Zygon | *Journal of* RELIGION AND SCIENCE VOL. 6, NO. 3

GENETIC BASES OF INDIVIDUALITY AND OF SOCIAL PROBLEMS

by Dwight J. Ingle

> Know, all the good that individuals find,
> Or God and Nature means to mere Mankind,
> Reason's whole pleasure, all the joys of Sense,
> Lie in three words, Health, Peace and Competence.
>
> [ALEXANDER POPE]

It is my opinion that both genetic and environmental factors cause some of our great social problems that relate to health and competence. I believe that the prevention of these problems will require biological as well as environmental interventions. The general biological intervention that I discuss in this paper is selective population control.

Overpopulation is a grave threat to the future of man and some forms of control are needed if we are to avoid famine, disease, and war as checks on population growth. I believe that, since man must limit his numbers, efforts to control births should be focused on those who for cultural, genetic, or medical reasons are unable to endow children with a reasonable chance to achieve health, happiness, and self-sufficiency. Note that I have included poor cultural heritage as a reason to remain childless.

There are two general aims among those who would try to control the biology of man. The first is to guide human evolution to supermen. I oppose this aim. The second is to reduce the causes of misery

Dwight J. Ingle, professor of physiology at the University of Chicago, read this paper at a seminar of Meadville/Lombard Theological School, Chicago, February 15, 1971.

and incompetence without otherwise reducing biological diversity. I favor this. It should be free from government control, it should retain freedom of choice, and would be guided by the counseling of physicians trained in human genetics, social engineering, and ethics. Such efforts should accompany, not replace, efforts to improve the environment and to insure equal rights and opportunities.

Health

Throughout the world, more people are ill and malnourished than are well. In the United States, health-care programs are expanding rapidly, but during the past ten years there has been only a small increase in the average length of life. The benefits of medical progress have been offset by the growth of other health problems.

There are some cults and religions which forbid their members to seek medical care when they are sick. What is the life expectancy of these people as compared with the average for all people who die in the United States? *It is only about a year less than average.* This does not mean that modern medicine has done no more than add a year to the average span of life in this country. Medical progress has more than tripled life expectancy in the past two hundred years by sanitation, improved nutrition, water purification, vaccination, quarantine, health education, and other public health measures. Those who refuse to go to doctors benefit from preventative medicine as much as any of us. Moreover, people who become seriously and painfully ill are likely to abandon faith as a healer and accept the care of physicians. Those who remain as protagonists of faith healing tend to have better than average health and better than average health habits. But it is true that coming to a physician after a serious illness develops does not affect life-span as much as we commonly suppose.

It has been estimated that heredity plays a role in about fifteen hundred diseases. The exact number is not known, but we can generalize and say that heredity plays a major, moderate, or minor role in almost all diseases. The genetic basis of a disease can be a defective or missing gene or an abnormal chromosome. More than seven hundred diseases caused by simple genetic defects have been identified. Most of these diseases are rare. There are a few exceptions. Sickle cell anemia is an example. But, for most of the great diseases, there seems to be a polygenic basis for differences in susceptibility to the disease. The genes involved have not been mapped or otherwise identified. The evidence for a genetic basis is indirect.

The selective breeding of laboratory animals has produced strains which develop diabetes, hypertension, cancers, some diseases of

nerves and muscles, ulcers, etc. Other strains have been developed by selective breeding which are resistant to these diseases. There are strain differences in resistance to infections. There is good evidence for a genetic basis of most of the great diseases of man such as some cancers, diseases of the heart and blood vessels, diabetes, some of the mental diseases, and others. Most of the great killing diseases are affected by many factors that have not been fully identified. Some people live all of their lives without becoming seriously ill. They grow old gracefully and remain rather active until they quietly fail and die. There seems to be a genetic basis for such good fortune.

Could a program of selective population control guided by genetic counseling significantly reduce the incidence of disease in our country? No. Not yet. There are two general reasons. First, most of the diseases caused by a simple identifiable genetic defect are rare. Second, most of the defects are recessive. This means that the same defective gene must be inherited from each parent before the disease is manifest. In relatively few cases is a counselor able to say to a couple, "If you have a child, the risk is high that it will be defective." Most of us carry some defective recessive genes. It is not possible to identify individuals who do not carry defective genes, if any exist.

