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DARWINISM, DAWKINS AND EVOLUTIONARY ALGORITHMS

Emeritus Professor A G Shannon *AM*
Master, Warrane College,
The University of New South Wales, Kensington, NSW 2033

Introduction

Public intellectuals like Dawkins, who like to use their expertise in one field to assert authority in another, seem to vary in their motivations from malice to vainglory, or even seeking the truth. Thus I felt in Dawkins' earlier writings that he was almost drifting towards St Anselm's ontological proof for the existence of God [6]. The god that Dawkins and his disciples are now trying to demolish though is the anthropomorphic god of the fundamentalists. His misdirected zeal ironically appeals to anti-theist fundamentalists. Descartes probably started it all when he thought that he could build up all human knowledge with an infallible mathematical deductive method! [11]

Not for them the humility inherent in an understanding of the scope and limitations of science [10], but rather the arrogance of Atkins [1]: "… science has never encountered a barrier, and the only grounds for supposing that reductionism will fail are pessimism on the part of scientists and fear in the minds of the religious". So too they are far from the founding fathers of the Royal Society at Oxford in the 1650s. Their Charter states that the Society is devoted "to the glory of God the Creator and the advantage of the human race", yet the Fellows were forbidden to meddle "with divine metaphysics and morals" [4].

Because this paper is merely an attempt to sensitise the reader to issues, a reasonably extensive reading list is appended so that students can pursue those aspects which interest them in more depth.

Evidence

It is not surprising that moral relativists disparage any "search for certainty". For them the only absolute is that there is no absolute. "It is as if to seek certainty denoted a lack of character, and were a sign of psychological or intellectual immaturity" [5].

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Dawkins makes much of his view that “evidence”, as he defines it, is missing from religious belief. McGrath [18] and Lennox [13] rebut this by pointing out that Dawkins has no evidence that there is no evidence. There are, it is true, some truths, such as the mystery of the Trinity which are inaccessible to reason in terms of existence and content. This does not make it unreasonable to believe them. It depends on whose authority we believe them. In any case a God we could fully understand would not be God – to extend St Anselm.

Yet scientists themselves believe some things on the basis of their nature rather than observation alone. Thus we believe it is in the nature of humans to be mortal. While nearly every textbook of introductory logic has the statement “all humans are mortal”, and we know that all humans who have died must *ipso facto* be mortal, yet we do not know it scientifically that all humans are mortal, because, as far as we know, most humans who have ever lived are alive today. We know that humans are mortal from the study of natures.

For Dawkins the only evidence is scientific evidence, which itself is not a scientific statement. Even the more persuasive Hitchens reduces his evidence to a series of anecdotes [13]. While some might say that these rebuttals are only playing with words, there are more serious underlying scientific issue relevant to the context of this paper.

These have been articulated in a series of papers by McCaughan, who points out that so much in life depends on the evidence of witnesses even scientific witnesses! [17] Simplistically they involve the obscuring of truth occasionally by statistics in science, and more frequently the domination of physics by mathematics to control all explanation despite the fact that mathematics can do no more than predict [16]. Statistics can disguise the existence of goal directed forces, but “goal directed forces eliminate blind chance. In following David Hume, scientists have removed goals or ends from science. This has not eliminated them from nature but left them unrecognised. Blind faith in blind chance just leads to intellectual blindness” [14].

This leads us to Dawkins’ use of evolutionary algorithms for computer simulations and analogies with typing monkeys!

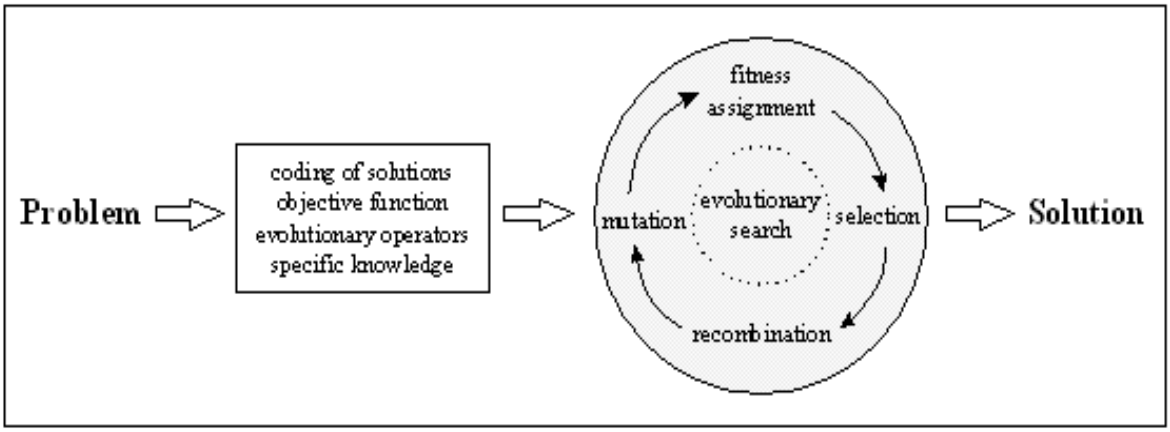
Genetic Algorithms

One type of evolutionary algorithm is a Genetic Algorithm (GA). A GA is an adaptive heuristic search algorithm with terms based on analogies with the evolutionary ideas of natural selection and genetics. Dawkins’ dichotomy that we can have God or evolution but not both [13:215] is to use these algorithms to prove that we do not need and cannot have God.

