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Faith in the Age of Science

by Dr Alan Branford (© 18 April 2018)

In Western Civilization, modern science arose in the era known as The Enlightenment (roughly the 17th and 18th Centuries). There was an iconoclastic fervour to discard the old dogmas. Individuals, from eminent scholars to the proverbial ‘everyman’, were encouraged to apply reason to the world around them and to the great philosophical questions. Names that may be familiar to you, such as Descartes, Newton, Kant, Goethe and Voltaire, are all associated with this movement.

Institutions such as The Royal Society and modern organized Freemasonry also emerged during The Enlightenment.

But God and Faith did not get trampled underfoot in this movement. Rather, individuals could now think for themselves about God and Faith. Faith was no longer a dogmatic – dare I say pagan – faith in relics and shrines, but it was now a personal Faith in a personal God.

Mathematics, too, was transformed in The Enlightenment.

The great Italian mathematicians of the 16th Century such as Girolamo Cardano and Niccolò Fontana Tartaglia were still shackled by the theological aversion to the number zero. The Catholic Church, an institution well known for its “support” of innovation and research in mathematics and science, considered ideas of “zero” to be Satanic! Who can fault their theological reasoning: God is everything, and thus the opposite of God, Satan, is the opposite of everything, namely nothing, i.e. zero. Thus, Satan equals zero!

These Italian mathematicians had noticed that, for some applications, their algebraic solutions went a bit “weird” in the middle, but if they just carried on as if they hadn’t noticed, then the weirdness went away by the end, and the correct solution was found. They never really did get to grips with this weirdness.

But, by the end of the 16th Century, the notion of “*i*”, the imaginary number, had been conceived, and Rafael Bombelli had even codified an arithmetic for it. Before long, Mathematics had left the reality of the number line behind. Do you remember playing with the idea of a number line in primary school? Now Mathematicians had devised complex numbers, numbers that had both a real part and an imaginary part, and there was now the complex number plane which contained within it the real number line.

Cardano's and Tartaglia's weirdness could now be explained. Their algebraic solution, for some problems, left the real number line for the wide-open spaces of the complex number plane ... for a while ... returning though by the end of the solution to the security of the real number line.

Today, complex numbers are fundamental to Mathematics, Engineering and Physics.

Mathematics is characterized by its ability to work with abstraction. It is my thesis that the ability of the Mathematician to be comfortable thinking in the abstract enabled Mathematics to be uniquely placed in adapting Faith in the Age of Science.

Our problem is that we are trying to gain complete understanding over an existence in which we are players. We are not looking at some system from the outside – we're in it!

We live in a three-dimensional world – we think!

Some of the other scientific disciplines seem to be a little torn over how many dimensions there are! ... And they are right to be. But, the Mathematician is quite sanguine over the idea of there being more than three dimensions. Mathematicians routinely swan off into multidimensional space.

I must emphasize here that I am not saying that God is some creature living in eight-dimensional space, like some screenplay for a bad Dr Who episode. This mention of dimensionality is only meant to illustrate that mathematicians routinely think outside of the observable world.

Let us consider this can of beans. <hold up a can of beans> Living as we do in three dimensions, we can see that it is indeed a can, or to be mathematically precise, a right-circular cylinder.

Now let us pretend that we live only in two dimensions. Let me show the can to this side of the room. <show the can end on> Imagine you can only see it in silhouette. What do you see? A circle! Now let me show the can to the other side of the room. <show the can side on> Imagine you can only see it in silhouette. What do you see? A rectangle!

One group sees a circle, the other sees a rectangle, and both are correct. In their two-dimensional world, this object is both a circle and a rectangle at the same time.

But of course, in reality, it is much more than either of these!

So, as a Mathematician, I can see what appear to be paradoxes to my limited consciousness, but I have the Faith that in some higher abstraction the paradox is resolved.

Let us recall a familiar verse of Scripture.

1 Corinthians 13:12

¹² For now we see only a reflection as in a mirror; then we shall see face to face. Now I know in part; then I shall know fully, even as I am fully known. (*1 Corinthians 13:12, New International Version*)

And so, when my soul eventually steps through to that higher abstraction, that higher existence, there I shall find the Grand Geometrician, his arms outstretched, saying simply, “Q.E.D.”

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Q.E.D. *Quod est demonstrandum* (Latin) – “That which is required to be demonstrated”
This phrase typically ends a mathematical proof.