



Sense Making Faith p 17



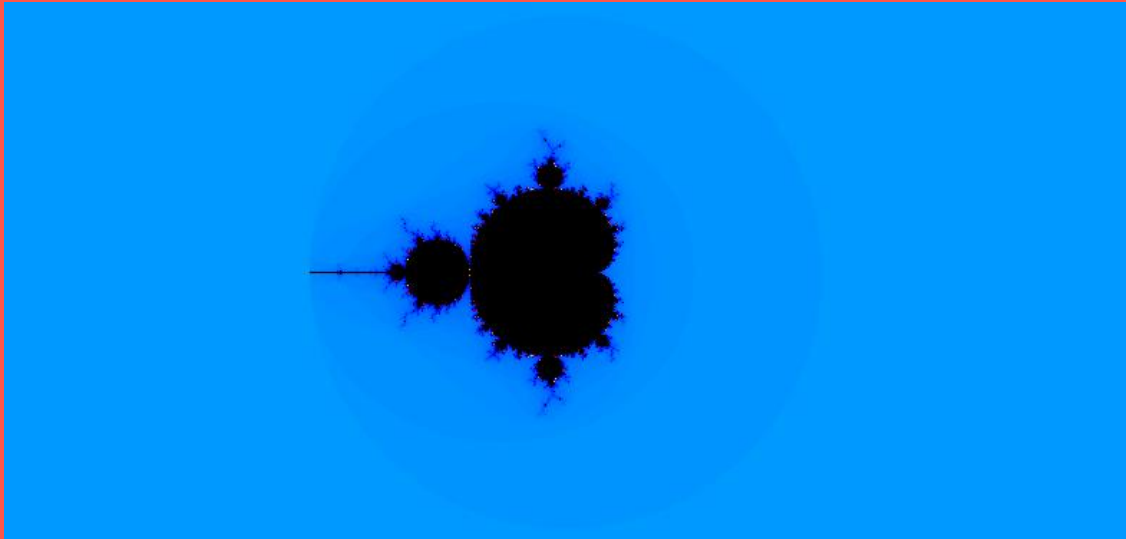
Fractal Journey

What is a fractal?

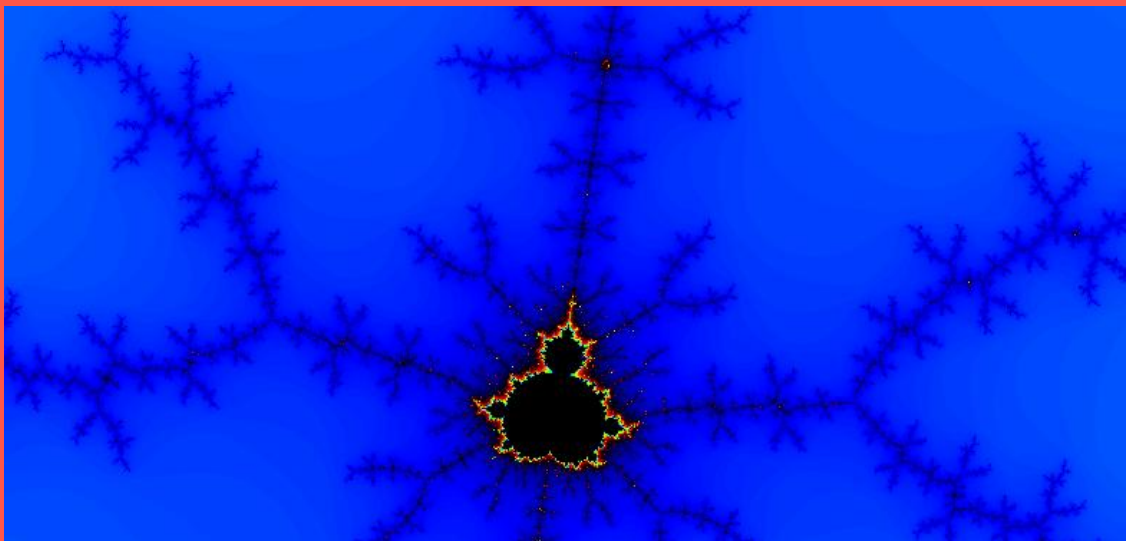
A fractal is a particular kind of shape which is determined by a set of mathematical rules. The shape is such that no matter how deeply you look into it, or magnify different parts of it, you still find repetitions of the shape embedded in the structure. Fractals are described as 'infinitely complex', but they are much more than mathematical curiosities. The shapes created by fractals and the way they change and evolve under different mathematical applications make them extraordinary, beautiful and revealing of the marvellous intricacy of nature. The mathematics of fractals have helped mathematicians and scientists understand more of the structure of the world around us. Because of their beauty, some people have treated fractals as art, colouring in their different manifestations and building galleries of fractal pictures, to amaze and stir the imagination.

