

The Toolsmith Conference

18-19 OCTOBER
2001



Dr. Frederick P. Brooks, Jr.

Frederick P. Brooks, Jr., was born in 1931 in Durham, NC. He received an A.B. *summa cum laude* in physics from Duke and a Ph.D. in computer science from Harvard, under Howard Aiken, the architect of the early Harvard computers.

He joined IBM, working in Poughkeepsie and Yorktown, NY, 1956-1965. He was an architect of the Stretch and Harvest computers and then was the project manager for the development of

In a word, the computer scientist is a toolsmith—no more, but no less. It is an honorable calling.

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IBM's System/360 family of computers and then of the Operating System/360 software. For this work he received a National Medal of Technology jointly with Bob O. Evans and Erich Bloch.

Dr. Brooks and Dora Sweeney in 1957 patented an interrupt system for the IBM Stretch computer that introduced most features of today's interrupt systems. He coined the term *computer architecture*. His System/360 team first achieved strict compatibility, upward and downward, in a computer family. His early concern for word processing led to his selection of the 8-bit byte and the lowercase alphabet for the System/360, engineering of many new 8-bit input/output devices, and providing a character-string datatype in PL/I.

In 1964 he founded the Computer Science Department at the University of North Carolina at Chapel Hill and chaired it for 20 years. Currently, he is Kenan Professor of Computer Science. His principal research is in real-time, three-dimensional, computer graphics—"virtual reality." His research has helped biochemists solve the structure of complex molecules and enabled architects to "walk through" structures

still being designed. He is pioneering the use of force display to supplement visual graphics.

Brooks distilled the successes and failures of the development of Operating System/360 in *The Mythical Man-Month: Essays in Software Engineering*, (1975, 20th Anniversary Edition, 1995). He further examined software engineering in his well-known 1986 paper, "No Silver Bullet." In 1997, he and Professor Gerrit Blaauw published a major research monograph, *Computer Architecture: Concepts and Evolution*.

Brooks has served on the National Science Board and the Defense Science Board. He is a member of the National Academy of Engineering, National Academy of Sciences, the American Academy of Arts and Sciences, the (U.K) Royal Academy of Engineering, and the Royal Netherlands Academy of Arts and Sciences. He has received the ACM A. M. Turing Award, the IEEE John von Neumann Medal, the IEEE Computer Society's McDowell and Computer Pioneer Awards, the ACM Allen Newell and Distinguished Service, Awards, the AFIPS Harry Goode Award, and an honorary Doctor of Technical Science from ETH-Zürich.

He is married to Nancy Greenwood Brooks. They have three children: Kenneth, Roger, and Barbara, and six grandchildren. Dr. Brooks became a Christian at age 31. He chaired the Executive Committee for the Central Carolina Billy Graham Crusade in 1973. The Brookses advise a chapter of InterVarsity Christian Fellowship, and he has taught an adult Sunday School class for over twenty years.

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**We gratefully acknowledge the
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JOHN Q. WALKER, PhD

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***n*VIDIA.**

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COLLEGE OF ARTS AND SCIENCES
UNIVERSITY OF NORTH CAROLINA at CHAPEL HILL**

THURSDAY SCHEDULE

11:00–12:00
CONFERENCE REGISTRATION
BANQUET HALL LOBBY
MOREHEAD PLANETARIUM

12:00–1:30PM
LUNCHEON
BANQUET HALL
MOREHEAD PLANETARIUM
KEYNOTE SPEAKER:

IVAN SUTHERLAND

“Computing and the March of Time”

THE AFTERNOON PROGRAM WILL BE HELD IN
THE HANES ART CENTER THEATRE

1:45 – 2:15
DIANE POZEFSKY
“Cal endar-based Context and
Presence”

2:20 – 3:00
STEVEN M. BELLOVIN
“Security and Software Engineering”

3:00 - 3:30
BREAK

3:30 – 4:10
J. CRAIG MUDGE
“Computer Security Viewed as an
Integral Part of Business”

4:15 – 5:00
BOB EVANS
“Tel ematics, An Imaginative New
El ectronics Appl ication”

6:30–9:30PM
RECEPTION & BANQUET
CAROLINA CLUB
at the ALUMNI CENTER
At the University of North Carol ina at
Chapel Hill

KEYNOTE SPEAKER:
FREDERICK P. BROOKS, JR.
“Life Sentences”

FRIDAY SCHEDULE

7:30 – 8:30
BREAKFAST
HANES ART CENTER FOYER & HALLWAY
THE MORNING AND AFTERNOON PROGRAMS
WILL BE HELD IN
THE HANES ART CENTER THEATRE

8:30 – 8:40
GERRIT BLAAUW
“Ships on the Beach”

8:45 – 9:15
MIKE PIQUE
“Scouting Expeditions in Mol ecul ar
Graphics”

9:20 – 10:00
DICK SITES
“From Fl ushatrons to Al pha and Back”

10:00 – 10:30
BREAK

10:30 – 11:10
JOHN CRAWFORD
“Moore’s Law in Microprocessor
Performance: a l ook back and a
gl impse ahead”

11:15 – 12:00
HENRY FUCHS
“Immersion and Tel e-Immersion
in the Office of the Future”

12:00 – 1:30
LUNCH

1:30 – 1:50
JIM SNEERINGER
“Personal Reminiscences”

1:55–2:35
SAM WILLIAMSON
“What Fred Brooks Taught Us About
Leadership”

2:40–3:15
KEN IVERSON
“Expl oring Math”

3:15 – 3:45
BREAK

4:00–7:30PM
RESEARCH DEMONSTRATIONS
SITTERSON HALL

IVAN SUTHERLAND

“Computing and the March of Time”

Dr. Ivan E. Sutherland is a Vice President and Fellow at Sun Microsystems. In addition to his own project in asynchronous system design, he helps Sun to adopt new technologies. He also serves as a director or advisor to several small companies. Dr. Sutherland divides his time among corporate activities, venture capital, and his own creative technical work.

