosen at random from those in major colleges and institutions. All had tenure or equivalent status.

Four of the nine simply had no knowledge of the procedure used to make the determination of racial admixtures. One said that such studies 'are not of interest to any anthropologists that I know of nor would they be to any enlightened scientist.'

Another four had some knowledge that racial admixtures might be determined, but considered this unimportant or too controversial, (one mentioned T. E. Reed's paper "Caucasian Genes in American Negroes," *Science*, 22 August 1969.) But all four discounted the procedure as irrelevant, out-of-date, and/or offensive.

The remaining anthropologist was a professor from the South who insisted that

the procedure could not be done at all. He observed that determining racial admixtures was 'dark ages genetics that only non-scientists like newspaper reporters are interested in.'

From these nine interviews, I conclude that the determination of racial admixtures is an unpopular subject and suffers from ignorance, a lack of interest, and, at least, a modicum of fear.

Scientists have served humanity well by conquering disease and multiplying food supplies. But the application of science to tragic social problems will be frustrated if blocked by taboos like those indicated by the nine interviews discussed above.

Determination of racial admixtures is a subject few anthropologists know anything about or feel they should know about. This conclusion was arrived at as a result of interviews with nine U.S. anthropologists over a period of one week.

These anthropologists were chosen at random from those with tenure or equivalent academic status and were located in major colleges and institutions in six different States plus the District of Columbia.

My conclusions then are these:

1. The procedure discussed in Reed's paper for determining racial admixtures is not widely known among anthropologists, those who do know about it are familiar with it on second-hand terms only. In no case was I able to interview anyone who was engaged in this kind of research presently or had ever been engaged in it. Furthermore I asked six of the respondents if they knew of anyone doing research in this area. One of them did. But when I tracked this researcher down, I discovered that he was a geneticist. (Incidentally, this geneticist said that the method for determining racial admixture was unreliable at best and was not an area of interest to him. His specialty was the study of twin phenotypes.)

2. There is widespread feeling that this area of knowledge is not necessarily the province of anthropologists. Almost everyone seemed to feel unqualified to speak at length on this subject except the Southern gentleman who rejected out-of-hand the idea of determining racial admixtures but was immodest enough to claim that he knew enough to know that it couldn't be done.

3. Four out of nine indicated in several different ways that this subject, even if it were in the province of anthropology, is not popular nor of interest to them. I interpreted these remarks to indicate a lack of personal interest as well as a self-protective reticence to dig into the subject.

It was my hypothesis from the beginning that this subject is not the kind likely to generate research grants from private foundations or the federal government. In short, the determination of racial admixture is an unpopular subject and suffers from ignorance, a lack of interest, and at least a modicum of fear.

DOCUMENT 17

Sperm Banks and Dark-Ages Dogmatism

Position paper presented by William Shockley in a lecture to the Rotary Club of Chico, California, 16 April 1980.

I shall today add a new perspective to my often-used lecture title "Human Quality Problems and Research Taboos." I shall reason that these taboos have recently been shown to arise from the same kind of dogmatism that characterized the dark ages and that this dogmatism arises from causes that are very similar, perhaps identical, to those that would have sent Galileo to the stake for burning had not he recanted his conclusion that the earth moved around the sun.

The new facts that have altered my emphasis have developed during the last three weeks since I announced my participation as a donor to the sperm bank created by Robert K. Graham and named by him in memory of Herman Muller. Muller's Nobel prize was awarded for his demonstration that mutations in the genes could be produced by X-rays. Graham followed Muller's proposal that the sperm of creative people might be used in artificial insemination to increase the quality of a population. Graham felt that a simple way to select for creativity was to restrict his donors to winners of the Nobel prize in science. He now has contributions from three of us.

My decision to be identified as a donor was made deliberately after consultations with some of my legal and newspaper friends and with Dr. Graham. I also had a commitment that the *Los Angeles Times*, which broke the story, would point my position in these words:

I welcome this opportunity to be identified with this important cause. But I want to make it clear also that I don't regard myself as the perfect human being or the ideal candidate. I'm not proposing to make supermen. But I am endorsing Graham's concept of increasing people at the top of the population, which is to be differentiated from anti-dysgenics – my past and present emphasis on reducing the tragedy for the genetically disadvantaged at the bottom.

The *Times* did carry my statement in full. Nevertheless, almost every interviewer I later met asked questions intended to reveal me as an ego-tripper bent on producing a superrace.

Graham's program will, in my opinion, have its greatest value, not

in any scientific information that will come from studies of the offspring that result, but instead from concepts that develop from the controversy that it has initiated.

These observations serve as an introduction to my analysis that so far as human genetic quality is concerned dark-ages dogmatism dominates the views of the intellectual community. My only evidence consists of press reports of interviews with scientists about the sperm bank. These suggest emotional judgments rather than reason. As reported, most of the eminent scientists, including Nobelists, have condemned Graham's program with the words "weird, pretty silly, biological nonsense, ridiculous, ethically and morally repulsive." The report of a straw-man criticism suggests that sperm recipients may be hoodwinked into thinking that genius babies were guaranteed. Dogmatism won a KO decision over science in one report suggesting that a child's mental endowment would be completely uninfluenced by the father's own mental powers.

The dark-ages dogmatism suggested by these reports would, if transferred from man to another mammalian species, namely the horse, amount to saying that breeders of race horses have all-been hoodwinked when paying the stud fees demanded for Kentucky Derby winners.

Next I shall explain the parallel that I find between the dogmatism of the sperm-bank interview reports and the dogmatism faced by Galileo. Galileo's heresy rejected the belief that God must have centered the universe about man. His telescopic discovery that the earth moved around the sun struck a devastating blow to the belief that man was so clearly the Apple of God's Eye that the Garden of Eden must have been at the center of the universe. Seventeen centuries before Galileo, the Greek astronomer, Aristarchus of Samos, had also concluded from his observations that the sun was at rest. But this fact was forgotten or suppressed in Galileo's day when the dark-ages dogmatism of what I call "the Apple-of-God's-Eye Obsession", or AGE0 for short, flourished.

Four centuries after Galileo, AGE0 dogmatism attacked Darwin's theory of the evolutionary origin of species. Burning at the stake was not threatened then, but biology teacher Scopes was forbidden to teach this heresy in Tennessee schools.

The parallel dogmatism of today, while conceding that God may have used evolution to create man in His own image, maintains that the end result must so transcend lower mammals that it is biological nonsense to apply to man the genetic principles that are valid for horses. In particular, AGE0 disciples cannot conceive that God could have been so unkind to man as to permit some babies to be born with such poor genetic endowments that they must lead frustratingly inferior existences

no matter how hard they try.

My research convinces me that the existence of tragic genetic deficiencies in our society is a fact and that the wishful thinking of dogooders who fail to face this fact does harm, not good. In debates I support the position that society has the moral obligation to diagnose the tragedy for American Negroes related to their statistical IQ deficit. I consider that the humanitarianism that sweeps such matters under the rug is humanitarianism gone berserk. By opposing such attitudes I believe that I may contribute greatly to reducing tragedy for American Negroes in future generations. In keeping with this motivation, I shall try to describe aspects of the dark-ages dogmatism in addition to those that interpret the press reports of the sperm bank criticisms.

The current version of AGEO is in accord with a popular misinterpretation of the "all men are created equal" clause of the Declaration of Independence. Actually, what equal meant to Jefferson was that they were equally "endowed by their creator with inalienable rights". The dark-ages dogmatism that today most resembles that of Galileo's time concerns racial differences. AGEO disciples hold that God could not have created races of such different capacities that some are destined to inferior social and economic positions in modern technological society. A darkness has fallen over the obvious, but tragic, facts that lead me to this conclusion. The most insightful analysis that I have found which describes how during the last 70 years the light of truth has been dimmed appears in two books by Carleton Putnam, "Race and Reason" in 1961 and "Race and Reality" in 1967. A journalist, under the pen name "Thomas Jefferson", has presented the related political history in a 1979 book entitled "The All-American Lie: The Case for Human Inequality". The most authoritative presentation of the biology of racial differences is the 1974 Oxford University Press book "Race" by John R. Baker.

Most offensive to AGEO disciples of all ideas about racial differences is that God, through evolutionary mechanisms, has color-coded some races so that statistically valid predictions of competence can easily be made by the pragmatic man in the street.

I have repeatedly asserted that many Negroes are superior to many whites. But my research leads me inescapably to the opinion that on a statistical basis the social and intellectual deficits of Negroes are hereditary and racially genetic in origin and thus not remediable to a major degree by practical improvements in the environment. I do, of course, favor all environmental remedies and ameliorations that make economic and social sense. I also have faith that society could find broadly effective humane solutions if the dark-ages dogmatism that I

have discussed could be overcome.

One most serious threat to the black minority is dysgenics, retrogressive evolution through the excessive reproduction of the genetically disadvantaged. The fertility found in the 1970 Census of 5.4 children born per rural black farm women indicates that this socioeconomic class, one of the lowest tabulated, will nearly triple in one generation. Black women college graduates average only 1.9 children, a number so small that this social class may be dying away.

Do our problems of the growing relief burden, urban decay, rising crime rates, lack of success of busing and other remedial educational programs – do these problems go undiagnosed and unsolved because of dark-ages dogmatism? To what degree may the disenchantment of American youth with the free enterprise system be caused by failure to recognize human inequalities? These are problems that stem from the analysis I have presented. Possible answers are another topic.

DOCUMENT 18

Intelligence in Trouble

Article by William Shockley published in *Leaders* magazine,
issue dated April/May/June 1981

The effectiveness of leaders will deteriorate on a worldwide basis by the year 2000 because of the action of dysgenics on their followers. Dysgenics is the name for backward evolution caused by the excessive reproduction of the genetically disadvantaged.

My conclusion follows from the premise that authority resides in the minds of those who accept it. Obviously, high level leaders require bright minds in their first rank followers. From Census Bureau projections, I conclude that between 1975 and 2000 dysgenics will cause a drop of about ten percent in the fraction of the world population which would make bright followers.

My dysgenic conclusion is appropriate for this journal to illustrate the significance of evolutionary factors in man's future. I shall not present the reasoning supporting my conclusion except to cite one recently established relevant fact: Cross-racial intelligence comparisons using IQ tests, translated from English to Japanese and vice versa, show that the average Japanese IQ is about ten points higher than the U.S.A. average of 100.

My principle purpose here is to appeal for a consensus by intellectual leaders about the nature of man and the role of evolutionary forces in his past and future – and to suggest a path to that consensus. Now such a consensus is blocked by discord between scientific and religious views about man's place in the universe. The resulting religion-evolution stress, as I call it, severely inhibits objective inquiry into such topics as dysgenics and racial differences.

If you doubt that a religion-science stress can inhibit objective inquiry, let me remind you of the classic religion-astronomy stress involving Galileo. In Galileo's day, four centuries ago, most intellectual leaders accepted a simplistic interpretation of Genesis: As the culmination of six days of creation, God had molded Adam from earth in His own image and breathed life into him.

Theologians reasoned that God had centered the universe about the spot where Adam drew his own first breath. Consequently, when Galileo suggested that the earth might move – and thus not always be

the center of the universe – he attacked the preeminence of man's place in God's plan of creation. That was rank heresy. Galileo ended his life in house arrest and would have been burned at the stake had he not recanted. Seventeen centuries before, Aristarchus of Samos, a Greek astronomer, had also proposed that the earth moved around the sun. But during the dark ages, this knowledge had been forgotten and religious dogma in western civilization suppressed its rediscovery.

Advancing science has dispelled this dark-ages dogmatism about astronomy. No theologian condemned astronauts, returning from the moon, for using Galileo's premises while describing their admiration of the beauty of the earth. Recently, the Vatican has contemplated reevaluating Galileo's condemnation.

These developments have encouraged me to prepare my thoughts for publication with the hope that they may contribute to reducing religion-science stress related to scientific interpretations of the evolutionary origin of human behavioral traits.

I had a personal encounter with religion-science stress about genes and human quality in early 1980. Several eminent theologians, all specialists in biomedical ethics, reacted to news about a new AID (artificial insemination by donors) program. The donors, selected by the sperm-bank founder in the hope of increasing creativity in the next generation, were Nobel Prize Winners in science. I participated in this program not because I regarded it as important as my own chief interest of anti-dysgenics, but because debate over its merits would contribute to objectivity about human quality problems.

The reported reaction of the theologians included: The "presumption that brighter is better" is rejected. Humanity "needs compassion more than it needs intelligence" – as if these traits were mutually exclusive. Sperm, selected for intelligence, may hold "the tendency for evil." Actually, scientific creativity, rather than intelligence, was the focus of the Nobel selection by the sperm bank.

These reported theological attitudes are contrary to well-established, but widely rejected, statistical facts about intelligence and genes. Selecting for high IQ does guarantee on the average, although not in every individual case, higher human quality for traits such as honesty, idealism, family stability, and brighter than average children in the next generation. The theological reluctance to accept the role of evolution in man's creation has contributed to the wide rejection of these facts.

I shall next propose a common interpretation for the religion-science stress evident in the adverse theological reactions to Galileo, to the Nobel AID program, and to a third familiar case, Darwin's theory

of evolution. I call my interpretation AGEO, for the Apple-of-God's-Eye Obsession. Let me explain: The AGEO that caused the religion-science stress about Galileo was the obsession that the earth must be the center of the universe.

In Darwin's case the obsession held that all of man's ancestors, starting with Adam, were molded in God's image. Darwin proposed that men, and also monkeys, descended from progenitors which were inferior to both men and monkeys. This offensive thought that man's ancestors were not all made in God's image led to the famous "monkey trial" of biology teacher Scopes.

An AGEO can also interpret the reactions of the theologians to the AID program. To enlarge on these reactions, I shall contrast them with those of Dr. Zvi Binor, director of the sperm bank of Chicago's Michael Reese Hospital, who noted: "The woman at least has her chemistry in the child, and the husband and wife can both experience the pregnancy and delivery. They're all very grateful and happy this thing worked out." In contrast to these humanitarian contributions of AID, the reported theological views feared that AID would become "a system of animal husbandry for people" and destroy the "unity that is marriage."

The AGEO that explains the religion-evolution stress in the reported reactions of the theologians has this obsession: Man, now molded in God's image and being the Apple-of-God's-Eye, is above the biological laws that applied during his evolution. Thus the objectives of AID programs are irrelevant. In an extreme form, this obsession holds that God has designed nature's laws for man so that noble intentions suffice to ensure his well being – diagnosis of problems is superfluous.

A melding of religion and evolution may be created by the current controversy over the teaching of biology in public schools. Opponents of Darwin contend that the teaching of evolution should be accompanied by the teaching of creationism (which accepts geological time scales but emphasizes gaps in the evolutionary sequence to argue that species did not evolve but were created in immutable forms by an infinite being). The creationists's arguments are overwhelmingly rejected by the scientific community.

News reports of the controversy about creationism versus evolution contained one comment that struck me as a step towards melding religion and evolution. Father Michael Mitchell, a biology teacher and associate superintendent for education in the San Francisco Archdiocese, which governs most of the area's Catholic Schools, was quoted as saying: "The whole problem is that people confuse the two levels of argument – one is on a scientific level, the other on a theologi-

cal level. For myself, the weight of evidence is on the evolutionary side but it never bothered me if God did it slow or fast..."

The emphasis in this quotation on the weight of evidence for the slowness of evolution suggests a basis for harmonizing the scientific and the theological levels. I reason thus: If "God did it slow" in creating man, then it follows that God used evolution's brutal elimination mechanisms to select mutations in the genetic code and thus to create man in His image endowed with humanity's most cherished traits: altruism, compassion, conscience, intelligence, and religion. In doing so, God endowed man with adequate mental power both for faith in religion and for understanding in science.

The melding of religion and evolution refutes the denigration of intelligence expressed in the reported reaction of the theologians discussed above. This melding demands that man use his intelligence to understand how God used evolution as His method of creating man in His image and, in addition, demands that man should develop the intellectual power to continue man's evolution.

Primitive cultures killed babies which were deformed, twinned, or too numerous. Rome and Sparta eliminated the physically inferior. The "droit du seigneur" to improve the breed persisted longer. Animals follow similar procedures. Social progress has halted these brutalities for man – and good riddance it is.

But if these were God's methods in creating man through evolution, they should not be forgotten. Instead, man needs to create new knowledge by understanding these methods and by inventing humane substitutes.

These thoughts suggest a path to the consensus of intellectual leaders that is lacking: When God created man with intelligence and an appreciation of the Golden Rule, must He not have intended man to use his capacities humanely to continue his own evolution? And, from a vastly different perspective, should not atheistic humanitarians strive for the same ends?

I believe that when nobly-intended idealists oppose proposals intended to continue human evolution or to prevent dysgenics, they display misguided humanitarianism. I label it humanitarianism gone berserk. It has no place in the needed consensus.

To understand how evolution developed humanitarianism is a scientific – not a religious – objective of sociobiologists. Sociobiology researches the development of behavioral traits in animals. Sociobiologists have proposed evolutionary mechanisms to select for mutations

altruism, traits closely related to the Golden Rule, a precept common to many of the religions of the various races of man.

The proposals by sociobiologists, like those of researchers on genes, race, and the heritability of intelligence, have been unjustly attacked as smacking of elitism and racism.