Further, some people feel that fractals are spiritually meaningful. This is because fractals remind us of the mathematical order and beauty at the heart of nature and also because the outworking of many fractal patterns remind us of shapes and structures found in the natural world. Some fractals look like snowflakes, others like waves, leaf patterns or shell whorls.

In this journey, we can look at some fractals and meditate on their elegance and beauty. The fractals that appear on this page were made using a fractal generator. A number of fractal generators can be downloaded from the Internet, so that you can make and discover your own fractal images on your computer.

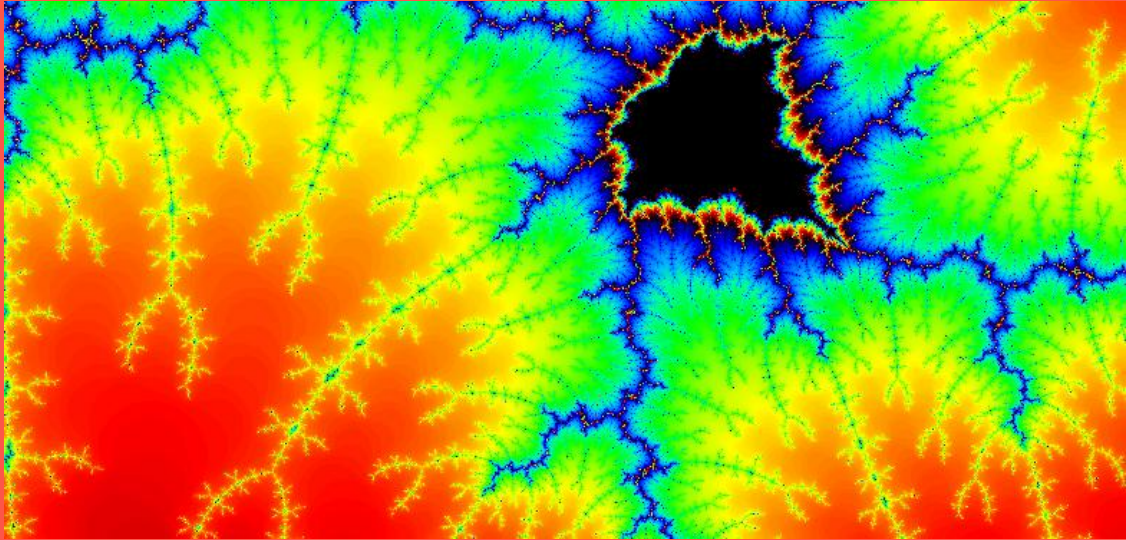


This is the most well known type of fractal, called the Mandelbrot set. It looks like a simple symmetrical shape with many branches, maybe like a drop of ink splashed on a page or into water. But if we look deeper into the pattern of the shape, we discover that it is even more beautiful and mysterious than it first appears:

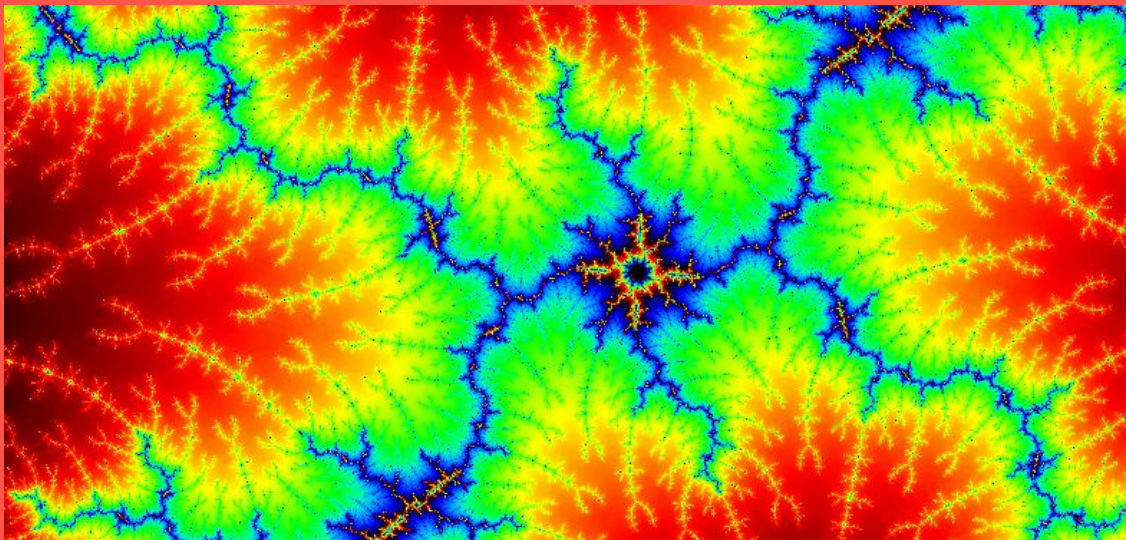


Zooming in on just one of the branches reveals a new Mandelbrot set in the heart of a snowflake-like pattern of feathery branches. From here, we can

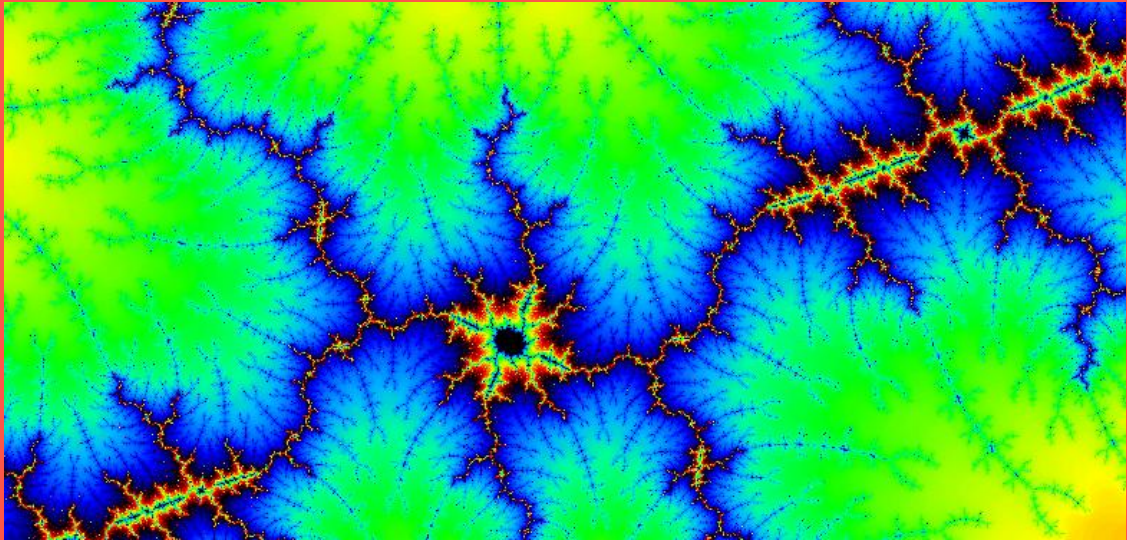
go deeper, magnifying the image far beyond what we could see with the naked eye:



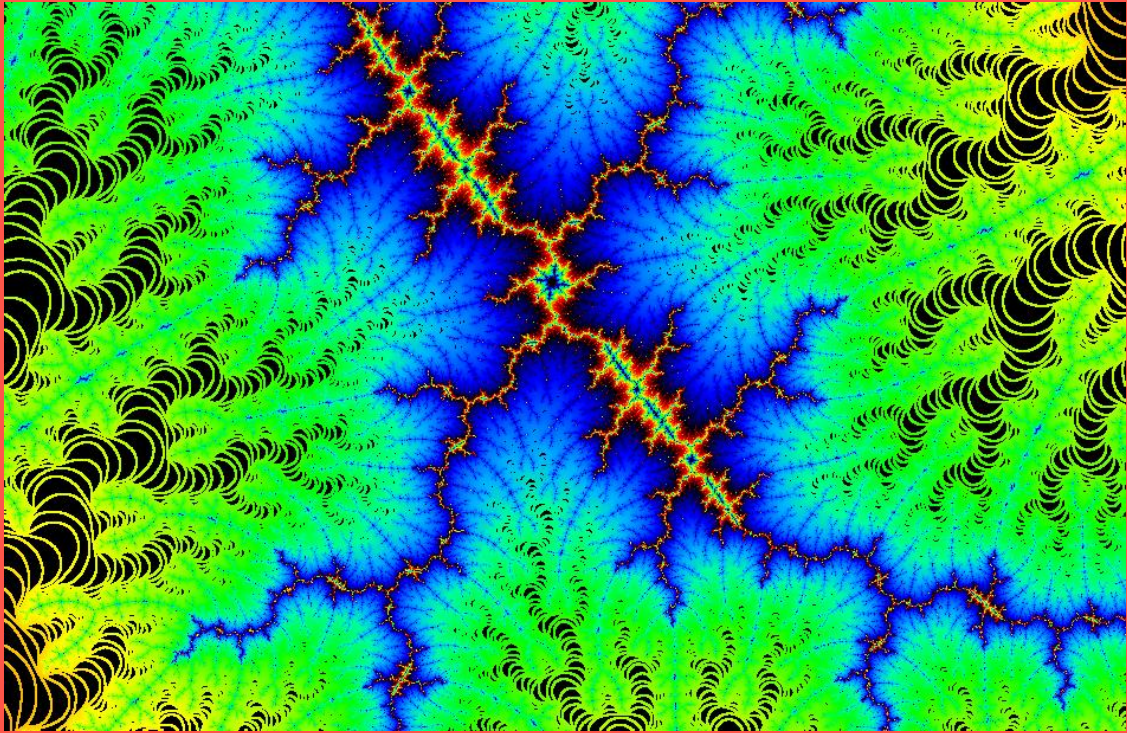
Inside the coloured edges of the new, tiny shape, we find more beautiful branchings, like blood vessels, or river patterns, reaching out from another repetition of the original set. Now we can go even deeper:



Now we find a star shape in the heart of the magnified border. Like a constellation, or a Catherine Wheel, it radiates branches and feathery patterns. At many times the original magnification, we find even more mysterious and beautiful shapes:



And magnified yet again, with the edges of the shape defined....



