THE EYE: BY CHANCE OR INTELLIGENCE

H. S. HAMILTON*

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Abstract

This article presents some of the obstacles encountered when natural selection, acting on chance mutations, attempts to account for the origin of the organs of vision in the almost limitless number of creatures throughout nature today. Information and intelligence rather than chance were the essential ingredients in sight manifestation.

Introduction

Sight is one of man's most precious faculties and one which determines to a large extent his activities and limitations. This applies to the animal kingdom as well and indeed decides in great measure the animal's survival. It is important, then, to examine these organs of vision to answer some of the questions about their origin and function. As far as origins are concerned there are only two main contending theories: the various kinds of eyes arose by some type of chance evolutionary mechanism or they were intelligently designed to fulfill the organisms' requirements in their respective niches.

Basic Darwinism

The biological climate of the 18th and early 19th centuries was one of general belief in special creation, but there were dissenting voices which became more strident with Lyell's geological theories of gradual deposition of the rock layers as contrasted with catastrophism and the Noahic Flood. At this time Charles Darwin was forming his ideas about evolutionary processes, stemming from his observations and experiences on the five-year round-the-world voyage on H.M.S. Beagle, plus subsequent investigations in England. He was developing the basic theory of natural selection based on the survival of the fittest to try to explain how more complex creatures could arise from simpler ones. This culminated in his book, ***The Origin of Species,*** published in 1859. In it he defined natural selection as follows:

> Owing to this struggle for life, any variation, however slight and from whatever cause proceeding, if it be in any degree profitable to an individual of any species, in its infinitely complex relations to other organic beings and to external nature, will tend to the preservation of that individual and will generally be inherited by its offspring. I have called this principle, by which each slight variation, if useful, is preserved, by the term of Natural Selection (Darwin, 1979, p. 115),

Further, he described natural selection as functioning in this manner:

> It may be said that Natural Selection is daily and hourly scrutinizing, throughout the world, every variation, even the slightest; rejecting that which is bad, preserving and adding up all that is good; silently and insensibly working whenever and wherever opportunity offers, at the improvement of each organic being in relation to its organic and inorganic condition of life (Darwin, 1979, p. 133).

This somewhat anthropomorphic character of natural selection seemingly differs to a degree from Richard Dawkins' definition in his book, ***The Blind Watchmaker:***

> Natural Selection, the blind, unconscious, automatic process which Darwin discovered, and which we now know is the explanation for the existence and apparently purposeful form of life, has no purpose in mind (Dawkins, 1986, p. 5).

In living organisms the visual organs can be conveniently divided into two major categories; those of

*H. S. Hamilton, M. D., 1653-140th Street, Surrey, B. C., Canada V4A 4H1.

invertebrates which are of two general types, simple and compound, and vertebrates in which all eyes are based on the principle of the camera. When discussing organs of extreme perfection in the chapter of his book, Difficulties of the Theory, Darwin outlined how the simple eyes of the invertebrates could have come into existence by natural selection. In this category the eyes range from the light-sensitive end of a nerve fiber to those of the octopus, for example, whose eyes resemble the vertebrate plan in a number of ways. In the well-known and oft quoted statement he confesses that his idea appears to be absurd:

> To suppose that the eye, with all its inimitable contrivances for adjusting the focus to different distances, for admitting different amounts of light, and for correction of spherical aberration, could have been formed by natural selection, seems, I freely confess, absurd in the highest possible degree (Darwin, 1979, p. 217).

In spite of this he goes onto convince himself that if the slight variations are numerous enough over a long enough time scale the change from simple to complex is possible and credible. However, after mature consideration, and criticism from various quarters over the following dozen years or so, in the sixth edition of his book (1872) he abandoned natural selection as the mechanism for major change and seemed to relapse into a kind of Lamarckism (Hedtke, 1983, pp. 37-38). He was unaware of Mendel's work and stated that "the laws of inheritance are quite unknown," (Darwin, 1979, p. 76), and that "our ignorance of the laws of variation is profound" (Darwin, 1979, p. 202).

Mendel and Mutations

Mendel's work in genetics was published in 1865 but was neglected and pushed aside as Darwin's theories were in the ascendancy. As time went on, breeding experiments showed that there was no evidence of one species changing into another. The fossil record continued to exhibit a lack of intermediate forms. Mendel's views on inheritance were rediscovered and followed up by De Vries' ideas on mutations which were then seized upon as a probable mechanism for speciation. Subsequent research, including extensive work with the fruit-fly, indicated that the vast majority of mutations were lethal or detrimental. This left only a very few that were neutral or could be beneficial in special circumstances. Even so, Neo-Darwinism, depending on gradual chance mutational change, has been the accepted evolutionary theory until recently, when it became apparent that this concept lacked explanatory power in view of the fossil record which still refused to reveal the necessary intermediate forms. Punctuated equilibria has become the latest theory to try to accommodate this obvious lack but still retains the concept of natural selection. Are these theories able to account for the almost unlimited types of eyes which we see in nature today? What about the small progressively orientated upward changes, are they real or testable? Apparently not, in the view of many evolutionists such as the following:

> Natural selection, long viewed as the process guiding evolutionary change, cannot play a significant role in determining the overall course of evolution (Stanley, 1975, pp. 646, 648, 650).

