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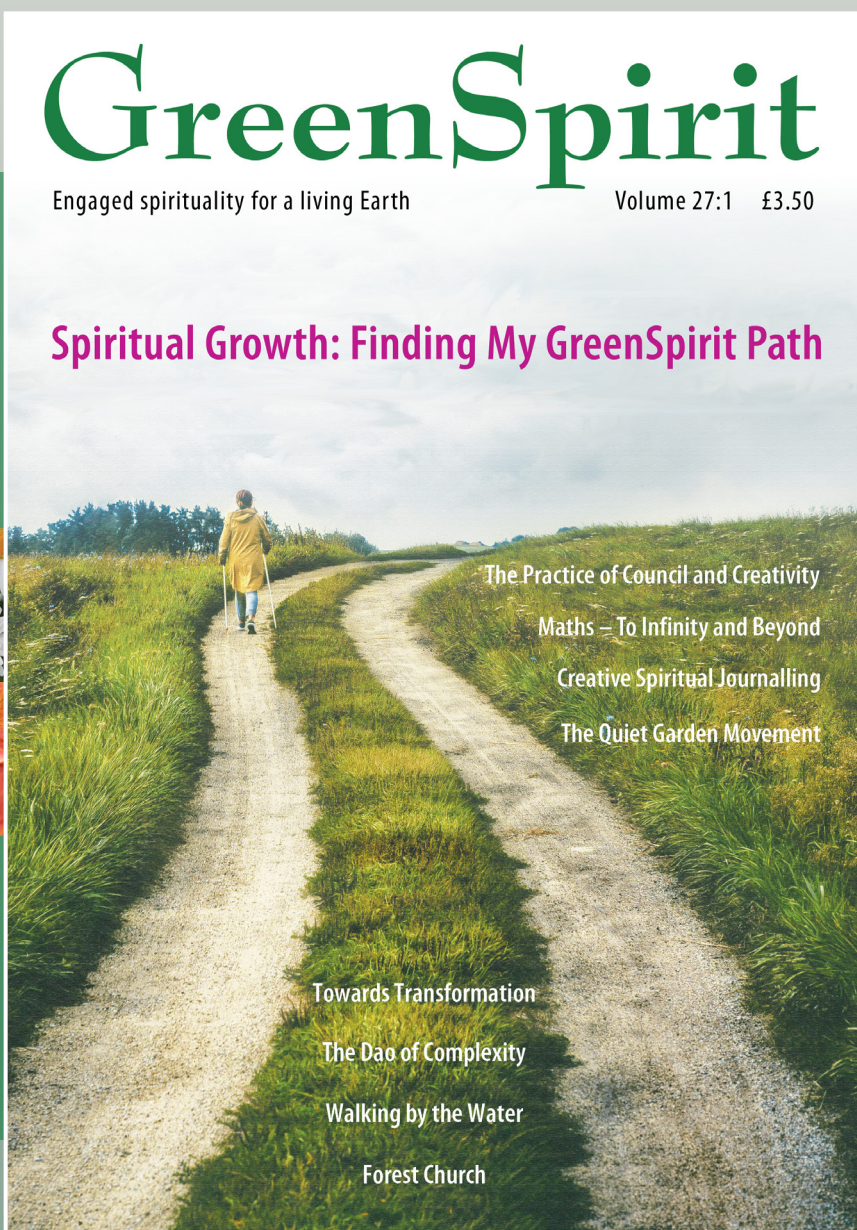
Engaged spirituality for a living Earth

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Maths: To Infinity and Beyond

IAN MOWLL

Introduction

Do you know how amazing maths can be? And how maths helps me on my spiritual journey? Please hear me out on this one...

For instance, through maths I find that the Universe is even more incredible than I ever imagined. I am filled with awe and wonder, and my heart opens to our extraordinary Universe and living planet Earth.



Beyond the Physical

Maths opens me up to the mysteries of the Universe. For example, think about the square root of minus 1. That is the same number multiplied by itself to make minus 1. Well, it does not exist. Not in the real world anyway. You see, the number 1 can be represented by 1 physical bead, number 2 by 2 beads, 3 by 3 beads, and so on. But you can't do this with the square root of minus 1. You would need an invisible bead to try to represent it.