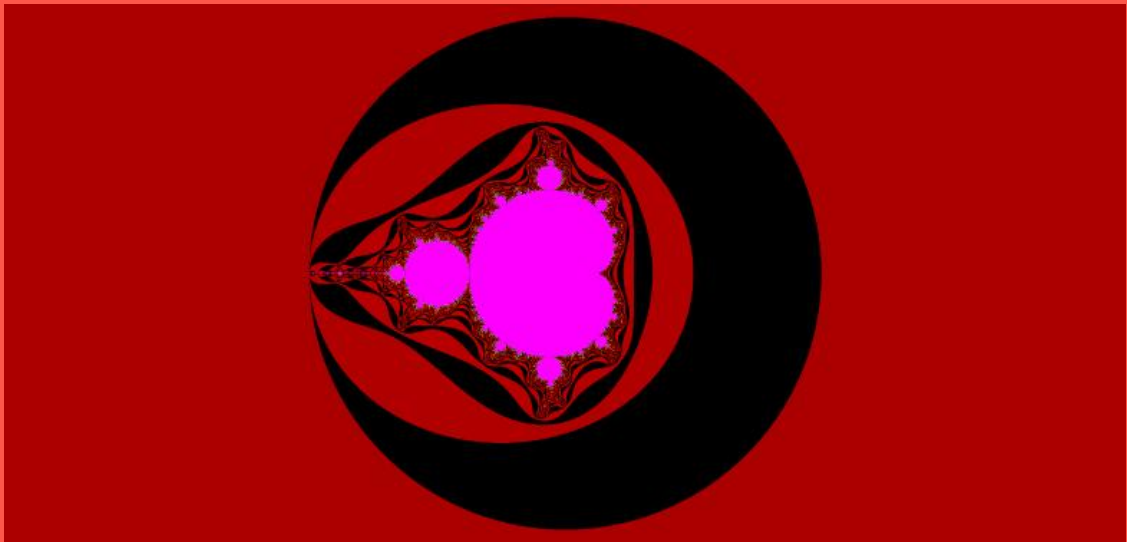
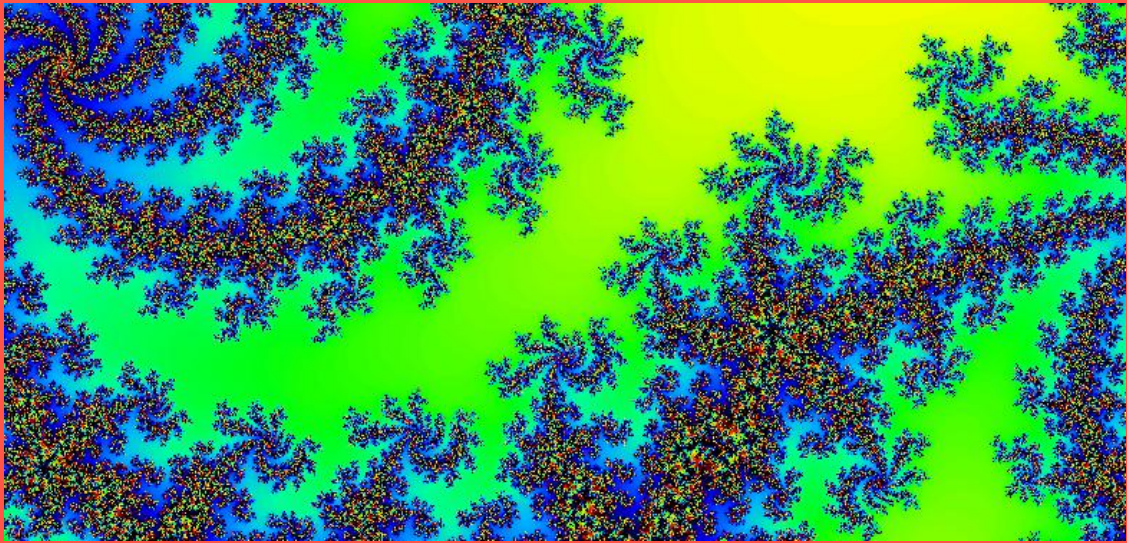
This is what the original shape looks like after zooming in on it 52 times. What can you see in it that reminds you of the natural world?

