

THE SELFISH GENE

RICHARD DAWKINS, 1989

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Richard Dawkins' work *The Selfish Gene* is a clear, concise and well reasoned explanation of evolution. Dr. Dawkins uses a writing style that is simple, yet elegant to explain to the layman, in terms that are not highly scientific, the process by which the 'primordial soup' of the prehistoric earth worked its way into the present day earth, with cell phones, computers, 100 story buildings, and transportation systems that move millions of people a day. Dr. Dawkins' idea, simply put, is that all changes in the forms of life on earth have occurred because genes strove (speaking as Dawkins does in a very non-motivational sense) to reproduce themselves in the next generation. Two ways that genes, also called replicators, could propagate themselves in the next generations are by cooperative and adversarial relations. Dawkins says that the purpose of his work is to "show how both individual selfishness and individual altruism are served by the fundamental law [he is] calling gene selfishness" (page 6).

The concept of gene selfishness refutes the common idea that living creatures evolve in such a manner that they do things 'for the good of the species.' Dawkins argues that creatures do things that may be considered altruistic by some because that action, even if it results in the death of the individual will result in the survival of more of that individual's genes into further generations. Dr. Dawkins runs the reader through several examples of calculations that enable the individual, or more precisely, the individual's genes, to calculate whether his/her death will serve to keep more duplicates of themselves in circulation within the population. However, Dr. Dawkins does not make the mistake of suggesting that individuals faced with the dilemma of jumping in a river to save a drowning person stops to mathematically calculate the likelihood that that altruistic act will serve his genes well.

In this work Dawkins introduces several new terms to the field of evolutionary studies. He also bends the common definition of gene to fit his will, which may be justifiable. Dawkins defines a gene as "any portion of chromosomal matter that potentially lasts for enough generations to serve as a

unit of natural selection” (page 28). With this simple sentence Dawkins has defined the unit of natural selection as the gene, not the individual, which conventional wisdom says is the unit upon which Darwinian selection acts. The justification behind this argument is that individual body is nothing more than a survival machine built by the genes to carry them into the next generation (page 19).

The replicator is another term that Dawkins introduces in this work. According to Dawkins, a replicator is simply an organic molecule that was able to create copies of itself, unlike other molecules that were being formed from the primordial soup of prehistory (page 15). A gene is a replicator. Replicators have three important characteristics: longevity, accuracy and speed. In order for a particular replicator to survive and prosper, it must live long enough to produce many copies of itself, be quick at doing so, and create exact copies of itself, for if there are mistakes the replicator has just created more competition for itself (page 17). Some replicators will of course make mistakes in the process of copying themselves. Sometimes these varieties will find themselves in possession of new adaptations, which make them better self-replicators and will in turn come to dominate the population.

Dawkins spends the first part of this book explaining different examples of how simple replicators have moved through time to become the species that we see on earth today. He makes an explicit point to show that DNA molecules are only found on earth, and thus the discussion that he is about to engage in only applies to the inhabitants of that planet, which is one simple example of the humor that Dr. Dawkins has infused throughout this work. He then goes on to discuss aggression between species, and why there is no obvious merit in indiscriminately trying to kill rival species. Simply put, the energy exerted in attempting to eliminate individuals of a species with whom you compete will take resources away from you, which could be better spent producing offspring. Furthermore, aggressive behavior towards another species is likely to benefit another one of your rivals more than it does you (page 68).

Quite possibly the most important chapter in this work is chapter eleven, which discusses memes, a term that I am quite certain that Dawkins made up. A meme is a “unit of imitation” (page 192). Memes act on ideas, which Dawkins argues is the ‘new primordial soup.’ Genes propagate themselves in the gene pool by moving from body to body via reproduction, memes propagate themselves by leaping from one brain to the next via the process of imitation (page 192). Some memes, such as religions, songs, and art have long

life-spans and will survive for many generations without much change. Other memes, like tight-rolled jeans, and teased bangs will fade as quickly as they developed because they have no selective advantage for being passed into the next generation. Dawkins argues that memes have more importance than genes, because upon our death, the genes that we carry within our survival machines will be virtually absent from the gene pool within a few generations, each successive generation seeing our genetic contribution halved. However, a meme developed and devised by us can theoretically survive into eternity, much like many religions have (page 199).

The Selfish Gene is a remarkably readable new interpretation of the process of evolution. Everyone, from the layman to the biological anthropologist should be able to read this work without feeling over or under-whelmed. Dr. Richard Dawkins has insightfully and plausibly explained natural selection in terms of genes, a delightful trip outside the box of traditional thinking, where natural selection works on individuals of a species.