

Does the order and beauty of the world provide evidence of God's existence?

Niall Douglas

Firstly I shall outline arguments by William Paley, Thomas Aquinas, Richard Swinburne and David Hume. I shall then extract the common thread underpinning all these teleological arguments, which is one of the properties of mathematical infinitesimals and then suggest that if infinity implies God, then there is evidence for his existence.

In Paley's *Natural Theology*¹, he suggests that the difference between a chance finding of a stone and a watch in a heath, is that the watch, due to its intricacy and design, would impress upon the finder a feeling that it had been designed with a purpose in mind, unlike the stone. He then draws this as an analogy to that of the Universe, in that its parts have purpose, so therefore the whole must have purpose, and therefore must also have been designed with a purpose in mind.

A similar argument is used by Aquinas in his *Summa Theologiae*. An acorn has a tendency to become an oak tree, which implies a notion or intention towards a goal. Yet an acorn lacks a mind, so how can it in itself direct itself towards its purpose? For Aquinas, "there is a being with intelligence who orders all the things of nature to their ends, and we call this being God"².

Swinburne in his *The Existence of God* takes a more metaphysical approach. He points out that the physical world is characterised by simple laws with relatively simple, sometimes beautiful, formulae (classic examples being Einstein's mass/energy conversion equation, or Newton's gravitational force equation). He emphasises how thusly ordered the Universe is, and even where there is chaos there still remains temporal order (whereby cause precedes effect) which to our present knowledge is inviolable.

However, Hume in his *Dialogues concerning Natural Religion* and *An Enquiry concerning Human Understanding* argues against these arguments. Firstly he uses a form of Occam's Razor in that one needn't explain apparent design through requiring a God – all you need is a design-producing being, though he later partially contradicts his own point by suggesting why have one God when there could be many Gods at work (which multiplies beyond necessity). Another argument he uses is one

¹ The full title is *Natural Theology; or Evidences of the Existence and Attributes of the Deity, Collected from the Appearances of Nature*

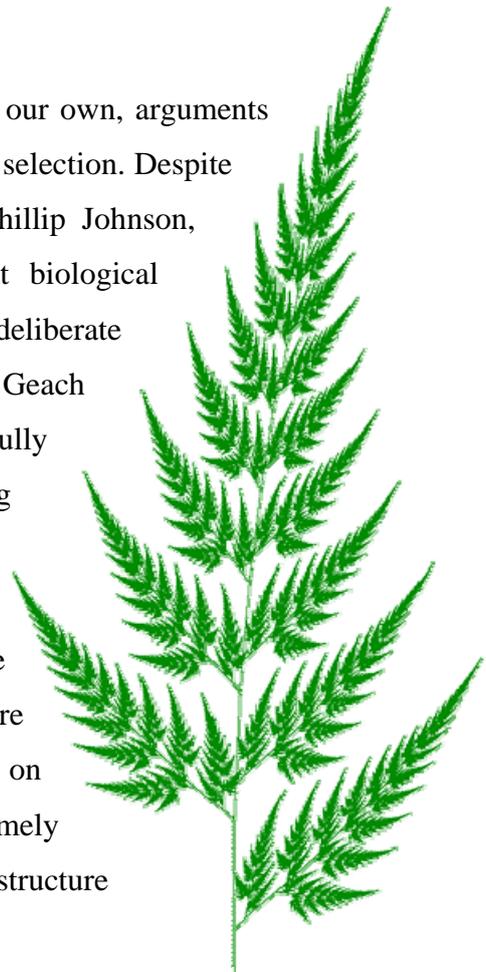
² Aquinas, T., *Summa Theologiae*, Ia, 2, 3.

of first mover – if you do have a God who designs, then a first thought must precede a first design, and thence from where does the thought come? Hume also feels that designing implies designing a machine, where the Universe is clearly organic in nature. Also, the order in the Universe could result from chance, and finally that design arguments are suspect because the Universe shows many signs of disorder.

