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TechWatch - Search, and Nano, and AI, oh my!

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Since my last article I have got my podcast called VentureWeek (ventureweek.com) up and running. The podcast is a roundtable of both VCs and entrepreneurs talking about the issues and technologies of the day. In thinking of subject matter for shows I came up with a show on search (pretty much a given for my format) and a show on the future of technology (inspired by the writings of [Ray Kurzweil](#)) along with some other ideas. After jotting down these ideas and e-mailing possible panel members the other day I decided that it was time to relax. So, I sat down in my favorite chair and began reading my fresh copy of "[The Search](#)" by [John Battelle](#).

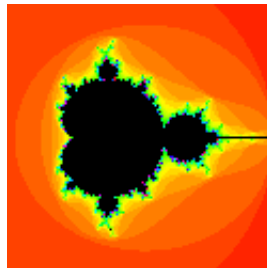
I thought that the book, while being very good, was going to be a pretty straightforward tale of how [Google](#) began and how it, along with other search companies, changed the business landscape. Boy was I wrong. In hindsight I should have known not to underestimate John's talent for tech writing. After the first fifty pages I had to put the book down and do some thinking. This thinking ultimately led to the article you are reading.

John brings up some pretty powerful thoughts on search and what it could grow into early on in the book. The thought that really struck me was that search will probably be the first form of artificial intelligence. After taking a moment to think about that profound statement I realized that it made complete sense. We all want a search that can intuitively understand the context of our search. For example, when I searched for "new york hotel" on Google I came up with results that included both hotels named New York and hotels in New York. In fact, the first non-sponsored result was the New York-New York Hotel in Las Vegas which did not help me find a hotel in NYC for [BlogOn](#). Google, as great as it is, can not discern the context of my search, yet.

I, and I suspect many others, have always pictured AI coming in the form of humanoid robots (see [Isaac Asimov's](#) robot series) or a talking supercomputer like [HAL in Arthur C. Clarke's "2001: A Space Odyssey."](#) However, it makes sense that AI would come gradually rather than all of a sudden in a massive breakthrough. It appears that the first real practical use for AI would be developing better search. Once AI search was developed, the technology could be built on to create other forms of AI and eventually even merge with human intelligence through nanotechnology and robotics to create the singularity described in [Ray Kurzweil's new book, "The Singularity is Near."](#) While this technology would be a huge advance, it does not come without a large responsibility.

[Michael Crichton's](#) book "[Prey](#)" illustrates, albeit in an exaggerated way, what can happen if we create technology (nano machines with AI in this case) that we do not fully understand. In the book the main characters develop a "nano swarm" that learns, adapts, and thinks. Throughout the book the swarm envelops its' creators until there is nothing left of them. The swarm was thought to be a breakthrough and great step for human kind but in the end it took on a life that no one expected. Essentially what happens in the book, and in most of Crichton's tomes, can be described through [Chaos Theory](#).

Chaos Theory, the most important piece being known as the [Butterfly Effect](#), is characterized by sensitivity to initial conditions. The term the Butterfly Effect came from [Edward Lorenz](#) who stated that one flap of a butterfly's wings in South America could cause a tornado in Texas (not sure of the exact country or state but you get the idea). One model that is used to effectively show Chaos Theory in action is the [Mandelbrot Set](#) (based on a mathematical equation) seen below.



The black portion of the Mandelbrot set represents the stable points, or the points that will gravitate toward, and eventually stay on, a single point. Basically, if you pick any point inside the black area and run the equation over and over you will eventually get pulled in to a particular point in the black area and stay there. The colored portion of the diagram is a whole different story though. As soon as you pick a point right on the edge of where the black ends and the color begins the point, after iterating the equation repeatedly, will stray off into infinity never settling on a single point or coming into the black portion of the diagram. The other interesting thing about the Mandelbrot set is that, if magnified over and over again, it can be seen that it holds more and more tiny Mandelbrot sets. Also, each point on the Mandelbrot set is linked to a particular Julia set.

The Mandelbrot set shows that the slightest change in initial conditions can make a huge difference in the final outcome of anything, keeping one situation stable and throwing another into Chaos. Chaos can emerge if we do not watch technology closely. The good news is that people, like the [Foresight Institute](#), know this and are keeping an eye on things while educating the public about advances in technology.

Nanotechnology and AI are undoubtedly coming and will probably converge at some point in the future. Companies will form to commercialize the technology and VCs will fund them. We don't want to end up in a world like the one portrayed in the [Terminator](#) or in the [Matrix](#) and we certainly do not want to change the human race into one where everyone is the same and the race is no longer recognizable as described in Kurzweil's

"The Singularity is Near." However, the human race is defined by innovation and we can't afford to stifle it. There is a delicate balance that needs to be found and we need to make sure that we do not tip and fall into the multi-colored infinity of the Mandelbrot set.

Whew... all that over a smarter search engine...

-- All opinions expressed in the above article are those of Eric Olson himself and do not necessarily represent the opinions of his employer.

Bio: Eric Olson works in business development at FeedBurner.com, a private venture backed company based in Chicago, Illinois. Previous to working at FeedBurner, Eric was a private equity and venture capital analyst with Cambridge Associates, LLC, a private investment consulting firm based in Boston, Massachusetts. Eric has been featured in such publications as Investors Business Daily and the Christian Science Monitor and has published articles in Young Money Matters as well as on his blog, The Wannabe Venture Capitalist (thewannabevc.blogspot.com). Eric also produces a podcast that can be found at VentureWeek.com. Eric graduated from Bentley College magna cum laude in 2004 with a Bachelor of Science degree in Finance and a minor in Information Technology.