GAs are implemented in a computer simulation in which a population of abstract representations of candidate solutions to an optimization problem evolves toward better solutions. That GAs use evolutionary terms can be a trap for the unwary though it should be noted that “even Darwin was sure that his account of speciation with natural selection as one of its engines was not logically connected with atheism“[4].

The “evolution” in the GA usually starts from a population of randomly generated individuals. That is, once the genetic representation and the fitness (optimal) function are defined, GAs proceed to initialize a population of solutions *randomly*, then try to improve the solution at each stage through repetitive application of *selection* operators.

In each generation, the *fitness* of every individual in the population is evaluated, multiple individuals are stochastically selected from the current population (based on their fitness in relation to the target), and modified (recombined and possibly randomly mutated) to form a new population. The new population is then used in the next iteration of the algorithm. Commonly, the algorithm terminates when either a maximum number of generations has been produced, or a satisfactory fitness (optimal) level has been reached for the population.



For instance, Lennox uses an example from Rechenberg [20] of applying an evolutionary strategy to minimise the electrical resistance in a complex system such as a college building where various circuits have been added on over time without considering the electric power issues as a whole. The initial electrical resistance is the starting point and something in the system is varied arbitrarily. The choice of what to vary can be done by tossing a die or rotating a roulette wheel [19]. If the new system results in higher resistance it is reversed; if lower (or the same) then it becomes the starting point for the next random selection. The process continues to test all possible combinations by random variation until there are no reductions in resistance after a number of previously decided variations. The point is that there is a definite starting point and a definite goal.

Even with the speed and power of modern computers they can be slow, too slow to accommodate Dawkins' and Huxley's monkeys and their target phrase from *Hamlet*: "Methinks it is like a weasel". If we had 28 monkeys, one for each key, including the five spaces, and since there are 26 letters plus the space key, the probability of randomly getting the phrase right in one attempt is 1 in 27^{28}. The probability of hitting the exact phrase in n attempts is $[1-(1-1/27^{28})]^n$. This is incredibly small, but "trivial compared with the length of a mammalian genome (in the human it is over 3 billion letters)" [9: 166].

The mathematician, David Berlinski, who coined the 'Head Monkey' term, has some penetrating insights [3], because the process needs a 'Head Monkey' who can measure the difference between success and failure: "if things are sightless how is the target represented, and how is the distance between randomly generated phrases and the targets assessed?" (13: 159). "The age of life on earth is only about four billion years. That is not a very long time for a random search process such as Darwinian evolution to achieve results" [9: 224].

Thus, a GA is a mechanical repetition of calculations - an algorithm which has a beginning and which is goal directed in order to eliminate blind chance. "In following David Hume, scientists have removed goals or ends from science. This has not eliminated them from nature but left them unrecognized. Blind faith in blind chance just leads to intellectual blindness" [16; 21].

Dawkins not only has a goal as the end of his evolutionary algorithm but also wants to have no definite beginning. That evolutionary algorithms attract some scientists is not surprising since, according to physicist and philosopher Paul Davies, neo-Darwinism still carries the day in the biological sciences. The origin of life was a mere fluke, a "chemical accident of stupendous improbability' according to their 'orthodox' scientific thinking" [21]. Yet "it is a basic principle of reality that every agent acts for an end …therefore, there is no such thing as 'random' activity in nature, that is activity with no purpose". Thus McCaughan points to the danger of erecting a perfectly legitimate scientific method into a system of philosophy [15]!

Concluding Comments

That agnostics, atheists and even anti-theists discuss God in any way can be a sign of hope as it was for St Paul in a speech to the Council of the Areopagus in Athens when he said: "I noticed as I strolled round admiring your sacred monuments, that you had an altar inscribed To An Unknown God. Well, the God whom I proclaim is in fact the one whom you already worship without knowing it" (Acts 17:23). Darwinism is a secular religion with some mighty leaps of faith – without much evidence! [18].

But, as Mary Eberstadt points out in her letters from A.F. (A Former) Christian [8], they do have a profit! "All those books on the new Atheism … almost a million copies sold in twelve months' time, covers in every major newspaper and magazine … talk about knowing how to make 'something' ($$$) out of 'nothing'"!

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