

NYT: Just How Old Can He Go?

Source: <http://sci.tech-archive.net/Archive/sci.med/2004-12/2514.html>

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Date: 12/28/04

Date: Tue, 28 Dec 2004 10:47:10 +0000

The New York Times
December 27, 2004
Just How Old Can He Go?
By STEVE LOHR

Ray Kurzweil began his dinner with a pill. "A starch blocker," he explained, "one of my 250 supplements a day."

Photo:

<http://tinyurl.com/4yrzf>

Caption:

Rick Friedman for The New York Times

Ray Kurzweil recommends taking vitamins and eating a diet that is low in carbohydrates, fat and dairy products and high in vegetables for encouraging longevity.

The risk of encountering starchy food seemed slight indeed at the vegetarian restaurant in Manhattan he had selected, where the fare was heavy with kale, seaweed, tofu, steamed broccoli and bean sprouts. But Mr. Kurzweil, a renowned inventor and computer scientist, has strong views on dietary matters.

His regimen for longevity is not everyone's cup of tea (preferably green tea, Mr. Kurzweil advises, which contains extra antioxidants to reduce the risk of heart disease and cancer). And most people would scoff at his notion that emerging trends in medicine, biotechnology and nanotechnology open a realistic path to immortality – the central claim of a new book by Mr. Kurzweil and Dr. Terry Grossman, a physician and founder of a longevity clinic in Denver.

"I am serious about it," said Mr. Kurzweil, a wiry man with few lines on his face for a 56-year-old. "I think death is a tragedy. I think aging is a tragedy. And going beyond our limitations is what our species is all about."

The study of human biology, he said, is increasingly intersecting with his main field of expertise – computing. Mr. Kurzweil points to the advances in medicine and genetics as leading toward a view of biology as a kind of computation.

The chemical units in DNA, which are designated by the letters A, G, C and T, are assembled and recombined, as if computer code.

"Genes are sequential programs," he said. "We are learning how to manipulate the programs inside us, the software of life. And personally, I really believe that what I'm doing is reprogramming my biochemistry."

His new book shows a different side of Mr. Kurzweil's continuing fascination with the connection between humans and computers. In "The Age of Spiritual Machines," published in 1999, Mr. Kurzweil made the case for why computers will exceed human intelligence within a few decades.

Photo:

<http://tinyurl.com/3ntfr>

Caption:

Julia Malakie/Associated Press

Ray Kurzweil, shown here in 1991, is working on a way to reprogram one's body in order to live a healthier life. He helped write a book on some of his strategies.

Provocative and controversial, that book struck skeptics as extreme and wildly optimistic about the gains technology can make anytime soon. The same criticism can be made of his new book, "Fantastic Voyage: Live Long Enough to Live Forever" (Rodale, 2004), published last month. But then, Mr. Kurzweil's success as an inventor has been based partly on ignoring conventional wisdom and a willingness to pursue ideas that may seem extreme.

He has few qualms about technology, which he says is "the continuation of evolution by other means." Just as the boundaries of computing will soon seem limitless, Mr. Kurzweil insists that improving knowledge and technology will make death avoidable.

The book describes three stages – the authors call them "bridges" – over the next 20 to 25 years. By the late 2020's, Mr. Kurzweil predicts, the fruits of artificial intelligence and nanotechnology, a technology that permits changes to the body at the cellular level, will really kick in so that science will enable people to rebuild their bodies, any way they want to. In 15 to 20 years, he contends that advances in the understanding of gene processes will make it possible for biotechnology therapies to turn off and reverse disease and aging. But only "a small minority of older boomers will make it past this impending critical threshold," write the authors, both graying boomers themselves.

In the meantime, the best that can be done, the authors say, is to reprogram one's body to live a healthier life to have a fighting chance to be around when the nanotech breakthroughs come to the rescue.

Mr. Kurzweil's thinking on health and aging is the result of both a personal and an intellectual journey. Like his grandfather, his father died in his 50's of heart disease, and Mr. Kurzweil, who is married with two children, was diagnosed with diabetes at 35. Life, clearly, had dealt him a bad

genetic hand.

Mr. Kurzweil reacted poorly to insulin, gaining weight. So he immersed himself in the research literature on diabetes, stopped taking insulin, and proceeded to devise his own program of diet, exercise and the use of some nutritional supplements. He lost 40 pounds, and brought his blood sugar and cholesterol levels down to healthy levels.

That thinking went into Mr. Kurzweil's earlier health book, "The 10 Percent Solution for a Healthy Life: How to Eliminate Virtually All Risk of Heart Disease and Cancer," which was published in 1993 and advocated a diet with fat accounting for only 10 percent of total calories consumed daily, far below the standard public health recommendations of 30 percent.