Genetic counseling can be very important to some individuals and couples. It can save some of them the anguish of bringing a defective child into the world, and it can reassure some couples who worry needlessly about the risk of a familial disease appearing among their children.

It has become possible to insert a hypodermic needle into the uterus of a pregnant woman and draw off some of the amniotic fluid which surrounds the embryo. This procedure is called amniocentesis. Chemical tests of the fluid or microscopic examination of cells in it can show whether the embryo bears certain defects. If a serious defect or disease is detected, the embryo can be aborted. These procedures are almost completely safe. Later pregnancies may result in healthy children. When methods already known are perfected, it will be possible to detect about one hundred different inherited diseases and to abort the embryo when the parents request it.

Slow but steady progress is being made in the development of methods to detect carriers of defective genes and chromosomes. In a small percentage of cases, the genetic counselor can study the family history of individuals who plan to have children and give useful advice on the risk of transmitting a polygenic basis for disease. There is no assurance that methods of detecting polygenic bases of

disease can be much improved. But neither do we know that they cannot be improved by methods which may be discovered.

There is a more rapid way of reducing the number of inherited diseases. This involves artificial insemination and is called positive eugenics. This procedure is practiced on a small scale, especially when the husband is sterile. In some other cases, a fertile couple may seek insemination of the wife by the sperm of a gifted man. This practice may increase as fashions in taste and morality change. It has been proposed that artificial insemination be widely used to improve genetic competence. Almost all human geneticists oppose this plan because they are afraid of harmful outcomes. At least a few genes which are harmful in some respects are said to be beneficial in others. When laboratory and domestic animals have been bred selectively for certain desirable characteristics, undesirable traits have appeared in some highly selected strains.

There is little risk that the occasional practice of artificial insemination when requested by a wife and husband will do more harm than good. Its voluntary practice is very different from the proposal to build a superrace by forcing a population to practice positive eugenics.

I doubt that anyone knows whether the pool of undesirable genes in our population is increasing or decreasing. Modern medicine prolongs the lives of more carriers of defective genes and chromosomes into the reproductive age. Harmful mutations are fed into the gene pool. But some naturally selective factors still tend to weed out the genetic bases of poor health. Regardless of whether the pool of defective genes is increasing or decreasing, it is a major cause of human misery.

A few medical scientists say that there is no need to try to improve the genetic competence of man because it will become possible to cure all inherited ills. I heard this refrain when I was a student and since then have watched in vain for an inherited disease to be completely cured in all patients who have it.

It is also claimed that within a few years it will become possible to repair or replace all defective genes. I doubt that this will be soon. It seems unlikely that diseases having a polygenic basis can be prevented by such methods.

There is another predicted means of improving the genetic competence of a population, which most people, including myself, find repugnant. This is called cloning. All cells of the body contain the same set of genes within the nucleus. The genes are suppressed in

ordinary cells so that they are not working. In some lower organisms such as frogs, salamanders, and fruit flies, it has become possible to replace the nucleus of a fertilized ova with the nucleus of an ordinary cell and have it grow into an individual which is the genetic duplicate of the organism from which the cell was taken. This method of asexual reproduction is not new in principle. When a clipping from a bush is nourished it grows into a copy of the bush because the living cells of the clipping contain the genes needed to grow the copy. If cloning should work in man, it would be possible to produce genetic copies of a man. Individuals of proven health, competence, creativity, or any other set of traits could be reproduced in any number desired. I mention cloning, not as a desirable biological intervention, but because it raises questions that should be debated.

The Mentally Dull and Retarded

Our national, state, and local concerns for health, education, and welfare are based on the dogma that all people are born with equal genetic potential for success and that all individual differences in school and job success are caused by differences in environment and represent social injustices. Intelligence ranges from idiocy to genius. Many judgments on individual differences in intelligence and factors which cause these differences are based on the use of intelligence tests and other objective tests of special abilities. There is no direct way of measuring the properties of the nervous system which determine these abilities. The genes which are involved in general intelligence and special abilities have not been mapped or otherwise identified. All measures of intelligence are indirect.