A sound consensus by intellectual leaders about religion and astronomy was lacking in Galileo's time. The basis for a consensus had been lost for centuries since the thoughts of Aristarchus were forgotten. This lack was unimportant practically: No space shuttle was budgeted. Nowadays, the lack of a consensus about religion and evolution is more serious. Today, society acts on unvalidated premises – premises that appear to have forgotten lessons taught both by the Ten Commandments and by evolution. Must seventeen centuries elapse before thoughts can focus on basic human-quality questions? For example:

Are present worldwide reproductive patterns lowering humanity's average intelligence, as my own studies convince me is the case? Are undeveloped nations undeveloped because their populations are less evolved? Does racial interbreeding raise or lower human quality? Do welfare programs in the U.S.A. encourage dysgenic trends? Urban decay? Rising crime rates? These are forbidden questions today in western democracies and few journals would have LEADERS'S courage to print them.

I believe that many of LEADERS'S contributors and readers will share my fear that "yes" is the answer to most of my questions. I also believe they feel that it would be wrong to speak out. I so interpret the lack of any mention of the obvious possibility of genetic inferiority in Christian Barnard's article in the issue preceding this one. It is my hope that a melding of religion and evolution will replace such reticence with a moral obligation upon the world's intellectual leaders to seek diagnosis of human-quality problems, to find humane solutions, and thus to continue man's upward evolution. *There is no higher aim for humanity to set itself on this earth.*

DOCUMENT 19

Playboy interview with William Shockley, August 1980

PLAYBOY: In February of this year, Dr. Shockley, you revealed to the world your participation in Dr. Robert Graham's Nobel-Laureate sperm bank. You have donated your sperm to Dr. Graham's depository and have admitted your participation publicly. The news media reacted to your admission with both shock and ridicule, so let's start by discussing that.

SHOCKLEY: Shall I give you the standard questions?

PLAYBOY: If you like.

SHOCKLEY: The standard questions are, "Where are these sperm banks going to go?" and "What's the objective in trying to produce a super-race?" and "Isn't this what Hitler tried?" and "Who are *you* to be donating your sperm?" and other questions of that sort.

PLAYBOY: Let's double back to those questions and start with our own. How did you get involved in this Super Baby experiment?

SHOCKLEY: I don't call it a Super Baby experiment and I object to your doing so.

PLAYBOY: That's not our term; every newspaper in the country has called it that.

SHOCKLEY: Well, that is clearly a misrepresentation of my purpose in participating in Graham's program.

PLAYBOY: Fine. What *was* your purpose in offering your sperm to Graham's repository?

SHOCKLEY: Let's get this straight. I didn't offer. I responded to Graham's request. In 1965, I was in the news after expressing worries that the genetic quality of our population might be declining. My first contacts with Graham occurred shortly afterward, in 1966. Graham had started even then to canvass some Nobel-Laureates about the prospects of contributing sperm to a proposed repository. The actual opportunity to contribute came my way some 12 years later. Also, in 1965, I had met a man who had already made the decision, with his wife, to seek a highly qualified sperm donor in order to improve the probable quality of his children. His wife shared his views on the matter. To my way of thinking, they are a very rare case in having come independently to this decision

PLAYBOY: Wasn't that an unnatural step to take?

SHOCKLEY: I agree that the idea seemed unnatural, but this man's arguments stood up very well. He was an unassuming fellow and not particularly impressive, but the more you listened to him, the more sense he seemed to be making. He said, "I don't expect to do everything for my child. I propose to teach him social values and to love him and care for him. I want him, or her, to have the greatest possible opportunity in life. If somebody can furnish sperm that gives a greater likelihood of success to my child than I would be able to give, then I'd have no qualms about arranging for a donor." What he said all hung together.

PLAYBOY: Maybe so, but you'll have to admit it's a minority opinion.

SHOCKLEY: I don't see that a minority opinion should be regarded as an adverse thing. I'm sure that as a black writer, you carry a certain number of those yourself. And Einstein carried some for quite a while, too.

PLAYBOY: Let's get back to how this whole thing began. We're trying to understand how you bring up a subject like donating sperm to a depository. Did you and Graham sit down and hash it out over drinks, or what?

SHOCKLEY: This wasn't exactly a new idea. Graham had been in contact with Hermann Muller, the Marxist geneticist, and this was actually Muller's idea, which he proposed long ago. I really don't know the history. Graham knows such things much better than I do.

PLAYBOY: What was the general reaction when Muller proposed it?

SHOCKLEY: Muller came in for a great deal of castigation. He made the tactical error of trying to draw up a list of people he considered optimum donors, which included some people who later ended up looking pretty unattractive.

PLAYBOY: Such as?

SHOCKLEY: I've forgotten who they were. Whether he had Karl Marx or Lenin or somebody else in there, I'm not sure.

PLAYBOY: Graham got involved because he knew Muller? What was *his* interest in something like this, which is outside his field?

SHOCKLEY: Graham's interest in the declining quality of people goes back at least to the Sixties, when he wrote a book called *The Future of Man*. He did studies of what went on during the French Revolution and the elimination of the elite class, which probably removed some of the brilliant people of France. I don't know that one can say France has significantly less intellectual potential now than it did before the revolution, but this is what Graham's studies were concerned with.

to have more children. We had talked about these things and my concern about possible downbreeding, or dysgenics, struck a responsive chord in him. I knew about his plans for a sperm bank and when it was set up, I had no particular problem in making a decision. This all happened about 1977, I believe.

PLAYBOY: How many other Nobel Laureates have donated their sperm to that repository?

SHOCKLEY: To the best of my knowledge, there have been two others. The repository contains sperm from five individuals, two of whom I don't know anything about - but they are there for some reason of Graham's, which I have not explored.

PLAYBOY: Three women have already been inseminated, according to press reports. How were those women chosen?

SHOCKLEY: Graham has been advertising for women in a publication sponsored by the Mensa society. Mensa is a group of individuals who all have I.Q.s in the top two percent. But neither Graham nor I regard the Mensa population as being an ideal group. We both have the notion that, by and large, Mensa members have nothing going for them to speak of aside from a high performance on I.Q. tests.

PLAYBOY: But isn't that what you're looking for? High I.Q. as an indicator of intelligence?

SHOCKLEY: Graham is looking for creative people.

PLAYBOY: Creative people? Why Nobel-Laureate donors, then? Why not artists, writers or actors?

SHOCKLEY: The Noble Laureates can be said to be more distinguished in terms of creativity than in terms of I.Q. Certainly, they are distinguished in both categories but far more so in the creative area.

PLAYBOY: We'll get back to the matter of creativity shortly; but first, did it concern you that new evidence suggests fathers over the age of 35 - and not just mothers, as was previously thought - can contribute to a higher incidence of birth defects, such as Mongolism or Down's syndrome?

SHOCKLEY: I heard that one for the first time from a newsman after the sperm-bank story broke. One urologist acquaintance of mine searched his references and found nothing. Since then I have heard more about the possible problem with Down's syndrome or Mongolism. That problem can be identified so early in pregnancy by amniocentesis that abortion is an appropriate course.

PLAYBOY: You say your medical friend found nothing in his references? We found the following quote from the *Annals of Human Genetics* of Great Britain: "Recent cytogenic evidence has shown that trisomy 21

[Down's syndrome] can arise perhaps even in substantial proportions from *paternal* nondisjunction. The evidence is that these cases of paternal nondisjunction occur more frequently in men over the age of 35." Don't you think you should have done more research into these things before you donated your sperm at the age of 70 to father child?

SHOCKLEY: No. I had confidence that Dr. Graham was in touch with medical experts who had given him good advice. So I felt this was a responsibility I could turn over to qualified experts. One cannot undertake all responsibilities. Besides, this question exhibits complete ignorance as to what Graham's program is. No one who participates in this program is going to be retarded. Participants must have a high I.Q., and if you have a high I.Q., by every definition you're not retarded.

PLAYBOY: We're not asking whether a participant is retarded - obviously, you're not. We're asking about your potential genetic contribution to Down's syndrome because of your age.

SHOCKLEY: There is no gene for Down's syndrome.

PLAYBOY: We're aware of that. Again, is it possible that some people of certain ages, including you, might be more predisposed to contribute to the genetic malfunction that causes the syndrome?

SHOCKLEY: [*annoyed, challenging*]: What does trisomy mean?

PLAYBOY: It means there are three X chromosomes instead of two. Chromosomes usually come in pairs. The extra X is what causes the syndrome.

SHOCKLEY: That's correct.

PLAYBOY: Our point - and we must insist on making it - is that in some cases, that extra X chromosome is contributed by the father. These are usually men over the age of 35. Why doesn't that possibility concern you?

SHOCKLEY: There is a tendency for paternal nondisjunction to increase with age, but nothing you've said so far about this has been very specific. You said that it is more likely above the age of 35. How much more likely? Twice as likely?

PLAYBOY: We're not certain. But we're not donating our sperm to a sperm bank, either.

SHOCKLEY: But if you're going to ask questions like this, don't you think you should have done research to find out whether these questions are answered in the literature?

PLAYBOY: It's you who isn't addressing the question. The fact is, at least some researchers think the tendency to contribute the extra chromosome actually decelerates after the age of 45. We've pressed the point because we find it hard to believe a man in your position didn't research this.

SHOCKLEY: Well, there is another factor in this. Sperm that has been through the liquid-nitrogen treatment will be less defective than sperm that has not. This treatment immobilizes the sperm so it can be stored almost indefinitely. A news report triggered by the sperm bank revelation points out that the incidence of defective sperm or of spontaneous abortions is reduced by a factor of three or four after this special liquid-nitrogen treatment.

PLAYBOY: Some people may not know how sperm is donated. Tell us how you did it.

SHOCKLEY: It is an abnormal male who at one time or another in his life has not masturbated, and this is one of the standard methods. There are also special condoms prepared for this purpose. These avoid the presence of sulphur, which exists in ordinary rubber and has a spermicidal effect.

PLAYBOY: All right, going back to the topics of creativity and intelligence: They may be important, but aren't there other positive traits society is in need of? Such as intuition, physical strength, honesty? And how are those related to high I.Q.?

SHOCKLEY: There is definite positive correlation between practically any high-quality human trait and I.Q. A number of these things, including honesty, resistance to temptation to cheat on tests and physical capacity, in high I.Q. children, compared in a positive way with their contemporaries. Now this doesn't mean that I.Q. necessarily is the best trait to breed for, but I don't know of any other trait that has such a highly positive correlation. There are other sperm banks where you can specify things like hair color, eye color and height. I'm not sure if you get information about the donor's educational attainment or I.Q. But I have nothing against these other traits you mentioned. It's just that in selecting for high I.Q., you are getting these other things anyway.

PLAYBOY: Your bias is definitely toward the intelligentsia, isn't it?

SHOCKLEY: It takes many good traits to make a society, and if we were able to isolate these traits and prove that they were heritable, then it would be good to select for these values. It might be very attractive to set up specialized sperm banks for that purpose, but obviously, you couldn't get too specialized. One could not set up a sperm bank that would be intended to selected people with a high inclination to become celibate priests, for example. This characteristic would have eliminated itself from the gene pool, assuming it could be shown to be heritable.

PLAYBOY: How do you define creativity?

SHOCKLEY: The Nobel committee is essentially looking for discoveries and inventions "of greatest benefit to mankind," that occurred in the

recent past. So if you examine that, you find that one definition of creativity might be the creation and delivery of something new and valuable. Nobel Laureates in science certainly meet those standards.

PLAYBOY: As to the three women who already have been inseminated—

SHOCKLEY: When I last spoke with Graham, it was not known if any of these women had yet become pregnant.

PLAYBOY: Newspapers reported that the women were due to deliver this year.

SHOCKLEY: I've seen such news stories, too. I am not aware that they have any basis in fact.

PLAYBOY: Odds are that at least one will get pregnant. Let's assume you're the father. Are you going to know who the mother is?

SHOCKLEY: The arrangement is that Graham knows everything on both sides and neither side knows anything about the other side.

PLAYBOY: Might this situation create some psychological problems for the child?

SHOCKLEY: It might. But I wouldn't think any more than adoption would. I also think that the child would be better able to have an objective view of the situation than an ordinary child would. Furthermore, there is the other side of this, which speaks to the fact that we are not trying to produce a superrace. I might point out here that before I even allowed my name to be linked with this experiment, I insisted on stating that we were not endeavoring to produce a superrace, but I was entirely in accord with Graham's objective of producing more intelligent, productive, creative people. I also went on to say that my that my emphasis is on reducing the human misery that may be developing at the bottom end of the I.Q. distribution. And I tried then to emphasize that the difference between these two positive influences on human quality; namely, the positive eugenics that Graham is talking about and the antidysgenics that I have been emphasizing.

PLAYBOY: If the genetic theory behind this idea really worked, wouldn't we be able to judge the success of it by looking at the children Nobel Laureates have already produced?

SHOCKLEY: Yes, and there was a famous study done on this back in the Twenties by Lewis M. Terman. He picked 1000 children from the California schools who were in the top one percent of the I.Q. distribution. Then this so-called gifted group was followed for about 35 years. At the end of that time they had about 2600 children. Terman's project was able to measure I.Q.s of 1500 of these. The median I.Q. of those children was about 135. I made drawings showing how well these I.Q.s fit the pattern of normal distribution for the general population. And not one

of these children fell into what is known as familial retardation – that's retardation that results from the tail of the normal distribution. Actually, there were 13 retarded children in this group of 1500, but these included Mongoloids and other children with physiological problems.

PLAYBOY: What about your own children? How did they turn out?

SHOCKLEY: In terms of my own capacities, my children represent a very significant regression. My first wife – their mother – had not as high an academic-achievement standing as I had. Two of my children have graduated from college – my daughter from Radcliffe and my younger son from Stanford. He graduated not with the highest order of academic distinction but in the second order as a physics major, and has obtained a Ph.D. in physics. In some ways, I think that the choice of physics may be unfortunate for him, because he has a name to live up to. The elder son is a college dropout.

PLAYBOY: Do you see your children very often?

SHOCKLEY: Not very often. No.

PLAYBOY: Do they know about your activities?

SHOCKLEY: My daughter perhaps knows more than the others of my activities in these areas. But as far as my sons are concerned, it's mainly the things they see in the papers.

PLAYBOY: Incidentally, what is your I.Q.?

SHOCKLEY: I don't know.

PLAYBOY: You have never known your I.Q.?

SHOCKLEY: I had I.Q. tests made by Terman in connection with the gifted children study when I was about ten. Then my I.Q. was about 130.

PLAYBOY: So you were actually part of the Terman gifted-children study.

SHOCKLEY: I was not accepted for the Terman study, because my I.Q. was not high enough. Terman missed two Nobel Laureates; I was one, Louis Alvarez of Berkeley was another. We were both tested for the program.

PLAYBOY: What was Terman looking for in terms of I.Q.?

SHOCKLEY: I think 135 or over. I suspect my I.Q. is higher than that by now, but I have not done a test on it.

PLAYBOY: Do I.Q.s improve with age?

SHOCKLEY: There has been cases in which there are marked improvement of I.Q. over the years. I have heard that Einstein was not a very bright student in his early years. I'm not sure what his I.Q. was in his adult life, but I would be rather surprised if it weren't quite high.

PLAYBOY: What are your children's I.Q.s? Do you have any idea?

SHOCKLEY: No, I don't.

PLAYBOY: What about your parents?

SHOCKLEY: Terman measured my mother, and, as I recall, it was above 150.

PLAYBOY: To come back to Graham's experiment in breeding, what is the value of it if not to add more knowledge about the effects of this kind of eugenics?

SHOCKLEY: I consider the real experiment to be sociological, and that experiment has been accelerated by the publicity surrounding the Nobel sperm bank.

PLAYBOY: Now that the reactions have come in, are you sorry it was tried?

SHOCKLEY: Not at all. There has been a clear demonstration of an important truth about our nation's intellectual community. This truth is that a Dark Ages dogmatism blocks objectivity about human quality problems.

PLAYBOY: Dark Ages dogmatism? That's strong language.

SHOCKLEY: The evidence for Dark Ages dogmatism is found in press reports of interviews with scientists about the sperm bank. These suggest emotional judgments rather than reason. Most eminent scientists, including Nobelists, have condemned Graham's program with the words weird, pretty silly biological nonsense, ridiculous, ethically and morally repulsive.

PLAYBOY: So much for the inherent intelligence of the Nobelists, right?

SHOCKLEY: I think that these reports suggest that sperm recipients may be hoodwinked into thinking that genius babies are guaranteed. Dogmatism won a K O decision over science in one report suggesting that a child's mental endowment would be completely uninfluenced by the father's mental powers. The Dark Ages dogmatism suggested by these reports would, if transferred from man to horses, amount to saying that breeders of race horses have all been hoodwinked when paying for the stud fees demanded for Kentucky Derby winners.

PLAYBOY: Yes, the general reaction of the press to the whole idea of "intelligent sperm" has been devastatingly negative. Columnist Ellen Goodman accused you of conceit and we're wondering: Is it possible you're on an ego trip, trying to play superstud, just to get the resulting publicity?

