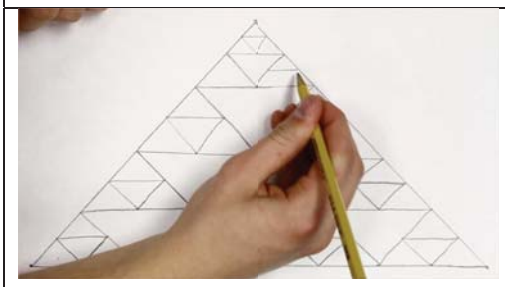
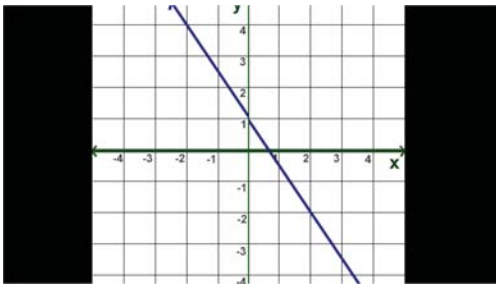
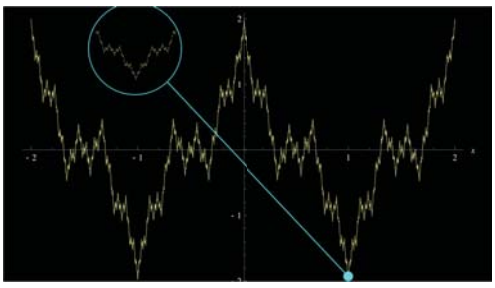
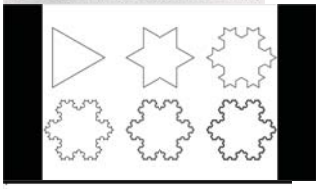
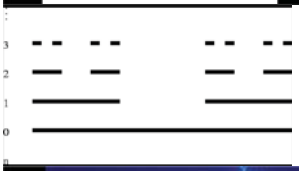
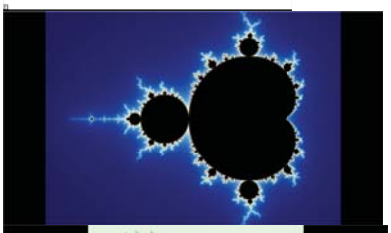
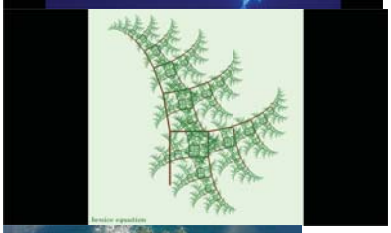
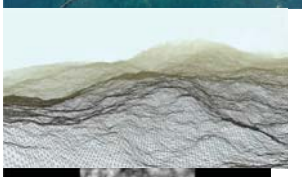
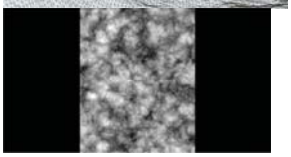
Video	Audio
  	Fractal art is an artistic movement that began in the 1980's. Fractal art is an art from which uses fractal algorithms and computer generated images to create works of art. In order to understand exactly what fractal art is one must first come to understand fractals. A fractal is a geometric concept that uses an algorithm to plot points in a repeating pattern in such a way that a given portion of the fractal can be equivalent to the whole. This concept is known as Recursive self similarity. The earliest records of the idea of recursive self similarity trace back to the seventeenth century polymath and philosopher Gottfried Leibniz. Leibniz however was only able to provide a straight line as an example. When a line is represented in two different scales of equal ratio and position of origin the lines appear identical even if domain and range displayed are not equivalent. While his example is not particularly mind blowing it introduces the idea of self similarity which is key to understanding fractals. Nearly two centuries later Karl Weirstraus presented the Weirstraus function which was every where continuous but in no place differentiable. The function, which was described as the sum of a Fourier series, also showed self similarity. If one zoomed on the lowest point they would find that at the point the pattern of the loop was repeated

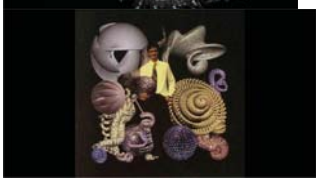





at the tip and at the tip of the tip and so on. No matter how far in one zoomed into the image the pattern continues to be repeated. Weirstrauses graph was one of many mathematical monsters that were created during the late 1800s and early 1900s. They were called this because they became problems that the majority of mathematicians avoided. These monsters would eventually be named fractals in 1975 by Benoit Mandelbrot after he discovered a new significantly more complicated fractal, known as the Mandelbrot set while playing with graphing on the Gaussian plane.

With the aid of computers fractal research skyrocketed and there were applications found in a variety of fields. Fractals helped medical doctors to better understand the geometry of the lung through its continual branchings. Through the development of a measurement for roughness measuring coastlines has become more precise. Along with many scientific usage, fractals have helped bridge the gap between mathematical images and realism. Fractals are frequently used in graphics programs and cgi to create noise, clouds, bump maps, lightning, as well as stand alone images.

Artists quickly took to the beauty of fractal images and they are commonly used in postmodern prices through layering. Weather it be to create a background image or used as the primary focus the image's impossible complexity catches the eye of every viewer. When used as the primary focus they are often animated to show more of the



fractal. 3D fractals have been used for camera fly throughs as well as animated through mutations.

Fractals also have a strong philosophical appeal Carlos Ginzburg takes advantage of this when he creates prices which depict what he calls homo fractalus. He describes homo fractalus to be the fractal human being where the totality of life is also in the detail. While his works are not perfectly mathematical they mimic the complexity, roughness, and self similarity of fractal images.

Another artist, William Latham, developed a method of creating computer generated artwork called evolutionary art work.

Evolutionary art takes computer generated images such as fractals and ranks them for aesthetic value and then randomly decides which images survive based proportionally on the aesthetic values. The survivors underlying codes are combined in pairs in the step called breeding. The new population is ranked again based on aesthetic value and the process repeats itself.

As long as digital art continues as an artistic media fractal art isn't going away. Even if the focus is drawn away from the fractals themselves they will be hidden in every generated cloud and mountain, aiding the artist to bridge the gap between the hard surface of the computer generated images and the rough perfection of nature.