Avron Barr

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I have been an independent consultant for 25 years. After my early technical work in artificial intelligence, I co-founded an "expert systems" startup in Silicon Valley, which in turn led to a career as a marketing strategy consultant for new software technologies. In recent years, I have become an advisor to government policy makers regarding national software industry strategies.

Artificial Intelligence. From 1976-1982, while a computer science graduate student at Stanford University, I was managing editor of the *Handbook of Artificial Intelligence*, an encyclopedia of AI ideas, techniques, and programs. Published in three volumes in 1981-2, the *Handbook* was the first major attempt to accumulate and organize twenty-five years of research on intelligent computer programs into a coherent, jargon-free presentation for a non-AI audience. It was selected as a Science Book Club book-of-the-month. A fourth volume was published in 1989.

Teknowledge, Inc. In 1982, I left Stanford University with several of my colleagues and started one of the first AI software companies, Teknowledge. For the next couple of years, I gave sales seminars for Teknowledge in the US and Europe, explaining the practical uses of artificial intelligence to corporate managers. Teknowledge went public in 1985.

Corporate IT, Call Centers, and CRM. In the late 1980's and early 1990's I consulted for corporate Information Technology departments on projects that applied knowledge systems technology. At that time, help desks and call centers were among the few practical application areas. As I became familiar with the technology and market issues in that segment, I started consulting for several of the vendors in the space now called Customer Relationship Management. I served on the Editorial Board of *Customer Support Management* magazine.

Inference Corp. In 1993 and 1994, I directed the marketing activities for Inference Corporation, which sold CRM software. My work included market research, product definition and positioning, lead generation, sales training and support, strategic technology partnerships and developing a two-tiered sales channel in the support automation market. I worked with product managers and directed our relations with Inference's PR firm, worked with the trade press and industry analysts, spoke at major industry conferences, and wrote copy for brochures, press releases, and sales bulletins as well as articles and white papers. Inference went public in 1995.

Stanford Software Industry Study. In 1994, I was retained by Stanford University's Graduate School of Business to direct a study (sponsored by the Sloan Foundation) of the global economic impact of software – analyzing trends and identifying the issues that will shape the industry in the future (including piracy, patents, antitrust, project management, the Internet, globalization, litigation, software quality and project failures). I helped plan the research, taught classes, directed several graduate students, designed and administered surveys, monitored the industry press, wrote proposals and reports, and spoke to industry and academic audiences about the results of our research. On several occasions I gave testimony to government committees looking into various issues. In autumn 1996, our research at Stanford was the first to raise the alarm about the worldwide shortage of software talent – we hosted a national roundtable meeting on the subject at Stanford in February 1997. In 1998 we studied the implications of the rise in early-stage acquisition of software startups, and in 1999 we began studying the globalization of the software industry.

I became a very active professional speaker during this period. I was elected to the Board of the National Speakers Association of Northern California in 1995 and 1996.

Major Recent Consulting Projects. During the six years I was retained by Stanford to direct the Software Industry Study at Stanford's Graduate School of Business, my other consulting work expanded in several directions. I worked with The McKenna Group on two major projects for IBM, one to research the global marketing strategies of their competitors and another investigating IBM's relationship with software startups, especially in Silicon Valley. In 1997-8, I was retained by Perot Systems to help develop technology and marketing strategies for their CRM offering. In the latter part of 1998, I did a knowledge management project for an HR software publisher, resulting in a white paper published by PriceWaterhouseCoopers. In 1999, I did another knowledge management project for DuPont in the area of corporate information security policy. In 2001, I was retained by Blaze Software (now Fair Issac) to do an analysis of trends and competitive positioning in the AppServer and Application Development tools markets. In 2002, I did a study for Network Inference, a British company, analyzing market trends in the Semantic Web space.

Also during this period a number of corporate clients and venture investors retained me for due diligence investigations of software companies being considering for investment or acquisition.

