

## Portia Isaacson Bass, Ph.D.



### SUMMARY

Portia Isaacson Bass is principal consultant of Bass Economics, Inc., which consults on models for forecasting technology evolution and new-product sales. Dr. Bass also serves as an expert witness in computer, telecom and semiconductor litigation. She is also engaged in scholarly research in mathematical and empirical foundations of new information-technology product forecasting (e.g., diffusion, technology, architecture, sales, prices). She is executive director of Bass's Basement, a not-for-profit (501c3) corporation, dedicated to research and education concerning new-product sales forecasting.

Dr. Bass is a pioneer technology and market analyst in the computer, telecom and semiconductor industries. Her particular expertise includes personal computer markets, mobile computing markets (laptop computers, tablet PCs, netbooks, battery); PC components and peripherals markets (microprocessor, DRAM, GPU, DVD drives, printers).

With physics B.S., computer-architecture Ph.D., marketing-science scholarly publications and current hands-on data analytics and market forecasting skills, Dr. Bass is particularly qualified to assist companies in market analysis of complex technology markets.

Her clients have included hundreds of companies, for example, AT&T, Canon, Disney, IBM, Intel, Mattel, NCR, NEC, Philips, Samsung, Sony, Texas Instruments (TI), Toshiba and Xerox.

Dr. Bass' market and technology forecasts of emerging high-tech products and services have been used by thousands of high-tech companies since 1980 when she founded Future Computing, Inc. Future Computing was the leading publisher of personal-computer industry business information when it was acquired by McGraw-Hill in 1984.

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## **PRESENT EXPERTISE**

- Theory and practice of forecasting digital technologies, applications and markets
- Mathematical and computer models of new product diffusion
- Entrepreneurship, especially in digital technology markets
- The future of digital technologies, applications, markets and industry
- Product management of digital products (including services)
- Emerging computer, operating system, data communications and application architectures
- Client/server and personal-computing architectures, markets and technologies
- Mobile-computing and wireless-communication architectures and markets
- World Wide Web authoring tools and content trends
- Computer components and peripherals markets (e.g. mass storage, semiconductors)
- Computer distribution channels and industry infrastructures
- Competitive analysis and strategic planning for technology businesses
- Web and PC software development: Microsoft .Net Framework, ASP.NET, C#, Visual Basic, Excel Object Model, SQL Server

## **EDUCATION**

- Ph.D., Computer Science, Southern Methodist University, 1974 (computer operating systems and computer architecture with minor in discrete mathematics)
- M.A.S., Computer Science, Southern Methodist University, 1973
- M.S., Computer Science, North Texas State University, 1972
- B.S., Physics and Mathematics, East Central University, Oklahoma, 1966

## **RESEARCH**

- Mathematical and computer models for forecasting technologies and architectures, applications, adoption, market trends, economics and business environments addressing such issues as:
  - What causes generational transitions? What is a generational transition in the customers' eyes as opposed to a manufacturer's view? How do generational transitions affect sales, prices, market expansion, market shares, competitors, and customers? How often do generational transitions occur?
  - How do product features change over time?
  - What is the relationship of Moore's Law and other functionality-growth laws for digital technologies to the learning (experience) curve? What are the appropriate metrics for measuring capability and performance of technologies?
- Analysis of historical digital technology trends and historical evolution of computer (and other digital system) architectures to provide analogies for forecasts
- Development of software tools and historical databases for research and practice in diffusion modeling, technology forecasting and market forecasting.

## **TYPICAL CONSULTING ENGAGEMENTS** (for litigation see following section)

- Compared the patent portfolios of two large semiconductor companies with respect to particular types of products. Estimated revenue affected by patent groups.
- Sales, price and technology multigenerational forecast for wireless application.
- Forecast, market share and competition model for smartphone market.
- Market segmentation and forecast for a new type of OEM semiconductor product
- Assisted in the technology choices, content design and planned evolution of a Web site for a substantial technology company
- Analysis and segmentation of customer database for telecom company
- Marketing strategy and implementation plan for the launch of a new and unique semiconductor product related to tablets, pen and touch technologies
- Identified opportunities for semiconductor products in mobile computing and wireless communication markets
- Assisted PC manufacturer in planning architectural evolution of product line encompassing workstations, servers, and mobile computers over ten-year period
- Assisted large software company in creating appropriate strategic relationships
- Assisted in naming a telecommunication company spin-off