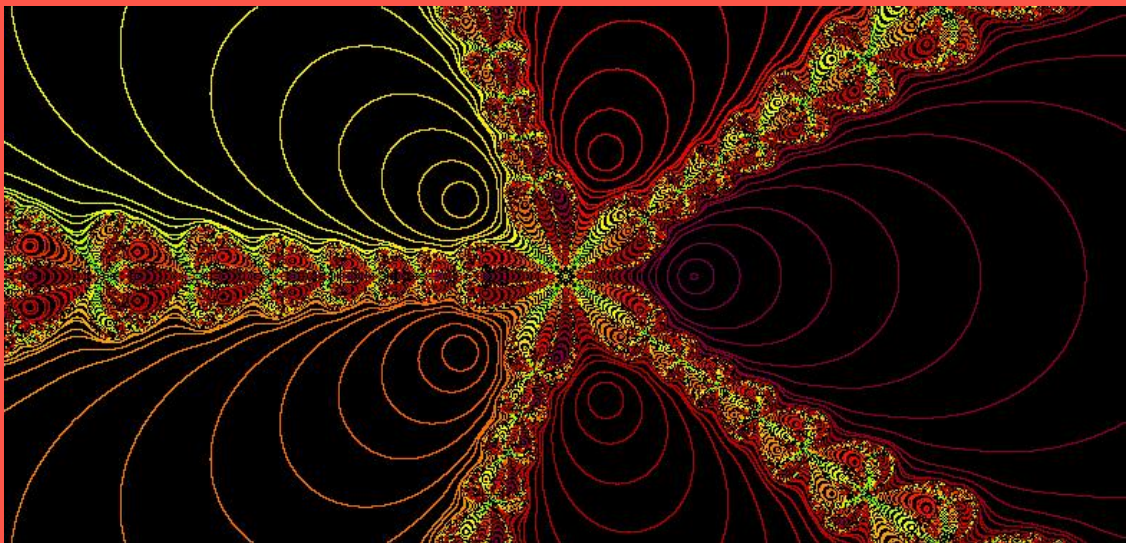
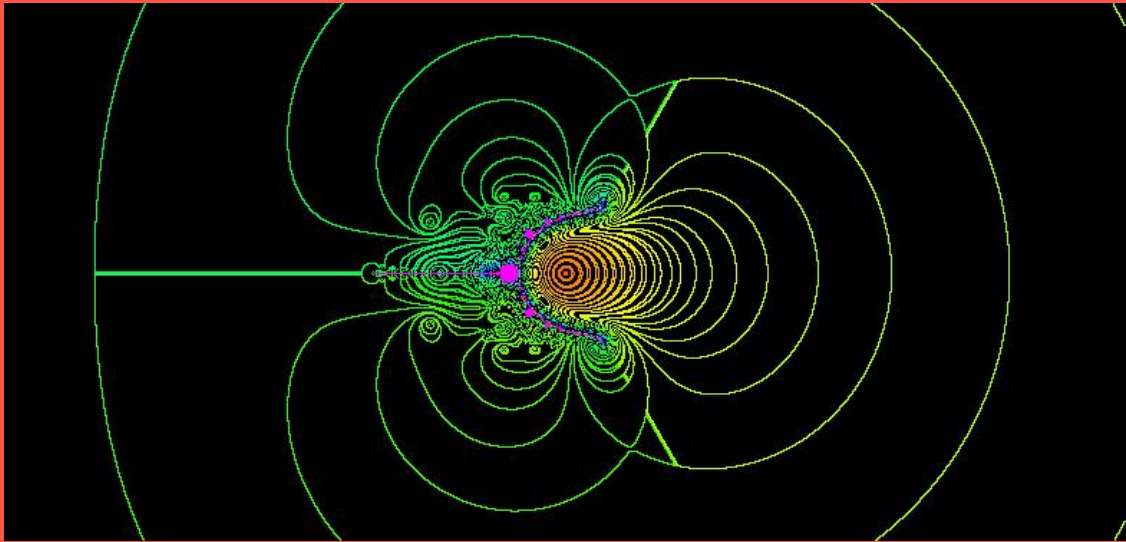
If you are interested in mathematics, it can be rewarding to find out more about great mathematicians such as Georg Cantor, Henri Poincaré, and Gaston Julia and the shapes they investigated and described in their mathematical work. You might also be interested to find out more about the way fractals are useful in teaching us about the real world, such as the way mountains and river valleys form.

