An Algorithmic Challenge to Atheism

George Wolfe
Ball State University

There is a famous maxim in science known as Occam's Razor. Put simply, the axiom states that when considering competing theories to explain a phenomenon, one should choose the theory that is simplest with the fewest assumptions. And by implication, if evidence does not exist to substantiate a claim beyond a reasonable doubt, a negative conclusion should be drawn. This maxim is often evoked when considering the question of whether an underlying intelligence (popularly referred to as God) was at work in creating the universe, or whether the universe is simply the result of random processes that give rise to evolving, and seemingly, directional complexity independent of any guiding principle of intelligence. Since random chance is the simplest explanation and involves the fewest assumptions, the scientist who applies Occam's Razor concludes that a pre-existent intelligence did not initiate the universe (i.e., there is no God).

Before the days of computers, attributing such constructive power to random processes remained in the realm of theory and immune from laboratory testing since an immense length of time would be necessary to simulate such a randomly generated event. Today, however, with the advent of high-speed supercomputers, the phenomenon of randomness independently giving rise to complex order can no longer be spared the rigor of experimental laboratory scrutiny.

In his Pulitzer Prize winner book, *Godel, Esher, Bach: an Eternal Golden Braid,* (Basic Books, 1979), Douglas Hofstadter probes the subject of artificial intelligence and the role of recursive algorithms in simulating intelligence as we define it. Using the computer, one can create algorithms that generate forms with great variety. These "general principle algorithms" set parameters within which random choices are made by the computer to create a huge number of permutations and combinations. In addition, the computer can be programmed to make decisions, sorting out preferred or "advantageous" results from results that are not pertinent.

For example, algorithms can be created to generate and great variety of snowflake designs, or in music serial composition, 12 tone rows, the number of permutations being equal to 479,001,600 or 12 factorial. In addition, random musical events can be algorithmically generated that are perceived or judged as having recognizable order. In such cases, the computer can be programmed to assess the output, accepting it or rejecting it based on a criteria of whether or not it is "useful." Programs such as this are said to display a rudimentary form of artificial intelligence.

In this computer model, the intelligent adaptive algorithm exists prior to the generated or "created" structure or form. Since all forms generated by a computer must as yet result from some type of algorithmic formula, algorithmic "intelligence" must pre-exist form. And while algorithms have been developed giving a program the ability to learn and adapt within pre-defined domains (such as exhibited in Samuel's famous checkers playing program), no

program has yet been able to modify the parameters of its program (the computer programming equivalent to the Zen "thinking outside the box") as must analogously occur when a living organism responds to selective pressure during the process of evolution. In other words, no one has succeeded in creating a self-modifying recursive "bootstrapping" program that enables a computer to program and re-program itself to take on new tasks outside the initial intent of its programmer. Until this happens, I must accept that a pre-existing intelligent "algorithm" underlies creation, one that sets parameters within which the forces of nature and living organisms are free to interact and evolve. (Note: this algorithmic model does not constitute "Intelligent Design," as it allows for the process of evolution by natural selection. Rather, it asserts that the random interactions that shape evolution occur within pre-determined "algorithmic" parameters).

This pre-existent, self-modifying "algorithmic" intelligence is what I am proposing is analogous to that which makes possible the evolution of complex living orderly structures. This could be said to correspond to what ancient philosophers and theologians referred to as Logos or "Divine Reason."

An atheistic view would assert that any such "intelligence" is self-generating rather than pre-existent and therefore emerges simultaneously with the process of creation (i.e.; the "Big Bang"). Moreover, the self-generating intelligence would have to have the ability to revise its underlying algorithms as it adapts to changing circumstances.

My challenge to atheists then, is this:

> 1) Simulate on a computer how the universe can "bootstrap" itself; i.e.; how a self-generating "intelligent" algorithm can arise independent of pre-designed programming, and

> 2) Demonstrate how this self-generating program can modify itself to adapt to changing circumstances as would be required to simulate natural selection and thereby evolve (notice I am agreeing here that evolution is indeed a "fact" of existence).

I am thereby placing the burden of proof here on the atheist rather than the believer. Until such simulation is accomplished, I assert that the simplest answer is to conclude that intelligence, the expression of which is observed in creation and in the evolution of living organisms, did not emerge with the unfolding universe. Rather, intelligence is pre-existent and serves to give direction, however haphazard, to the interaction of unpredictable events involved in enabling complex orderly structures to evolve from a condition of non-order. Since the expression of intelligence has resulted in the emergence of life, and since science has yet to create or initiate the metabolic process we call life, it is fitting that it such pre-existent intelligence be referred to as "divine."

Questions from readers about Dr. Wolfe's algorithmic model.

1. Why does it necessitate drawing a negative conclusion...?

I am not drawing a negative conclusion. I am simply saying that intelligence pre-exists the expression of intelligence. Using artificial intelligence as a model, intelligence as encoded in an algorithm must exist before the intelligence can be exhibited in the execution of that algorithm. In an analogous way, the intelligence we see expressed in humans and in the evolution of life in general must pre-exist its expression. Atheistic scientists assert that intelligence arises simultaneously and extemporaneously with evolving complexity. As yet, evidence does not support this claim.

2. What if the evidence exists and researchers simply have not discovered it?

I am very open to this possibility, and even suggest two ways evidence could be presented to challenge my assertion based on my algorithmic model (see my two challenges to atheists at the end of my paper).

3. Is it acceptable to equate human beings to computers?

I am not equating human beings with computers. I am merely pointing out that artificial intelligence has yet devised algorithms that are self-modifying such that they can adapt to a changing environment (such as a checkers program that would, on it's own, devise new rules to change the make-up of the game in an unexpected way). If intelligence is something that arises extemporaneously with complexity, then it would possess self-modifying abilities and also be self-generating. As yet there is no way to simulate such a process other than have the computer program "learn" through trial through the within the narrow confines of a game.

4. How can one know what or if there is a programmed purpose/task/function for human beings as designed by a creator?

I am not saying there is a programmed purpose/task/function for human beings as designed by a creator. This would be more like "intelligent design theory," and I am not talking here about intelligent design. Within this algorithmic model, evolution occurs as it has and will continue to occur. The intelligence, as would be analogously encoded in an algorithm, must pre-exist the expression of that intelligence in the execution of the algorithm. Thus, since we would agree that intelligence is exhibited in creation in a variety of ways through a variety of species, etc., that intelligence must pre-exist, i.e., have existed before it's expression, in the beginning of the universe. This is a new model for what some ancient philosophers and theologians have referred to "Logos" or Divine Reason."