> As far as I can see, statements of the type that 'Phenotype x is an adaptation evolved via the agency of natural selection' are thoroughly untestable. The necessary data to refute such an assertion cannot be gathered, and we are more or less forced to accept it as an article of faith rather than a scientific statement (Cracraft, 1981, p. 32).

Darwin's inherent weakness is its reliance on ***a posteriori*** rationalization of presumed selective advantages which cannot, by definition, be experimentally verified (Maderson et al., 1982, pp. 282-283).

Pseudo-evolutionary Series

Professor Garrett Hardin of the University of California asks:

> How are we to account for the evolution of such a complicated organ as the eye? If even the slightest thing is wrong—if the retina is missing, or the lens opaque, or the dimensions in error—the eye fails to form a recognizable image and is consequently useless . . . since it must be either perfect or perfectly useless. How could it have evolved by small successive Darwinian steps? (Hardin, 1961, p. 71-72. See also Hamilton, 1986).

Hardin then offers an answer:

> Were all other organisms blind, the animal which managed to evolve even a very poor eye would thereby have advantage over the others. Oysters have poor eyes—many tiny sensitive spots that can do no more than detect changes in the intensity of light. An oyster may not be able to enjoy TV but it can detect a passing shadow, react to it as if it were caused by an approaching predator, and—because it is sometimes right—live another day. By selecting examples from various places in the animal kingdom, we can assemble a nicely graded series of eyes, passing, by not too big steps, from the primitive eyes of oysters to the excellent (though not perfect) eyes of man and birds. Such a series, made up from contemporary species, is not supposed to be the actual historical series; but it shows how evolution could have occurred (Hardin, 1961, p. 71-72).

In his book, ***Darwin Retried,*** Norman Macbeth, writes:

> What are the weaknesses in this statement? I will point out two although there may be more.
> 1. Doubtless one can collect samples from various species to build up a nicely graded series of eyes, but this has nothing whatever to do with the way the specific human eye was developed. Hardin admits this when he says that "such a series . . . is not supposed to be the actual historical series." Since it is the historical series we are asking for, he is giving us stones for bread.
> 2. Collecting a group of samples would actually show that nature had solved the problem in a number of different ways; but when we cannot explain even one way, the mystery only deepens when we see that nature has worked out several (Macbeth, 1971, pp. 100-101).

With regard to the immense invertebrate phyla there is no such progressive series of eyes from simple to complex as indicated by Duke-Elder:

> The curious thing, however, is that in their distribution the eyes of the invertebrates form no series of continuity and succession. Without obvious phylogenetic sequence, their occurrence seems haphazard: analogous photoreceptors appear in unrelated species, an elaborate organ in a primitive species or an elementary structure high in the evolutionary scale, and the same animal may be provided with two different mechanisms with different spectral sensitivities subserving different types of behaviour (Duke-Elder, 1958, p. 178).

Mutations can only rearrange or shuffle information already present in the genetic make-up for each individual eye. To progress from, simple to complex requires a steady, progressive increase in available genetic information, and this does not arise by chance rearrangement or shuffling of the genes in any specific genome. Intelligence and design are necessary for any increase in complexity. In the natural world we find that the eyes of creatures are eminently satisfactory for their needs, and no impulse for change is evident. With the newer knowledge of DNA in genetics and the development of information theory, the inadequacy of natural selection acting on chance mutations to account for organic evolution is becoming more and more evident:

> The central question of the Chicago Conference (1980) was whether the mechanisms of microevolution (natural selection) could be extrapolated to explain the phenomenon of macroevolution. At the expense of doing violence to the positions of some people at the meeting the answer can be given as a clear NO (Lewin, 1980, pp. 883-87).

Vertebrate Realities

When we consider the vertebrates in contrast with the invertebrates, we find that the eyes are all constructed on the principle of the camera but with modifications for functioning in different environments such as air, water, and in light and darkness. In all cases the principles of refraction are uppermost in order to produce a clear image on the retina. To appreciate the difficulties for chance evolutionary processes being operative, the words of astronomer Alfred Noyes are pertinent:

> Suppose, for instance, one of the surfaces of the crystalline lens of the eye to be accidentally altered, then I say that unless the form of the other surface is simultaneously altered in one way out of millions of possible ways, the eye would not be optically improved. An alteration in the two surfaces of the crystalline lens, whether accidental or otherwise, would involve a definite alteration in the form of the cornea, or in the distance of its surface from the centre of the crystalline lens, in order that the eye might be optically better. All these alterations must be simultaneous and definite in amount, and these definite amounts must co-exist in obedience to an extremely complicated law . . . my apprehension, then, that so complicated an instrument as the eye should undergo a succession of millions of accidental alterations is no less improbable than if all the letters of the *Origin of Species* were placed in a box and on being shaken and poured out . . . should at last come out together in the order in which they occur in that fascinating work (Shute, 1969, p. 129).

