other, which makes communication difficult. However, Lieberman's results have been seriously brought into question — the erors cannot be ignored — and I feel that this is important to recognize when reading his paper.

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GENETIC ENGINEERING: THE EVOLUTIONARY LINK

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Although a great deal has been said about the creation-evolution controversy, much less has been written about the implications of evolutionary thinking. One area of great concern is how evolutionary assumptions cloud our perception of genetic engineering. It is the purpose of this paper to expose that link and provide a Biblical base for evaluating genetic engineering.

Genetic Engineering

For thousands of years, man has had the ability to breed variations within created kinds. But recent advances in genetics now allow him radically to alter genetic structures and transcend the barriers between the created kinds of plants and animals. One of the most sophisticated techniques used to do this is recombinant DNA research (rDNA).

This research technique was first developed in the 1970s by scientists working at Stanford University and the University of California at San Francisco. By using restriction enzymes, they could cut small segments of DNA (called plasmids) and insert foreign DNA into various hosts (principally *Escherchia coli*). These formed genetic hybrids called chimeras (due to their conceptual similarity to the mythological Chimera which was a creature with the head of a lion, the body of a goat, and the tail of a serpent).

The possible benefits of this technique are vast. They provide a means by which genetic repair can be affected on plants, animals, and man. They also allow scientists to alter existing organisms so they can manufacture medical or industrial products for our use.

But there are also dangers. Many scientists have been concerned that rDNA techniques might produce an "Andromeda Strain"[1] for which there is no cure. As a result, the National Institutes of Health have established various guidelines for physical (P1, P2, P3, and P4) containment. Further studies, however, have shown that the potential danger of escape and infection is much less than originally assumed.

But it is with these guidelines that we begin to see evolutionary assumptions working. The assumptions about safety are based upon the theory of evolution. Experiments performed with DNA from animals considered to be evolutionarily close to man are believed to be more dangerous than those performed with DNA from less-advanced animals.

Since we live in a created world, such a rating may not be completely accurate. Certainly, similarity in morphology implies some similarity in genetic structure. We might expect that DNA sequences of other mammals would be more similar to human DNA than to viral RNA, but we would also expect some excep-

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tions. In this regard, creationists also operate with a degree of ambiguity because there is not as yet a conclusive genetic criterion to distinguish one created kind from another.

A scientist might be misled by the distance of genetic relationship between humans and a "primitive organism" to use a P2 facility (with normal laboratory safety procedures) when in actual practice a P4 facility (with more rigourous safety procedures) might be needed. Safety, therefore, should be based upon the accurate genetic mapping of organisms rather than on these evolutionary assumptions.

But the greatest concern over genetic engineering should not be over safety (though it is a significant one which needs greater attention) but rather over the future direction of genetic engineering. Fueled by evolutionary assumptions and ignited by the rise of sociobiology (a new theory of social behavior), genetic engineering promises to be one of the most explosive issues of the 1980s.

Sociobiology and Genetics

Edward O. Wilson is the founder of sociobiology, which is deeply rooted in an evolutionary world view. This relatively new science is described in his book *Sociobiology: The New Synthesis*, published in 1975.[2] According to the *New York Times*, Wilson has claimed that sociobiology is a well-established discipline of biology and has been for 25 years.[3] Most people, however, have not been aware of its growing influence until the last few years.

Wilson defines sociobiology as "The systematic study of the biological basis of all social behavior."[4] By "biological basis," he refers specifically to genetics and ultimately to evolutionary theory. Sociobiology is the application of evolutionary theory not only to animal, but also to human social behavior.

Here is where the real danger occurs. Human beings as well as all living creatures are assumed to be the sum total of their genetic makeup. If they were dealt a bad genetic hand, then they lose and natural selection removes them from the population. If they were dealt a good hand, they stay in for another round and reproduce and pass their genes on to the next generation. Genetic engineering, therefore, provides a mechanism by which to effect certain "sleight-of-hand" and intervene in the process of evolution.

What is even more fearful in this view is the assumption that the individual is meaningless. Species evolve, not individuals; therefore, individuals in the long run are insignificant. The individual reproduces and dies, but its genes persist into the next generation.

Someone once said that a chicken is simply an egg's way of making another egg. Wilson has modernized this, saying "The organism is simply DNA's way of making more DNA."[5] The organism exists for the sole purpose of making more DNA. The individual again loses his dignity by being in the role of merely a supporting actor to the ever-reproducing DNA.

When its theory is applied to man, we discern even more clearly the thin line between truth and error. In the last chapter of his book, *Sociobiology*, Wilson lays before us his view of man. Who he is, why he is, where he is going, and where will he need to go in the future, are questions he addresses. Wilson begins by recognizing that man is anatomically unique in respect to the rest of the animal kingdom, yet he has no doubts that man's behavior is to be understood in terms of the selfish genes.

Acknowledging the seemingly endless variety of human social organizations, Wilson insists that the underlying basis for culture is genetic. Different cultures arise simply as different genetic strategies to achieve the same basic survival goals, which are already genetically determined.