More recently I have been working in the area of software industry cluster development and national software industry policy. I have worked extensively with the South Korean government. In 2002 and 2003, I was retained by the World Bank to work on Sri Lanka's national software strategy. Current projects include a study of the changing nature of the software work being offshored to India and China and an advisory role in DARPA's DARWARS project on the architecture and market structure of future e-Learning systems based on computer game technology.

Coaching Software Startups. In recent years, I have also worked closely with several early-stage software startups in a variety of markets: embedded Java, Internet advertising, HR benefits automation, e-publishing/communities, personalization, legal software, wireless services, financial modeling, distance learning, text analysis, categorization, and service process management. My work typically involves market research, product positioning, or writing a white paper or business plan, but for these very young companies, I act as a coach on everything from financing strategy to putting together an effective sales presentation.

Writing, Teaching, and Other Activities. I've published articles in many trade magazines and newsletters and have been interviewed and quoted widely. I've co-chaired the Conference of the International Association of Knowledge Engineers, the Claremont Conference on Policy Making and Knowledge Systems, and an AAAI workshop on AI and Information Retrieval. I have served on the Program Committees for ObjectWorld, the IT Staffing Forum, and Practical Applications of Knowledge Management.

I've lectured at the Universities of California, Delaware, Geneva, Oklahoma, and Paris, and at Santa Clara University, the University of Southern California, Florida Atlantic University, Brazil Institute of Technology, and the India Institute of Technology. I also taught courses on the software industry, enterprise software strategy, and knowledge management at Stanford and in the Executive Education program at the Stanford Business School on Strategic Uses of Information Technology.

Education

A.B. - Cornell University - Mathematics and Physics, cum laude, 1971.
M.S. - Stanford University - Computer Science, l981, ABD.

Publications

Recent papers are available on the worldwide web at www.aldo.com/papers.

A. Barr and P. Reilly. Developing a National Software Strategy: Some IP Considerations. IIPI Conf. on Strategies for Building Software Industries in Developing Countries, Honolulu, May 2004.

A. Barr. The Globalization of Software. Presentation at Software Insight 2004, San Jose, Costa Rica, January, 2004.

S. G. Tessler, A. Barr and N. Hanna. *The Role of Software in Economic Development.* December 2002. Electronic Journal of Information Systems in Developing Countries, *EJISDC (2003) 13, 10, 1-17.* (22p).

A. Barr, S.G. Tessler and W. F. Miller. *Korea and the Global Software Industry.* Study funded by the Korean IT Industry Promotion Agency. Oct. 2002.

A. Barr and S.G. Tessler. *Developing Sri Lanka's Software Industry: Report to the World Bank.* July 2002.

A. Barr and S.G. Tessler. *Towards a Professional Software School.* A concept paper that argues that software professionals should be educated like doctors, lawyers, and architects. April 2002.

A. Barr, S.G. Tessler and B. Kresge. *Towards a Knowledge-Level Software Platform.* A position paper for the first International Semantic Web Workshop at Stanford Univ. July, 2001.

A. Barr and S. G. Tessler. *The IT Labor Shortage, Which Never Really Existed, Is Finally Over, Right?* IT Services Forum. February 2001.

A. Barr & S. G. Tessler. *Software Entrepreneurism in Korea.* Final Report, Asia/Pacific Research Center, for the President of the Republic of South Korea, December 1999.

S. G. Tessler and A. Barr. *The Software Talent Shortage: Some Thought on the Subject.* IEEE Potentials. December 1998/January 1999. Vol 17, No. 5.

Barr, Tessler, Lissak, Loofbourrow & Kurzner. *Knowledge Technology: Transforming Human Resource Management.* September 1998. PriceWaterhouseCoopers White Paper Series.

A. Barr. Will Componentware Save Us from the Software Talent Shortage? C/NET Web.Builder Conference, San Francisco, April 1998, slide presentation.

