THE FALL OF THE NATURAL SELECTION THEORY

JERRY BERGMAN, PH.D.

ABSTRACT

The major contribution of Darwin to evolutionary theory was his theory of natural selection. Of the major aspects of evolution, the theory of natural selection has produced the least opposition by those critical of evolution. This is partially because limited selection is observed in selective breeding, and it is easy to extrapolate this process to the natural world. This paper summarized some of the reasons for the modern trend to abandon the theory of natural selection as a force in evolution.

NATURAL SELECTION

Natural selection is based on the assumption that animals that survive birth and live to adulthood are likelier to be better adapted to the environment, and are biologically superior in general. As a result, each generation produces animals which are slightly better adapted to local conditions than the previous one. Slight genetic differences may result in new traits, most of which are minor, maladaptive or both. A few, though, will aid a given population's adaptation, and may eventually, change the composition of the gene pool, slowly producing more and more variety and better and better adaptation.

The major force of evolution, natural selection, comes from the following logic: (1) Organisms vary, and many of these variations are passed onto their offspring. (2) Most organisms produce more offspring than can possibly survive. (3) Offspring that vary in directions favored by the environment will be likelier to survive and propagate. Favorable variation will for this reason, accumulate in populations by natural selection. (Gould (1977: 22)

Hitching (1982:12) concluded that this idea seems so obvious that, it quickly replaced the Biblical account of creation, and became a new way of looking at the living world. With a few hiccups, it has held its place [throughout the scientific world] ever since." The problem, both then and now, was going from the known to the unknown. The essence of Darwin's' contribution lies in his contention that natural selection is the prime creative force of evolution, not just the executioner of the unfit (Gould, 1977).

The theory has increasingly come under criticism. Among the latest is Gould's 1989 book, WonderfulLife, a study of a large quarry in western Canada called the Burgess Shale in which is preserved an incredibly large number of fossils. Its fossils show an enormous diversity, similar to that found in modern times. The research here as well as elsewhere shows that the diversity of life in the ancient past is far greater than previously imagined (Gould, 1989). The great majority of the animal life that once lived in the Burgess shale has died out, leaving no survivors. Significant is the fact that the survivors were not more complex, more evolved, or more specialized, or superior in any obvious ways to those that did not survive. Gould's conclusion was that, not natural selection, but chance selected; those that survived were more lucky than more fit. Most types of animals that have become extinct are generally not less fit than surviving types, are very similar to many extant types, and any differences that exist are often irrelevant to survival. The history of life does not show progressive elimination of weaker species being replaced by superior ones as evolution teaches. One periodic mass extinction after another has wiped out the majority of species not according to any innate superiority of one compared to another, but because of their being in the wrong place at the wrong time (Carrighar, 1965).

An animal's survival after birth tends to be mostly the result of chance; in most cases natural selection eliminates only the sick and the deformed. Environmental variations such as temperature, the population of other animals and the surrounding plant life all have been

fairly stable for eons, resulting in only very limited degree and types of changes. The population of many higher types of animal species is small, consequently comparatively few examples exist for evolution to work from. The animal hierarchy that evolutionary criteria forms shows the reverse of that expected; animals lower on the evolutionary scale are less likely to be threatened with extinction, to reproduce in greater numbers, and more resistant to variations in the environment.

Natural selection must also explain the incredible diversity in the living world, the multi-millions of different animal and plant species. The explanation that each living type was separately created by God in the creative week described by Genesis was accepted by most scientists until the middle 1800's (Gould, 1981). The naturalistic answer motivated scientists to interpret the fossil record as examples of animals that were "non-survivors," from which today's more perfectly adapted life forms arose. The predecessors of modern life, it was thought, were weaker, smaller, and less well adapted than contemporary animals--and those that still exist were better able to survive climatic changes, and the competition for mates and resources such as air, food and space. Darwin taught that all life was created by evolution and is still evolving, a process that resulted solely from a never ending struggle for survival. In the long run, only the fastest runners, those with hardier hearts, better eyes (and other sensory organs), stronger or longer legs (enabling them to run faster), or those with the most effective means of defense, win out in the struggle of life. This, in short, is Darwin's theory of evolution.

Darwin's idea quite possibly stemmed partly from the observation: if we can breed a meatier cow, a faster horse, a fatter chicken, why not an even more meaty cow, an even faster horse, or yet fatter chicken? And, can man alone bring about changes in animals, or does not nature itself constantly select the best by killing the worst? He knew animal husbandry improvements were small, but believed--mostly on faith (he had no evidence)-- that more time and knowledge would find to change did not exist. As he stated in his Origin of Species, "Slow though the process of selection may be, if feeble man can do so much by his powers of artificial selection, I can see no limit to the amount of change... New traits are not developed, existing ones are only re-arranged and favorable ones retained. Permanent positive changes in the animal rarely occur, only the probability of certain traits changes. Our tremendous amount of experience in breeding animals shows that it can be carried only to a certain point and the new strains, revert back to the previous type if allowed to interbreed.