So, mathematicians have made up an imaginary number called 'i' ('i' stands for imaginary). 'i' multiplied by itself is minus 1. Now, you might think that mathematicians are having a fanciful idea to fill a gap. But nothing is further from the truth. It turns out that 'i' is a very useful concept. For instance, it is used in calculations in electronics, cellular technology, wireless technologies, radar and even understanding brain waves.¹ For some of the amazing technology we use every day, we depend on the use of 'i'.

This shows me that there is some 'reality' beyond the physical that I can't touch and feel. It helps me to see that I am part of a wider, unseen Universe and there is so much more to explore.

It's Weird

Maths shows me how strange the Universe is. For instance, think about infinity – a 'number' that is beyond our comprehension. It turns out that there are all sorts of infinities – big infinities and gigantic infinities. How strange is that? And the idea of infinity is full of mystery and paradox. If you want to know more, there is a whole documentary about it called *A Trip to Infinity*.²

This shows me that the Universe is not some predictable, mechanical machine in which I am a helpless part. But the Universe is like an unknown landscape, and we are just starting to discover its hidden secrets. And the idea of infinity prompts me with much spiritual reflection – the Universe is so much deeper, more profound and amazing than I could ever have imagined.



It's True

What I love about maths is that it is verifiably true. Imagination is an important part of our human evolution and spiritual journey; we need it to help us create a better world. But too much imagination can take us far away from reality and lose connection with life's journey. The story of Icarus is about this, Icarus flew too near the sun and fell into the sea. An interpretation of this story is the danger of getting carried away with fanciful ideas.

Maths can ground us. For instance, maths was used by Eratosthenes, a Greek mathematician, in about 200BC to show us that the world is round and not flat. He used the lengths of shadows from vertical sticks in two cities to calculate the size of the Earth. Knowing that the Earth is round and not flat is counter intuitive. So mathematics does not deaden ideas but shows me how things really are.



How the Fibonacci series is used in Nature

Maths is a shared reality where we can communicate with each other and build on each other's discoveries – as mathematicians have done over the centuries. Maths can even be said to be like a universal language. If, sadly, civilisation as we know it ends and new civilisations arise, they will discover the same maths. And this will help them to 'discover' the Big Bang, supernovas, stars, planets and more. In this way, maths shows us that we are all part of a bigger shared reality.

Simplicity

There is often a mysterious simplicity in maths. When working on a problem, sometimes you construct long equations to define it. And then, so often, the terms in the equations cancel out and you are left with a simple, elegant solution. When this happens, you intuitively know that you have the right answer. For instance, there is Einstein's famous equation $e = mc^2$, which shows that energy is equal to mass multiplied by the speed of light squared. Why is there such a simple connection between mass, energy and the speed of light?

Have you heard of the Fibonacci series? This is a simple series that starts with 0 and 1 and then adds the last 2 numbers together to make the next number. So, the series goes: 0,1,1,2,3,5,8,13,21 and so on. This series is found in Nature so many times from the way seed heads are distributed on a sunflower, how shells are constructed, the formation of spiral galaxies, and even our faces have many aspects of the Fibonacci series embedded in them.³

The Universe has built into it some kind of elegant simplicity. For me, finding out these simple truths are like 'ah-ha' moments and I feel a connection with the Universe.

Practicality

And finally, maths is practical. For instance, much of climate science is based on mathematical models.⁴ We need maths to help us make sense of our amazing planet and orientate us in the right direction to take care of our living Earth.

From a spiritual perspective, we need to be aware that maths and science can be used for good or bad. So, one of the important tasks of our times is to bring values into maths and scientific research, so that they are used for the good of the world and sustaining the wondrous interconnected diversity of life on our beautiful planet.

Conclusion

There is so much more we could explore through maths: the weirdness of quantum mechanics, black holes, singularities and much more. The history of maths and science suggests that in the future, we will have many more 'wow' moments with new discoveries that upend our current thinking. As there is so much to find out, I sometimes think that we are just at the beginning of discovering many of the Universe's amazing secrets.

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