A. Barr. Knowledge Management in the Information Age, Documation '98.

A. Barr & S. G. Tessler. Strategies for Survival. January 1998. (A version of this paper, entitled Treasuring IT Talent, appeared in Compuware's *InTelligence Magazine,* Volume 2, No. 1, 1998)

A. Barr & S. G. Tessler. How Will the Software Talent Shortage End? *American Programmer,* January 1998. (Also reprinted in *Dr. Dobb's Journal,* April 1998.)

A. Barr & S. G. Tessler. Notes on Human Resource Issues in the Software Industry and Their Implications for Business and Government, Prepared for the NSTC Presidential Advisory Committee on High-Performance Computing and Communications, IT, and the Next Generation Internet, Washington, DC, October 30, 1997.

S. G. Tessler and A. Barr. Report on the SCIP Software Labor Roundtable: Discussions regarding the global software labor supply. SCIP Research Memo, June 1997.

A. Barr & S. G. Tessler. *The Software Labor Shortage: Implications for Immigration.* A Position Paper for the Workshop on the Migration of Scientists and Engineers to the US, Inst. for Economic Development, Boston Univ., 1997.

A. Barr. *Six Myths About Knowledge Management.* Presentation at the Documation Conference, April 1997.

A. Barr & S. G. Tessler. Great People, The Missing Resource. *Distributed Object Computing.* April, 1997.

S. G. Tessler & A. Barr. *A Pilot Survey of Software Product Management.* Proceedings of the Software Engineering Process Group Conference (SEPG '97), San Jose CA, March 1997.

S. G. Tessler & A. Barr. *Software R&D Strategies of Developing Countries.* Council on Foreign Relations, Globalization of Industrial R&D Study Group, January 1997.

A. Barr & S. G. Tessler. *The Globalization of Software R&D: The Search for Talent.* Council on Foreign Relations, Globalization of Industrial R&D Study Group, December 1996.

A. Barr & S. G. Tessler. Good Programmers Are Hard To Find: An Alternative Perspective on the Immigration Of Engineers, SCIP Research Memo, October, 1996.

A. Barr & S. G. Tessler. The US Domination Of Worldwide Software Products Sales Increased in 1995. SCIP Research Memo, October 1996.

A. Barr. 1995. *US Initiatives for the National Information Infrastructure.* InfoTech '95, Kuala Lumpur, Malaysia.

A. Barr and S. G. Tessler. 1995. *Software Project Management: Preliminary Results of a Pilot Survey.* Presented at the Stanford Computer Forum.

A. Barr and S. G. Tessler. 1995. *An Overview of the Software Industry Study,* SCIP Research Brief #95-2, Stanford University Computer Industry Project.

A. Barr, S. G. Tessler, and B. Lent. 1995. *Revising the Classification of the Software Industry,* Memo to the US Office of Management and Budget, Economic Classification Policy Committee.

A. Barr and S. G. Tessler. Expert Systems: A Technology Before it's Time. *AI Expert,* June, 1995.

A. Barr. 1995. *Automating Knowledge Distribution: A Position Paper on Knowledge Asset Management,* Knowledge Management Network working paper..

A. Barr. *The Evolution of Expert Systems Technology.* Keynote address to the Second Singapore International Conference on Intelligent Systems (SPICIS 94), Nov. 1994.

S. G. Tessler, A. Barr and E. A. Feigenbaum. 1994. *The US Software Products Industry: Success Factors in an Era of Rapid Change.* Stanford Software Industry Research Project.

A. Barr. *Partnerships in the Enterprise: The Changing Role of IS.* Computer Channel, Syosset, NY, October, 1994.

A. Barr. *IS 2000: A New Role for Corporate IS Departments and People.* Software Development. October, 1994.

A. Barr. *Automating the Distribution of Knowledge.* Invited talk, AAAI Conference on Innovative Applications of Artificial Intelligence. Seattle, August, 1994.

