NATURAL SELECTION AND DESIGN: COMMENTS ON MICHAEL RUSE'S NEW BOOK

by Ward H. Goodenough

Abstract. Is the adaptive complexity of living organisms the result of evolutionary processes alone? or does it give evidence of intentional design? Michael Ruse appears to argue that we can have it either way. As a scientist I find the argument from design unnecessary. Yet it has great appeal to humans, whose behavior is largely intentional and who look for patterns in events and for the intentions that may have produced them.

Keywords: design; evolution; intention.

There is an apparent, often amazing fit of the structures of living organisms to the uses for survival to which those structures are put. Does this imply that these structures were designed specifically for those uses, or is this fit to be understood as a by-product of feedback interactions of organisms and the milieus in which they exist, a feedback process that has come to be called *natural selection*? If empirical evidence shows an apparent design (Ruse's "argument *to* design"), must we infer that it is the product of purposeful designing (Ruse's "argument *from* design")? This question has been at the heart of much of the 150-year debate about how evolution is to be understood, especially in regard to human beings. Ruse reviews critically the history of this debate and seems to conclude that there is room for both ways of looking at things.

By room for both ways of looking at things, I gather that Ruse's point is that scientifically we can account for evolution without having to posit a

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[*Zygon*, vol. 37, no. 2 (June 2002).]
 ISSN 0591-2385

designer; it can and does all come about by the operation of natural processes on the materials those same processes have produced previously. At the beginning (something Ruse does not talk about) were the self-organizing processes affecting random irregularities in the changing distribution of energy/matter following the Big Bang, such as we would infer from chaos theory. From this, again by the chance operation of these same self-organizing processes, emerged self-replicating molecules. These in their interactions and resulting mergers into more complex self-replicating entities produced the first living organisms. Differences in the ability of these organisms to survive long enough to reproduce—differences resulting from chemical changes in their genetic constitution (mutations) induced, again, by natural processes—have resulted in the ever-changing living systems whose survivals and extinctions make up the history of life on Earth. No designer needed!

There is, nevertheless, much in it all to wonder at. The intricacies of mammalian and insect eyes are frequently mentioned examples. We humans have an inborn proclivity for aesthetic pleasure in contemplating the fit of working parts to functioning wholes in the things we contrive in order to achieve our purposes. Being both purposeful and sentient animals, we are fascinated by ingenuity in design. The complexities of functional adaptations in nature fascinate us similarly and lead us, as designers ourselves, to wonder how and by whom or what they could have been designed. There is nothing in science to deny the possibility of some as yet unknowable Designer. There is room, therefore, for a deistic interpretation of design in evolution. Scientifically it is not necessary, but for humans, who see events as the result of intentional behavior, it is all too compelling, and not only compelling but aesthetically and hence psychologically (that is, spiritually) elating. We can thus reaffirm our belief in God, our feeling of the necessity of God in our lives, by seeing in evolution the working of an awesome design. Though as scientists we do not need to see evolution that way, as human beings we seem to have a compelling need to search for intention, not only in the behavior of our fellow humans, which is indeed intentional, but in other animals and in everything else as well. So why not indulge our proclivities? If doing so provides us with much-appreciated psychic euphoria, so much the better. Such, I infer, is the crux of Ruse's message.

As an anthropologist whose scientific interest has focused on *Homo sapiens* as one of the many products of biological evolution, I personally take the position that it is preferable to try to understand evolution and ourselves in it without resort to a Designer. It keeps open the search for scientific explanations of what appear as remaining mysteries. I find it humbling to remind myself that horseshoe crabs, the AIDS virus, and the bacteria in my intestinal tract that allow me to digest my food are all, equally with humans, surviving products of evolution, along with such beautiful crea-

tures as butterflies, tropical fish, and songbirds. What reason is there for humans to think of ourselves as the most wonderful of those products other than our tendency to see the world from an egocentric perspective? When I look at what has gone on in human history through the ages, I see little that makes us better than anything else except as measured by standards of comparison of our own choosing for purposes of self-congratulation.

It is demonstrable that in numbers we have proven to be one, but only one, of the more successful species. By this criterion, rats and cockroaches are also doing very well in the habitats we have created for both ourselves and them, although many other species are not. Indeed, our very success in this regard makes us ever more liable to be the prey on which other predating and parasitic organisms will turn for their own survival and reproductive success. Just as we are destroying many of the resources on whose exploitation we have prospered, so we may become a major resource on whose exploitation others will prosper. Evolutionary success is often the precursor of disaster. Indeed, the better adapted a species is to a specific environmental niche, the more likely it is to die out if that niche changes or ceases to exist.

This thought leads to a consideration of something that Ruse does not mention at all and that is unthinkable for those who like to see evolution as the product of a Designer's design that will take humans ever upward and onward. That something is extinction. All living organisms die. We humans, through self-awareness, know that as individuals we are destined to die. It is not easy for us to come to terms with that fact and to find a way emotionally to accept our mortality and feel positive about such life as we have. We like even less to confront the fact that the ultimate fate of every species, including *Homo sapiens*, is extinction. Indeed, all life on Earth will someday be extinguished. The idea that humans are the product of a godly Designer's intention to develop something that will in time itself achieve godliness is akin to believing that we as individuals can achieve immortality, if not in the flesh, at least in spirit. It may be comforting to believe this, but everything we learn from science about our universe and ourselves in it points otherwise. For me, a challenging spiritual exercise is to come to terms with the transience of all things, including ourselves as individuals and as a species. How then do I find meaning in my existence? Alternatively, how do I escape from feeling it necessary to have any meaning at all in my existence? Such questions are invitations to serious contemplation and meditation.

On several occasions Ruse mentions a difference in views about how natural selection operates. Does it work on individuals alone or also on populations with variable gene pools, populations that are largely inbreeding isolates, whether numerous and extensive or small and spatially confined? Ruse leaves the question open.

That there are selective processes affecting the survival of species and of distinct social groups is clear. When South America became joined with North America, placental mammals from the latter invaded South America, which till then had only marsupials, and successfully took over. Opossums were the only marsupial survivors. Marsupials died out as individuals, one at a time, to be sure, but the competition for survival was not among individuals within a species, it was between members of different species. The end result was the selection of mammalian species as against marsupial species for survival.

If we wish to reserve the term *natural selection* for selective processes at the individual level within species and refer to selection for extinction and survival at the group or species level by some other term, let us do so. What is important to remember is that there are selective processes at work affecting which sperm are best able to fertilize an ovum all the way up through the survival of distinct gene pools among animals to which languages and cultures get transmitted from one generation to another in human groups. Evolution goes on at all these levels, and modes of systemic organization and selective processes of one kind or another are determining the outcomes.

These outcomes often can be interpreted retrospectively as results of the relative efficacy of different functional adaptations to contingent circumstances. Efficacy of what is seen as a means to any presumed goal can be a product of chance or of serendipitous discovery. As is often the case with humans, it also can be a product of intentional design. Since we humans have a clear tendency to see events as caused by intention, we look first for responsible agents rather than the blind working of natural processes. This leads us to create gods with superhuman powers and to see events in the natural world, including evolution, as resulting from the intentional exercise of those powers.

Reference

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