Mr. Kurzweil's research soon extended to aging and longevity, and he has continued at it ever since, consulting doctors and scientists along the way. His blood, metabolism and fitness are monitored regularly. The results appear encouraging. His biological age, using tests like high-frequency hearing, memory and lung capacity, is about 40. "In a sense, I treat myself as a laboratory," he said.

His experimental bent was evident even before he went to college at the Massachusetts Institute of Technology. In 1965, as a teenager, he appeared on the television program, "I've Got a Secret," hosted by Steve Allen, for having written a computer program that composed piano music.

Mr. Kurzweil's inventions mainly center on the use of artificial intelligence technology to teach computers to recognize patterns, a task far easier for humans than machines. His creations include an early optical-character-recognition program; a text-to-speech voice synthesizer for the blind; the first commercial speech-recognition system that could handle many words; and sophisticated computer-based instruments, a project in collaboration with Stevie Wonder, the singer and musician.

His inventions have earned him many awards over the years including the \$500,000 Lemelson-M.I.T. Prize, the nation's largest award for invention and innovation, and the government's National Medal of Technology. Over the years, he has licensed or sold his technologies to larger companies, like Xerox, which bought his optical-character-recognition technology in 1980. He is now chairman of Kurzweil Technologies Inc., in Wellesley Hills, Mass., and his instinct for commercial invention has made him a wealthy man, free to pursue the ideas that interest him.

In the artificial intelligence field, he is known more as a practical inventor than as a pure scientist. "Ray Kurzweil seems to have this knack for defining a problem so that he can attack it in a way that is useful and it actually works," said Raj Reddy, a computer science professor at Carnegie Mellon University, who is a leading artificial intelligence scholar. "And his work is guided by high-quality research. He always does his homework."

It is clear that plenty of homework went into "Fantastic Voyage." The book, with 452 pages, has more than 900 footnotes. There is a research rationale for each recommendation, backed up by some 2,000 scientific citations. "We started from a perspective of, 'What does the medical literature show?' " said Dr. Grossman, the book's co-author and founder of the Frontier Medical Institute, a longevity clinic. "We can defend everything we say."

The authors offer no silver bullet, no single nostrum, or even a handful, that will insure a long and healthy life. "It's a complex case," Mr. Kurzweil said. "That's why it takes a book to make it."

The authors advocate eating less than you need, with diets that are very low in carbohydrates and fat, high in vegetables and low in dairy products. Daily aerobic exercise is part of the formula. The authors are also big believers in the health value of antioxidants, like vitamins A, C and E. They can combat oxidation processes that release free radicals, which are wayward molecules that damage cells and increase the risk of disease and the pace of aging.

Traditionally, the medical profession has focused on treating disease. But disease prevention is increasingly a theme of medical research and practice as it becomes clear that ailments like heart disease and cancer are strongly influenced by diet and lifestyle.

"People are coming from a number of directions to these same truths," said Dr. Joseph Zibrak, an assistant professor at Harvard Medical School. "The science behind much of what Kurzweil and Grossman are talking about is becoming conventional."

Mr. Kurzweil, however, recommends far more than the standard preventative counsel to eat a healthier diet and get more exercise. Moderation is not his counsel for the radical reprogramming of the body. For example, Mr. Kurzweil and Dr. Grossman advocate taking large doses of vitamins and minerals and letting your body sort out what it needs – an approach that some experts say is extreme and perhaps risky.

"They have totally bought into mega-dosing on vitamins by accepting scanty evidence too early, before it's been properly evaluated," said S. Jay Olshansky, a professor in the school of public health at the University of Illinois at Chicago.

Mr. Olshansky points to a recent study, by an epidemiologist at Johns Hopkins University, that found taking high doses of vitamin E may slightly increase the risks of dying earlier. "Mega-dosing could be mutagenic; it could cause problems," Mr. Olshansky said. "If you follow Ray and Terry's advice, you could die sooner. Kurzweil is asking people to be guinea pigs."

Mr. Kurzweil and Dr. Grossman say there is a market for their ideas, beyond just their book. They have set up a small side business selling supplement pills, "Ray & Terry's Total Daily Care," which is a pared-down version of Mr. Kurzweil's vitamin and nutrient program. For people 50 or over, they

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recommend six pills a day, which cost \$1.25 a day, and fewer pills for younger people.

Mr. Kurzweil, however, is going further. He is sticking to his 250 pill-a-day regimen, though he adjusts his routine if his research suggests improvements. In this research, Mr. Kurzweil is both the scientist and the laboratory. "I've tried to approach this as an inventor," he said. "That's how I approach problems, constantly measuring, testing and searching for the best ideas."

<http://www.nytimes.com/2004/12/27/technology/27kurzweil.html>