A. Barr. *Beyond Info/Man.* Inference Corporation white paper. 1994.

A. Barr. *IS Release 2.0 — The Upgrade.* INFORMATICS '93, the National Conference of the Canadian Information Processing Society, Calgary, September, 1993.

A. Barr. *Automating the Help Desk.* Computer Channel (broadcast), Syosset, NY, Aug. 1993.

A. Barr. *Automating the Distribution of Corporate Knowledge.* National AI Conference, Sao Paulo, August, 1993.

A. Barr. Active Information Systems. *IEEE Expert,* July, 1993.

A. Barr. Help Desks: Up to the Challenge? *Information Week.* January, 1993.

A. Barr, *Knowledge-Based Performance Support.* Computer Channel (broadcast), Syosset, NY, Jan., 1993.

A. Barr. Software Trends at the Help Desk. *Intelligent Software Strategies.* Sept. 1992.

A. Barr and S. G. Tessler. IJCAI-91. *The Spang Robinson Report on AI.* December, 1991.

A. Barr. *The Knowledge Products Business.* First World Congress on Expert Systems, Orlando. Dec., 1991.

A. Barr. *The Role of Rapid Prototyping in Systems Development.* First World Congress on Expert Systems, Dec., 1991.

A. Barr. *Beyond Information Systems.* Proc. of the SHARE Europe Anniversary Meeting. Oct., 1991.

A. Barr. Transforming Support at the Help Desk. *Information Center Quarterly.* Spr. 1991.

A. Barr. Automating Knowledge Flow at the Help Desk. *Intelligent Software Strategies.* November, 1990.

A. Barr. Knowledge Distribution Systems: The Evolution of Expert Systems in MIS. *PC AI Magazine.* July, 1990.

A. Barr. The Evolution of Expert Systems. *Heuristics.* Summer, 1990.

A. Barr, P. R. Cohen and E. A. Feigenbaum (Eds.). *The Handbook of Artificial Intelligence*, Volume IV. Reading, Massachusetts, Addison Wesley.. 1989

A. Barr. *Reading, Writing, and Knowledge Engineering.* IntelliCorp Annual Users Group Meeting. 1989.

A. Barr. *Marketing Knowledge Products and Services: Some Thoughts for the AI Entrepreneur.* 1987.

A. Barr. *The Future of Specialized Symbolic Processors.* New Science Associates' Second Annual Forum, Phoenix. 1987.

A. Barr. *Knowledge-Based Programming: A Methodological Retrospective.* Proc. of AI'87, Long Beach. 1987.

A. Barr. Knowledge-Based Programming for the IBM Mainframes. *Expert Systems Strategies,* **2**, 5-12. 1987.

A. Barr. *Expert Systems: A Retrospective.* Invited lecture given at Computer World '86, Osaka, Oct., 1986.

A. Barr. The Impact of Expert Systems. *The Spang Robinson Report on Artificial Intelligence,* **10**, 11-13. 1985.

A. Barr. *Systems That Know That They Don't Understand.* Cognitiva: Artificial Intelligence and Neuroscience. Paris: Centre d'Etudes des Systemes et des Technologies Advances. Revised in December 1985 for a colloquium at the University of Delaware.

A. Barr. Artificial Intelligence: Cognition as Computation. In F. Machlup and U. Mansfield (Eds.), *The Study of Information: Interdisciplinary Messages.* New York: John Wiley and Sons. 1983.

A. Barr and E. A. Feigenbaum (Eds.). *The Handbook of Artificial Intelligence*, Volumes I and II, respectively. Los Altos, California: William Kaufmann, Inc. and Addison-Wesley, Reading, Massachusetts. 1981, 1982.