Natural selection would be expected to favor primarily animals that 1) produce more offspring, 2) have longer fertility periods, 3) live longer, and thus have more time to reproduce. And those that live longer but have shorter fertility periods would, in the long run, be at a disadvantage. The data as a whole also reveal that natural selection as a force of evolution is not now functioning to any significant degree anywhere--the number of offspring, longevity, and length of the fertility period of most animals has been remarkably stable for the past several thousand years (Borchgrave, 1988). Selection would not develop extremely complex mechanisms, but structures which directly facilitate that which is defined as evolutionary success, such as the number of offspring.

Reproductive rates often are the opposite of what evolutionary theory predicts. Animals that have supposedly evolved to the highest rungs on the evolutionary ladder in terms of the number of changes from the originally hypothesized one cell ancestor of everything living often have the lowest reproduction rates. Most mammals have one or two litters every few years, and for only a few mating seasons. Many female mammals, if impregnated, give birth to only one offspring or less per mating season. Conversely, many creatures on the bottom of the so-called "evolutionary scale," such as bacterium and viruses, have by far the highest reproduction rates. Many insects regularly lay thousands of eggs in only a few days. (Farb, 1962)

If reproduction fecundity is a main criterion of evolutionary "success," bacterium and viruses are without question one of the most successful living organisms ever. Cholera bacterium reproduce at such a rate that a single pair can produce an estimated 700 quintillion offspring--3,000 tons worth in only twenty-four hours. And an offspring reproduction rate such as this provides an almost inexhaustible gene pool for mutations (Wistreich, 1984). If so many mutations occur per 1,000,000 organisms, the higher the number of organisms, the greater the total amount of possible mutations (and the more mutations, the greater the probability of favorable ones). The far higher reproduction rate of bacteria coupled with their short life span would result in more off spring and more total generations per given length of time (Williams, 1966).

Some bacteria--however few out of the trillions--are bound to be blessed with a slight selection advantage, gradually altering the entire gene pool. Bacteria as such would eventually no longer exist, and could be present today only if new bacteria were somehow "spontaneously generated," or life at an even "lower" level was occasionally formed, and was able to evolve to the higher bacteria level. If so, the bacteria existing now would be a

recent result of this natural progress. Bacteria should evolve at a much faster rate than the "higher" animals, yet no evidence exists that any evolutionary change has occurred in bacteria in recent (or even ancient) history. The earliest bacteria thus far discovered, estimated to be two billion years old, "closely resembles the microcolonies of certain modern soil bacteria" (Schoph et. al., 1965; 1365-66; Wistreich and Lechtman 1984:50).

Of the many animals now threatened with extinction, almost all are on the higher end of the so-called evolutionary tree. Little concern exists that bacteria, houseflies, viruses, fruit flies, or any of the myriads of micro-organisms, insects, and other "lower" forms of life will become extinct (and it is taxing our resources to keep these animal populations somewhat under control). Most all animals our conservation programs are aimed at helping are at the highest end of the so-called evolutionary hierarchy, and are primarily mammals (especially primates). The inverse relationship between supposed evolutionary development and survival is well documented. The US Department of Interior Endangered Species List contains only six insect species out of over 800,000 identified (0.0000075%). Mammals are 1,000 times likelier to be threatened with extinction than insects. Many more animals on the "higher" compared to the lower end of the evolutionary scale are in danger of becoming extinct--the opposite of what is expected if survival of the fittest laws propel animals to a "higher" level of "fitness."

Aside from the cases of extinction for which mankind was directly responsible, it has been difficult to determine the specific biological cause for most of the rest. The most well-known set of massive extinctions--the whole dinosaur world consisting of scores of reptile types, both land and water, large and small--has generated many conflicting hypothesis. Another mass extinction, which is dated at the end of the Cambrian, some estimate caused fully two-thirds of the trilobite families to disappear. In another, dated at the close of the Permian, nearly one-half of the then known animal species became extinct (the dinosaur extinctions are dated at the close of the Cretaceous age).

