

Diabologic: What Will Change Everything?

by Frank Dolinar

The 2009 World Question from the Edge Foundation

I've written about the Edge World Question a couple of times. Each year's question is provocative and the answers come from disparate and sometimes controversial points of view. Whether I agree with the stated opinions or not, answers to the Edge question always make me think. This year's question, described below, is no different. Not surprisingly, it's made its way onto my annual list of "must have" topics.

<p style="text-align: center;">WHAT WILL CHANGE EVERYTHING?</p> <p style="text-align: center;">"What game-changing scientific ideas and developments do you expect to live to see?"</p> <hr/> <p>New tools equal new perceptions.</p> <p>Through science we create technology and in using our new tools we recreate ourselves. But until very recently in our history, no democratic populace, no legislative body, ever indicated by choice, by vote, how this process should play out.</p> <p>Nobody ever voted for printing. Nobody ever voted for electricity. Nobody ever voted for radio, the telephone, the automobile, the airplane, television. Nobody ever voted for penicillin, antibiotics, the pill. Nobody ever voted for space travel, massively parallel computing, nuclear power, the personal computer, the Internet, email, cell phones, the Web, Google, cloning, sequencing the entire human genome. We are moving towards the redefinition of life, to the edge of creating life itself. While science may or may not be the only news, it is the news that stays news.</p> <p>And our politicians, our governments? Always years behind, the best they can do is play catch up. Nobel laureate James Watson, who discovered the DNA double helix, and genomics pioneer J. Craig Venter, recently were awarded Double Helix Awards from Cold Spring Harbor Laboratory for being the founding fathers of human genome sequencing. They are the first two human beings to have their complete genetic information decoded.</p> <p>Watson noted during his acceptance speech that he doesn't want government involved in decisions concerning how people choose to handle information about their personal genomes. Venter is on the brink of creating the first artificial life form on Earth. He has already announced transplanting the information from one genome into another. In other words, your dog becomes your cat. He has privately alluded to important scientific progress in his lab, the result of which, if and when realized, will change everything.</p> <p style="text-align: right;">—John Brockman Editor and Publisher</p>

This year's answers are, predictably, all over the map. I've provided a few summarized samples in the following paragraphs. (See all 151 answers to this year's Edge question at: http://www.edge.org/q2009/q09_index.html)

University of Bradford Archeologist Timothy Taylor discusses how our cultures evolve. He asserts that the concept of evolving culture is a paradox because to evolve it must, in my words, break its own mold. He says, "the creative force of culture tries to keep everything the same." Then follows with, "societies that tolerate the least behavioural deviance are the most science-averse." This is visible in the daily news. Which leads us to question how cultures can evolve. Change comes stealthily, insinuating itself in our lives so gradually as to be invisible until it has rewoven the tapestry of the culture.

MIT researcher David Dalrymple believes that to ensure the survival of the human species, it's necessary for humans to learn to adapt and survive somewhere other than Earth. To do this, we must first escape Earth's gravity well in the short term and eventually to escape the sun to make our way into deep space and to other star systems. There are several essays on this topic.

I have discussed the concept of "Disruptive Technologies" and provided a number of examples. It's intriguing to me when someone else does the same. Keith Devlin, mathematician, author, and Executive Director of Stanford's Center for the Study of Language and Information, has done just that. The object of his attention is already among us, the ubiquitous mobile phone. Devlin expects to see near universal ownership of a cell phone. He says this will place global connectivity, computational power, and access to all the world's knowledge literally in everyone's hands.

Another potentially disruptive technology (and one of my favorite topics) is nanotechnology, sometimes referred to as "molecular manufacturing". Molecular manufacturing is the topic addressed by Ed Regis, science writer and author. Most people will have heard the term in conjunction with, and often used as a synonym for, nanotechnology. It won't be used as a synonym by Ed Regis. He isn't happy with the way the much of the current hype surrounding "nanotechnology" had been co-opted (repeatedly) until today it is, in his words, simply small-particle chemistry. His vision is bigger, more profound. Knowing that nature can create living organisms from natural nanotechnology, he asks, "Why can't machines be intelligently engineered to accomplish relevantly similar feats?" Regis believes in the Eric Drexler's vision of nanotechnology. He asks about nanotechnology, "What if, indeed, it became an operational reality?" ...and answers, "Nothing has a greater potential for changing everything..."

Juan Enriquez is an author, Founding Directory of the Harvard Business School's Life Sciences Project, and the CEO of Biotechnomy. He addresses the concept of directed evolution. He suggests that new tech developments that affect human medicine and health care are leading us toward creation of a new branch on the human family tree. Enriquez does not expect this to be a consciously deliberate path, but an accumulation of small improvements, with the implication that these will somehow be incorporated into the human genome. It makes me wonder about how we will use such technologies, whether they will become therapies or enhancements (and whether it makes a difference) and the ethical considerations that arise out of such use. It also makes me wonder when or if we will become like the Borg.

Media analyst and author Douglass Rushkoff suggests that the discovery of intelligent life somewhere else (wherever that somewhere else actually is) would profoundly change our view of ourselves, our place in the universe. But he believes it won't be our own doing, it will have to come from outside and it will be done *to* us, and it will fundamentally change what it means to be human.

Gerald Holton, an Emeritus professor at Harvard, offers a succinct and terrifying statement. He says, "An answer can be given once more in one sentence: the intentional, hostile deployment – whether by a state, a terrorist group, or other individuals – of a significant nuclear device."

Roger Schank is a well known name in the field of Artificial Intelligence (AI). A computer scientist, psychologist, and author, Schank is talking about delivering “just in time” wisdom to people who need it, through the auspices of our ubiquitous computer systems. These systems, like today’s but progressively smarter, will be sensitive to the nuances of the need hidden in our questions, will provide educational / professional storytelling, forms of education, training, and guidance. In this process:

- 1) Information will be more relevant to the inquiries;
- 2) the size of the information will change (the suggestion is that it will be smaller and directly on target); and
- 3) This information will represent the best stories of experts in the field.

The goal is that computers won’t just respond to what you said (typed), they’ll respond to what you meant. [This reminds me a bit of the recent discussion of the Dbpedia by Tim Berners-Lee.]

Finally, Alan Alda states his belief that we’ll probably never change human nature, and until we do, there won’t be any advance that will change everything.

"What game-changing scientific ideas and developments do you expect to live to see?"