Of course, much has been discovered since Hume wrote what he did, not least the work of Charles Darwin. However some problems were obvious in Hume's argument from the beginning, not least that the ordinary physical and temporal constraints of this Universe need not apply to God and thus for him, a thought need not temporally precede design. Furthermore, where we see chaos, a higher mind may see order – thus, it could be conceivable that the entire Universe is totally ordered all of the time; indeed this is a form of determinism. Swinburne addresses all of these arguments in his book and concludes that there is only order in need of explanation, and disorder is an illustration of order.

Due to the higher capabilities of God for seeing order than our own, arguments for design are generally not undermined by Darwin's natural selection. Despite the arguments advanced by Creationist writers such as Phillip Johnson, where we used to see chance genetic mutations, recent biological research has more often than not found them to be deliberate properties of a wider genetic exchange system³. As Peter Geach points out, the development of living things cannot be fully explained by evolution theory – there still remains something else missing.

Recent developments in mathematical understanding have shed some light on this problem. It has been found that nature follows fractal geometries, of which I provide an example on the right of a computer generated IFS Fern. This extremely simple equation nevertheless generates the very complex structure



³ Discover magazine recently had a front page article about how newly discovered giant viruses (more genetically complex than many small bacteria) have changed the way biologists look at viruses. They now believe that far from being parasitic, the majority in fact help cellular life exchange genetic codes in a form of reproduction and indeed, multi-celled organisms may have only been possible through viruses (<http://www.discover.com/issues/mar-06/cover/>). Most sudden genetic changes are due to the action of viruses, with a vastly smaller proportion being due to radiation exposure or some other exogenous cause.

that is a fern. Trees are fractals, as are galaxies, blood vessels, fingerprints, rain droplets, planetary orbits, molecules, sand, coastlines, vortices, snail shells, all language eg; books such as Shakespeare or the Bible etc. – indeed, all scientific laws are merely a convenient simplified (usually linear) subset of an underlying master fractal equation which itself is very simple. In Ian Stewart's *Does God Play Dice?* and Benoit Mandelbrot's *The Fractal Geometry of Nature*, countless examples are provided of known fractal equations for everyday objects. Indeed, the process of thinking itself ie; cognition, has been shown to be a fractal⁴. Fractals mathematically depend on the properties of infinitely small numbers – or rather, that you can infinitely subdivide any range of numbers. They are also *iterated*, or in other words the equation is repeatedly applied to the result of the previously iterated equation – thus an infinite history builds up going back to the start of time, embodied within an infinitely detailed real number. It is from this one can generate such complexity (called *emergent properties*) from such simple equations.

In the case of Paley, a stone is therefore one particular kind of fractal whereas a watch is another kind of fractal (metal), with both having being transformed by a fractal transformation (for the stone and metal, the natural tectonic forces within the Earth – but with the watch, additional accumulated human knowledge). An acorn becomes an oak because its DNA, a fractal, when given suitable energy inputs, has the emergent properties of an oak tree – it does not need a mind, yet most certainly directs itself towards a purpose (the emergent properties of the fractal). These emergent properties are properties of the mathematics and can be shown by anyone with a calculator and a piece of paper – where in this lies a controlling intelligence?

Finally, in the case of Swinburne, much of his book is about emergent properties of fractals – and indeed, while he doesn't explicitly say so, he does implicitly seem to understand this through his view that evolution and science are compatible with God and furthermore, that God is sustaining matter and the laws of nature from moment to moment which is a very Creationist viewpoint. This says to me that Swinburne sees God actioning every time an infinity comes into play, which is the same as every time a fractal is iterated.

⁴ More commonly referred to as *The Santiago Theory of Cognition*. See Maturana, H. and Varela, F., 1987, *The Tree of Knowledge – Knowing That We Know*, Shambhala, Boston.

Of course, this does not prove God's existence. However, many world religions do hold that the essence of God lies in infinity eg; infinite love, infinite understanding, infinite compassion etc. and I find it remarkable that there should be such a correlation between mathematical properties and religious belief. If God has anything to do with infinity or vice versa, this, for me at least, does show that the order and beauty of the world provides evidence of God's existence.

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