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Subject: Edge 322: W. Daniel Hillis: The Hillis Knowledge Web: An Idea Whose Time Has Come

Date: Mon, 19 Jul 2010 15:05:42 +0000

Edge 322 — July 19, 2010
20,500 words

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THE THIRD CULTURE

THE HILLIS KNOWLEDGE WEB An Idea Whose Time Has Come

W. Daniel Hillis

In retrospect the key idea in the "Aristotle" essay was this: if humans could contribute their knowledge to a database that could be read by computers, then the computers could present that knowledge to humans in the time, place and format that would be most useful to them. The missing link to make the idea work was a universal database containing all human knowledge, represented in a form that could be accessed, filtered and interpreted by computers.

One might reasonably ask: Why isn't that database the Wikipedia or even the World Wide Web? The answer is that these depositories of knowledge are designed to be read directly by humans, not interpreted by computers.

They confound the presentation of information with the information itself. The crucial difference of the knowledge web is that the information is represented in the database, while the presentation is generated dynamically. Like Neal Stephenson's storybook, the information is filtered, selected and presented according to the specific needs of the viewer.

INTRODUCTION

By John Brockman

In May, 2004, EDGE published W. Daniel "Danny" Hillis's essay "'Aristotle': The Knowledge Web", in which he noted:

...humanity's accumulated store of information will become more accessible, more manageable, and more useful. Anyone who wants to learn will be able to find the best and the most meaningful explanations of what they want to know. Anyone with something to teach will have a way to reach those who want to learn. Teachers will move beyond their present role as dispensers of information and become guides, mentors, facilitators, and authors. The knowledge web will make us all smarter. The knowledge web is an idea whose time has come."

In his essay, Hillis asked the Edge community to begin a conversation and a number of people who think deeply about such matters participated: Douglas Rushkoff, Marc D. Hauser, Stewart Brand, Jim O'Donnell, Jaron Lanier, Bruce Sterling, Roger Schank, George Dyson, Howard Gardner, Seymour Papert, Freeman Dyson, Esther Dyson, Kai Krause, and Pamela McCorduck.

In 2005, George Dyson noted in his prescient EDGE essay "Turing's Cathedral":

My visit to Google? Despite the whimsical furniture and other toys, I felt I was entering a 14th-century cathedral — not in the 14th century but in the 12th century, while it was being built. Everyone was busy carving one stone here and another stone there, with some invisible architect getting everything to fit. The mood was playful, yet there was a palpable reverence in the air. "We are not scanning all those books to be read by people," explained one of my hosts after my talk. "We are scanning them to be read by an AI."

"When I returned to highway 101, I found myself recollecting the words of Alan Turing, in his seminal paper Computing Machinery and Intelligence, a founding document in the quest for true AI. "In attempting to construct such machines we should not be irreverently usurping His power of creating souls, any more than we are in the procreation of children," Turing had advised. "Rather we are, in either case, instruments of His will providing mansions for the souls that He creates."

In March, 2007, Hillis announced a new company called "Metaweb", and the free database, Freebase.com, and he wrote second Edge essay: "Addendum to 'Aristotle' (The Knowledge Web)." He wrote:

In retrospect the key idea in the "Aristotle" essay was this: if humans could contribute their knowledge to a database that could be read by computers, then the computers could present that knowledge to humans in the time, place and format that would be most useful to them. The missing link to make the idea work was a universal database containing all human knowledge, represented in a form that could be accessed, filtered and interpreted by computers.

One might reasonably ask: Why isn't that database the Wikipedia or even the World Wide Web? The answer is that these depositories of knowledge are designed to be read directly by humans, not interpreted by computers. They confound the presentation of information with the information itself. The crucial difference of the knowledge web is that the information is represented in the database, while the presentation is generated dynamically. Like Neal Stephenson's storybook, the information is filtered, selected and presented according to the specific needs of the viewer.

Last week, buried in the news on a summer Friday afternoon, was the announcement that Google had acquired

Metaweb. ...

...We create tools and then we mold ourselves in their image. With The Hillis Knowledge Web he has proposed something new, something different. I can make a case that his "Aristotle" (The Knowledge Web) essay is the kind of seminal document, such as Turing's Computing Machinery and Intelligence, and McCulloch et al's What the Frog's Eye Tells the Frog's Brain that appears a few times in a century. But now, with the Google announcement, we will all find in Internet time, how his ideas play out in the real world.

Now is the time to revisit (in chronological order) Hillis's original 2004 essay ("Aristotle": The Knowledge Web), the ensuing Reality Club conversation, and his 2007 "Addendum to 'Aristotle'", and have a conversation about where we are today.

I hope to hear from you.

- JB

[ED. NOTE: "The Hillis Knowledge Web", is a 20,000 words+ document of smart ideas, important ideas, not optimized for the smartphone revolution. Don't even think of reading it on your iPhone/Android/Blackberry. These are not 2.5"-wide ideas.

PERMALINK: http://www.edge.org/3rd_culture/hillis10/hillis10_index.html

-MORE-

IN THE NEWS

The Technium, Salon, Die Presse, BoingBoing, Medgadget, Computing

THE TECHNIUM

July, 2010

PREDICTING THE PRESENT, FIRST FIVE YEARS OF WIRED

Kevin Kelly

I was digging through some files the other day and found this document from 1997. It gathers a set of quotes from issues of Wired magazine in its first five years. I don't recall why I created this (or even if I did compile all of them), but I suspect it was for our fifth anniversary issue. I don't think we ever ran any of it. Reading it now it is clear that all predictions of the future are really just predictions of the present.