SHOCKLEY: That comment raises two issues. I'll dispose of the ego-trip aspect first. After Phil Donahue introduced me to his audience a few months ago, I thanked him for not bringing up the superman issue. To put it in perspective, I rose to my full 5'6" height, removed my jacket, turned full circle and explained that a superman description would need

to be expressed as "superman plus 20 pounds."

PLAYBOY: That is a nice PR gimmick, but it doesn't answer the question. The fact is, this revelation of your participation in the sperm bank has brought you a great deal of publicity. It seems to us you may have planned it that way.

SHOCKLEY: No, I acted on the spur of the moment in making the donation. But I deliberated and consulted, as you know, before deciding to identify myself as a sperm-bank donor. Furthermore, I insisted that the original sperm-bank story in the *L. A. Times* quote me as saying that I didn't think of myself as the perfect human being or the ideal donor, and also that, although I supported Graham's positive eugenics aim of more people at the top of the population, my own focus is on reducing the misery at the bottom. By these statements, I laid a foundation for emphasizing the dysgenic threat when subsequently interviewed about the sperm bank. The results have been rewarding to me.

PLAYBOY: Why is it so important to you to talk about the so-called bottom of the population? And what people are at the bottom, in your opinion?

SHOCKLEY: It's important to me because of the tragedy at the bottom end of the population, which is particularly severe for the blacks, but also probably occurs in the *chicano* population – maybe to a comparable degree – though I am not as conversant with the *chicano* case. The same thing probably occurs for some Appalachian whites. What I'm talking about here is poverty, crime, unemployment and a host of other human miseries that impose heavy burdens on society and bear most heavily on the babies who are born into suffering as a result of this misery.

PLAYBOY: What about these so-called human-quality problems? You have repeatedly said that the quality of human race is declining in this country because "society is not doing enough research into the genetic factors that make people what they are." What caused you to make that observation?

SHOCKLEY: One key incident in 1963 stands out. It involved a San Francisco delicatessen proprietor who was blinded by an acid throwing teenager with an I.Q. of 65. This teenager was one of 17 children born to a woman whose I.Q. was 55. I asked myself what people I knew who had families that large. I could think of none. Apparently, these families were those of people who were not making it in our society, so that those with the least intelligence were having the most children. The more I talked to people about this, the more alarmed I became. No one was willing to look at the issue objectively, dispassionately. This is what drew me into the whole question of dysgenics, or retrogressive evolution.

PLAYBOY: Why focus on some acid-throwing teenager who happens to be black? The majority of mass murderers in this country have been white and not all have been low-I.Q. morons. Hitler apparently had a high I.Q. What does that suggest to you?

SHOCKLEY: It suggests that any trait, either extremely good or extremely bad, would be highly enhanced by a high I.Q., because the individual having that high I.Q. would possess general abilities to get things done.

PLAYBOY: But it seems to us you emphasize that anecdote about the black teenager more than any other. Why?

SHOCKLEY: He was in California at the time, a time when I was involved in considering the question of whether abortion laws should have been liberalized. He came from a rather large family of relatively ineffective people. His crime made the news, of course, and my attention was drawn toward him as an example of problem makers' multiplying faster than the problem solvers. It was simply an accidental circumstance that brought this into focus for me.

PLAYBOY: All right, let's define dysgenics.

SHOCKLEY: It's an important word to get into the vocabulary of the public. Dysgenics is evolution without progress, retrogressive evolution, which decreases the quality of the species. It is caused by the excessive reproduction of the genetically disadvantaged. In 1967, in *Sex Versus Civilization*, demographer Elder Pendell proposed that civilizations decline because problem makers multiply in greater percentage than problem solvers. This is what I fear is happening to intelligence in our society.

PLAYBOY: Is that just your opinion or do you have the facts to support it?

SHOCKLEY: The 17 children of the low I.Q. mother are one example. The fact that she was black warns that the dysgenic threat is most severe for blacks, and the statistics from the 1977 census back up this conclusion. When socioeconomic classes are listed, college graduates come near the top and rural farm families near the bottom. Black rural farm women average 5.4 children, nearly three times as many as the 1.9 for black women college graduates. Now on the average, the woman who graduates from college has a better brain, for hereditary and genetic reasons – one more suited to education – than does the rural woman. And the 1.9 children per woman is not enough to maintain that part of the population. It looks as if the numbers of problem solvers of the black minority may be decreasing. As for the problem makers, I have heard at least two anecdotal stories from responsible observers about women who

have said they would have babies to increase their relief income. But I have found no good published evaluation of this matter. One sociologist has written that the percent of Aid to Families with Dependent Children (AFDC) that goes to parents whose parents in their turn were AFDC recipients has doubled twice from five to ten to 20 percent in the past 20 years. If something doubles every ten years for a century, it will become 1000 times larger – an alarming prospect.

PLAYBOY: But the comparatively rapid social advancement of blacks during the 25 years since the Brown desegregation decision, when some of the artificial environmental barriers were removed, proves the falsity of your dysgenic analysis.

SHOCKLEY: Blacks have caught up with whites to a substantial degree during that time. But, as Dr. Arthur R. Jensen's new book documents, the incidence of mental retardation for black children in school has not decreased as it should if theories about better education due to integration were working out. The socioeconomic gains of blacks compared to whites eliminated about one third of the deficit in family incomes.

PLAYBOY: That's not true. The gap in incomes between blacks and whites has actually grown because of inflation's effect on the dollar.

SHOCKLEY: My analysis used what I have called an offset method based on percentages of black and white families in matched income ranges. The dollar values are not used. What I find is that the gains all occurred between 1955 and 1969 and after that, progress stopped. Is dysgenics involved? It's something to worry about.

PLAYBOY: Isn't the answer to this to spend more for remedial education and job training, instead of conjuring up the "dysgenic threat"?

SHOCKLEY: If environmental efforts now being put forth are not at an optimum level, they should be increased. But that emphasis should not continue to prevent research on genetic factors. If genetic factors affecting the I.Q. or motivation are involved, then future taxpayers will suffer from this dysgenic trend. But those who will suffer most are the babies born to these families – babies who may be so genetically disadvantaged that they can't escape from these bad environments. In effect, they are genetically enslaved to a life of frustration. A question that might well be asked is, for example, Are fertility rates, like the 5.4 children for rural black farm women, even higher in the slums? I have not found a penetrating study on what may be the root cause of urban decay. Nobly motivated humanitarianism that prevents objective studies being done on these tragic matters, which affects whites as well as blacks, is humanitarianism gone berserk. One question that I've mentioned is

whether welfare mothers have babies to increase their income. Berserk humanitarianism may put taboos on such research. I once asked an investigative reporter to do some research on this subject for the welfare department. He was unable to complete his report due to the Welfare Department's uncooperative efforts. They evidently felt this was a taboo subject.

PLAYBOY: But the bulk of the evidence you and others bring to bear on this subject of black intellectual inferiority comes from I.Q. testing, does it not? And isn't it a known fact that the black minority in this country has suffered from years of social neglect, abuse and poverty? All of which is reason enough to expect low performances on I.Q. tests.

SHOCKLEY: But these environmental deficits don't explain the details of the tragedy. One of the standard erroneous representations about my position is: "Dr. Shockley says Negroes have lower scores on I.Q. tests and are therefore racially inferior." That is an entirely inaccurate statement, setting up a straw man that can easily be knocked down. My opinion is best represented in this statement: My research leads me inescapably to the opinion that the major cause for the American Negroes' intellectual and social deficits is hereditary and racially genetic in origin and thus not remediable to a major degree by practical improvements in environment. That statement is based upon research that puts together a whole pattern of things.

One example concerns *components* of the I.Q. test and not simply the total scores. A significant example is supplied by studies done under the direction of Gerald Lesser at Harvard. He went into the New York school system and tested students who were white, black, Chinese, Puerto Rican and Jewish. His I.Q. test was divided into four components. The most striking findings, from the point of view of my interests, concern the component of the test on which almost all sociologists would say that blacks would perform worst because of cultural disadvantages; namely, the verbal part. Actually, the verbal component turns out to be the part on which black children score the highest. On the other hand, the components that involve analytical reasoning – even things that involve day-to-day reasoning, like how many pennies are in a nickel – on those things, the blacks are more retarded than whites of the same age group. In other tests, this same pattern of retardation has been borne out. In other words, black children don't have much comparative trouble with questions like, Who discovered America? and Who wrote *Romeo and Juliet*? But they do have problems with things like, Which way is west? and How many days are in a week?

PLAYBOY: In other words, things that require no genetic reasoning are

more troublesome for blacks. Is that what you're saying?

SHOCKLEY: What does noegenetic mean?

PLAYBOY: It's a term developed by Charles Spearman that refers to the application of eductive or inductive reasoning.

SHOCKLEY: You mean something that involves the use of cognitive skills?

PLAYBOY: Right.

SHOCKLEY: Yes, these tend to be more troublesome. Another kind of test stands out in my mind, and this one has been documented by Jensen in one of his books. It's a test of memorization capability done on black and white children in the California schools. The child is shown a set of 20 familiar objects, such as a ball, a brush, a toy car – one at a time. Then the child tries to recall as many of them as possible. This is called a free-recall test. At this stage of the test, there is no difference between black and white children on performance. By the fifth time the children went through this test, it became obvious that the white children were remembering better. The reason for their better performance was this: The white children, as the test series progressed, were mentally classifying the items into a group of balls, a group of books, and so on, as an aid to memorization. Black children weren't nearly as apt to do this or to do as good a job at it as whites.

PLAYBOY: You said these items were common to the children's environments. Were they two separate groups of items, one for black children and one for white children?

SHOCKLEY: In Jensen's California experiment, they were objects that are common to both Richmond, California, and to Berkeley.

PLAYBOY: But that assumes that the white children and the black children in that part of California live in the same environment.

SHOCKLEY: Still, the point is that on the first few rounds of the test, the two racial groups showed negligible differences in the performance. Hence, one concludes that the items were equally familiar to both groups. Otherwise, why should the performance have been so nearly equal?

PLAYBOY: You conclude, then, that ...

SHOCKLEY: That the difference in performance is in the processing of the information, which requires cognitive skill, rather than in the familiarity of the items.

PLAYBOY: The subject of the relevancy of I.Q. testing has been debated endlessly and may never be resolved. But getting back to this dysgenic-threat thesis of yours, it's fair to point out that your theories have been aimed for the most part at black Americans, whom you have labeled

genetically inferior as a group. In fact, you call this "The National Negro Tragedy." What is your motive in using such inflammatory terms?

SHOCKLEY: I don't know where you got that National Negro Tragedy phrase. It's not mine and doesn't convey my position. The phrase that I now use is The Tragedy for American Negroes. My emphasis is on the tragedy for the Negroes themselves arising from their greater per-capita representation in statistics for poverty, welfare, educational failure and crimes. The relief burden related to these statistics could be called a National Negro Tragedy if the intent is to focus upon the concerns of the taxpaying citizens. But that is an unfair focus. I believe society has a moral obligation to diagnose the tragedy for American Negroes of their statistical I.Q. deficit. Furthermore, this is a world-wide tragedy, and in my opinion, the evidence is unmistakable that there is a basic, across-the-board genetic disadvantage in terms of capacity to develop intelligence and build societies on the part of the Negro races throughout the world.

PLAYBOY: Wait a minute. Let's boil that down a bit. At the nub of what you're saying is the belief that blacks are inferior, right?

SHOCKLEY: If you, personally, were representative of the Negro population as a whole, rather than belonging to Lord knows how high a top-level fraction of it, then we wouldn't have these troubles. There are many individual exceptions, of course, as I have said many times. What disturbs me most about this situation is that black people are going to suffer most because of their disadvantages. The real losers are going to be the genetically disadvantaged babies. Their disadvantages result from what I've tried to emphasize by calling it an unfair shake from a badly loaded dice cup.

PLAYBOY: That's colorful, but what does it mean?

SHOCKLEY: Actually, it's more as if the baby got a five-card poker hand that was not drawn from a full deck but from a ten card deck made up of the two hands holding the genetic cards of their parents. If both parents had high hands, for example, each containing four of a kind, the chance of baby's getting two pairs or even better a full house, would be pretty good and the worst possible draw would be one pair. This oversimplified genetic explanation suggests how high-I.Q. parents will tend to produce not-quite-so-high-I.Q. children, while sometimes producing a dumb one. Sometimes parents blame themselves when one child falls far below his sibling in making grades. Actually, genetic models predict that in about ten percent of all two-child families, the I.Q.s of the children will differ by 20 I.Q. points or more. Knowledge of this fact might keep some parents from trying to push the slower child beyond his capacity, which may do the child far more harm than good.

At the other extreme, if the parental ten-card deck is composed of two worthless four-card flushes, both in the same suit, one child in twenty would have a good chance of being a high-value flush. This suggests how a single, highly gifted child may show up in a large family even though all the other children are below average.

PLAYBOY: If such a tragedy exists – and you yourself have pointed out that only 50 percent of the people you've talked with will admit that there is a tragedy for American blacks – doesn't it have to do with the white power structure in this country as anything else? The "tragedy" could not exist in a vacuum.

SHOCKLEY: Let me put my thoughts in perspective. A similar sort of tragedy certainly exists in Africa in terms of famine areas where planning has been inadequate. One aspect of the tragedy in America, which seems to me to be hard to blame on the white power structure, is the tragedy of the black spouse-killing-spouse homicide rate. If this is caused by frustration due the belief that blacks have been treated unfairly – as the generally prevailing sociological position would inculcate anyone who listens to it – then, certainly, wide-spread resentment could exist and more instability could lead to marital quarrels. My research on statistics shows that the spouse-killing-spouse mortality rate is 13 times higher per capita for blacks than for whites. I don't believe the same thing occurred with the American Orientals at the time the power structure was saying that they couldn't buy houses in the same area as other people in California, back during World War Two.

PLAYBOY: Certainly, you're not comparing the history of Oriental Americans with that of black Americans. Blacks have been exploited in America for generations.

SHOCKLEY: I'm not convinced that it takes even one generation to adapt to changes from situations that have lasted for many generations. I know a man – an Aztec Indian – whose family had been out of touch with white civilization for, I think, 100 to 200 years. This fellow had never had any experience with things that dealt with modern technology and his father had been enslaved. He came from a culture of blowgun and Stone Age level, isolated from modern civilization. He didn't enter school until the age of ten, yet at 21 he had acquired an electrical-engineering B.S. and a physics M.S. His brother is a successful journalist in Mexico City. This example supports my conviction that fantastic cultural deficits can be overcome in a fraction of one generation by individuals with outstanding inherent determination and intelligence.

PLAYBOY: You're comparing an anecdotal story of an Aztec Indian with a whole race of people and saying that the Aztec case proves a genetic

disability on the part of blacks. Would you agree that there are similar individuals in the black community who have overcome environmental handicaps?

SHOCKLEY: Absolutely. And these people have certainly existed in our society for at least a century.

PLAYBOY: If you agree, how does that fit with your view of blacks as an enslaved race?

SHOCKLEY: My point is, the environment and the discrimination have not stopped some blacks who have the ability from progressing, so I don't see why it is necessarily stopping all the rest.

PLAYBOY: Very interesting. But what does that have to do with the relationship between the badly loaded genetic dice cup and what you call the American Negro Tragedy?

SHOCKLEY: Tragedy for the American Negroes, if you please. The relationship is that in some cases the cards are stacked or the dice are loaded, so to speak, so that the likelihood of drawing really good genes for intelligence and other behavioral traits is much smaller for some groups of people than for others. This is patently unfair. These people end up at the bottom rungs of the socioeconomic ladder through no fault of their own. This is the fate that is now befalling a disproportionately large fraction of the black minority. This fate will become worse if dysgenic effects result from the 5.4-to-1.9 ratio found in the 1970 census.

PLAYBOY: In what way is this a tragedy for all blacks, if these dysgenic conditions affect only the low-income end of the black population?

SHOCKLEY: The tragic disadvantages of those at the low end probably act as a disadvantage to those at the high end because the color-coding effect comes in. People may then react to all blacks unfavorably as a result of some experience with those at the low end of the scale.

PLAYBOY: But that has nothing to do with objective science.

SHOCKLEY: That's right. One might respond subjectively to all blacks in just the same way that some people believe that all red-headed people are emotionally volatile.

PLAYBOY: That's called prejudice, isn't it?

SHOCKLEY: Well, it may or may not be. Perhaps one has intuitively picked up something about red-headed people that is perfectly sound. In the case of the black situation, carrying the reactions one might have to black street-gang types over to black academic-faculty types would be prejudice.

PLAYBOY: How do you feel about prejudice?

SHOCKLEY: Prejudice that is not supported by strong facts is both illogical and not in accordance with truth. The general principle that

truth is a good thing applies here. Some things that are called prejudice, which are based on sound statistics, really shouldn't be called prejudice.

PLAYBOY: Give us an example in the context of our discussion.

SHOCKLEY: It might be easier to think in terms of breeds of dogs. There are some breeds that are temperamental, unreliable, and so on. One might then regard such a breed in a somewhat less favorable light than other dogs. Now, some of the business prejudices against blacks, the pragmatic man-in-the-street prejudices, are not incorrect. The man in the street has had experience and knows what to expect from blacks in business. If one were to randomly pick ten blacks and ten whites and try to employ them in the same kinds of things, the whites would consistently perform better than blacks.