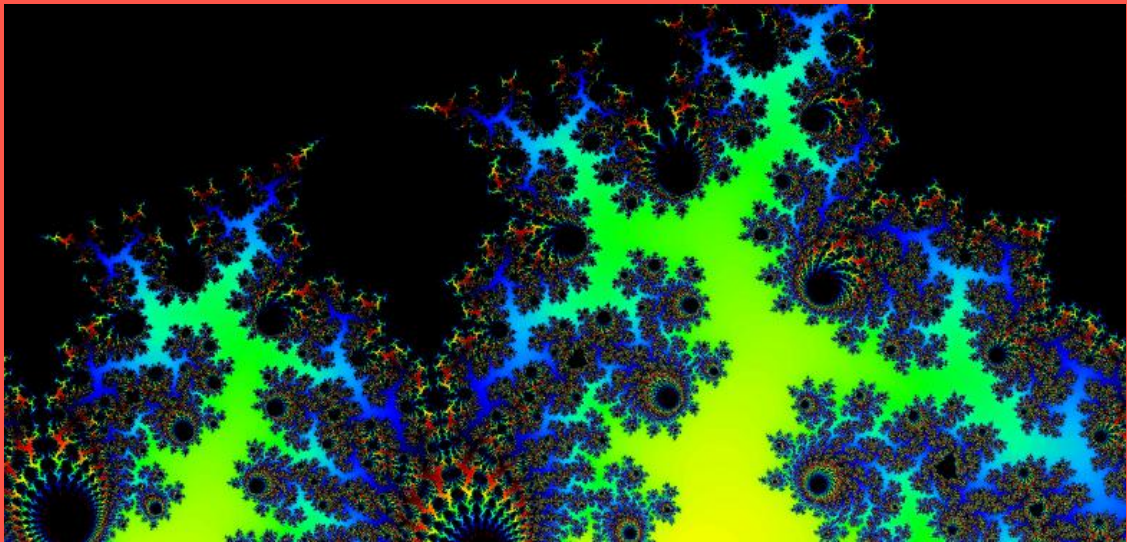
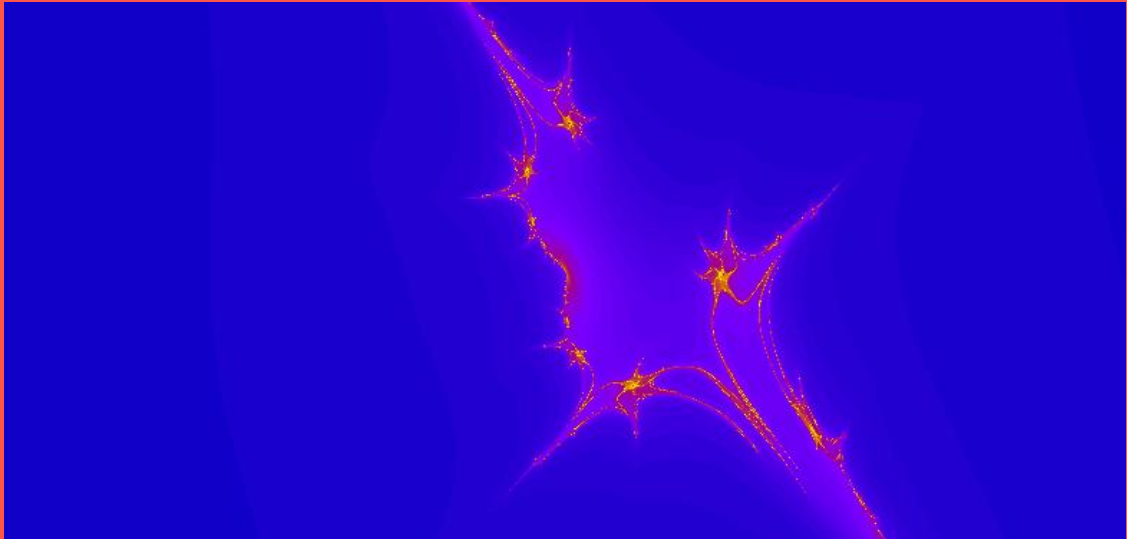
If you just want to enjoy the fractals, then why not use some of the images below to concentrate your attention on the unseen beauty at the heart of nature. Try to imagine the world around us that we cannot see, but which still has so much detail, structure and loveliness contained in it.

What does paying attention to the fractals do to us when we start to think about the world as created and sustained? Are these patterns and structures the work of God's hand?

Make a note of any fractal images you notice in the world around you, in nature, in architecture, in images in magazines and on billboards.







**Much more beautiful fractals than these can be found in fractal galleries.
Have a look at some of the fractals generated and coloured by artists,
spiritual wonderers and fractal enthusiasts:**

Soler's Fractal Gallery

<http://soler7.com/Fractals/FractalsSite.html>

Wolter Schraa

<http://www.xs4all.nl/~wolter/index2.html>

ad infinitum

<http://www.fractalhaven.com/>

ken keller

<http://home.inreach.com/mapper/>

paul de celle

<http://www.fractalus.com>

<http://fusionanomaly.net/fractals.html>