The fact of major extinctions is well-know; the why is not. As noted in Science News (Sept. 30, 1978, pg. 233) "...surprisingly little has been known about just what makes a particular species go extinct." The variety of animals has not been increasing, but declining with time and no new forms are appearing, to say nothing of new and better forms. Since the 1600's, over 500 species and subspecies of native biota have become extinct in America, and governments are continually adding new names to the endangered species list--then only after heroic national efforts is one removed. In prehistoric times, the rate of extinction is estimated to be one species per 10,000 years, by 1600 the rate was one per thousand years, and it is now one per year (Sullivan et al, 1980: 168). Evolution predicts an increase of diversity with time--but what has been occurring is the exact opposite.

Flexibility appears to be far more important for survival than a high level of fitness; and natural selection would theoretically "select" animals into a slowly narrowing ecological niche in which extinction is inevitable. As both today and historically animals which are "higher" on the evolutionary scale are likelier to become extinct, "selection" tends to evolve animals into a position in which they are likelier to be selected out of existence! In other words, Darwinian selection almost invariably leads to extinction. Complexity does not usually increase the animals survival advantage, but often actually makes survival more precarious because more structures exist to break down. Animals with more complex brains are also often less able to tolerate some of the major environmental pressures that supposedly caused their evolution -- changes in temperature, food supply, etc.--than lower forms. The parsimony law predicts that if two structures equally achieve the same results, the simpler structure is preferable. Mechanically, a simpler structure has fewer parts to wear down, and thus cause a breakdown. A clear technology advance is the development of a machine which does the same job with fewer parts, especially moving parts, or with a less complicated design.

In many cases, the so-called simpler eyes of insects or ears of certain animals are more effective than the same structure in humans. This fact questions the purpose, from a biological standpoint, of more complex structures. If a motorcycle will transport one to the next town as effectively and quickly as a Cadillac, natural selection will not evolve a Cadillac. Yet, the fact is, most higher animals are Cadillacs. The functions of life, growth, survival, and reproduction, are all carried out as effectively in bacteria, insects, and worms as humans, if not more so--the only difference is that humans travel through life in a more luxurious style.

A problem with selection is that the "simplest" living things are extremely complex, and the supposedly oldest living things are also usually highly "developed." Microfossils, chains of cells that resemble a string of beads, were discovered in rocks collected from a desolate corner of Western Australia. Paleobiologist Schoph, et. al. (1965), noted that these bacteria-like organisms which lived at the bottom of certain shallow seas were "surprisingly complex." In his words, "these microfossils tell us that life was a whole lot more complex at that time (three and a half billion years ago, only a billion years after the earth was

supposedly formed) than any of us had really guessed." Animals are designed for a certain type of life, and each one fits quite well into its own habitat. The severe difficulties in placing animals in an evolutionary hierarchy, given the limitations of molecules and the flexibility inherent in all living structures (plus the fact that all of them are designed to fit a role and every organ is perfected) has produced the new taxomy system called cladistics. All organisms face the same needs, and all are normally capable of carrying out what is necessary to meet them (Thomas, 1974).

Selection predicts that lower forms of life will display a low level of tolerance for variations in such factors as temperature, lack of regular food, etc., and that those organisms at the higher level would possess better, often more complex organs which help them to survive by blessing them with more ability to:

1. live for longer periods of time without food, and on food types that are abundant (as cellulose).
2. live on a wider variety and type of food (animals that can eat most anything are ideal).
3. survive large temperature variances (such as from 25 to 75 degrees C, or close to these extremes.)
4. have a higher level of tolerance to poisons, ions, and acids (a pH of 4 to 10 or wider, etc.).
5. have an effective means of escaping and defending themselves against predators of all types and sizes.

A major thrust of evolution would seem to be an ever greater ability to survive in spite of deprivation of its biological needs. Presumably, the only limit is the ability to survive total deprivation, and to stop and start one's biological system (some animals can survive for centuries in a state of extreme hibernation without food or water). Selection, in short, would cause the evolution of a "super fit" animal, the most possible fit (likely a single-celled organism) which would eventually literally cover the earth, impeded only by space and the availability of food--both which would effect only its ability to reproduce. Even here, evolution would increase its food flexibility requirements to the extent that the cell could exist on only oxygen, carbon, nitrogen, and trace amounts of a few other elements. This prediction has failed. Further, no need exists to evolve the tremendously complex organisms with their endless variety of sense organs, systems of locomotion, communications, etc., that are now found everywhere in the real world, both today and far back in the past.

Much of what exists in the natural world seems to have little to do with the process of natural selection or even survival. Viewed from a distance, most tree experts can tell a cypress (tall and pointed) from a maple (roughly ball shaped) from an elm (fans out at the top). As the shapes of most trees does not maximize increased sunlight exposure, selection would not seem to have caused this important genetic based taxonomic aid. These different shapes, while of enormous help in identifying tree types, seem to have nothing to do with selection or survival. A tree shape which would seem to facilitate survival for all trees is that which maximizes, for example, its leaf exposure to sunlight. Increased sunlight intake facilitates utilizing more sunlight, resulting in increased photosynthesis, thus more energy, food and growth.