PLAYBOY: Of course. The majority of whites have better access to education, influence, money and other environmental elements that help ensure success in our society.

SHOCKLEY: Well, I've already said that I've been led inescapably to the conclusion that these problems are more related to genetics than to environment.

PLAYBOY: Earlier, you mentioned Africa and said this dysgenic threat was a world-wide problem. You believe it affects all Negroids, regardless of their environment?

SHOCKLEY: I put my chief emphasis on the tragedy for *American Negroes*. The book *Race and Modern Science* contains the best study I've seen on blacks outside this country. In his chapter, Stanley Porteus, a Hawaiian psychologist, describes how he and his colleagues used a maze test on tribes in Africa and in Australia. They found the natives to be intrigued and challenged by the test. They tested various tribes and found very big differences among them in performance. Some Rhodesian tribes – Ndaou and Wakaranga – were more advanced, while some of the Bushmen were at the low end. From these data, which are given in mental-age equivalents for these tribes, I conclude that the Bushmen were down around an I.Q. of 50 and the others are up to somewhere around 80. None came closer than ten I.Q. points of my estimate of about 90 I.Q. for California Negroes.

PLAYBOY: Few scientists working in the field of genetics, anthropology or psychology agree with you. Many of them have said that you are a blatant racist.

SHOCKLEY: Let me point out that this attitude did not exist at the turn of the century. Many eminent and thoughtful scholars expressed the same ideas that I am attacked for. Alexander Graham Bell wrote a pamphlet on improving the human race. Stanford's revered president

David Starr Jordan stressed the same theme in a book, *The Blood of the Nation*. The situation had changed by 1962, when the eminent anthropologist Carleton Coon proposed in a book that Negroes were substantially behind whites on an evolutionary scale and said that he would discuss brain differences in his next book. In the next book, he retracted his offer because of pressure put on him. Coon has told me that these attacks undermined his health and led to early retirement from Harvard. This suppression of inquiry into matters related to dysgenics shows up in book publishing. Under the subject "eugenics," the Stanford library card file has many acquisitions from 1900 to 1930 and practically none from 1930 to now.

PLAYBOY: You'll have to admit that eugenics is widely held in disrepute and is barely a legitimate science. You won your Nobel Prize for your work in the transistor. Why should anyone listen to a person who's a Nobel Prize winner in physics on the subject of eugenics?

SHOCKLEY: There is an old saying: Wisdom from the mouths of babes.

PLAYBOY: Babe? at 70?

SHOCKLEY: Wisdom from the mouths of babes means that occasionally, truths can come from an unlikely source. This is like the *Encyclopedia Britannica* or some other profound mathematics book being produced by monkeys typing in the British Museum. If there seems to be merit in the things that are expressed, one had better look at them.

PLAYBOY: The likelihood of a monkey typing the *Encyclopedia Britannica* – especially when he knows more about bananas than encyclopedias – is infinitesimally small.

SHOCKLEY: If you ask, Why should anybody listen to someone? well, why should anyone have listened to Einstein when there were no relativists at the time?

PLAYBOY: That's not the first time you've mentioned Einstein in comparison to yourself. Einstein is considered a genius. Are you a genius, in your opinion?

SHOCKLEY: Insofar as genius may be sweat and effort, perhaps. I would not like to try to define exactly what a genius is or to say that I necessarily belong to that class. Certainly, there have been very great technological developments that have followed from very simple observations that anyone might have made if he had been there at the time. My track record is definitely somewhat better than that. But in terms of people such as Einstein, Newton, and Maxwell, I would say they belong to a higher level of genius. The contributions I have made are more technological.

PLAYBOY: And now your contributions to this new field of eugenics

have brought you notoriety and censure from your academic colleagues. How have you had to deal with suppression of your ideas?

SHOCKLEY: I was put on notice very early that few would take kindly to my raising questions that are usually swept under the rug. My interview "Is Quality of U. S. Population Declining?" was published back in 1965. It was reprinted in the Stanford Medical School alumni journal. Stanford's "faculty, the department of genetics" objected with a letter to the editor brandishing the words malice, mischief and myopic against me. An eminent friend of mine in the National Academy of Sciences explained to me that the mere fact that I had mentioned both Negroes and I.Q. in one and the same paragraph led my critics to label me a racist. The geneticists' beautifully and forcefully written letter pained me greatly when I first read it. Since then, I have enjoyed reading it aloud to friends, with rhetorical flourishes, preferably over cocktails, so as to dramatize its Madison Avenue merits. My presentations have been suppressed many times by disruptions or cancellations, sometimes only a day or so before I would have left home to keep the engagement.

PLAYBOY: Didn't common sense tell you that linking an entire race - black, white or green, for that matter - to intellectual inferiority would be opposed as racist by many people? And that it would invite censorship?

SHOCKLEY: The genetics-faculty letter did more than any other thing to make me face up to dealing with the racial issue. A related incident occurred earlier, when I was preparing a paper that didn't deal with racial questions at all but simply with mental retardation, heredity and thoughts stimulated by the story of the acid-throwing teenager. While preparing my lecture, I questioned one of my fellow Nobel Laureates about the possibility of a world-wide dysgenics threat. I proposed to him that human genetic quality - almost certainly definable to some meaningful degree - was declining. His responses were vague, unclear. I finally said, "I think what you're saying is that this question is so bad you will not try to answer it." He agreed with that interpretation. I thought that was a deplorable attitude to take.

PLAYBOY: In your own mind, how do you explain the fact that so many people disagree with your theories about black genetic inferiority?

SHOCKLEY: I think that two basic premises underlie their rejection of the concept of genetic inferiority of humans, no matter whether the concept is applied to individuals or to races. One is the "created equal" phrase in the Declaration of Independence. That phrase was intended to apply to social rights but is popularly misinterpreted as equality in genetic endowment. This is biologically ridiculous. It asserts that man

alone, of all species of mammals, is made up of individuals all genetically equal - equal at least in potential for socioeconomic success in our society. The second premiss is what I have labeled the Apple-of-God's-Eye Obsession, AGEO for short. In Galileo's day, this obsession held that God must have put the Garden of Eden at the center of the universe. Galileo's conclusion that the earth moved around the sun was an intolerable heresy. Darwin's evolutionary theory that man was a descendant of primates was a comparable heresy. The version of AGEO that blocks objectivity about racial or dysgenic questions combines these two premises. AGEO adherents hold that God created all mankind with equal dignity and equal potential, and God could not have done anything else. These views are so widely held and accepted that they have set up taboos that prevent research. This is an example of berserk humanitarianism. As a result, there are many scientists who agree with me but dare not speak out - dare not "come out of the closet," as one psychometrician has told me.

PLAYBOY: Let's assume that the dysgenics threat is real and the quality of the human race is declining. What would you propose as a solution?

SHOCKLEY: I proposed a thinking exercise about ten years ago called the Voluntary Sterilization Bonus Plan. What it does is to offer people who may be carrying genes that are defective, including those for intelligence, a bonus for voluntarily agreeing to be sterilized.

PLAYBOY: That sounds vaguely familiar to us. Does it remind you of any particular mass movement within the past 40 years?

SHOCKLEY: Forty years takes us back to Hitler's concentration camps and gas chambers. Your question has often come to me from lecture audiences in the form, "You're talking about eugenics. That's what Hitler tried, isn't it?" Incidentally, during the war against the Nazis, I did operations research and was awarded the Medal for Merit with a citation signed by President Truman. The real lesson from Nazi history is that the First Amendment, which permitted uncovering Watergate, is the best guard against totalitarian abuses. The Hitler reference is one standard question often used to shut off discussion of eugenics or antidysgenics. A second, similar question is: "What is the definition of the perfect man?" And a third question is: "When the committee to define the perfect man is set up, how can I make sure to be appointed to it?" If one accepts that any conceivable remedy for dysgenics would be worse than the illness, then there would be little purpose in diagnosing the tragedy we've been discussing, except as an intellectual parlor game.

PLAYBOY: OK, that's fair. How would your Voluntary Sterilization Plan work?

SHOCKLEY: Every time I have discussed the Voluntary Sterilization Bonus Plan, I have described it carefully as a *thinking exercise* rather than as a legislative proposal. It shows that we don't have to define what the perfect man is and that no authority is deciding who can have children. It's a voluntary choice by the people themselves. It does not require Hitler's concentration camps. There is an inducement, but nevertheless, its acceptance is voluntary. The amount of the cash bonus would vary. In some cases, it would be zero. For example, income-tax payers, who tend to be somewhat successful already in society, would get no bonus. All others, regardless of sex, race or welfare status, would be offered a bonus that would depend upon best scientific estimates of any genetically carried disabilities that they might have. Those would include diabetes, epilepsy, hemophilia, Huntington's chorea and other genetically transmitted illnesses. A dysgenic increase of these afflictions is probably now occurring, owing to advances in medicine that overcome evolution's pruning actions. There would also be bonuses for lower-than average I.Q.s.

PLAYBOY: A lot of people are affected by those so-called undesirable genetic traits that might be passed on from one generation to another. Do you have any of those traits that you might pass on yourself?

SHOCKLEY: I am not aware of any. No hemophilia, no epilepsy, no Huntington's chorea, no diabetes.

PLAYBOY: So nothing that you are aware of that would be passed on to a child through the sperm-bank program?

SHOCKLEY: I was short one tooth on the lower jaw, and I think maybe one wisdom tooth. I'm not sure those are real disadvantages.

PLAYBOY: How much money would those people receive for agreeing to sacrifice their right to have children?

SHOCKLEY: My thinking exercise proposes a figure of \$1000 for every I.Q. point below 100. That may sound high, but \$30,000 put into a trust for a 70-I.Q. moron, who might otherwise produce 20 children, might make the plan very profitable to the taxpayer. If three of these hypothetical children ended up in institutions for the mentally retarded for life, it might cost the taxpayer nearly \$300,000 to take care of them. Furthermore, if we offered ten percent of the bonus in spot cash, it might stimulate our native American genius for entrepreneurship.

PLAYBOY: And doesn't that strike you as playing God?

SHOCKLEY: Now that's one discussion-stopping question I overlooked when you brought up Hitler's eugenics. I don't think proposing the V.S.B.P., or even giving it a test, is playing God. I argue that if God made man, including his brain, in God's image, He intended man to be

a problem solver. I have talked about the V.S.B.P. many times and haven't found anything really wrong with it – except for one most obvious flaw that I leave in as a thinking exercise.

PLAYBOY: What is that?

SHOCKLEY: Finding the *flaw* is your thinking exercise. Incidentally, others beside myself have independently invented similar plans.

PLAYBOY: Are you going to tell us who those others are? Or is that another thinking exercise?

SHOCKLEY: The earliest was iconoclast H. L. Mencken in the Thirties. Two others won Nobel Prizes: Francis Crick for the double-helix, genetic-code research, and Archer Martin for a chemical invention. In a 1974 lecture, Martin proposed that "by simply giving a bonus of sufficient size to both men and women to get themselves sterilized, a desirable differential fertility would result." He also suggested a bonus for more children to those who had "distinguished themselves." I think if funds could be found and law violations avoided, I would like to see a trial run of the V.S.B.P. It might prove to be a sound idea.

PLAYBOY: The earliest was actually Margaret Sanger in 1926. And are you aware of the Chinese government's bonus plan that rewards people for having one child but punishes them for having three or more?

SHOCKLEY: Only vaguely. Some years ago, I tried to get some students to look at the literature on this. All we found at that time were some very broad sweeping statements of objectives of the Chinese government, but nothing indicating that anything was actually going on. I've heard recently about the program you mentioned, but without knowing more about the statistics and how it worked, and how the Chinese people responded to it, I would not want to speculate on how effectively this might work. There is one feature about it that I don't like, which isn't present in the Voluntary Sterilization Bonus Plan. If you start penalizing a family with two children because they have a third child, you are penalizing the first two children, who do not share any responsibility for the situation. On the other hand, if the penalties are severe enough, then this inhumane aspect is a substitution for nature's own pruning efforts that existed in evolution. Carried to that extreme, parents who fail to take the proper precautions, and their families, are less likely to survive. But generally, I don't think this is any more effective than the Voluntary Sterilization Bonus Plan, and I think that the V.S.B.P. would be more humane.

PLAYBOY: Several states in the South have sterilization programs for those who are mentally retarded or otherwise judged unfit by society. Many of those programs call for forced sterilization. What do you think

of them?

SHOCKLEY: I think that they have been very unjustly derogated. Objections to these programs are based on the same berserk humanitarian beliefs and Dark Ages dogma that refuse to accept the fact that people may be created very unequal and may obey breeding laws that are similar to those of animals. I remember one man asking me if I favored sterilization of the retarded and then proceeded to say that he had a loving compassionate retarded daughter and he did not see why she shouldn't have children. To my way of thinking, this is a clear case of humanitarianism gone berserk. Why should a child be brought into the world under those adverse genetic conditions just to fulfil the compassionate and warm feelings of the retarded mother, in this case?

PLAYBOY: What bothers many people is the fact that *your* thinking exercise seems aimed at blacks in particular. That's why the Nazi parallel has been raised by those who are normally dispassionate and detached in these matters. Your theories amount to scientific genocide of the black race.

SHOCKLEY: What I am intending to do is reduce human misery for the people involved. And this proposal cuts across all racial and ethnic-group lines. Certainly, in terms of numbers, more whites than blacks would be involved, though the percentages for black retardation are higher. As to the Nazi reference, I think everyone agrees that their methods were profoundly inhumane. I believe that true humanitarianism extends further than the Christian version of the golden rule of "Do unto others as you would have them do unto you." I feel that true humanitarianism is best expressed by Jainism: "In happiness and suffering, in joy and in grief, we should regard all creatures as we regard our own self." In other words, true humanitarianism is concerned with even nonhuman forms of life.

Nobel Laureate Albert Schweitzer carried this to the extreme in acting on the principle of reverence for life by trying to avoid stepping on insects and transplanting weeds and things of that nature. But I believe he drew the line at withholding antibiotics from a sick patient because of his reverence for the life of the bacteria. Incidentally, Schweitzer spent the last part of his life running a hospital for blacks in Africa. He wrote, "With regard to the Negroes, then, I have coined the formula: "I am your brother, it is true, but your elder brother." For this, Schweitzer has been called racist. I think that a logical, true humanitarianism replaces Schweitzer's reverence for life with concern for the memories of emotions stored in the neurological systems of one's fellow creatures. The Nazis had no regard for these.

PLAYBOY: And you, unlike the Nazis, are concerned with the feelings of your fellow creatures?

SHOCKLEY: Yes.

PLAYBOY: Are you familiar with Kipling's philosophy about the white man's burden?

SHOCKLEY: In a general way. Kipling applied this to India, did he not?

PLAYBOY: No, to the Philippines, but it has been more widely applied to white paternalism toward all Third World people.

SHOCKLEY: It would be interesting to know how the general welfare in India actually fared before and after the British occupation there.

PLAYBOY: We're asking because your Jainist attitudes seem like warmed-over paternalism toward blacks. That quote from Schweitzer, in particular, reflects a rather odious view. Do you share Schweitzer's view of blacks? How does this reflect your humanitarianism?

SHOCKLEY: You've asked that question before. We do take seemingly brutal measures that we regard as humanitarian with certain animals. If we eliminate all predators of deer, they might become too numerous and run out of food and starve to death. I think a situation not too different from that might exist in some of the most primitive tribes, possibly the Bushmen tribes. If one were to build up a civilization around those people and try to fit them in, it's quite possible that it might lead to a very miserable situation for children of that society, who might then lead very tragic lives. I think society has a moral obligation to diagnose these conditions and take corrective measures.

PLAYBOY: Your use of animal imagery is clearly inappropriate. The fact is, it's incredibly conceited for one group of humans to make life-and-death judgments like that over another group of human beings.

SHOCKLEY: But there's nothing novel about that. That's what we do on all sorts of food-and-drug laws. To protect people from their poor judgement in buying drugs. The extreme case is the law on cancer drugs. Even though the cancer cases may be essentially hopeless, and the patients relieved of some symptoms, the laws say certain drugs cannot be used to treat cancer. In California, the law even prescribes what kinds of treatment are legal for cancer. So there is no great novelty about government's taking this view. Only when it comes to something like human-quality and the possibility of doing research into it are there taboos and thought blocks erected.

PLAYBOY: Let's be clear on this: You are trying to balance your concern for human feelings on the one hand with your strongly held belief the something must be done to stop this genetic backsliding. Correct?

SHOCKLEY: Thanks. That's a good summary. But one aspect deserves special emphasis. Human intelligence is one the finest, most admirable products of evolution. Intelligence is necessary to ensure that humanitarian and compassionate endeavors do not go astray. We should respect intelligence and do all we can to prevent a dysgenic deterioration of it.

PLAYBOY: Geneticist Cyril Burt is a name you know quite well, since you used some of his data on identical-twin studies in your own work. That data has now been shown to have been tampered with by Burt himself. Why did he deliberately skew the data?

SHOCKLEY: I'm not sure, in any case, and it is rather pointless speculation now. There seems to be little doubt that Burt's data did have a good deal of fakery in it.

PLAYBOY: Don't you think his fakery reflects on your own credibility? Here is a man who was a scientist, who evidently had no qualms about tampering with the truth. Whether or not his motives were political, we can't say. But doesn't that hurt your cause?

