RIP: Benoit Mandelbrot – Discoverer of Chaos

Description

From the New York Times:

Benoit Mandelbrot, Mathematician, Dies at 85

> BenoÃ®t B. Mandelbrot, a maverick mathematician who developed an innovative theory of roughness and applied it to physics, biology, finance and many other fields, died on Thursday in Cambridge, Mass. He was 85.
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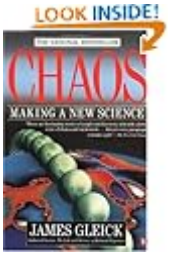
> His death was caused by pancreatic cancer, his wife, Aliette, said. He had lived in Cambridge.

Why is this important to this blog? His work was the inspiration for the title.

I first bumped into his work, not having a clue about him in 1988. I was at Naval War College and had bought a Mac II, equipped with a graphics card which would provide 256 color displays.

I'm not sure exactly where I found it, I'm guessing on GEnie (yep, before the 'Net), but I got a program to draw fractals, the Mandelbrot set, and later the Julia set. I'd set a bunch of parameters in the computer when I was heading to bed, then get up in the morning to see some way down inside the Mandelbrot fractal scene. They'd take 2-4 hours to draw, depending on the "magnification" factors (the power to) I had set. Then I had working material to slice up in PixelPaint.

I was fascinated by the detail, and it was not the "chaos" or disorder, but the very subtle silightly offset order.



My worldview shifted as a result, somewhat then, but moreso later. In 1996, I was sent to attend two courses in Software/Systems Safety at the University of Southern California. Wandering through the University's book store and picked up "Chaos: The Making of a New Science".

In reading that book, and seeing the development of this body of science, my views of life shifted quite a bit. When I hear "chaos," I usually consider the topic and think about if it's just order too subtle that has escaped the examination, or it's really something out of control. Usually, it's related to the subtle organization. Beyond that, how his formulas have affected the computer graphics world. The scenery in the background of the big screen, like the "Lord of the Rings," and many, many others, is generated

using fractal formulas.

So, in 2004, when I began blogging, the moniker of the blog, Chaotic Synaptic Activity, came from a subtle reference to the far beyond the decimal point changes, normally allocated as disorder, in those things I think about. Before I read the James Gleick book, to me, chaos was chaos. After? It just means you have to consider things further.

In addition, about a year ago, the scientists figured out what I did in 2004: The brain runs on chaos!

For years, I've told myself I needed to write this piece to explain my naming convention, and I haven't. Today, on hearing of Dr. Benoit Mandelbrot's passing, I could delay no longer.

He was a pioneer in his field, and changed mathematics forever. In mapping, in fluid dynamics, in population growth and an offshoot into market economies and how they preform.

> In the 1950s, Dr. Mandelbrot proposed a simple but radical way to quantify the crookedness of such an object by assigning it a â€œfractal dimension,â€• an insight that has proved useful well beyond the field of cartography.
>
> Over nearly seven decades, working with dozens of scientists, Dr. Mandelbrot contributed to the fields of geology, medicine, cosmology and engineering. He used the geometry of fractals to explain how galaxies cluster, how wheat prices change over time and how mammalian brains fold as they grow, among other phenomena.
>
> His influence has also been felt within the field of geometry, where he was one of the first to use computer graphics to study mathematical objects like the Mandelbrot set, which was named in his honor.
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> â€œI decided to go into fields where mathematicians would never go because the problems were badly stated,â€• Dr. Mandelbrot said. â€œI have played a strange role that none of my students dare to take.â€•

We need more minds like this.

RIP, Dr Mandelbrot.

Update: This YouTube bideo gives you a 10 minute view of the Mandelbrot math, hosted by Arthur C Clark

Now, hear from 2008 on how this math gave insights to the then coming economic collapse:

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