## **EXPERT WITNESS AND LITIGATION CONSULTING ENGAGEMENTS**

- Karim v. Hewlett-Packard Company, Case No. CV 12-05240-PJH, United States District Court, Northern District of California. Dr. Bass was retained 2013 by Gibson Dunn & Crutcher LLP representing HP. She prepared a report.
- Skold v. Intel Corp. et al. Case No. 1-05-CV-039231, Santa Clara, California. Dr. Bass was retained 2012-2014 by Munger, Tolles & Olson LLP representing Intel. She prepared a report and gave a deposition.
- Baba, et al. v. Hewlett-Packard Company, Case No. 5:09-05946-RS, U.S. District Court of Northern District of California, San Jose Division. Class action concerning notebook computers. Dr. Bass was retained 2012 by Morgan, Lewis & Bockius LLP, which represented Hewlett-Packard Company. She prepared a report.
- St. Clair v. Acer, Inc. et al.; Civil Action No. 10-282-LPS. Microsoft Corporation v. St. Clair, Civil Action No. 10-282-LPS. U.S. District Court District of Delaware. Patent infringement case concerning laptop computer power management. Case is ongoing. Dr. Bass was retained (2010-present) by Perkins Coie LLP, which represents Intel. She prepared a report concerning the laptop-computer market and gave a deposition.
- Intel Laptop Battery Litigation, Case No. 09-cv-02889-JW U.S. District Court for the Northern District of California. Class action concerning battery life and battery-life benchmarks. Plaintiffs dropped request for monetary relief and withdrew their class certification motion; the court granted Intel's request for summary judgment. Dr. Bass was retained (2009-2011) by Perkins Coie LLP, which represented Intel. She prepared a report concerning the laptop-computer market and gave a deposition.

- Nygren, Shifflette, & Fromkin v. Hewlett Packard Company, Case No. 07-05793-JW U.S. District Court for the Northern District of California. Class action concerning laptop wireless feature. Dr. Bass was retained (2009-2010) by Morgan, Lewis & Bockius LLP, which represented Hewlett-Packard Company. She prepared a report.
- Kelsea Baggett v. Hewlett-Packard Company, Case No. CV-07-0667 U.S. District Court for the Central District of California. Class action concerning color LaserJet printers that allegedly stop printing (hardstop) with some toner remaining in the cartridge. September 2009 HP's motion for summary judgment was granted and class certification denied as moot. Portia Bass was retained (2008-2009) by Morgan, Lewis & Bockius LLP, which represented Hewlett-Packard. Dr. Bass prepared a report (38 pages, 18 figures) for consideration in class certification. Her analyses described and quantified the variety of products, product features, customers, prices, distribution channels and usage patterns found in segments of the HP color LaserJet printer cartridge market.
- Matsushita Electric Industrial Co., Ltd. v. Mediatek, U.S. District Court for the Northern District of California C05 03148 JL. Patent Infringement concerning U.S. optical disk drive LSI semiconductor chips. Settled. Portia Bass was retained (2006-2007) by Dewey Ballantine LLP (now Dewey & LeBoeuf LLP) representing Matsushita. Dr. Bass provided a report and deposition quantifying and describing the U.S. optical disk drive LSI semiconductor market including: unit sales of several types of optical-storage chips that have been sold each year as part of end-customer products such as PCs, videogames and audio/video products (e.g., DVD players, DVD recorders); unit sales of MediaTek optical-storage chips as part of end-customer products in the U.S.; unit sales of optical-storage chips from other leading suppliers as part of end-customer products in the U.S and issues relating to research and development and the patterns of competition in the various optical storage markets. Dr. Bass's quantification of the optical-storage semiconductor market was used in the damage analysis by the economist expert.
- Skold v. Intel Corp., Superior Court of California, County of Santa Clara. Nationwide class action alleging that Intel misrepresented and concealed information about the performance of early Pentium® 4 processors and artificially boosted benchmark scores for those processors. The trial court denied three motions for class certification, finding that individual issues would predominate. Reversed on appeal. Portia Bass was retained (2006-2008) by Skadden Arps Slate Meagher & Flom LLP, which represented Intel.
- Terence Dunn v. Berger Kahn LLP. Legal malpractice case concerning Terence Dunn v. Gaiam Holdings, Inc., et al. Portia Bass was retained (2005-2006) by Nemecek-Cole, which represented Berger Kahn, to analyze the opposing damages testimony, which were prepared using the Bass model to forecast quarterly sales of two instructional video titles sold on both VHS and DVD. Dr. Bass prepared a report and gave arbitration testimony.
- PostX Corporation vs. Secure Data in Motion, Inc. d/b/a Sigaba, Case No. C02-04483 SI. Patent infringement of two secure document delivery patents. Portia Bass was retained (2005-2006) by Pillsbury Winthrop Shaw Pittman LLP, which represented PostX Corporation, to analyze opposing economic damages analysis employing the Bass model of new product sales. Dr. Bass provided a report, supplemental report and trial testimony.