A. Barr, L. Fagan, and P. Cohen. *Understanding spoken language.* Computer Science Dept., Stanford University. 1982.

K. T. Wescourt, M. Beard, and A. Barr. Curriculum information networks for CAI: Research on testing and evaluation by simulation. In P. Suppes (Ed.), *University-level computer-assisted instruction at Stanford: 1968-1980.* Stanford, California: Institute for Mathematical Studies in the Social Sciences. 1981.

A. Barr. Natural language understanding. *AI Magazine*, **1**, 5-10. 1980.

A. Barr and J. E. Davidson. *Representation of knowledge.* Technical Report No. STAN-CS-80-793, Computer Science Department, Stanford University. 1980.

A. Barr. *The representation hypothesis.* Working Paper, HPP-80-1, Computer Science Dept., Stanford Univ. 1979.

A. Barr. *Meta-knowledge and cognition.* Proceedings of the Sixth International Joint Conference on Artificial Intelligence. Tokyo, Japan. 1979.

A. Barr. *Meta-knowledge and memory.* Working Paper HPP-77-37, Computer Science Dept., Stanford Univ. 1977.

K. Wescourt, M. Beard, L. Gould, and A. Barr. *Knowledge-based CAI: CINs for individualized curriculum sequencing.* Technical Report No. 290, Institute for Mathematical Studies in the Social Sciences, Stanford University. 1977.

A. Barr and R. C. Atkinson. Adaptive instructional strategies. In H. Spada and W. Kempf (Eds.), *Structural Models of Thinking and Learning*, Bern: Hans Huber. 1977.

A. Barr, M. Beard, and R. C. Atkinson. The computer as a tutorial laboratory: The Stanford BIP project. *International Journal of Man-Machine Studies*, 8, 567-596. 1976.

A. Barr. *A survey of intelligent computer-assisted instruction.* Institute for Mathematical Studies in the Social Sciences, Stanford University. 1976.

A. Barr and M. Beard. *An instructional interpreter for BASIC.* Proceedings of the ACM SIGSCE/SIGCUE Technical Symposium on Computer Science and Education. Anaheim, California. 1976.

K. Wescourt, A. Barr, and M. Beard. *A simulation procedure for research with intelligent CAI systems.* Proceedings of the ACM Computer Science Conference. Anaheim, California. 1976.

A. Barr, M. Beard, and R.C. Atkinson. A rationale and description of a CAI program to teach the BASIC programming language. *Instructional Science,* 4, 1-31. 1975.

A. Barr, M. Beard, and R.C. Atkinson. Information networks for CAI curriculums. In O. Lecarme & R. Lewis, (Eds.), *Computers in Education,* Part 1. NY: American Elsevier. 1975.

M. Beard and A. Barr. *BIP student manual.* Technical Report SR 77-2, Navy Personnel Research and Development Center, San Diego, California. 1975.

M. Beard, A. Barr, J.D. Fletcher, and R.C. Atkinson. *Final report: Individualization of computer-assisted instruction.* Institute for Mathematical Studies in the Social Sciences, Stanford University. 1975.

A. Barr, M. Beard, and R.C. Atkinson. *Computer-assisted instruction in BASIC programming.* Proceedings of the ACM Computer Science Conference. Washington, D.C. 1975.

A. Barr, M. Beard, P. Lorton, and R. C. Atkinson. A college-level course in BASIC. In G. Goos and J. Jartmanis (Eds.), *Lecture Notes in Computer Science*, Volume 17, New York: Springer-Verlag. 1975.

A. Barr, M. Beard, P. Lorton and R.C. Atkinson. *Tutorial CAI in technical areas: Skill development using an information network.* Proceedings of the Fifth Annual Conference on Computers in the Undergraduate Curriculum. Pullman, Washington. 1974.

R.C. Atkinson, J.D. Fletcher, J. Lindsay, J.O. Campbell, and A. Barr. Computer-assisted instruction in initial reading: Individualized instruction based on optimization procedures. *Educational Technology,* **13**, 27-37. 1973.