SHOCKLEY: Certainly. It's only human nature to make that kind of connection. That is why it is so important to have a better study on identical twins - one that is scrupulously objective - so as to refute all these sorts of criticisms.

PLAYBOY: Are you now denouncing Burt's data?

SHOCKLEY: I would not use the word denounce. I would regard it as deplorable and sad, but it happened and it is unfortunate.

PLAYBOY: We're asking because Burt's data was central to at least part of your thesis.

SHOCKLEY: As well as other data. Plenty of others have dealt with Burt.

PLAYBOY: Let's discuss Arthur Jensen, the Berkeley psychologist you mentioned earlier. You've been referred to in the press occasionally as a disciple of Jensen, who advanced the theory that black children are less capable of level-two or abstract reasoning. He's been in the news recently as a result of a new book defending I.Q. testing. What is your relationship with him?

SHOCKLEY: We first met in 1966, when I spoke at the Center for Advanced Study in the Behavioral Sciences at Stanford. Jensen was a member of the audience. He told me about Burt's work on the identical twins, which he had recently learned about. So that's where we became acquainted. I regarded him as a resource person, because he had been reading and writing in the field for decades and had a very scholarly approach. In his *Harvard Educational Review* article in 1969, he used words from parts of a paragraph I had written a year or so earlier having

to do with the "dysgenic threat" and "genetic enslavement." But as far as I know, that's the only time that he emphasized that particular point. Whereas I have put my emphasis on the area of social obligations and psychometric research, Jensen's focus has been much more on the tools for analysis and the scientific validity of the results.

PLAYBOY: But you basically share the same beliefs about blacks, don't you?

SHOCKLEY: I'm not aware whether Jensen would agree with my main conclusions or not.

PLAYBOY: His book takes a rather hard line in favor of I.Q. tests. Jensen says I.Q. tests are not biased against any group of Americans for whom English is the first language. Is that an opinion you share?

SHOCKLEY: I would not want to give a blanket endorsement to that point of view without studying it some more. I believe that it might be possible to make an intelligent estimate of the degree to which environmental deprivation might actually be producing a bias in the intellectual scale for children. There may be a few general-information questions that show a specific cultural bias towards whites, such as, "What color is a ruby?" But I would postulate, without having looked into this in much detail, that questions like this one would make a difference of only two or three I.Q. points, at the most.

PLAYBOY: Some I.Q. test questions are obvious cultural setups. One, in particular, that strikes us as invalid is, "If you see smoke coming from a neighbor's house, what should you do?" The answer to that question depends on how you were socialized, what your parents have told you to do, not on your general intelligence.

SHOCKLEY: There was one example of this kind of question brought up in CBS's program *The I.Q. Myth*. The question was, "If a child smaller than you hits you, what should you do about it?" This was supposed to be an example of a culturally biased question. As it turned out, this was one of the easier questions for blacks and certainly did not give evidence of being culturally biased.

PLAYBOY: The so-called correct answer to the question is, "Don't hit the child back, because he is smaller than you."

SHOCKLEY: I'm pretty sure that was not the only correct answer. There may have been several.

PLAYBOY: In any case, isn't the point that the answers reflect a value system based on white society and have nothing to do with intelligence?

SHOCKLEY: That doesn't stand up. The fact is that blacks have acquired these values from their environments just as well as white children have. Furthermore, they give more correct answers on that

question than they had on the average for all of the other questions.

PLAYBOY: What we are really talking about is the assimilation of values as reflected by an I.Q. test. Not necessarily the use of any cognitive skills. A child isn't stupid because he answers that question in another way.

SHOCKLEY: The question is whether the elements involved in developing cognitive skills are entirely cultural or whether there is a basic genetic predisposition. Many cases have been cited of gifted children who start learning how to read with very little stimulation whatever. This is obviously due to genetics. I don't see why the same sort of thing shouldn't apply to cognitive skills. It's the consistent pattern of observations like these that leads me to what I call my "inescapable opinion" about the black I.Q. deficit.

PLAYBOY: In the past, you have indicted the scientific community for not researching ideas about black genetic inferiority. We're not saying there is a problem as you've described it; but if there were, who would be responsible for investigating a genetically disadvantaged race?

SHOCKLEY: I would say the responsibility to do this kind of thinking rests primarily with those who are most capable of it. In terms of race, a disproportionate fraction of the white population can do this compared with the black population. So the white population is responsible. But one particularly distressing circumstance is implied by news stories about intelligent blacks moving to the suburbs to avoid ghetto or slum areas. Some reports indicate that they seem withdrawn rather completely from a concern for their less fortunate brethren. I have often said that the people who would be the most important for me to reach are the black intellectuals of this country.

PLAYBOY: How can you expect to reach black intellectuals when your rhetoric smacks of racism?

SHOCKLEY: The smack of racism attributed to "my rhetoric" lies in the ears of the listeners. It is not present in my written or spoken words. The word racism carries with it a connotation of belief in the superiority of ones own race, plus a fear and hatred of other races, and lacks any hint of humanitarian concern. What I am intending to do is to promote raceology, the study of racial problems and trends from a scientific point of view, and this approach is quite different from racism. One black student told me after we talked that he no longer thought of me as a Klansman or Hitler and that I had guts for facing up to a problem no one else would face.

PLAYBOY: That's nice, but you are still making qualitative judgments about an entire race, are you not? You believe quite simply that whites as a race are superior in intellect to blacks.

SHOCKLEY: Statistically, yes. But not in individual cases. Let me repeat that I always try to qualify statements about black racial I.Q. inferiority by saying that there are many blacks who are intellectually superior to many whites, and that the Caucasians are not necessarily the world's superior race. In terms of the percentage of the population who can achieve eminence and make great contributions in science, American Jewish scientists are an outstanding fraction of the scientific community and on a per capita basis are represented, I think, at least ten times higher than the population as a whole. American Orientals also are overrepresented.

PLAYBOY: Of course, Jews aren't a race. But doesn't the tightly knit social structure of Oriental and Jewish families have more to do with their success than genetics?

SHOCKLEY: What makes their social structure tightly knit?

PLAYBOY: Tradition, customs, learned experiences - their environment, in other words. But we are asking you.

SHOCKLEY: Why should it not be genetics? It certainly is in the animal kingdom. Take, for example, the cuckoo bird, which has this very unusual habit of never hatching its own eggs. That's certainly not an environmental factor. The weaverbird, which hangs its nest on a limb with a piece of horsehair that is tied in a knot. They have raised weaverbirds with robin foster parents for several generations. Then, if you give them a horsehair, they know exactly what to do with it. That is undoubtedly a built-in genetic trait. I see no reason to think that family patterns don't stem from genetics.

PLAYBOY: What about Orientals: Is it not possible that they are the "superior race," assuming there is such a thing?

SHOCKLEY: They are certainly not inferior. Furthermore, even when discriminated against in the Twenties, Japanese school children in California on two verbally weighted tests showed very small I.Q. deficits and actually outperformed whites on a less verbal one. The massive 1966 Coleman report on 645,000 students showed Orientals about five verbal I.Q. points below whites and on nonverbal I.Q. a shade above in grades nine and 12.

PLAYBOY: All right, here we are back to square one again. Dr. Shockley, aren't you essentially a white supremacist?

SHOCKLEY: No, I am not a white supremacist.

PLAYBOY: If that is the case, why have you allowed yourself to be used by right-wing-extremist groups who promote white supremacy? For example -

SHOCKLEY: I have appeared a few times prominently in such right-wing

publications as the *Thunderbolt*, a newspaper supported by the States Rights Party, or closely tied into it. It's not a Klu Klux Klan publication, but it is definitely anti-Negro and anti-Semitic and very much white supremacist. I find these views in conflict with my version of the golden rule. But on two points I put *Thunderbolt* ahead of much of the American press. First, I believe it is not hypocritical, though it does express erroneous views. Second, it sometimes publishes valid news that I don't find elsewhere. I also believe that the net result of getting the truth out will be good and that misinterpretations will be corrected.

PLAYBOY: But if these people are misusing your theories, why haven't you put a stop to it?

SHOCKLEY: If someone has stolen your car and is driving it recklessly, why haven't you put a stop to it? I have not given priority to a study of extremist groups, but I have this view about them: Those groups view black problems from the perspective of racism, not from raceology. Their focus on black crime would be on its brutality rather than its contribution to the Tragedy of American Negroes.

PLAYBOY: You've mentioned black crime before, as if its existence supports your claim of black genetic inferiority. Does it?

SHOCKLEY: The important issue is the role of crime in the Tragedy for American Negroes. The people who suffer the most are blacks themselves. I mentioned earlier the high spouse-killing-spouse ratio. A young black male in Harlem is more than 100 times more likely to be a homicide statistic than a male in Denmark. These are aspects of the tragedy that raceology reveals.

PLAYBOY: As to crime and race: Aren't there tribes in Africa in which crime is almost unheard of? Anthropologists who have studied those tribes point out that their environment tends to discourage crime. On the other hand, there are studies in this country showing that our cities tend to breed crime. Obviously, there's a strong environmental relationship here. How does this fit in with your racial thesis?

SHOCKLEY: I don't know of any studies showing such a lack of crime. I do know of some showing that certain tribes tend toward intertribal warfare. Some researchers postulated that this bellicosity was caused by a lack of protein, but that didn't seem to be true once they actually looked into it. With respect to urban slums' breeding crime, the question of a cause-and-effect relationship needs to be researched much more carefully. Do people remain in the slums because they have a low I.Q., which is highly correlated with a high crime rate? I tried looking into this myself once. I asked a law-enforcement agency if it would search its files and give me a reference to anything that had been written on the

correlation between I.Q. and crime. They claimed there was nothing available. I went to the Stanford library in one afternoon and produced two studies in which hundreds of prisoners had their I.Q.s tested in two separate studies. As I recall, the median prisoner I.Q. was about 85, or one standard deviation below normal. Of course, someone could argue that high-I.Q. people who commit crimes don't get caught. That might be one explanation, but I doubt it.

PLAYBOY: To return to the central point: There is no question that the K.K.K. and even the Nazis have used your data for goals that are political, destructive and have nothing to do with humanitarianism idealism. Given your goal of reaching the so-called black intellectual community with your theories, how can you allow yourself to be misrepresented by the white-supremacist groups?

SHOCKLEY: Your emphasis that we must "return to the central point" is a new experience for me. I do not recall anyone making the point before and certainly not as persistently as you have just now, that I will be irresponsible myself if, in your words, I allow myself to be misrepresented by white-supremacist groups. Let me assure you that I make no efforts to allow myself to be misrepresented by white-supremacist groups. My efforts instead have been to communicate the concerns and findings that we are discussing as accurately as I can. That, as far as I am concerned, is the central point of this interview. I would then hope that this accuracy would suffice to reach intellectuals, black or white, who should think responsibly about the dysgenic threat in general and its relationship to the Tragedy for American Negroes in particular.

PLAYBOY: What attempts have you made to reach black intellectuals, and with what results?

SHOCKLEY: If I think that one over, I will end up with a pretty long list. Near the beginning are Dr. Alvin Poussaint and Donald Warden, a San Francisco attorney and radio host. James Farmer, Roy Innis and Frances Cress Welsing have appeared with me on TV programs and I have tried to be as precise as I have been here. My correspondence with Roy Wilkins in 1973 was, perhaps, my most diligent effort to open up a line of communication. Mr. Wilkins regarded me as a threat to Negro progress greater than the K.K.K., according to press reports of a speech. In that case, I responded with both a press release and a letter to Mr. Wilkins. I asked him to choose 100 to 200 black intellectuals for blood tests and I pointed out if this showed they were no more Caucasian than the national average, then, and I quote from a news story: "This new scientific fact could correct unfair discrimination that now prevails on the opinion that Negroes obtain their intelligence from white ancestors."

PLAYBOY: Some anthropologists say that race is such a fuzzy concept that it would be pointless to try to find how much Caucasian blood American blacks have. What about that?

SHOCKLEY: One proof that I don't have to be a geneticist to work on these problems is my 1973 paper in the *Proceedings of the National Academy of Sciences* on the determination of the percentage of genes in Oakland blacks that come from white ancestors. I refined the best prior estimate of 22 percent obtained using a particular blood type called Duffy's gene. I reconciled that with an estimate of 27 percent for another blood type and obtained a new best value of 23 percent. As far as I have heard, my 1973 paper is still the most advanced on this subject.

PLAYBOY: What was Mr. Wilkins reaction?

SHOCKLEY: Mr. Wilkins rejected my proposal but made no reference to your central point about white-supremacist groups. Biology professor Richard Goldsby and I are on first-name terms but no closer to agreement on the main issues. Carl Rowan and others were also approached. This interview with you is the latest of my serious attempts.

PLAYBOY: Reaching the black intellectual community is nearly impossible for you. Harvard psychiatrist Poussaint, one of the best-known, most respected, black professionals in the nation, says that your theories have hurt the black self-image and that blacks tend to take them to heart and feel that they are personally inferior, not only as a group but as individuals. Would you comment on that?

SHOCKLEY: Yes. I think that there may be some truth to what Poussaint says, and this is a very sad state of affairs. If a very substantial fraction of the black race is made up of people who have limitations in objectivity of character so that it is impossible for them to accept reality, then disclosure of this dysgenic threat could be a very devastating thing for them, and that would be tragic. But one alternative would be even more tragic. That would be to set up an artificial milieu in which blacks are protected, as some people might be in mental institutions. If such a lack of objectivity exists and if the blacks most susceptible to it are increasing most rapidly because our society is afraid to do the needed research to diagnose the problem, then it's a pretty deplorable state of affairs. It indicates fear and a lack of faith in the power of reason and the existence of humanitarianism – attitudes that I do not share. Where there is a serious illness that needs to be diagnosed before treatment can be wisely made, I see no excuse for withholding the contributions that reason may provide.

PLAYBOY: Your faith in humanitarianism seems unrealistic to us. For example, what logical reason would blacks have for showing faith in

humanitarianism when, as a group, they have suffered from severely inhumane acts for generations? And why would most whites who know the history of blacks, and whom you blame for "not doing the needed research to diagnose the problem" – why would they put faith in humanitarianism'swinning out over racial hatred and injustice? It never has before, so why would it now?

SHOCKLEY: Well, I have faith that if one brings out facts and presents them properly, sound answers will be found. I may be wrong about this, but not only is this a faith that I have, but it is probably an element of faith that any religious person should have. If he believes that God is involved in this situation, then he is compelled to have the same faith I have.

PLAYBOY: Really? Why?

SHOCKLEY: Because the Apple-of-God's-Eye Obsession says that God has set up the world to be fair to man and be good to him.

PLAYBOY: But you don't believe that, do you? You apparently don't believe in God.

SHOCKLEY: I think that some of these philosophical views are broader than the belief or nonbelief in God. I think these things came about through evolution. In terms of my humanitarianism, you wouldn't say that the blacks in the United States are worse off than in almost any African country, would you?

PLAYBOY: Worse in what way?

SHOCKLEY: Healthwise.

PLAYBOY: No, not for the most part. But blacks in America have been exploited and deprived of their basic human rights.

SHOCKLEY: How about Idi Amin?

PLAYBOY: An isolated instance.

SHOCKLEY: Or how about the civil war in Algeria?

PLAYBOY: Civil war is one thing, slavery is another. So is genocide.

SHOCKLEY: Is there no black slavery of blacks in Africa now?

PLAYBOY: Perhaps, but how do these digressions help us to understand your faith in humanitarianism? Your faith seems somehow unconnected to historical and present-day reality.

SHOCKLEY: You could have some faith in terms of the elimination of slavery, the enactment of affirmative-action programs, the wiping out of Jim Crow laws and things of this sort. But blacks can also conclude that these things will turn around and get worse if dysgenics are the root of the problem. And, on that basis, it may be very difficult for blacks to share my faith in humanitarianism. Nonetheless, I'm reminded of the dictum of Herbert Spencer: "The profoundest of all infidelities is the fear

that the truth will be bad."

PLAYBOY: Do you believe that?

SHOCKLEY: I think I can concur with that, yes. It expresses rejection of a lack of faith in reality. To have such a profound lack of faith in the world is being unfaithful to the very nature of our existence. That is what it means to fear that the truth will be bad. The truth about Watergate, for example, was a very bad thing. But getting the truth may have been a very good thing.

If one can perceive some kind of a tragedy potentially developing – then one should seek some way of dealing with it that minimizes human misery. For the worries that I express about dysgenics, this aim may very well be best achieved by limiting the number of babies that come into the world under adverse circumstances. The same solution has often been recognized, but not implemented, in undeveloped, and perhaps undevelopable nations.

PLAYBOY: That kind of humanitarian social Darwinism may be well and good, but it doesn't deal with real-life situations. Take, for example, the white woman who was thinking of marrying a black man. This is a documented case. Somewhere on the East Coast, she heard you speak about black genetic inferiority and she became afraid that her children by this black man might be born inferior. She went to a therapist for advice. This kind of reaction seems to be the real potential tragedy, Dr. Shockley – that white people could actually come to believe that black people as individuals are inferior to themselves and will inevitably produce inferior offspring.

SHOCKLEY: Do you know what answer the therapist gave her?

PLAYBOY: The answer was that she shouldn't be concerned about your theories, that they were irrelevant. And that the question itself was inherently racist.

