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Mel Conway, Ph.D.

I am an entrepreneurial computer professional, inventor, and educator with advanced degrees in Mathematics and Physics. I have co-founded two technology companies, published several widely cited papers, and have been issued a major software patent.

Education			
	Ph.D.	Mathematics	Case Western Reserve University
	M.S.	Physics	California Institute of Technology
	B.S.	Physics	Case Western Reserve University

Experience as an Educator

Full-time public high school teacher. Mass. licenses: Physics 8-12, Math 8-12.

Designed and taught undergrad/graduate computer science courses at Case.

Taught university freshman physics at Caltech. (Began midyear and improved the final placement of my section from 9th of 9 to 2nd to the honors section.)

Invited seminars: MIT, Caltech, Washington University, IBM.

Employment

Educator

Fall 2008   Adjunct Faculty, Endicott College.

Fall 2003 – Summer 2007   Chelsea High School, Chelsea, MA.

Physics, Geometry, and MCAS Prep. Professional development: SIOP, NCLB English Language Arts Series, Adolescent Literacy, Analyzing Student Data/Differentiating Instruction.

Technology and Management Consultant

1992 – 2003   Some engagements:

United a ten-person software development team from warring groups in two companies and managed the successful completion of its graphical PC-based laboratory workstation.

Participated in development of a trader workstation at J.P. Morgan Bank.

Senior Architect/Director

1988 – 1991   Wang Laboratories, Inc.

Co-Founder, Corporate Director, Chief Scientist

1982 – 1987   THINK Technologies, Inc.

Developed the technology that was the basis of the company's initial product, Macintosh Pascal. This product was key to the success of the Macintosh in undergraduate Computer Science education.

Technology Consultant

1971 – 1982

Designed and developed hardware and software. Some clients: Brookhaven National Laboratory, Burroughs Corporation, US Department of Health Education and Welfare, Digital Equipment Corporation, Massachusetts General Hospital, Monroe Calculator Company, National Bureau of Standards, Raytheon Corporation, Rockwell International Corporation, US Air Force, US Veterans Administration, and Washington University Medical School.

Avocations	**Vocal Music**
	Four years, Cleveland Orchestra Chorus (Robert Shaw, George Szell)
	Eight years, Tanglewood Festival Chorus-Boston Symphony Orchestra (John Oliver, Seiji Ozawa; performances in numerous locations including Boston, Tanglewood, Carnegie Hall, Lincoln Center, Hong Kong, Tokyo, and Osaka.
	Formal voice studies: 1987-2002
	Reading
	I am interested in the history of Western Ideas. Some books I have read: J. Bronowski and B. Mazlish: *The Western Intellectual Tradition;* J. Diamond: *Guns, Germs, and Steel;* V. Hanson: *Carnage and Culture;* R. Kagan: *Of Paradise and Power*; C. Christensen: *The Innovator's Dilemma;* R. Feynman: *The Character of Physical Law* and *The Pleasure of Finding Things Out;* R. Dawkins: *The Selfish Gene* and *The Blind Watchmaker;* J. Gleick: *Chaos;* L. Garrett: *The Coming Plague;* S. Hawking: *A Brief History of Time;* M. Rothschild: *Bionomics-Economy as Ecosystem*; J. K. Galbraith, *The Great Crash-1929* and *The New Industrial State*; Amity Shlaes, *The Forgotten Man*.
Research Interests	**Cognitive Models of Software Internals**
	I have developed a new conceptual model for computer applications that promises intellectual accessibility to a broader audience than just software developers. The patent cited below describes in detail a concrete realization of the model.
	Sociology of System Design
	In graduate school I concentrated in Operations Research. This focus on quantitative system analysis led to development of the principle now known as *Conway's Law*. Published in 1968 and described in *Wikipedia* and Fred Brooks's *The Mythical Man Month*, the principle describes a necessary relationship between the structure of a design organization and the structures of the designs it is constrained to generate. *Wikipedia* characterizes it as "a valid sociological observation."
Career Highlights	**Participation in multiple aspects of education** for over thirty years. As a public school teacher I wrote a **collection of essays** reflecting on this experience: http://web.me.com/melconway . I was intimately involved in the **planning and creation of two independent schools**: the Primary Unit of Notre Dame Children's Class (pre-K to 2, Wenham, MA) and Glen Urquhart School (K-8, Beverly, MA). I wrote and presented to the respective governing bodies the initial financial plans for both schools, and I solicited bids and managed the process of the extensive modifications of an existing building for the NDCC Primary Unit. I designed and taught the **middle-school integrated math class** for one year in the early days of The Waring School.
	Major software patent filed September 1995, issued August 2001. *Dataflow Processing with Events*, No. US 6,272,672. 151 claims, 115 figures.
	Practical research in software technology whose impact has been felt at many places in the computer industry. **Two papers** in *Communications of the ACM* reported four innovations in compiler technology.
	Design and construction of computer hardware. Under contract to Mass. General Hospital I built the first freestanding digital video viewer for medical CAT scanners. MGH's experience led to two more contracts, from the Washington University Medical School and Brookhaven National Laboratory. All of these machines were entirely of my design and execution; except for outsourcing the construction of the memory boards which I had designed, I did everything: proposal, negotiation, all design, drafting, purchasing, construction, test, documentation, installation, training, and service. I delivered **two radiology conference papers** describing these machines.