- Barbara's Sales Inc. et al. v. Intel Corp. et al., Circuit Court of Madison County (Illinois), Illinois Supreme Court. Class action concerning Intel's alleged misrepresentation of performance capabilities of early Pentium® 4 processors. Portia Bass was retained (2003-2005) by Brown & Bain (now Perkins Coie), which represented Intel.
- Mobility Electronics, Inc. v. Comarco, Inc. (Comarco Wireless Technologies, Inc.) and Targus Group International, Inc., U.S. District Court for the District of Arizona Case No. CIV-01-1489 PHX MHM. Patent infringement case concerning universal power adapters for notebook computers. Case settled after Comarco's motion for preliminary injunction was denied. Portia Bass was retained (2003) by Brown & Bain, which represented Mobility Electronics, Inc. Dr. Bass prepared a 27-page report and gave deposition as well as trial testimony concerning the market for universal power adapters for portable (also called notebook and laptop) computers. Her analyses included secondary factors relevant to obviousness of the patented invention, the relationship between product success and the patented invention and the likely effect on Mobility of any injunction.
- Shvarts, Cohen v. Sony Electronics Inc. Class action concerning notebook computer battery life. Portia Bass was retained (2002-2004) by Heller Ehrman LLP, which represented Sony. Dr. Bass prepared a report on issues related to class certification including: the characteristics of notebook computer purchasers, notebook computer usage patterns, the varying importance of battery life to notebook users, causes of variation in battery life experience and battery life tests of plaintiffs' notebook computers and batteries.
- Hal LaPray, Tracy D. Wilson, Jr., and Alisha Seale Owens v. Compaq Computer Corporation. Class action concerning claimed defective floppy disk controller. Portia Bass was retained (2000-2002) by Beck Redden & Secrest LLP, representing Compaq. Dr. Bass provided multiple reports and deposition testimony concerning issues related to class certification including: floppy disk usage patterns since 1975, consumer expectations about reliability of floppy drives and media; inspection of plaintiffs' computers and testing of replica systems of plaintiffs' computers to determine likely causes of plaintiffs' complaints.
- Linear Technology Corporation v. Impala Linear Corporation, Toyoda Automatic Look Works, Ltd., Analog Devices, Inc., and Maxim Integrated Products, Inc.; Linear Technology, Inc. v. Maxim Integrated Products, Inc. Maxim Integrated Products, Inc., U.S. District Court for the Northern District of California Civil Action No. C-98-1727-VRW. Patent infringement concerning voltage regulator sleep mode and current reversal protection. Portia Bass was retained (2000-2005) by Brown & Bain, representing Maxim and Heller Ehrman, representing TI Unitrode. Dr. Bass prepared a 104-page report and deposition covering: market importance of voltage regulator patent in portable electronics (e.g., notebook computers, PDAs, wireless telephone). Notebook computer battery life technical simulation for notebook computers using regulators with and without the patented feature from late 1980s through 2001; notebook battery life testing of notebooks with and without the patented feature, market analysis to determine notebook computer usage profiles, technology and product architecture trends from late 1980s through 2001; data analysis of sales of voltage regulators with and without the patented feature to indicate whether the patented features were the reasons for any success of the patented voltage regulators.