Opinions on the validity of intelligence tests vary widely. Some psychologists regard them as nearly perfect measures of general intelligence and believe that test performance is little affected by environmental factors. At the other extreme, intelligence tests are regarded as worthless. Most of what I have to say reflects my belief that intelligence tests are moderately good measures of general intelligence.

There are approximately two hundred thousand resident patients in public institutions for the mentally retarded in the United States. Many others are residents of private institutions. It is commonly considered by clinical neurologists, clinical psychologists, and the courts that an individual with an IQ under 70 is mentally retarded. There are approximately five million mentally retarded individuals in the United States. Retardates are commonly jobless and depen-

dent, although some can be trained to do simple jobs and to earn a living. They are unable to progress through the lower grades of school unless they are automatically promoted, as sometimes happens. It is estimated that there is a genetic basis for retardation in at least half of the cases. Some diseases which cause brain damage and retardation have an identified defective gene or chromosome. Retardation can be caused by severe protein deficiency during embryonic life and infancy. Some brain damage results from mechanical injury, lack of oxygen, or certain childhood diseases. There remains a substantial percentage of cases of retardation from unknown causes. Some retardation is due to clearly defined pathology of the brain and some is not. Do some retardates merely represent the lower range of biological variability? There is no agreed-upon answer. There must be structural and functional bases for differences in intelligence.

True retardates lack the self-sufficiency needed to be good parents. Whatever the cause of retardation, they should remain childless. Most of the severely retarded never mate.

Individuals with an IQ below 85 are commonly called "mentally dull" or "dull normal." There are approximately twenty-eight million people with an IQ between 70 and 85. They are not likely to succeed in high school or to even pass out of the grades unless they are automatically promoted, as is common. Most of them can be trained to be self-sufficient but many drop out of school, remain unemployed, become social welfare cases, and a higher than average percentage become inmates of our jails and prisons. I do not imply that there is a genetic predisposition to crime. The mentally dull may turn to crime as the easiest way to some of the riches around them. They are more likely to be arrested and convicted than are white-collar criminals and those representing organized crime.

Mental retardation is a major reason, not the only reason, why the average children from slums lag behind national norms in test and school performance.

Is mental dullness inherited? This is an unpopular question. When it is brought into the open, it is hotly debated. The evidence for and against this proposition is faulty. The design of research and controls—or lack of controls—of relevant variables is the sort to make one weep. It is my opinion that the question is important and researchable. It seems very probable to me that heredity is of major importance in determining the level of intelligence. If environmental factors determine the level of intelligence, it should be possible significantly to affect test and school performance by manipulation

of the environment. Despite many loudly and widely ballyhooed claims that manipulation of the environment can permanently increase intelligence, it has not proven possible independently to repeat and confirm these studies upon demand.

Are people of low intelligence outbreeding people of high intelligence as is commonly claimed? Possibly not. Although mothers of low intelligence are inclined to have larger than average families, many individuals of low intelligence remain childless. However, the need remains to shift the reproduction load to those individuals who are best qualified for parenthood.

Social Dependency

Is there a genetic basis for social dependency? This is another unpopular question. The argument rests on the evidence that low intelligence contributes to dependency and that the level of intelligence is determined to an important extent by heredity.

Regardless of the validity of this evidence, it can be argued that many of the socially dependent should remain childless because they are unable to provide children with a good cultural environment. A child born into a culture which denigrates books, schools, job training, and responsibility, and embraces the culture of the street is just as enslaved as is the child whose mental retardation or poor health are insuperable barriers to self-fulfillment.

I do not believe that the presently existing attacks upon cultural handicaps have the slightest chance of reducing the size of the problems. When I first voiced such an opinion ten years ago, I was assured that social reforms then under way or planned would rapidly reduce our social problems. Instead, they have become malignant. I repeat a suggestion made at that time. We could learn from the intensive child-care and youth programs of some of the collective societies and from the kibbutzim of Israel. All of the waking hours of the children are spent in healthful, useful activities. Thus, the child is isolated from the contagion of social disease. Such programs linked with selective population control might significantly reduce the causes of our great social problems.

Summary of Aims and Methods

In sum, a program of selective population control must consider the following:

1. A general aim is that only wanted children should be born.
2. Genetic counseling should be available to all individuals who seek it and should be expanded according to gains in knowledge.