If you accept this assumption, then genetic engineering offers great promise. Not only does it provide a means by which to restructure life, it provides a means by which to restructure society. Sociobiologists' great hope is that genetic engineering will enable man to rid society of many social and cultural ills.

No one can deny that an individual's genetic makeup has some effect on his patterns of behavior. But to believe that by simply changing the genes we change the whole man is to deny our spiritual nature. This denial, however, is essential to the sociobiologist's world view.

Although such hopes may be extravagant, many scientists nevertheless hold them. Genetic engineering offers promise of curing societal discontent. Even many scientists who do not like sociobiology and its tenets hold great hope for genetic engineering due to their evolutionary assumptions.

Evolution and Genetics

Out of this growing world-view is the assumption that life can and should be taken apart and put together at will. Although it is an erroneous view, it is logically consistent within a naturalistic world-view which accepts evolution as fact. Scientists assume that life on this planet is the result of millions of years of chance. They reason that if life is a random result, then surely they as intelligent scientists can do a better job in their laboratories than nature can do alone.

One striking example of this attitude can be found in the title of a recent book on genetic engineering: *Improving on Nature*.[6] If you accept an evolutionary framework then you can easily accept the idea that nature needs improving. Nothing is absolute; all life is the result of a random process in a particular situation. Nothing is sacred; there are no barriers between man and animals. Nothing is forbidden; every piece of DNA is open to human control.

Scientists, therefore, stand poised on the threshold of wholesale genetic redesign. They mimic the hope of Julian Huxley who looked forward to the day when scientists could fill the "position of business manager for the cosmic process of evolution."[7]

If these hopes are fulfilled, scientists have the technological ability to be gods and seek this new-found power over the genetic structure of all creatures. Even scientists question whether they should have this power. An editorial in *Science 81* asked, "Are we wise enough to play at being masters of evolution? . . . We tinker with atoms, but their forms are fixed. Not so with biological forms. . . ."[8]

As creationists and Christians, we must raise even more critical questions and therefore resist this power. We may have the technological ability to be new creators, but we are not the One Creator of the universe. We are sinful creatures (Rom. 3:23) affected by the fall of man (Gen. 3). It is arrogant to believe that we can overthrow the Creator and become re-creators of this earth.

A Christian View of Genetic Engineering

Does genetic engineering have a place in a Christian world view? Should we reject all of it or can aspects of genetic engineering be redeemed by fallen man? In order to answer these questions we must distinguish between two types of genetic research.

The first type of research is what we might refer to as *genetic repair.* This research attempts to remove or treat the 1600 or so genetic diseases that afflict mankind. It also includes various forms of minor genetic manipulation for the benefit of mankind. Part of God's command to us is to subdue the earth (Gen. 1:27) and we can do this through the wise and ethical use of technology. This is very different from the second type of research many evolutionists are advocating.

The second type of research involves the *creation of new life forms.* Many scientists seek rDNA techniques in order to restructure and *vastly* alter existing life forms. This is something that Christians cannot support. It is one thing to add one gene or a short gene complex to an organism and modify it slightly to allow it to produce a useful product. It is quite another to create life forms that do not fit in existing niches and that may create havoc with the biosphere. If we are rightly concerned about environmental deterioration through human intervention then we should be even more concerned about human restructuring of life forms on this planet.

Further, we should resist any scientist's desires to redesign human nature. Edward O. Wilson has said, "We will have to decide how human we wish to remain."[9] We are created in the image of God (Gen. 1:27) and attempts to make man in his own image cannot be allowed. Already many are fearful of recent attempts to breed highly intelligent progeny from sperm provided by Nobel prize winners.[10] Human engineering is but one step away from the crazed dreams of building a superior human race.

Once again the creation model provides not only predictive capability but research guidelines which can prevent a new technology from leading us to disaster. There is nothing to fear from genetic engineering itself. Its application and the world-view which guides it are what should make us anxious. If an evolutionary world view prevails, then is Huxley's *Brave New World* too far on the horizon?

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(Editor's note.) May I add two quotations? The first is by Sherlock Holmes: "When one tries to rise above nature, one is liable to fall beneath it." (In the story, *The Adventure of the Creeping Man*).

The second is by Aristotle, in commenting on the Spartans, who, above all other ancient people, went in for eugenics; but at Aristotle's time had declined sadly: "We should judge the Spartans not from what they used to be, but from what they are." (*Politics,* Book VIII, Chapter 4.)

THE FLOOD ON AN EXPANDING EARTH

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Born's lattice theory is used to prove that a change in the permittivity of free space would cause a differential expansion of the earth and yet allow for compressive forces necessary to account for various geologic features.

One of the most outrageous hypotheses in geology is the suggestion that the earth's radius has expanded. It has never achieved widespread acceptance because of the lack of a mechanism which will explain the compressional features of the earth. This paper will propose a mechanism which is hoped will overcome this objection to an expanding earth.

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The model of an expanding earth will explain several features on the earth. As noted in a previous article[1] the sediment distribution cannot be explained on the basis of a flood which occurred on an earth of the present radius. There is a thicker layer of sediment on top of the continental platforms which are topographically higher than on the ocean floor which is topographically low. This feature violates the second law of thermodynamics if one assumes that the