- Telxon v. Robert P. Meyerson, Dan R. Wipff, Robert A. Goodman, Dr. Raj Reddy, and Norton W. Rose. Civil action. Portia Bass was retained (2000) by Rosenthal, Monhait, Gross & Goddess, which represented Telxon Corporation, to provide a deposition concerning the pen-computer market in early 1990s and the competitiveness of a specific computer design and prototype.
- Galaxy Networks, Inc. v. Kenan Systems Corporation, U.S. District Court, Central District of California; Civil Action No. CV-95-5568 DDP. Portia Bass was retained (1997) by Irell & Manella, which represented Kenan Systems. Dr. Bass provided a report, deposition and trial testimony about business practices in relationships between computer software companies and distributors.
- Applied Materials v. Novellus, Northern District of California. Patent infringement. Dr. Bass provided report and deposition about the worldwide semiconductor sales and distribution patterns.
- Compaq Computer Corp. v. Packard Bell Electronics, Inc., Southern District of Texas No. H-94-4034. Patent infringement concerning six personal computer patents: 574279 (PC video display system), 4980836 (reducing power consumption of battery powered PC), 5101497 (programmable interrupt controller), 5125088 (computer system speed control at continuous processor speed), 5226122/5381530 (programmable logic system for filtering commands to a microprocessor). Settled. Retained (1996) Wilson Sonsini, which represented Packard Bell. Dr. Bass provided report concerning market importance of six personal computer patents.
- Intel Corp. v. Cyrix Corp. v. Texas Instruments, Inc., U.S. District Court, Eastern District of Texas. Patent infringement and antitrust counterclaim concerning 386 and 486 microprocessors. Dr. Bass provided report, deposition and trial testimony quantifying and describing the market for x86-compatible microprocessors.
- TI v. Dell. Patent infringement. Report and deposition on why Dell's success.
- Intel Corp. v. Advanced Micro Devices, Inc., District Court of the Northern District of California. Copyright infringement of Intel math co-processor microcode. Provided report and deposition about math coprocessor compatibility.
- Fairchild Camera & Instrument Corp. v. Data General Corporation., U.S. District Court for the Northern District of California. Antitrust. Provided report and depositions about damages due to Data General's tying of its operating system software RDOS to Nova computer sales.

## **EMPLOYMENT HISTORY**

2000-Present	Principal Consultant, Bass Economics, Inc. – consultancy on high-tech market/technology forecasts, litigation support and expert witness.
2012-2013	Investor, Vice Chairman and Principal Analyst of Parks Associates.
2000-2007	Adjunct Professor of Marketing (research only), University of Texas at Dallas
1987-2002	President, Future Think, Inc. (d.b.a. Dream IT) -- Consultancy and publisher of business information about markets for digital products and services
1994-1998	Board of Directors, FOURTH SHIFT Corporation
1986-1987	Board of Directors, Microsoft Corporation
1984-1985	President, Future Computing, Inc., a McGraw-Hill subsidiary
1980-1984	Founder, President & CEO, Future Computing Inc.
1978-1980	Fellow and (later) Vice President BSD, Electronic Data Systems
1976-1981	Founder, Partner, and Vice President, The Micro Store
1975-1977	Assistant Professor, Computer Science, University of Texas at Dallas
1974-1975	Engineering Specialist, Xerox Corporation
1971-1974	Instructor, Computer Science, North Texas State University
1970-1971	Senior Systems Software Programmer, Recognition Equipment Inc.
1968-1970	Systems Software Analyst, Computer Usage Company
1968-1968	Scientific Programmer, Lockheed Electronics
1967-1968	Scientific Programmer Analyst, Bell Helicopter
1960-1962	U.S. Army (Honorable Discharge)

## **MOST SIGNIFICANT ENTREPRENEURIAL VENTURES AND PUBLICITY**

### Ventures

- 1976: Founding partner in one of the first 20 computer stores in the USA and the first in the southwestern USA. Successful. Sold in 1981.
- 1980: Founding partner and CEO of Future Computing, Inc., which became the leading technology forecaster and business information provider in the personal computer industry. Sold to McGraw-Hill in 1984 for \$8 million. Continued as CEO until 1985.
- 1985: Intellisys, Inc. Software for integrated electronic home. Built most "electronic" home of its day. Featured in many news stores and science TV shows. Featured article: Portia's Pad, IEEE Spectrum, May 1985. Failed to raise 3<sup>rd</sup> round of venture capital because too long term.