SHOCKLEY: Well, if she had been asking about races farther apart than blacks and whites, and if more facts were known, the therapist might very well have said that the chance of having a retarded child as a result of this divergence between races might be very substantial. I doubt if it is for black-white matings, because if it were, the result would be known. The probabilities might be much larger for very different groups.

PLAYBOY: But we're describing an emotional crisis in a woman who reacted to your theories. Obviously, asking a question about mental retardation in black offspring in the context of your theories is tantamount to questioning the very humanity of people. Certainly the humanity of the black individual she wanted to marry.

SHOCKLEY: Well, it is quite true that these are very painful thoughts.

They are things that strike centrally on one's whole viewpoint toward life and the universe. Objective thinking on this subject is blocked by the Apple-of-God's-Eye Obsession, as I mentioned earlier.

PLAYBOY: But you still haven't answered our question about this white woman. Wouldn't it be a tragedy for whites to believe that black people as individuals were inferior to themselves and would inevitably produce inferior offspring? And isn't this an example of that kind of racist thinking?

SHOCKLEY: I'm not saying that this is not a tragic situation, you understand. But what are the facts? If you take two black people at random and mate them and produce children, and you take two white people at random in the population and mate them and produce children, the existing statistics fit into this pattern that I call an inescapable opinion that the black children will be, as far as I.Q. tests are concerned, inferior to the white children. Now, then, you say, suppose people came to actually to believe this. It seems to me you are saying, "Suppose white people actually came to believe what you, Shockley, believe."

PLAYBOY: But you keep saying that your purpose is to limit human misery. The example of the woman is one in which you may have caused human misery.

SHOCKLEY: I would say even greater misery will result, and is now taking place, because of society's refusal to investigate the dysgenic threat.

PLAYBOY: Are you for or against interracial marriage? Not as a scientific experiment but as a social reality?

SHOCKLEY: I'm going to say I certainly would not oppose an interracial marriage in any particular case that might come up. But I would not advocate it as a policy. One would have to know more about these facts.

PLAYBOY: Do you think there ought to be efforts made to increase marriages between black men and women of high I.Q.s?

SHOCKLEY: I don't see why not. It would be applying positive eugenics to encourage more births in that part of the population.

PLAYBOY: Do you believe in equal opportunity for all people, black or otherwise?

SHOCKLEY: Yes. I believe in the created-equal assertion of the Declaration of Independence, when it is interpreted in terms of equal political rights, but I would qualify it some: I don't think the right should be given equally to everyone to have children, if those people having children are clearly destined to produce retarded or defective children. This puts an unfair burden on society. But when I talk about that burden, my standard language emphasizes the fact that the ones who

suffer the most are the children themselves.

PLAYBOY: But we're asking about equal opportunity, not about the right to have children.

SHOCKLEY: Can you have equal opportunity if you don't have the same capacity as someone else to use it?

PLAYBOY: The fact that you can't go through a door does not mean that it shouldn't be open. Don't you agree with that?

SHOCKLEY: That is right. But you may also be led to demand that there should be a wider door. If the door is too narrow for you to go through, you can certainly assert then that, although the door is open for you, you are not given equal opportunity. Is the trouble with the door or with the width of the man?

PLAYBOY: Suppose we are talking about a handicapped individual. Handicapped by society or by himself. And the doorway to success is not designed to accommodate his wheelchair. Should the door be redesigned to accommodate the man?

SHOCKLEY: This does not lend itself to a general answer, because if one follows the open-door approach, then one would say that a man should have equal opportunity to visit anyone he wants, and every house should be built with a ramp for his wheelchair.

PLAYBOY: No, we're talking about equal opportunity in institutions such as colleges, corporations, etc., that have a responsibility for administering equal opportunity rights.

SHOCKLEY: An individual may be limited in his capacity to exploit his opportunity for equal rights. Black students who get into college certainly have equal rights to learn. They are exposed to equal lectures. They may be brought in by quota systems and are underqualified both by training and in their basic ability to grasp the material. Then, although they are given the equal opportunities and, indeed, the extra advantages of remedial courses, they won't be able to make the most of them. They can reasonably conclude that something phony in the system is frustrating them. When society endeavors to enforce equality of achievement by methods like these, then the result may be sort of induced paranoia on the part of blacks. I see this as possibly related to the high spouse-killing-spouse rate we have discussed.

PLAYBOY: Wouldn't it be better for society if you shifted your focus and your energies from the dysgenic question to the goal of equal opportunity for all? Then we might have an equal basis for making qualitative judgments.

SHOCKLEY: To my way of thinking, that is basically not a very astute observation at all. I could at most add only a minuscule contribution to

the efforts already under way. I'm perfectly certain I am unique among the Nobel laureates in saying that I feel an obligation to face this problem, the dysgenic aspect or threat. Nothing that has occurred in the past several years has made me feel that my approach is unsound. This situation places me in a position like the one I occupied when my team was probably alone in trying to create the transistor. And the dysgenic problem is of greater importance by far than that was. It has been around since the days of the Greeks. It has been discussed many times and no satisfactory solutions have been found. The transistor will, in due course, probably be replaced by something else, just as the vacuum tube has been replaced by the transistor. But the human-quality problems I'm talking about are going to be with us until some new stage arrives. Possibly, it may be genetic engineering on the DNA code or cloning or things like that. But I think these are so distantly foreseeable that they amount to distractions in discussions like this one. Anyway, if we can prevent dysgenic deterioration of intellectual capacity, future generations will be that much better able to think about genetic engineering.

PLAYBOY: It might be helpful for us to know something about the tenor of your personal relationships with blacks. It could give us some insight into your motives.

SHOCKLEY: I basically haven't had much personal contact with blacks, but I can remember some.

PLAYBOY: What were your impressions?

SHOCKLEY: The earliest recollection I have of any close association with blacks was in my teens. We had a black maid – I think her name was Genoa, as I recall – and my mother and I were both very fond of her. Also, when I attended Hollywood High, there were black students there.

PLAYBOY: How did you get to along with them?

SHOCKLEY: I didn't have much contact with them. All I remember about them is that they were active in sports. Later on, when I moved to New York – actually, Madison, New Jersey – we had a maid or housekeeper who was black. She wasn't very efficient, that's what I remember most about her. I also recall that while my children were going to school, I happened to find out that the president of the high school student body was black. I thought that was a constructive social development.

PLAYBOY: That's interesting. Anything else?

SHOCKLEY: Well, there's something I hadn't thought about until you asked me just now. One night while I was living in Madison, we found a black boy, about eight years old, sleeping in our garage. I tried to drive

him home, but he couldn't or wouldn't find the way. The police finally took him off our hands. They seemed to feel he'd been a victim of some kind of child abuse.

PLAYBOY: What about more recent contacts, outside of your well-publicized encounters with Roy Innis and other professional blacks in a business setting?

SHOCKLEY: Well, in 1961, my wife and I were in a hospital for months in casts after a head-on collision. Most of the nurses who took care of us were black, and the quality of their care stood in marked contrast to that of the white nurses. My wife and I were most impressed.

PLAYBOY: What was it that impressed you so highly?

SHOCKLEY: They gave us the best care and were the most natural and comforting that I had.

PLAYBOY: One of the more troubling parts of your theory has to do with the degree of white blood you claim affects the genetic intelligence of blacks. Do you really believe there are intelligence differences between light-skinned and dark-skinned blacks?

SHOCKLEY: Industrialists who have operated in Africa have told of the greater value of mulattoes over pure blacks as employees. But where race mixing has gone on for generations, only a statistical correlation would be expected between skin color and performance. Judgments about individuals would be dubious. Actually, skin color alone does not provide the best measure of white ancestry. J. R. Baker in *Race* considers morphological features, in addition to skin color, and concludes that many eminent American Negroes have substantial fractions of Caucasian ancestry. The conclusion seems to me to be borne out by blacks seen on TV – for example, by many newscasters.

PLAYBOY: That's interesting, but how is it pragmatic for the man in the street, who doesn't understand statistics?

SHOCKLEY: The pragmatism comes in when a businessman says, "I know I have had bad luck hiring three blacks, and so I am going to avoid hiring blacks if I can." Here again, science may offset unfairness by developing valid aptitude tests that see deeper than skin color.

PLAYBOY: Is your opinion based on personal experience you have had with blacks?

SHOCKLEY: It is based mostly on conversations with successful businessmen. Two of these described specific aspects of their problems. I have also obtained a similar impression from general reading. A third item is my own research, which proposes a mathematical model to explain why an increase in I.Q. raises earnings less for blacks than it does for whites. Its name, the cooperative-correlation model, is much shorter

than its explanation.

PLAYBOY: Do you feel that certain scientific groups that should be dealing with this issue are simply ignoring it?

SHOCKLEY: Yes. My primary target for this criticism is the National Academy of Sciences. Another group I would single out specifically consists of the tenured members of faculties and departments of anthropology in the country. Most of these anthropologists tend to maintain that race is a myth and there can't possibly be any differences in intelligence or anything else deeper than skin color. They will go further, of course, and say that even if there were differences, there wouldn't be anything one could do about it. Both of these statements are irresponsible.

PLAYBOY: Most of your critics assume that there is some ulterior motive for your highly inflammatory views, such as racism or some political intent. Is there? And how do we know that you don't have any secret axe to grind? That you aren't a racist wolf in humanitarian sheep's clothing?

SHOCKLEY: I guess I really don't know how you can convince people of that. Eminent political figures have tried with great eloquence and expressiveness to convey such impressions, sometimes quite successfully, sometimes even when untrue. I wouldn't pretend to have the expertise that politicians have. One characteristic that would make me an unlikely candidate for a covert racist ideology is my not entirely unrecognized lack of tactfulness in some areas. The outspokenness that I have is, I think, by and large, not in keeping with a man who has skills in being deceptive in political matters. That would be about the best argument I could give.

PLAYBOY: Even so, you are undoubtedly aware that some people would sooner see you in prison than allow you to express these opinions, though the First Amendment protects your right to say what you have said. Do you have any thoughts on freedom of speech?

SHOCKLEY: The words that define the First Amendment seem to me to be some of the most important words put on paper by man. I compare their significance in the political arena with the statement in science like Newton's third law of motion: "For every action there is a equal and opposite reaction." I have stressed the point that the First Amendment was a lesson that the German people did not learn during Hitler's time. I don't believe he would have lasted if the First Amendment had been in place in Germany.

PLAYBOY: Do you worry about reprisals?

SHOCKLEY: Not really. As my wife has often said, to do what I do, you

must have three things: honesty, a secure professional reputation and financial security. I have those three things and thus have no excuse not to try to communicate what I believe to benefit mankind.

PLAYBOY: How are you hoping readers will respond to the concerns you have raised in this interview?

SHOCKLEY: I am hoping that it will trigger someone who is sitting on the edge of making a decision, saying, "I should take a stand on this." He might then take action. Get a proposition on a ballot or organize a demonstration. I don't know who it would be. My main theme in this interview has been that the diagnosis of racial problems can be done and that good things might happen as a result of open-minded research.

PLAYBOY: What if, in the final analysis, you are proved to be wrong about all of this?

SHOCKLEY: I've got my answer for that one: My chagrin over a scientific setback would be more than offset by the fact that these new scientific results would go far toward eliminating what would have to be regarded, then, as an unwarranted prejudice against blacks.

PLAYBOY: That's very interesting. Perhaps more than any public figure in the history of this nation, you have been booed off speaking platforms at college campuses, hung in effigy and generally greeted as bad news. How did you feel when that began to happen to you?

SHOCKLEY: I think the first time was at Sacramento State in 1969 or so. There were people dressed in Ku Klux Klan uniforms and I remember a man coming up to the platform and offering me a Nazi salute. Then there was the situation at Brooklyn Polytechnic Institute, where there was a 20th-anniversary meeting of the scientific honorary research society Sigma Xi. They had asked me to speak and I accepted and told them the title of my talk, which had the words race and dysgenics in it. A week before I was to give the talk, they called and asked me to speak on physics. I refused. The net result of this was that they cancelled the whole meeting and sent out 500 telegrams one day before the scheduled meeting.

PLAYBOY: You were involved in a rather famous dispute at Leeds University in England, weren't you?

SHOCKLEY: Yes. Someone thought the transistor deserved to be recognized, and so I was invited to accept an honorary doctor of science degree from Leeds in May of 1973. I was in London in February of that year to lecture to electrical engineers to commemorate the 25th anniversary of the transistor. I can remember well that it was February, because the most dramatic incident occurred on my 63rd birthday, the 13th of the month. Lord Boyle, the vice-chancellor of the university,

invited me to have cocktails at the Carleton Club, the noted conservative club of England. He and I had a pleasant conversation for a few moments, and then he said: "Dr. Shockley, when we decided to award this degree, we were not aware of your other interests." I at once began to wonder about this and said, "Lord Boyle, are you leading up to saying that when I come to Leeds University you would have me behave some other way than I normally behave, or are you saying you'd like me to forget the whole thing?" He replied, "A frank question deserves a frank answer. We'd like to forget the whole thing." After I broke that story to the press, the news coverage in England was comparable to that of Graham's sperm bank here. David Frost interviewed me as the first of a new series.

PLAYBOY: Did it ever occur to you that you might actually get hurt at some of those disruptions?

SHOCKLEY: Yes. There was one occasion when I saw a man in the audience with something like a sword cane. I've been a little concerned in other situations but not very much. Incidentally, I've acquired great confidence in the competence of the police and security forces.

PLAYBOY: After 15 years of this and at the age of 70, Dr. Shockley, one would think you'd be rather tired of this crusade. Any rewards you have received must have been intensely personal in nature, since the world has not exactly welcomed your theories with open arms. What we're wondering, finally, is how you feel about the work you have done and how you would characterize the risks involved in being a "raceologist," as you have described yourself elsewhere.

SHOCKLEY: As I have said before, I don't feel myself that the risks are very large. Young scientists would jeopardize their careers by doing research or expressing views like mine. Such risks have been much smaller for me. I have felt that this fact places an obligation on me to continue. One fellow scientist, whom I meet every year or so, usually greets me with, "Well, here you are again. I didn't know whether you would be here another year." Actually, I have had few threats. Although sometimes in the press I may not come across accurately, I find that most people, or at least most who talk to me, accept the fact that my intentions are good. I believe this goes a long way toward eliminating the type of hostility that might otherwise exist. As for my personal motivations to continue pressing this subject despite my advanced age, I once used a letter-to-the-editor opportunity, while responding to a column in *Presbyterian Life* identifying me as a disciple of Hitler, to discuss it in these words: "During the last five minutes of my life, should I have my intellectual powers intact, I hope to consider that since engaging in this

campaign, I have used my capacities close to their maximum potential in keeping with the objective of Nobel's will of conferring greatest benefit on mankind."

DOCUMENT 20**A Tribute to Dr. William Shockley
by his Student Office Personnel**

Published on 23 July 1978 in support of an appeal for financial aid for the non-profit organization entitled the Foundation for Research and Education on Eugenics and Dysgenics (FREED).

We began working as student office staff for Dr. Shockley a year ago, relatively uninformed but highly curious about this Nobel Prize-winning scientist, famous for his invention of the transistor and infamous in most circles for his studies linking intelligence, heredity, and race. We had heard him characterized as the classic suppressed but-undaunted scientist fearlessly exposing the truth in a taboo field; we had also heard his name linked with racism and incompetence. What would the real Dr. Shockley prove to be like? What lessons would our working experiences offer?

We've learned a lot in this past year, not only about the man and his work but also about his "context," the academic community, the mass media, the general public. We are confident that Dr. Shockley is a scientist of integrity. But not all that we've learned has been so positive.

Our most disillusioning discovery is that academic freedom, formerly assumed to be inviolate, is far more limited than we had imagined. The field of what Dr. Shockley calls "human quality problems" is so charged with emotion and prejudice on all sides that both freedom of inquiry and freedom of expression are severely constrained. The field is indeed overcast by a functional, if not official, taboo. Any researcher venturing into subjects of this kind will find both his personal and his professional reputation subjected to impassioned name-calling on one level and discreditation and non-personhood on a subtler one.

These abuses are bad enough; but the most fundamental injury is the damage to Dr. Shockley's freedom of speech. Scores of campus debates have been canceled because groups disagreeing with Shockley's ideas have applied sufficient pressure beforehand or have heckled him and his contestants into silence at the podium. A seminar he proposed was rejected to a significant extent because the reviewing panel deemed the subject too controversial, though they felt the proposal itself to be sound.

We had fondly believed academia to be an open forum for the free exchange of all types of ideas; but Shockley's ideas are, to a sobering degree, excluded from such a freedom.

Our second major discovery has to do with the difference between Dr. Shockley and the popular image of Dr. Shockley. Shockley's positions reach the public through the mass media, which, as an imperfect lens, causes distortions. The media has certain biases and purposes, both conscious and unconscious; it must simplify information for mass consumption, and it must present that information in a way that sells. We've found that the image of Dr. Shockley and his theories eventually lodged in the popular mind is to some degree over-simplified and exaggerated. In particular, the racial component of his theories has been sensationalized.