These programs should be under the control of physicians trained in human genetics.

3. The procedure of amniocentesis should become a widely available means of detecting defects in the embryo. A defective embryo can then be aborted upon request of the parents, especially the mother.

4. Artificial insemination should be available to properly counseled adult women who request it.

5. All retardates and psychotics should be encouraged to remain childless.

6. Barrenness should be encouraged among the mentally dull, habitual criminals, permanent welfare clients, and others judged to be unqualified for parenthood.

7. Sterilization should be offered without cost to all who volunteer for it.

8. Material rewards for remaining childless should be offered to all of the underprivileged who are judged to be unqualified for parenthood. A new class of professional counselors trained in social welfare is needed. People should not be judged merely on the basis of IQ, being poor, or being unemployed.

9. Counseling and contraceptive aids should be offered without cost to the underprivileged. Abortions should be offered without cost as a backup to contraceptive failure to all of the underprivileged who seek it.

10. A broad continuing program of education on aims in population control, family planning, qualifications for parenthood, and the availability of services should be taught by the schools, all news media, and all community social service agencies.

11. Although federal, state, and local support would be required, these programs should function independently of political control, as do programs in community medicine run by private medical schools, religious groups, etc.

The Ethics of Selective Population Control

"Science without conscience is but death of the soul" (Montaigne). Ethical guides to conduct change according to the needs and climate of the times. Most societies have placed some restrictions on mating and reproduction. Ours prohibits marriage until a certain age is reached. It prohibits polygamy and polyandry. It prohibits incest. It has sometimes placed other strictures on mating and reproduction. Society has commonly assumed greater control over the individual when society is in peril. I am among those who believe that society

must control population growth or perish. I argue that selective population control can become a humane way of reducing the causes of social malignancy.

Each man produces billions of sperm and each woman produces hundreds of mature ova during a lifetime. Does each of these living cells have the right to become a person? Obviously not. Most of them must perish. The right to get born does not rest with unjoined eggs and sperm or in hypothetical individuals who do not exist.

Does the principle that each individual should have equal rights and freedoms extend to parenthood? I claim that the right to bring new lives into the world depends on qualifications for parenthood, and these qualifications are not equally distributed among men and women. I claim that no individual has a moral right to assume high risk of bringing a handicapped person into the world or one likely to bring serious injury to society. Selective population control can allow the potential biological failure or social failure to be replaced by one much more likely to be healthy and competent.

Should an induced abortion be regarded as murder? I am among those who argue that the embryo is not a person. Prior to the maturation of its nervous system, the embryo can have no consciousness of self, no will to live, no fear of death. The value of an embryo is like that of unjoined eggs and sperm—all are alive but need not be salvaged unless wanted by the host. The decision to abort an unwanted embryo is the private concern of the host and should be recognized as one of her rights.

Since it is unlikely that conscience alone will suffice to shift the reproduction load to those best qualified for parenthood, I consider it more ethical to use material rewards for cooperation than to use coercive methods which would deprive the individual of a final choice of becoming a parent or remaining childless. I would trust physicians trained in human genetics and a newly created class of professional social scientists to guide counseling on qualifications for parenthood. The most fearful risk in such a program is that it would come under political control or the control of any individual or group seeking material gains and power.

As a corollary to encouraging a minority of the population to remain childless, some couples who are highly qualified for parenthood should be encouraged to have larger than average families.

A final principle which should guide the development of such a program is that judgments should be made on the basis of individuality rather than identity with a religion, political philosophy, social class, or ethnic background.

SUMMARY

Although it is not yet possible to develop a program which would soon reduce our problems of health and dependency, I believe that we should initiate a program of selective population control that would grow according to gains in knowledge. There is slow but steady progress toward the detection and prediction of inherited diseases. The problems of ill health and incompetence are urgent and are growing. We should consider and debate every humane means of reducing them by preventive measures. We especially need to establish ethical guides to the use of knowledge in fields of biological and social engineering. Man already controls his future, albeit blindly. He should choose to act purposefully and not be paralyzed into inaction by risks that cautiously applied knowledge will be misused. The threats of laissez faire are greater.