### Book Features

- Primary entrepreneur featured in the book *Women, Technology and Power: Ten Stars and the History They Made* by Marguerite Zientara. American Management Assoc.
- *What Works for Me: 16 CEOs Talk About Their Careers and Commitments* by Thomas R. Horton. American Management Assoc.

### Major Business Press and Television

- Featured entrepreneur in Wall Street Journal, Venture, Inc., Business Week, Forbes, USA Today, and Dallas Morning News as well as on CNN, ABC news, Good Morning America and Beyond 2000.

## **RECENT SCHOLARLY PAPERS AND SOFTWARE**

- Virtual Bass Model and the Left-Hand Data-Truncation Bias in Diffusion of Innovation Studies, Zhengrui Jiang, Frank M. Bass,\* and Portia Isaacson Bass, *International Journal of Research in Marketing* 23 (2006) 93–106.
- Bass, Portia Isaacson. Computer-Architecture Dynamics. Working paper. <http://www.bassbasement.org>
- Bass, Portia Isaacson and Frank M. Bass. 2004. IT Waves: Two Completed Generational Diffusion Models. Working paper and supplements. <http://www.bassbasement.org>
- Bass, Portia Isaacson. 2002. Principles of Technology Generations Diffusion Data: The IBM Mainframe Case. Working Paper. <http://www.bassbasement.org>
- Bass, Portia Isaacson and Frank M. Bass. 2001. Diffusion of Technology Generations: Model of Adoption and Repeat Sales. Working Paper. <http://www.bassbasement.org>
- Bass, Portia Isaacson and Frank M. Bass. 2004. IT Waves: Open-Source Software. [www.basseconomics.com](http://www.basseconomics.com). <http://www.bassbasement.org>
- Bass, Portia Isaacson. 1999-present. Bass Modeler Web Service and Excel Addin for Diffusion Modeling Research and Technology/Market Forecasting. <http://www.bassbasement.org>

## **RECENT SCHOLARLY CONFERENCE PRESENTATIONS AND ABSTRACTS**

- Kim, Taesun, Frank Bass and Portia Isaacson Bass. 2005. Not to Worry: Bass Model Estimation Bias Is Small. 2005 INFORMS Conference presentation.
- Bass, Frank and Portia Isaacson Bass. 2004. Moore's Law and The Experience Curve: The Economics of Bits and Chips. 2004 INFORMS Conference presentation.
- Bass, Portia Isaacson. A Mathematics for Multigenerational Diffusion Models. 2004 INFORMS Marketing Science Conference abstract. [www.basseconomics.com](http://www.basseconomics.com).
- Bass, Portia Isaacson and Frank M. Bass. 2004. The Embedded Model of the Norton-Bass Successive Technology Generations Model. 2004 INFORMS Marketing Science Conference presentation.
- Bass, Frank and Portia Isaacson Bass. 2004. Moore's Law and The Experience Curve: The Economics of Bits and Chips. 2004 INFORMS Marketing Science Conference presentation.



- Bass, Portia Isaacson and John Isaacson. 2003. Multiple Generation Diffusion Model Estimation Using Adaptive Nonlinear Least Squares Algorithm NL2SOL. 2003 INFORMS Marketing Science Conference presentation.
- Bass, Portia Isaacson. 2002. Decomposition of Aggregate Observations by New Durable Product Diffusion Models. 2002 INFORMS Marketing Science Conference presentation.
- Bass, Portia Isaacson and Frank M. Bass. 2001. Diffusion of Technology Generations: Model of Adoption and Repeat Sales. 2001 INFORMS Marketing Science Conference presentation.