Responding to this image, many people identify Dr. Shockley as a racist whose theories exclusively concern blacks, when in fact they deal with mankind in general. Similarly, many attack him for incompetence, believing he does primary research outside his field. In fact, he concentrates on statistical analysis of the respected studies of other researchers (a field in which he is distinguished). At any rate, can it not be assumed that a man of his intellectual stature who devotes ten years of his energy to a new field can attain expertise in that field?

It is bad enough that misconceptions survive in the public mind, But it is especially disillusioning to find that many of Dr. Shockley's peers in the academic world share these misconceptions, reacting to his popular image rather than responsibly and openly interacting with the unadulterated theories at their source. Of the lessons learned in this office, one of the most basic involves the crucial need for openmindedness.

Dr. Shockley may be wrong. He may very well be right; his theories are supported by substantial evidence. No definitive conclusions can be reached until more serious research has been done by all sides into the determinants of intelligence and the possibility of dysgenics. The old taboos must be lifted; the whole field must be subjected to more objective, truly scientific scrutiny.

DOCUMENT 21

True (Not Berserk) Humanitarianism: A Positive Absolute Value That Unites Religion and Science

Text of an address by William Shockley at the Fourth International Science Conference on the Unity of the Sciences held in New York in November 1975.

I. Introduction

The expressed goals of the series of International Conferences on the Unity of the Sciences are truly humanitarian. One stated purpose of this Fourth Conference, with its theme "The Centrality of Science and Absolute Values", is "to help mankind" – a parallel to the "greatest benefit on mankind" criterion for prize winners in Nobel's will. The Preface to the Proceedings of the Second Conference in 1973 in Tokyo stressed the "dilemma of the quantitative nature of science and the qualitative nature of values." I believe that this dilemma can be resolved only by acceptance – a painful and trying acceptance – that quantitative considerations apply to humanitarian values. For example, values about human abortion (see VI below) currently do involve quantitative value judgments. Social value judgments do automatically have the first element of quantitative measurement: good or bad – positive or negative.

I contend that quantitative thinking about positive and negative values is linked (in words from the Tokyo Preface) "a responsibility ... to the development of a standard of value ... to resolve the dilemma of *science and values*." The Tokyo Preface warns about negative social values: "poverty, illiteracy, disease, sorrow, distress, pain and despair". A key purpose of this Fourth Conference is "to relieve mankind from the unnecessary misery and destruction". Thus the logical structures needed "to help mankind" – a goal of this Conference – are *double negatives*: Consider the sequence of ideas: First, the *negatives* are identified; second, measures to *negate* the *negatives* are sought. *Double negatives* are more realistic, I believe, than aims for *positive absolutes*, such as "the most happiness for the most" discussed in III below. Indeed, I maintain that:

Quantitative scientific analysis of double-negatives will reveal the path to truly humanitarian, positive, absolute values.

A sinister negative now threatens the most important input to humanity's future. The genetic quality of the next crop of babies may be lowered by *dysgenics* retrogressive evolution through the excessive

reproduction of the genetically disadvantaged. My studies of this problem – worldwide though it is – have focused on the United States. Here, the brutal elimination mechanisms of evolution, which created human quality, may now be reversed by nobly-intended humanitarian programs. I do endorse the humanitarianism of these programs. But if such programs do, as I fear, increase the prevalence of genetic diseases and degrade our most highly-esteemed, genetically-influenced behavioral traits, then *humanitarianism* has gone berserk.

In America, Negroes are those who are most threatened by dysgenics: Negro women of very low social class – averaging *low genetic intelligence* – bear nearly three times more children than Negro women college graduates. (The 1970 U.S. Census reports that rural farm Negro women, aged 35 to 44 years in 1970, had already produced 5.4 children versus 1.9 for college graduates. Whites had 3.7 and 2.3. Although Negroes are less than 10% of the U.S. population older than 24, they exceed 14% of those under 10.) I believe that analysis would prove that more low IQ children will be born and the welfare burden will grow. The tax payer will suffer, but the genetically disadvantaged babies will suffer most. Diagnosis of the dysgenic threat is a moral obligation for humanitarians. (See VII) *Positive "perfect-man" eugenics* is not the answer to *dysgenics*. The answer is a *double negative: anti-dysgenic* measures to *negate* the *dysgenic negative*. True humanitarianism is a positive absolute value. It establishes a unity between religion and science. Humanitarianism must be significantly genetic and, hence, subject to dysgenic decay. Therefore, there are many reasons why berserk humanitarianism and other negative influences which block diagnosis of dysgenics must be negated. I conclude from my study of the Tokyo report that dysgenics was neglected.

At the third Conference in London, Dr. A. J. P. Martin, in his First Plenary Lecture, proposed (he informed me in a personal letter) bonuses for sterilization to reduce the world population to "perhaps one tenth" with a "large decrease in those of low intelligence" and found that his remarks greatly perturbed the audience. One perturbing item was probably his quantitative value judgment of "one tenth" for optimum world population (see III below). I have publicized a somewhat similar "Voluntary Sterilization Bonus Plan Thinking-Exercise" with the intent of opening minds, otherwise closed, to the possibility of finding humanitarian anti-dysgenic measures.

Diagnosis of dysgenic trends is blocked because thoughts about anti-dysgenic measures inevitably involve the significance of genes compared to environment in influencing human behavior and hence to

race and intelligence – all emotionally loaded subjects made taboo by humanitarianism gone berserk.

I suspect that taboos about race have left their mark on the history of these Conferences. The race-intelligence taboo was broken in the report of the Tokyo Conference on only two pages. Dr. G. S. Stent, the author, confirmed my finding and could add no other examples of discussion of race from the London Conference, which he attended. Dr. Stent's two pages suggest how an "easy way out" conclusion (in an article by geneticists W. Bodmer and L. L. Cavalli-Sforza) about research may cause the scarcity of funding for university research on race and intelligence. Dr. Stent wrote: "In my opinion the final conclusion, which trivializes the problem scientifically, amounts to taking the easy way out from a serious dilemma... if races really differed hereditarily in intelligence, then racism would not be a "prejudice" but a true perception of the world and one of which rational society ought to take account." I heartily agree but I would have used "raceology"; "racism" connotes prejudice, fear and hate; raceology means objective analysis.

My campaign for objective inquiry into the relationships among dysgenics, genes and behavior involves many subjects of the Conference: human abortion, the impact of research funding in universities, ideological and cultural interactions, and global economic inequalities. I shall discuss some of these below. My chief focus, however, is on general philosophical views that support and extend the points that I have made above. I start by stating a faith in man that, I believe and hope, all Conference participants share.

II. A Three-Facet Faith in Man

First, I believe that human evolution has so far advanced that educated persons of modern technological societies *do* have the developed brain power to diagnose human-quality problems soundly.

Second, I believe that these civilized humans do also have an underlying true humanitarianism – not a humanitarianism gone berserk with its sanctimonious and self-indulgent suppression of evidence of tragic, human genetic defects. True humanitarianism coupled with intelligence, will ensure, I believe, that efforts to diagnose and cure human-quality problems will be humane – indeed far more humane than benign neglect which permits dysgenic forces to grow out of control.

But one more component is necessary. We have it in the United States. It is the First Amendment with its guarantees of freedom of speech and of the press. Open debate, guaranteed by the First Amendment, will expose cover-ups of error and hypocrisy and keep open a path

on the search for truth.

And now the third facet: It is my faith that the first two facets can become a driving force for true humanitarianism. This facet, I realized about two years ago, sustains me in my campaign to provoke diagnosis of genetic factors in human-behavioral problems.

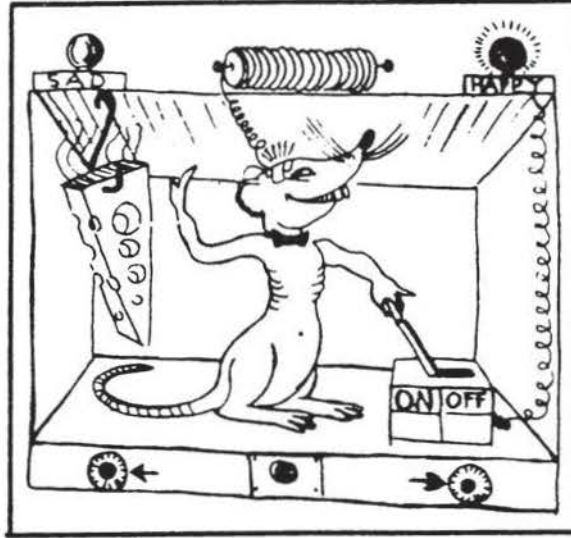


FIGURE 1: A rat becomes so engrossed by electrical stimulation of his pleasure centers that he loses interest in food.

My faith that sound diagnosis is possible requires that these problems are not in principle unanswerable as are those in physics governed by the Heisenberg uncertainty principle of quantum mechanics. Einstein discovered a similar principle of unanswerability, or indeterminacy, by establishing that motion through space was relative. "How fast is the earth moving through space?" was unanswerable. (See Dr. G. Masini, the Tokyo Conference.) However, Einstein created new possible answers with the concept of invariant quantities for which all observers would measure the same values no matter what their relative motions were. The title of my Stanford project, "Research on Methodology to Reduce the Environment-Heredity Uncertainty, Including Ethnic and Racial Aspects", states my faith that sound diagnosis of these problems can be made.

In contrast to soluble problems, I shall next discuss the insoluble, positive-absolute-value problem of "the most happiness for the most".

III. Indeterminacy: The Most Happiness for the Most

Possibilities of both measuring and producing happiness by electrical instrumentation attached to the brain are suggested by the experiments of James Olds, with rats. Olds found that an electrode could be appropriately implanted in the brain of a rat so that an electric current would produce pleasure. Given a lever that closed a switch, a rat would then continue to stimulate these pleasure centers, even for 24 to 48 hours continuously. As shown in Fig. 1, the rat would ignore food to continue to indulge in an orgy of switch closing.

Let us see how we may extrapolate from these observations to a conceptual experiment which attempts to achieve the positive absolute value of the most happiness for the most. We imagine that electrical means have been developed so that quantitative increases in happiness can be measured. Next, suppose that isolated human brains can be grown and maintained *in vitro*. As shown in Fig. 2, vast banks of brains are connected to computers. The computers transmit – at enormous economies compared to real life experiences to the brains and respond to the reactions of the brains by sending new experiences to them. Theory and experiment, and occasional trouble shooting as shown in the figure, are adjusted to maximize the quantity of happiness. Programming is steadily improved until the brains, at least statistically, feel that they are leading optimum lives. An optimum life may, of course, be programmed to have periods of hardships as well as periods of happiness.

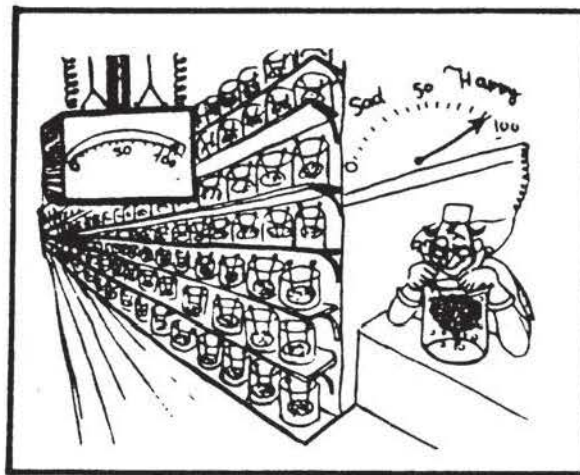


FIGURE 2: Great numbers of very happy human brains *in vitro* lead optimum lives by interaction with a computer.

The system of Fig. 2 of brains *in vitro* does not present the ultimate end of this conceptual experiment. If electrical circuitry can be developed to duplicate the neurological functions of the brain, including the happiness centers, then the situation of Fig. 3 can be realized. Miniaturized circuits can then progress through maximized life cycles, including simulated gestational periods, so that it would then be possible to replace all of the human brains growing *in vitro* by small computerized duplicates so as to achieve even greater experiences of happiness for larger numbers.

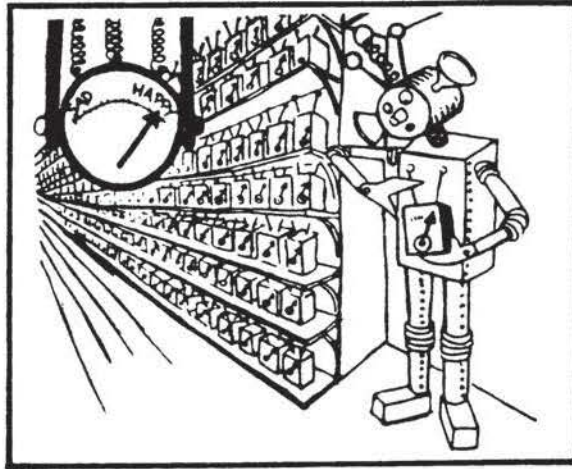


FIGURE 3: Transistorized simulated brains with happiness circuits lead simulated existences that produce the most happiness for the most.

Thus the splendid objective of benefiting mankind by achieving "the most happiness for the most" is found to have ridiculous logical consequence – an example of the problems of searching for positive absolute values.

IV. Three Moral Postulates:

Truth-Concern-Death: A Religion-Science Unity

I believe that an invariant concept, parallel to Einstein's invariance discussed at the end of II above, is a key attribute of the moral postulates discussed next. Each of Einstein's invariant quantities had the property that all observers measured the same value for it no matter how differently they moved relative to each other. I assert that the three moral postulates presented here will be judged to have the same value by all thoughtful readers no matter how differently their thoughts move

in interpreting the origin of humanity on religious or evolutionary grounds. My three moral postulates were published in *Presbyterian Life* to refute a column equating me to Adolph Hitler because of my "Voluntary Sterilization Bonus Plan Thinking-Exercise". I quote them next and follow with the arguments for the invariance of the postulates.

The Truth Postulate: "The truth shall make you free" signifies that man has the obligation to use his brain for the welfare of humanity.

The Concern Postulate: The basis of a humane civilization is a human being's concern for the emotions experienced by his fellow creatures. Christians and atheists are sensitive to this concern – not all in either case, but in both cases overwhelming majorities in civilized societies. The invariant quantity of this postulate, discussed in V, is one of my main points.

The *death postulate* interprets what it's all about – the final balance sheet of life – the appraisal of contributions to the Concern and Truth Postulates. Here is how I state *The Death Postulate: During the last rational five minutes of my life, should I happen to have my intellectual powers intact, I hope to consider that by demanding objective inquiry and open discussion of human quality problems I have used my capacities in keeping with the objective, like that of Nobel's will, of conferring greatest benefit on humanity.*

The argument for invariance is simplest for the Death Postulate, which demands high terminal self-esteem. This is an appropriate objective for an atheist whose last rational five minutes are the ultimate termination of thought and being. It can equally well be the highest religious objective of a believer in a day of judgment that determines the quality of an afterlife. What better goal for an agnostic?

Next the Truth Postulate: If man's brain was part of his original creation in God's image, then a divine intelligence must have put it there to serve God's will by thinking. On the other hand, if man's brain was developed by the superior evolutionary fitness of those apes with the more inventive brains who devised weapons to eliminate duller apes, then instinct compels creative thinking. Hence dedication to finding truth is invariant to beliefs ranging from a fundamentalist's Genesis to an atheist's evolutionary theory.

The invariance of the Concern Postulate is discussed in V:

V. Concern Postulate – an Invariant, Positive Absolute Value

Like the truth Postulate, either Genesis or evolution can be taken as the basis for the Concern Postulate. Indeed, the same cruel elimination mechanisms of evolution that developed man's brain can also account for the humaneness that civilized people express through their

concern for the feelings of the battered child and of the abandoned pet animal: Those tribes who took best care of their wounded and their farm and combat animals were also more fit to survive than their less humane competitors.

Although I originated independently and published in *Presbyterian Life* the foregoing evolutionary explanation of humanitarianism, I suspected that the idea was old. I made inquiries while writing this paper. Dr. R. L. Trivers reacted affirmatively when I read my description to him by phone. He cited his work on "Evolution of Reciprocal Altruism" in which, as a simple specific illustration, he uses a swimmer who will altruistically risk a ten percent chance of drowning in an effort to save a swimmer in trouble who has a fifty percent chance of drowning. Consider ten cases of swimmers in trouble. Then the one failure would cost two lives – the altruist and the drowning swimmer. With no altruism, five lives would be lost. Obviously, altruism increases evolutionary fitness. To explain why, in any one tribe, the non-altruistic outbreed those who do occasionally die while saving others, there must be motivations for reciprocal altruism. The resulting mathematical model supports the view that atheistic students of evolution will cherish both the Concern Postulate and also its logical theorem, the Golden Rule.

The Golden Rule, however, became a basic religious precept without waiting for Darwin to introduce evolution. And it is invariant to the particular religion is clear from these versions: Hinduism: "Do not unto others, which if done to thee, would cause thee pain." Confucianism: "Do not unto others what you would not they should do unto you." Christianity from St. Matthew: "Therefore, all things whatsoever ye would that men should do to you, do ye even so to them: for this is the law and the prophets." And, most similar to my Concern Postulate, Jainism: "In happiness and suffering, in joy and grief, we should regard all creatures as we regard our own self."

The key attribute common to the Concern Postulate and to all versions of the Golden Rule is concern for the feelings of fellow creatures. I rest my case for the *invariance of the Concern Postulate*.