Even William Paley (1743-1805) long before Darwin's time, speaking about the eyes of fish, says that the laws of light:

> . . . require in order to produce the same effect that the rays of light, in passing from the water into the eye, should be refracted by a more convex surface than when it passes out of air into the eye. Accordingly we find that the eye of a fish, in that part of it called the crystalline lens, is much rounder than the eye of terrestrial animals. What plainer manifestation of design can there be than this difference (Shute, 1969, p. 129).

Another great obstacle in deriving the vertebrate eye from any invertebrate eye involves the structure of the retina in each division. In the invertebrates it is upright while in the vertebrates it is inverted with no intermediate forms. Again in quoting Duke-Elder there does not seem to be any solution to this enigma:

> It would seem therefore, that despite the considerable amount of thought expended on the question, the emergence of the vertebrate eye with its inverted retina of neural origin and its elaborate dioptric mechanism derived from the surface ectoderm is a problem as yet unsolved. Indeed, appearing as it does fully formed in the most primitive species extant to-day and in the absence of transitional forms with which it can be associated unless by speculative hypotheses with little factual foundation, there seems little likelihood of finding a satisfying and pragmatic solution to the puzzle presented by its evolutionary development (Duke-Elder, 1958, p. 247).

Jack H. Prince states:

> There is no concrete evidence that any known kind of invertebrate eye has definitely been associated with the development of the modern vertebrate eye, although there may be grounds for assuming connections between some of them and the discarded vertebrate third eye (Prince, 1956, p. 354).

A further problem occurs when chance mutational changes are supposed to be responsible for the very considerable alterations in eyes of water dwelling vertebrates when they left the sea to dwell on land in an entirely different environment. Again precise refractive changes were obligatory as well as anatomical refinements, and a means of lubrication (tears) had to be provided, all of which require new genetic information in the DNA. Chance genomic mutational changes would be entirely inadequate for the task (Hamilton, 1988, pp. 117-20).

Conclusion

In this brief survey a number of difficulties have been mentioned which plague evolutionary theories with respect to the eye and which natural selection acting on chance mutational change cannot explain. Natural selection has been termed a tautology, even by some evolutionists, and while it may have some validity in minor genetic variation it is totally powerless in

macroevolution. It is evident that present concepts of organic evolution have not and cannot account for the remarkable design and ability of the organs of vision from the light-sensitivity of the amoeba to the perfection of the eagle's eye.

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SYMPOSIUM ON VARIATION—I

POSSIBLE VARIABILITY IN LIVING ORGANISMS— A REVIEW OF *CRSQ* WRITINGS

EMMETT L. WILLIAMS*

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Abstract

A selected bibliography and brief discussion of creationist writings on limited variability in the biological world is presented.

Introduction

One of the major points of difference between the creationist and evolutionary models of science is that of the possible variation in the natural world. Generally an evolutionist believes in infinite variation that allows "nature" to start with "simple particles and molecules" and evolve upward to man. Whereas creationists in general believe in a limited variability. The Creator designed and quickly brought the various types into being. The only variation allowed, which is considerable but not unlimited, is within the gene pool of these original types.

These postulates affect the research and field work attempted by the two different groups of scientists. The evolutionist continually looks for links between living organisms, between living organisms and fossil remains and between various fossils. No lack of success will deter his search for the "chain" and similarities that connect all of the "evolved" creatures. Creationists will study both similarities and differences in organisms and will not overrate the former to the neglect of the latter. They generally view similarities as a solution to a common design "problem" and visualize the Creator repeating a pattern He has employed in His creative acts. The differences often are explained within a framework of different functions for various organisms or a different type of created kind.

Adaptation is viewed by the two opposing philosophies in different ways. Evolutionists feel that nature (natural selection) operates on an organism and it evolves a solution to an environmental problem and survives in a particular niche of the natural world. A creationist believes that an organism present in a harsh natural environment is "preadapted" to survive. The omniscient Creator designed the particular creature to be successful in its intended niche. These few examples illustrate the repercussions of the different philosophies in the area of variation and fixity in nature.

In providing a recent creationist history for the concept of variability of living organisms, a review of *Creation Research Society Quarterly (CRSQ)* articles was attempted. The ideas developed by various creationist scientists can be studied in detail by reading their works. I offer these brief reviews as an introduction to this symposium. The references are collected according to author. I make no claim of completeness for I may have overlooked some contributions to the subject unintentionally.

Frank L. Marsh

Dr. Marsh probably has written more on the subject of variation than any other modern creationist. His writings likely have had a greater impact in this area than anyone else in recent years. He has done considerable research and writing on the kind concept and been very influential in its acceptance.

1. Marsh, F. L. 1964. The Genesis kinds in the modern world. *CRSQ* 1 (Annual):30-38. The author presented a history of the kind vs. species concept from both science and Scripture. He pointed out the confusion over kind and species in the literature. It is noted that there are limits to variation.

*Emmett L. Williams, Ph. D., 5093 Williamsport Drive, Norcross, GA 30092.