## OTHER SCHOLARLY PAPERS

- Window on the 80's, *IEEE Computer*, w/ E. Juliussen, January 1980.
- The Personal Computer vs. Personal Privacy, *Computers & Privacy in the Next Decade*. New York: Academic Press, Inc., 1980.
- Personal Computing, The Oregon Report, IEEE Computer Society, September 1979.
- Using Microprocessors--Extending Our Reach, COMPCON Proceedings Fall 79, September 4-7, 1979.
- The Next Ghetto: The Information Poor, Rocky Mountain Microcomputer Conference Proceedings, Pinegree Park, Colorado, August 28, 1978.
- Microcomputers in Business, '78 National Computer Conference PC Conference Proceedings, June 1978.
- Personal Computing: A Little Past and a Lot of Future, x'78 National Compute Conference Proceedings, June 1978.
- A Machine-independent Floppy Disk Controller with Portable Software, *Rocky Mountain Symposium on Microcomputers Proceedings*, w/ B. Johnson, August 1977.
- Personal Computing Dissected, *Computer*, IEEE Computer Society, July 1977.
- The Personal Computer: Evolution in Computer Science Education, Proceedings of East Texas State University Computer User's Conference. March 1977.
- Personal Microcomputers, Texas Association for Educational Data Systems, Austin, Texas, October 25-26, 1976.
- TPL: A Compiler for Instructional Use, presented to the Fort Worth Chapter of the ACM, May, 1975.
- Picture Systems, PS, and the Design of Channel-to-channel Computer Interface, Proceedings of the 2nd Annual Symposium on Computer Architecture, IEEE Computer Society and ACM, January 20-22, 1975.
- PS: A Tool for Building Picture-System Models of Computer Systems, Proceedings of the Third Texas Conference on Computing Systems, IEEE Computer Society, November 1974.
- PS Language Definition, ACM SIGDA Newsletter 4, pp. 20-26, September 1974.
- Picture-system Models and Computer System Design, Ph.D. Dissertation, Computer Science Department, Institute of Technology, Southern Methodist University, Dallas, Texas, 1974.
- A Semantic Model of a Concurrent Processing Language, Computer Science Conference, Federation of North Texas Area Universities, March 26, 1974.
- A Process-interrupt Mechanism for Block-structured Languages, 7th Annual Meeting of the Texas Academy of Science, February 28, 1974.

- A Programming Language for Concurrent Processing, Master's Thesis Computer Science Department, North Texas State University, August 1972.

### **BOOKS AND EDITED BOOKS**

- Personal Computing: A Lot of Past and Even More Future, 2011.
- Computer Industry Almanac, w/ E. Juliussen, L. Kruse, 1987.
- Microprocessors & Microcomputers. Long Beach California: IEEE Computer Society. 1979.

### **EDITORSHIPS, PROFESSIONAL SOCIETY OFFICERSHIPS AND COUNCILS**

- Senior Technical Editor, *IEEE Computer*, 1978-1981
- ACM Council Member-at-Large, 1978-1981
- IEEE Computer Society Governing Board, 1980-1982
- American Management Association Management Systems Council, 1978-1981
- Founder and Chairperson, Association for Computer Machinery Special Interest Group on Personal Computing, 1977-1979

### **CONFERENCE CHAIRS, MANAGEMENT AND ADVISORY BOARDS**

- 1977 National Computer Conference (NCC) Chairman, 1975-1977
- National Computer Conference Management Committee, 1977-1979
- IEEE Computer Society COMPCON Chairman, Fall 1979
- COMDEX Advisory Board, 1990-1991
- Unisys International CIO Conference

### **KEYNOTE ADDRESSES AND INVITED SEMINARS**

- Personal Computing: A Lot of Past and Even More Future, North Texas PC Users Group 30<sup>th</sup> Anniversary Presentation, 2012 (book and presentation).
- The Future of Personal Computing, The Future of Personal Computing 92 Conference, ESP, Ltd., London, April 14, 1992.
- A Whole New World of Computing, Keynote Speech, Digital Consulting Conference, May 1992.
- Keynote Speech, Pen Computing Opportunities Conference, Japan, April 1992.
- Beyond Client/Server Computer Architectures, Client/Server Summit, Nice, France, Unisys Corporation, March 1994.
- Japan Microprocessor Conference, JEIDA, 1979.
- Japan Economic Journal PC Business Conference, 1985.
- TI-MIX Europe Symposium, Frankfurt, Germany, September 1979.
- Future Computing Seminar, Norway, September 20, 1979.
- Future Computing Seminar, Denmark, September 19, 1979.
- Luncheon Speaker, Annual Conference, American Institute of Certified Public Accountants, San Francisco, May 15, 1979.
- Keynote Address, USAF Computer Related Information Symposium (CRISYS) U.S. Air Force Academy, January 24, 1979.