VI. Human Abortion – a Perspective Based on the Concern Postulate

In addition to the Golden Rule, the Concern Postulate leads to Albert Schweitzer's reverence for life qualifies it significantly: Nevertheless bacteria killed by an antibiotic and weeds destroyed in agriculture warrant little reverence for their forms of life, because neither has emotions worthy of concern.

The concern postulate introduces a quantitative, scientific perspec-

tive into thoughts about human abortion: Before a fetus has developed a *nervous system* that can *record* memories of emotions, its death is of less concern than the suffering of a trapped mouse recording in its memory for minutes or hours the agony of a broken back and ruptured kidneys. This reasoning about human abortion eliminates a simple "yes" or "no" basis so that, as I shall explain, humanitarian values depend upon quantitative evaluation – the feature that my **Introduction** stated resolves the dilemma of science and values.

The United States Supreme Court introduced the quantitative value of six months in its 1973 decision on human abortion. During the last trimester of pregnancy, the Court held, the fetus acquires an "important interest in potential life". One obstetrician spoke of a late abortion thus: "... It's a little kid and lets out some squeaks. Somebody covers it up. Sometimes it lives for an hour or two." The Concern Postulate demands quantitative valuation of the suffering associated with the squeaks and the slow death. This conclusion that quantitative features are involved with abortion will be repugnant to many. But it does constitute a reality that must be faced by responsible seekers for the standards sought for by the Conference. The Concern Postulate condemns indifference to the suffering of the fetus. The fact that the fetus will never describe in agonizing detail in suffering is no excuse for those who cause, or fail to alleviate, its misery. Why not anesthetics as for laboratory test animals?

Although application of the Concern Postulate is unambiguous for the abortion question, the same is not true for some hypothetical, unfamiliar cases. I do not know what to think about little green men arriving on a UFO or a chemically synthesized duplicate of Abraham Lincoln. I formulate my non-commitment in this "refined concern phrase": "Concern for memories of emotions stored in the neurological systems of earth's hereditary sequence." This phrase excludes the brains *in vitro* and the transistor circuits of Figs. 2 and 3. It does cover the 24 week old fetus and also a steer brought to slaughter. Does the "refined concern phrase" express an invariant insight?

I have no doubt about the application of the Concern Postulate to problem of VII below.

VII Moral Obligation to Diagnose the American Negro Tragedy of Statistical IQ Deficit

The moral obligation is stated above in thirteen words – one phrase of five words and two more of four words each. These focus the Truth and Concern Postulates on a most agonizing American problem. All true humanitarians must accept the first five words – to oppose diagnosis of

a serious problem is like being against the diagnosis of cancer.

The second phrase defines the focus of concern: "the American Negro tragedy". The Negroes themselves suffer the misery of the American Negro tragedy. The existence of the tragedy is proven from facts about the status of substantial portions of the American Negro population: Mr. Roy Wilkins, Executive Director of the National Association for the Advancement of Colored People, in a January 1975 appeal for funds, used a leaflet stating: "Black unemployment nationwide is soaring to Depression levels." "One out every three black teenagers is unemployed." "Almost half of all black teenagers less than 18 years old live in poverty." Any true humanitarian must recognize "the moral obligation to diagnose the American Negro tragedy."

The final four-word phrase defines an aspect of the tragedy accessible to quantitative diagnosis: "The American Negro tragedy of statistical IQ deficit." The word "statistical" means that the IQ deficit does not apply to all Negroes – *many Negro IQs are higher than many white IQs*. But massive statistics prove that Negroes, as a group, average about fifteen IQ points lower than whites. Research has established that *cultural bias does not explain* lower Negro IQ scores, and, furthermore, that IQ scores do statistically predict educational achievement and *do so as well for Negroes as for whites*.

Thus the IQ deficit means – again *only statistically* – a deficit in educational achievement and, hence, inferior jobs, less pay, lower social status, and other characteristics of the American Negro tragedy like those in the NAACP leaflet. This tragedy will grow if the dysgenic facts cited in the Introduction have their logical consequences. For wise remedies to develop, investigators of proven sincerity using acceptable premises must do the diagnosis. Problems with premises and sincerity are discussed in VIII and IX.

VIII. Premises that Facilitate or Hinder Diagnosis

What standards of reasoning and what premises can facilitate or hinder the diagnosis called for in VII above? I first present the basis for my premise that objective realities do indeed exist. This premise is essential to my confidence that diagnosis is the best first step in a cure for any problem. I shall also discuss some systems of premises that set up barriers to diagnosis.

In discussing my analytic efforts on dysgenics with college students, I am often distressed to find them proud of being unsure of everything. This unfortunate attitude reflects a "value free" indoctrination in academia. I try to demonstrate that objective realities do exist and so

does objective logical reasoning. My most useful tool is the "transoprep acor", the acronym defined next. I devised it when teaching "Mental Tools for Scientific Thinking" to freshmen and could find no adequate dictionary substitute.

To establish that *transoprep acors* do define *objective realities* I use Percy William Bridgman's concept of operational definitions. Specifically, I demonstrate how to create the logical structures of arithmetic. As will become clear, the "transoprep acor" acronym arises from the words that I use in my demonstration. I start by first marking the symbols 1, 2, 3, 4, and 5 on my fingers with a felt tip pen and next, by experimenting with one-to-one correspondences between my fingers and some pebbles. I find that the associative and commutative laws of addition do work. These laws, which work with any set of handleable things, are the basic conservation laws of "thinginess". Some one else, to whom I *transmit* my findings in *operational* terms, can *reproduce* them – arithmetic is a *trans-op-rep* objective reality. It has also a logical structure: When the key numerical attributes of a pile of two pennies and a pile of three nickels and a third pile made by combining the first two are subjected to comparison operations, then an orderly relationships results – the *a-co-r* pattern is $2 + 3 = 3 + 2 = 5$. Indeed, I assert that the conservation law of thinginess is the simplest example of theoretical physics, which, by definition, quantitatively interprets nature with the aid of symbol-marked fingers in this case. Other examples of transoprep acors are theorems of geometry. I urge students to master a few transoprep acors as reference patterns for use to calibrate any reasoning that they may encounter.

The systems of premises used by some members of academia are so divergent from the tenets of modern science that they set up barriers to any thought about the diagnosis called for under VII. In a debate, I spoke of differences in premises and my opponent, a fellow Stanford professor, responded thus: "One of the issues that Professor Shockley alluded to in his introductory remarks was the fact that I believe in the teachings of the Honorable Elijah Muhammed, the messenger of Allah, that the white race is a relatively recent race on the planet earth. And this is not a controversial finding. It might be to you. Professor Leakey, the British anthropologist, has said as much: That is, the first people on the planet were African. Nowhere in the history of the world can you find any evidences of white people existing beyond 6,000 years: that is, the white race is 6,000 years old. It was in fact, created by Black scientists through a genetic breeding experiment. That is a fact that is known by many people throughout the world and the fact that it has not gained the credence in American universities says more about the limits

of intellectual freedom in American universities than it does about the essential truth of the proposition. Most religious leaders are fully aware of this fact." Another system of premises, that blocks diagnosis even more generally than the Black Muslim one just described, is based on what I interpret as the "Apple-of-God's-Eye Obsession", AGEO for short. AGEO-logicians reason that, when God created man to be the apple of His eye, He also designed nature's laws for humanity's glorification. AGEO logic thus concludes that these laws must be such that good intentions are sufficient to ensure man's well-being – objective diagnosis is unnecessary. AGEO-logicians reason that God could not be so unfair as to let babies come into the world with handicapped genetic endowments – a bad shake from an unfairly-loaded, parental genetic dice-cup. Most dogmatically reject as inconceivable by a sincere AGEO-type is my own research opinion about a particular genetic unfairness: Nature, at the very pinnacle of unfairness to humanity and in general and especially to outstanding American Negro intellectuals, has color-coded the genetic disadvantages of Black Americans so that statistically reliable predictions of intellectual performance can easily be made and profitably be used by the pragmatic man in the street. This is tragic. But denial of truth may be more tragic (see induced paranoia at the end of X.) I believe that AGEO is one reason that humanitarianism goes berserk.

A very different barrier to objective exploration of diagnosis is the subject of IX.

IX. Sincerity, Truth, Polygraphs and the National Egalitarian Lie

AGEO-types dogmatically reject facts about statistical differences between sexes and races in genetically controlled behavioral traits. These distortions lead to the premises of "the national egalitarian lie". The intellectual community is permeated with doubts about the sincerity of statements on race and intelligence. I have faced public accusations of insincerity. I refuted these when an invitation to speak to a lawyers' club was accompanied by a challenge to take, at the club's expense, a polygraph (lie detector) test to evaluate my sincerity. It is rewarding to me to report that I passed. Accordingly, I challenge Conference participants to challenge me to polygraph tests if any assertions related to my paper while agreeing to reciprocal tests on my questions to them. This proposal is, I believe, in keeping both with the purpose of the Conference and with the Truth Postulate.

X. Research on Race Mixing and IQ for American Negroes

My first demonstration for the possibility of the diagnosis demand-

ed in VII is my reanalysis of noted human geneticist Curt Stern's interpretation of the observed skin pigmentation distribution of Fig. 4. He used a model with three gene loci for pigmentation – hence my seven steps on Fig. 4. Stern's model assumed that each Negro had exactly the same probability M that any of his genes came from a Caucasian (white) ancestor and, like my dashed line for $M=0.21$, predicted too few light-colored Negroes. My excellent solid-line fit assumes that 22% of the Negroes have $M=0.55$.

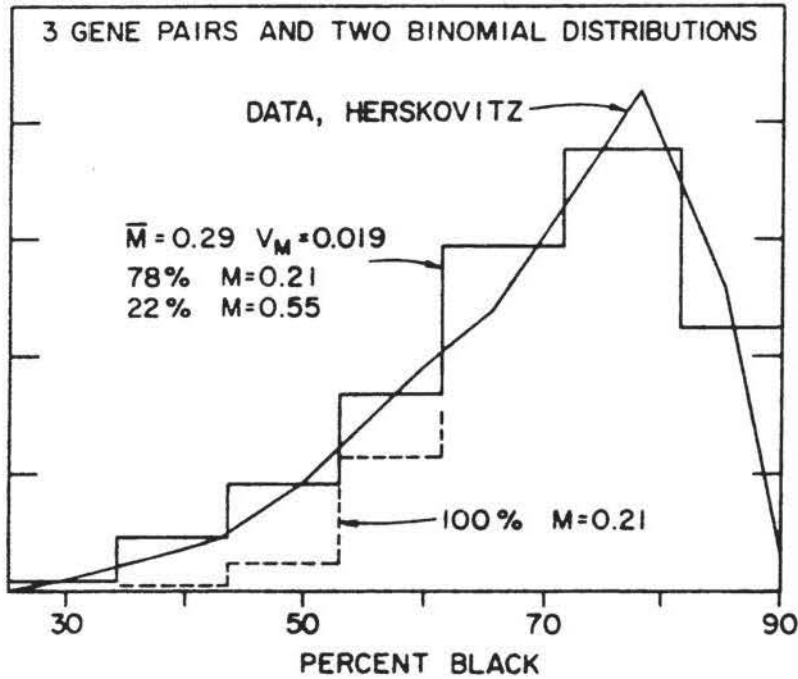


FIGURE 4: The observed distribution of skin pigmentation of American Negroes is well represented by a 3-gene model and perfect assortative mating for two populations, one having three times more white ancestry than the other. (W. Shockley, *Proc. Nat. Acad. Sci.* 70, 2180a, 1973, references.)

My second reanalysis used the blood type data of Dr. T. E. Reed to conclude that a large spread, or variance, in M -values for 3,146 Oakland, California Negroes arises from M varying much as it does in Fig. 4, say, from zero to more than 0.50. My value for the average of M for all the Negroes was $0.23 + 0.01$ and was the first calculation to include variance and assortative mating for M . Dr. T. E. Reed misunderstood my initial publication about M -variance and published an erroneous critical article.

My third reanalysis uses data relating skin color to an IQ-like test, the Goodenough Draw-a-Man Test. I correct the interpretation that when social class is finely enough divided, IQ is not significantly related to skin color of Jamaican school children. My z variable in Fig. 5, which represents average IQ for each of the nine groups, increases significantly both with lightness of skin color (p less than 0.01) and with higher social class.

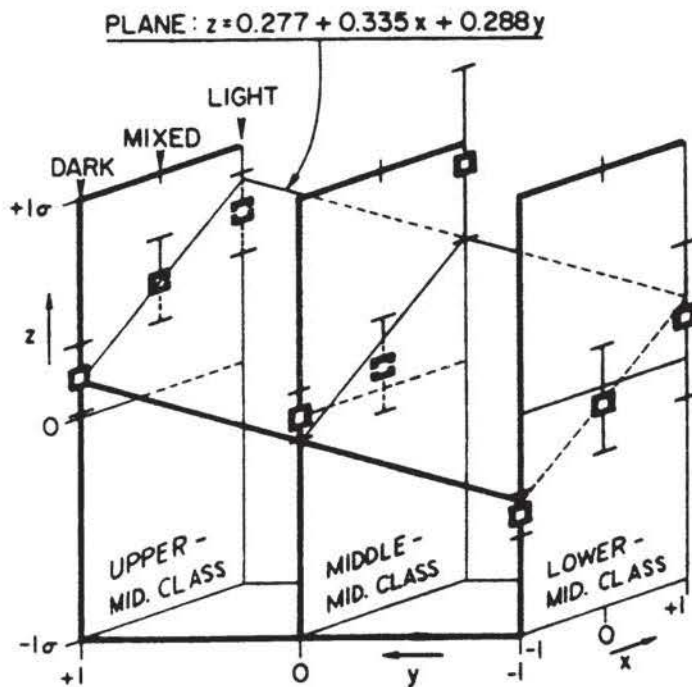


FIGURE 5: Nine subpopulations of Jamaican school children have average intelligence (represented by z) which increases systematically with social class and lightness of skin color. (W. Shockley, *Proc. Nat. Acad. Sci.* 70, 2180a, 1973, references.)

A key diagnostic experiment, similar to one I first proposed in 1966, would study a sample group of a few hundred medium-colored Negro students, say 53% black on Fig. 4, in an all black college. Theory for Fig. 4 predicts that each such student is equally likely to have a high or a low M -value. Divide the group into upper and lower halves for IQ or for scholastic standing and then use blood types to determine the average M for each half. This could test my prediction, based on preliminary estimates with poor controls for environment including prejudice towards dark skin, that increasing M from 0.11 to 0.23 raises average IQ from 80 to 90.

Support for obtaining new data like that for my proposed experiment is hard to get. Several proposals by Professor L. L. Heston, a psychiatrist noted for outstanding research on the inheritance of schizophrenia, were rejected. He had planned research to obtain better data like that of Figs. 4 and 5 for purposes like my proposed experiment. One rejection, which I analyzed, was absurd. The National Research Council, in rejecting Heston's proposal for \$40,000, said, in effect, that if average Negro IQ is really increased by white ancestry, then his study would prove it; but if not, it would be indecisive. Hence no support. The N.R.C.'s rejection reflects the attitude of the National Academy of Sciences, its parent organization. I consider the N.A.S. attitude on genes and intelligence to be "American Lysenkoism".

"Untold harm is done to Negroes by your demands for diagnosis of the role of racial genetics in the IQ deficit," I have been told. This attitude opposes the Truth Postulate. To refute it, I ask you to imagine that you are a black youth who comes into the world suffering the unfairness that berserk humanitarianism has made more prevalent through dysgenic welfare programs. Suppose that you are lied to and told that all your disadvantages are caused by an unfair society. You find support for this explanation in your school experience. The methodology of your education is dull and frustrating.

How would you size this up? Evidently, some malevolent conspiracy is insidiously working against you. If you have spirit, you will rebel. Can this induced paranoia play an important role in the disorder and vandalism of our schools? If it does, must not some blame fall upon those who provoke the paranoia? Upon the well-intentioned lies or the wishful-thinking of do-gooders whose humanitarianism has gone berserk?

XI. Conclusion

Quantitative thinking, scientifically applied to social values, resolves the science values dilemma posed by these Conferences and in so doing, reveals new truths. I have proposed a standard, the transprep acor, for testing the objective reality of proposed truths. My pragmatic views on truth may have been influenced by John Dewey's comment in his book *Logic*; "Logical forms with their characteristic properties arise within the operation of inquiry and are concerned with the control of inquiry so that it may yield warranted assertions."

I hold that even for subjective matters there are some positive absolute values including humanitarianism consistent with the Concern Postulate. Genetic factors are important for humanitarianism which is, therefore, vulnerable to dysgenic decay.

I close by sounding a note of dismal hope. If human genetic potential for foresight and humanitarianism is inadequate, or becomes inadequate through dysgenics, then a worldwide nuclear war is certain. Almost all of mankind will die. But man will not become extinct. If nuclear destruction occurred today, Swedes and Swiss would preferentially survive, saved by their decades of preparation of fallout shelters in their granite mountains.

This eventuality is a dismal hope. Human evolution would resume by eliminating those lacking foresight and social organization. This renewal of human evolution is desirable, but the elimination mechanism is detestable. These grim positive-negative values are invariant to whether one chooses the cause as being God's will or Monod's chance and necessity.