We as a culture are deeply, hopelessly, insanely in love with gadgetry. And you can't fight love and win.
Jaron Lanier, Wired 1.02, May/June 1993, p. 80 ...

...Pretty soon you'll have no more idea of what computer you're using than you have an idea of where your electricity is generated.

Danny Hillis, Wired 2.01, Jan 1994, p. 103

If we're ever going to make a thinking machine, we're going to have to face the problem of being able to build things that are more complex than we can understand.

Danny Hillis, Wired 2.01, Jan 1994, p. 104 ...

... It's hard to predict this stuff. Say you'd been around in 1980, trying to predict the PC revolution. You

never would've come and seen me.
Bill Gates, Wired 2.12, Dec 1994, p. 166

In the future, you won't buy artists' works; you'll buy software that makes original pieces of "their" works, or that recreates their way of looking at things.
Brian Eno, Wired 3.05, May 1995, p. 150

We're using tools with unprecedented power, and in the process, we're becoming those tools.
John Brockman, Wired 3.08, Aug 1995, p. 119

If the Boeing 747 obeyed Moore's Law, it would travel a million miles an hour, it would be shrunk down in size, and a trip to New York would cost about five dollars.
Nathan Myrthvold, Wired 3.09, Sep 1995, p. 154 ...

-MORE-

SALON
July 7, 2010

CAN THE INTERNET SAVE THE BOOK?

Online luminary Clay Shirky explains the new digital literary revolution -- and how the Web will change reading
By Andrew Keen, Barnes & Noble Review

(With additional questions from James Mustich, editor in chief of the Barnes & Noble Review).

...James Mustich: Clay, I was very taken with that post you wrote about the early days of the Gutenberg revolution.

Clay Shirky: Oh, yes. Eisenstein's book.

JM: Right. It had a very insightful historical perspective that's generally lacking in conversations about today's publishing turmoil. You also had an interesting piece at edge.org recently, about how publishing is the new literacy. You said, "It is our misfortune to live through the largest increase in expressive capability in the history of the human race -- a misfortune because surplus always breaks more things than scarcity."

-MORE-

DIE PRESSE
July 10, 2010

MARGINALIE

DA VERDREHEN WISSENSCHAFTLER DIE AUGEN [AS SCIENTISTS ROLL THEIR EYES]
Anne-Catherine Simon

...However, it was not a scientist that carried on the debate this year about the cognitive impact of the Internet, but a literary agent. John Brockman, who represents authors such as Richard Dawkins and Jared Diamond asked: "How has the Internet changed the way you think?" The more than 100 responses from well-known scientists, artists and thinkers published on www.edge.org show above all that nobody has the answer.

-MORE-

BOING BOING

July 8, 2010

Why We Talk to Terrorists: response to Supreme Court ruling on "material support" of foreign terrorist groups
Xeni Jardin

In John Brockman's EDGE newsletter, an essay by Scott Atran (left) and Robert Axelrod (right), two social scientists who study and interact with violent groups "to find ways out of intractable conflicts." The piece is a response to a recent Supreme Court decision that amounts to a real "chilling effect" for anyone working for peace and reconciliation through dialogue with foreign groups that have a history of armed conflict. Before the ruling, we knew that sending money or guns to any of the four dozen groups currently designated by the secretary of state as terrorist organizations was punishable by up to 15 years in prison. But now the law has been clarified to show that, say, holding conflict resolution workshops with them, or even interviewing one of their officers for an op-ed piece, could merit the same penalty. This NPR News analysis is a good place to start for real-world examples. ...

-MORE-

MEDGADGET

June 14, 2010

HOW TOXOPLASMA AFFECTS HUMAN AND ANIMAL BEHAVIOR

... THE ECONOMIST has recently featured an interesting article on the behavioral effects that parasitic protozoa *Toxoplasma gondii* has on its mammalian hosts. Many of these effects have been recognized for years, and some of us here at MEDGADGET been privy to *Toxoplasma* news, thanks to a friend at Stanford who works with Dr. Robert Sapolsky, a leading researcher in the field. First of all, there is strong evidence that urine from cats infected with *Toxoplasma* is sexually attractive to rats. Then there seems to be a connection between *Toxoplasma gondii* and schizophrenia, lack of interest in the novelties of life, and a noted correlation with people getting into more car accidents. It seems that the nature of this parasite's life cycle has created a strange symbiotic, psychological relationship between it and its typical feline and rodent hosts. THE ECONOMIST provides a handy overview of the latest knowledge around this topic.

Here's a must watch video interview of Sapolsky with [Edge.org](http://edge.org)...

Key quote: Somehow, this damn parasite knows how to make cat urine smell sexually arousing to male rodents...

Edge: TOXO - A Conversation With Robert Sapolsky...

-MORE-

COMPUTING

March 4, 2010

THE DANGERS AND DELIGHTS OF THE WEB

By Tom Young

(Having spent many a column espousing the wonders of the internet, my final column will sound a warning on the dangers.

The first is anonymity. This can be a curse and a blessing online. Sites such as Wikileaks - which desperately needs funding to stay open - provide a valuable place where information can be put into the public domain anonymously. ...

... But the internet carries an arguably more pervasive and long-term danger than the provision of anonymity and that is the way that it changes and shapes thinking and the way people interact with information.

The online forum [edge.org](http://www.edge.org) recently tackled this problem. It asked leading scientists, technologists and thinkers: How is the internet changing the way you think? A number of people, including American writer Nicholas Carr and science historian George Dyson, outlined fears that the web is at risk of reducing serious thought rather than promoting it.

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EDGE

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