- Keynote Address, Personal Computer Show, London, England, July 5, 1979.
- Keynote Address, Intl. Microcomputer Applications Conference, Tokyo, Japan, November 16, 1978.
- Luncheon Speaker, ACM-SIGMOD International Conference on Management of Data, Austin, Texas, May 31, 1978.
- Keynote Address, Annual Motorola Technical Review, November 2, 1977.
- Personal Computing: An Idea Whose Time Has Come, Personal Computing Exposition, New York, October 29-30, 1977.
- Personal Computing: A Business Perspective, Data Processing Management Association Annual Conference, Washington, D.C., October 10, 1977.
- Personal Computing Evening Keynote Address, IEEE COMPCON, Washington, D.C., September 8, 1977.
- Home Computers, Heart-of-Texas DPMA Annual Meeting, Banquet Speaker, March 1977.

### **INVITED SEMINARS AND SPEECHES**

- A Glimpse of the Future: IT Then, CIO Conference Speech, March 11, 1992.
- Changing Business through Technology - Pen Computing, COMDEX/Spring, April 8, 1992.
- The Personal Computer: Challenge to Computer Engineering, Computer Science Lecture Series, Stanford University, May 16, 1979.
- The Organizational Crisis: Assessing the Impact of Minis, Micros and Distributed Systems, AMA, San Francisco, March 28, 1979.
- P.O.P.S., Inc., Montreal, September 1979.
- Morgan Stanley Personal Computer Forum, New Orleans, May 3, 1979.
- Personal Computing: A Little Past and a Lot of Future, Goddard Space Flight Center, Maryland, May 22, 1978.
- Invited Speaker, IEEE Computer Society, Orlando, Florida, May 25, 1978.
- Keynote Address, University of Denver, June 12, 1978.
- Personal Computing, Computer and Business Equipment Manufacturers Association (CBEMA), Washington, D.C., June 1, 1978.
- Rochester Chapter of ACM, Rochester, New York, May 15, 1978.
- NECON '78, DPMA, Hartford, Connecticut, April 20, 1978.
- Twenty-second Annual Data Processing Conference, University of Alabama, March 8, 1978.
- The Future of Retail Computer Stores, Panel Discussion, The First West Coast Computer Faire, April 1977.
- Dinky Computers are Changing our Lives, Banquet Speech, Second West Coast Computer Faire, March 3, 1978.

### **OTHER PROFESSIONAL ACTIVITIES**

- Professional Development Seminars Organization by ACM Chapters, South Central ACM Regional Chapter Volunteer Training Workshop, October 23, 1976.
- Personal Computing, Dallas Chapter of the ACM, August 31, 1976.
- Personal Computing, Association for Systems Management, Dallas Chapter Meeting, August 10, 1976.

- What's New in Programming Language Theory, Session Chairman, ACM Conference, October 1975.
- Honorary Fellow, Association of Computer Programmers and Analysts, 1977
- Past, Present, and Future, Panel Discussion, 1976 National Computer Conference, New York, June 1976.
- Advisory Board, University of Southern California Project to Predict the Social Impact of Personal Computers, NSF Funded, 1978-1979
- MECC Computer Literacy Project Advisory Board, 1981-1983
- Structured Programming, DPMA Regional Conference, Texas, November 6, 1975.
- A Survey of Structured Programming Concepts, Fort Worth ACM, May 1975.