WHAT SELECTION ACTUALLY DOES

Natural selection seems to operate primarily to counteract de-evolution and functions to help to maintain the species at the same quality level, not to improve or "cause" a higher level of development. Serious genetic defects are generally fatal to those so afflicted. A body mechanism in the mother serves a fetus quality control function, causing rejection (and often spontaneous abortion) whether these defects are genetically or environmentally caused. The fact that only the more "fit" or the healthier survive serves primarily to reduce the number of undesirable characteristics that may be passed onto one's offspring, ensuring that the race as a whole stays at about the same quality level. Natural selection, in eliminating or reducing those creatures that deviate from the norm, actually serves both to retard any change, thus all evolution. The Darwinian view which pictures nature as being characterized by fierce struggles has dominated our view of the natural world and our scientific research for over a century (Grasse, 1977). Darwin stated: "What a book a devil's chaplain might write on the clumsy, wasteful, blundering, low, and horribly cruel works of nature." Evolutionist Teller (1962: 2) concluded:

> Evolution knows no moral feeling. The earth is a gory battle-ground, where the weakest animals [die]...in a pitiless struggle of tooth and claw. Evolution, century after century, repeats its own follies, by bringing into existence billions of the lowest types of life when it might produce only the highest; continues the production of useless and harmful organs; turns out beings, some of which live only a day or an hour, or sometimes for only a few seconds. It is a ruthless, blundering, non-moral process, without a glimmer of guidance behind it.

This struggle for existence has been extended to almost every level of the living organism--from molecular, to biochemical, to molar. Roux, in his theory of body conservation, suggested that the struggle for resources even results in one's own body organs struggling with each other for nourishment! Huxley went further: concluding that molecules within each organism were competing with each other. Weismann assumed that particles of germ plasma were also in constant conflict. E. O. Wilson's social biology theory adds that, while individuals compete with each other, they also unite into groups which compete with other groups.

This view of life violates a core value of humanity, that of the need to care for the sick, the weak, and the less advantageous. Macbeth (1971: 57) notes that, "After the implications of 'survival of the fittest' became apparent, especially relative to social programs, the emphasis on struggle was played down. As Gould (1977: 39) admits, "Although I wear the Darwinian label with some pride, I am not among the most ardent defenders of natural selection." More blunt is Bethell (1976) who concludes, "Darwin's theory [of] ...Natural selection was quietly abandoned, even by his most ardent supporters, some years ago." And this is as it should be, the theory has resulted in a set of philosophies, from the Nazi superior race theories to the Western wars on the Black race, which are collectively responsible for the loss of almost 700-million humans from the late 1800's to today (Bergman, 1990, Gould, 1981).

REFERENCES

1. Bergman, Jerry, Natural Selection. In Press, 1990.
2. Bethel, Tom, Darwin's Mistake.Harper's, February, 1976.
3. Borchgrave, Arnold (Ed.), "Slime Hasn't Changed in 2 Billion Years," Insight. Jan 25, 1988.
4. Carrighar, Sally, Wild Heritage. Boston: Houghton Mifflin, Co., 1965.
5. Farb, Peter, Insects, New York: Time Life Books, 1962.
6. Gould, Stephen, Ever Since Darwin, New York: W.W. Norton, 1977.
7. Gould, Stephen, The Mismeasure of Man, New York: W.W. Norton, 1981.
8. Gould, Stephen, Wonderful Life, New York, N.Y.: Norton, 1989.
9. Grasse, Pierre, Evolution of Living Organisms, New York: Academic Press, 1977.
10. Hitching, Francis, "The Neck of the Giraffe", Life, April, 1982, New Haven: Tichnor and Fields, 1982.
11. Macbeth. Darwin Retried, New York, N.Y.: Dell, 1971.
12. Schoph, J.W., et al., "Early Bacteria", Science, Vol. 149, p. 1365-66, 1965.
13. Sullivan, Thomas, et. al., Social Problems, New York: Wiley, 1980.
14. Teller, Woolsey, The Atheism of Astronomy, New York: Amo Press, 1972.
15. Thomas, Lewis, The Medusa and the Snail,New York: The Viking Press, 1974.
16. Williams, George C., Adaptation and Natural Selection, Princeton, NJ: Princeton University Press, 1966.
17. Wistreich, George A., and Max Lechtman. Microbiology, New York: MacMillan Pub., Co., 1984.