### **COMPUTER INDUSTRY COLUMNS AND ADVISORY BOARDS**

- Columnist and Contributing Editor, *Computer Reseller News* (the computer industry's leading trade publication), 1982-1997 (intermittently)
  - Business Intelligence, *Computer Reseller News*, October 1997.
  - Internet Beamed from Satellite Direct to User, *Computer Reseller News*, September 1997.
  - Wireless Internet, *Computer Reseller News*, August 1997.
  - Visual Basic Opportunity, *Computer Reseller News*, July 1997.
  - Another Step towards Digital Pen and Paper, *Computer Reseller News*, June 1997.
  - Digital Cameras, *Computer Reseller News*, May 1997.
  - Remembering 1982, *Computer Reseller News*, May 1997
  - What Sun Doesn't Tell You About Java, *Computer Reseller News*, April 1997.
  - Mathematica, *Computer Reseller News*, March 1997.
  - Will Emerging Technologies Ever Stop, *Computer Reseller News*, February 1997.
  - FrontPage Is a New Era in Web Development, *Computer Reseller News*, January 1997.
  - Survey of Emerging PC Storage Technologies, *Computer Reseller News*, October 1996.
  - Expert Systems in PC Distribution, *Computer Reseller News*, September 1996.
  - Emerging Technology Reviews, *Computer Reseller News*, August 1996.
  - Emerging Technology Reviews, *Computer Reseller News*, July 1996.
  - Emerging Technology Reviews, *Computer Reseller News*, June 1996.
  - Visual C++, *Computer Reseller News*, May 1996.
  - In Search of Java Applets, *Computer Reseller News*, April 1996.
  - Internet/Microsoft Integration Seen As Best Strategy, *Computer Reseller News*, Page 59, March 18, 1996.
  - Two New Digital Pens, *Computer Reseller News*, March 1996.
  - Network "Computers": Sun's Java is Native Language, *Computer Reseller News*, Page 65, March 11, 1996.
  - Visual Basic 4.0 Meets VCR, *Computer Reseller News*, Page 56, February 26, 1996.
  - The Final Frontier: Internet Apps Reach for the Stars, *Computer Reseller News*, Page 61, February 5, 1996.

- Windows Programming Meets the Internet in Many Ways, Computer Reseller News, Page 106, January 29, 1996.
- Lotus' ScreenCam: Making of a Movie, Computer Reseller News, Page 71, December 4, 1995.
- VARs Could be Stars in Lotus ScreenCam Movies, Computer Reseller News, Page 74, November 27, 1995.
- Our Notebook Computer Dreams Coming to Fruition, Computer Reseller News, Page 80, October 16, 1995.
- Building the Best Little Network on Earth, From Scratch, Computer Reseller News, Page 65, September 25, 1995.
- The World Wide Web Puts New Spin on Publishing for the Masses, Computer Reseller News, Page 58, September 4, 1995.
- Getting Connected: How to Resell the World Wide Web, Computer Reseller News, Page 59, August 28, 1995.
- World Wide Web Puts New Spin on Publishing for the Masses, Computer Reseller News, Page 53, July 17, 1995.
- Components: Breath of Fresh Air for Software, Computer Reseller News, Page 64, June 19, 1995.
- Software Developers May Learn to Like Living Life in an "Office" Environment, Computer Reseller News, Page 57, May 29, 1995.
- Wildfire's Telephony Assistant May be Your New best Friend, Computer Reseller News, Page 63, May 1, 1995.
- Entering an Era Where Phone Calls Can Spread Like Wildfire, Computer Reseller News, Page 57, April 24, 1995.
- On-line Help: PC's Next Great Breakthrough?, Computer Reseller News, Page 52, March 20, 1995.
- Notebook Technology is Growing by Leaps and Bounds, Computer Reseller News, Page 60, March 6, 1995.
- More Than a Name: Cyberphone Is Our Worldwide Workplace, Computer Reseller News, Page 56, January 23, 1995.
- Search Goes On for Best Windows 95 PC with Pen, Computer Reseller News, Page 51, November 21, 1994.
- Windows 95 Gives Blessing to Union of PCs and Telephones, Computer Reseller News, Page 61, November 14, 1994.
- PC Card Software: Puzzles of Installation, Distribution, Computer Reseller News, Page 77, October 24, 1994.
- Sound Proposition: Adding Audio to Mobile Computers, Computer Reseller News, Page 94, September 19, 1994.
- Client/Server Software Brings About Meeting of Minds, Computer Reseller News, Page 73, August 2, 1994.
- Integrated PCMCIA Peripherals Enjoy Rapid Growth in Popularity, Computer Reseller News, Page 88, August 1, 1994.
- Reader/Writers Inspire a New Type of Desktop-Mobile Link, Computer Reseller News, Page 49, July 4, 1994.
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