From 1976 to 1980, Dr. Sutherland was the Fletcher Jones Professor of Computer Science at Caltech serving as head of Computer Science. During this period he and Professor Carver Mead initiated the Silicon Structures Project, a major research program staffed and funded cooperatively with industry. The pioneering work of the Caltech group helped fuel the silicon revolution by giving academia worldwide the confidence and the tools to teach integrated circuit design.

Prior to joining the Caltech faculty, Dr. Sutherland had founded the Evans and Sutherland Computer Corporation (E&S) with Dr. David Evans. E&S is now a \$200 million per year firm manufacturing high performance computer graphics equipment. Dr. Sutherland served as Vice President and Chief Scientist for E&S and remains a major shareholder and an active member of its Board of Directors. Both Sutherland and Evans also taught at the University of Utah, and between the company and the University, made Salt Lake City the premier center for computer graphics. A key publication of the period, "A Characterization of Ten Hidden Surface Algorithms," by Sutherland, Sproull, and Schumacker, offered a taxonomy of the then current research in computer graphics.

From 1980 until the firm was acquired by Sun, Dr. Sutherland was a vice president of a consulting firm Sutherland, Sproull, and Associates, Inc. Also starting in 1980, he was a founding partner of Advanced Technology Ventures, a Boston- and California-based venture capital partnership. Dr. Sutherland had been an Associate Professor of Computer Science on the Gordon McKay endowment at Harvard prior to founding Evans and Sutherland. His research at Harvard on a head-mounted display led to early use of dynamic

three-dimensional computer graphics, demonstrating what is now known as "virtual reality." This work provided the ideas around which E&S was founded. Bob Sproull, later the co-founder of Sutherland, Sproull and Associates, Sutherland, Sproull and Associates, participated in the Harvard work as an undergraduate. Bob and Ivan formed a friendship and association during that period that carries on today.

Dr. Sutherland went to Harvard from the Defense Advanced Research Projects Agency (ARPA), where he had spent two years as Director of the Information Processing Techniques Office. In that capacity, Dr. Sutherland was responsible for funding much of the US academic research in advanced computing. His contracts included Project MAC at MIT, the Illiac IV project at the University of Illinois, as well as major programs led by AI Perlis at Carnegie-Mellon University and David Evans at the University of California at Berkeley. His contact with the US Department of Defense continued after he left ARPA, first as a member of the Naval Research Advisory Committee (NRAC), and later as a member of the Defense Science Board (DSB), and as Chairman of the Technical Advisory Committee for the Defense Mapping Agency (DMA).

*If we perceive our role
aright, we then see more
clearly the proper criterion
success: a toolmaker
succeeds as, and only as,
the users of his tool
succeed with his aid.*

FPB

Dr. Sutherland has always maintained an active research program of his own. In the early 80's his research centered on robots that walk. He built a 6-legged hydraulic walking machine featured on the cover of Scientific American in January 1983. More recently his research program has involved new designs and design techniques for asynchronous digital systems. A "Theory of Logical Effort" resulted from this work. The asynchronous design style was

the subject of Dr. Sutherland's 1988 ACM Turing Award Lecture, "Micropipelines," published in the June 1989 issue of Communications of the ACM.

Dr. Sutherland received a Ph.D. Degree from MIT in 1963 following an MS from Caltech and a BS degree from Carnegie Tech, all in Electrical Engineering. He holds honorary degrees from Harvard, Caltech, and the University of North Carolina. Dr. Sutherland is a member of both the National Academy of Sciences and the National Academy of Engineering. Dr.

Sutherland was the 1988 recipient of the Turing award, the highest award given by the Association of Computing Machinery. He won the prestigious Smithsonian Price Waterhouse Information Technology Leadership Award for Lifetime Achievement. In 1988, he was chosen by the IEEE to receive their John Von Neumann Medal. Dr. Sutherland is author of 29 patents, as well as numerous publications and lectures.

DIANE POZEFSKY

“Calendar-based Context and Presence”

Diane Pozefsky is an IBM Fellow and is currently Director of Storage Networking Architecture in IBM Storage Systems Group. Her focus is on developing solutions that help move the industry from direct-attached storage to networked attached storage solutions such as NAS appliances and virtualization solutions.

Computers are tools, and the question you ask when you have a tool is, ‘What can you do with it?’

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Diane joined IBM as an architect in Research Triangle Park, NC in 1979 and has spent most of her career in networking.

She was one of the lead architects for the peer networking enhancements (APPN: Advanced Peer-to-Peer Networking) to Systems Networking Architecture (SNA). APPN was a major change for the architecture that changed SNA from a static, hierarchical network solution to a dynamic, peer one.

Diane was lead architect of AnyNet®, a technology that allows independence of applications and networks by allowing programs designed for SNA and TCP/IP to run on the other network. She was also team leader for one of the first AnyNet products that permitted customers to move their current SNA applications to IP networks.

Based on her contributions to networking, Diane was named an IBM Fellow in 1994. IBM Fellow is the highest technical position in IBM. There have only been 165 fellows names since the program was started in 1963.

In 1997, Diane joined the IBM team working on the 1998 Nagano Winter Olympics, where her responsibility was assuring the quality and

functional soundness of the network. After the Olympics, Diane joined the IBM CIO office to work on networking issues and improving support for mobileworkers and teleworkers. She took her current position in August 2000.

Beyond her regular assignments at IBM, Diane has been heavily involved in National Engineers Week (including chairing a multi-corporate program for next year's program). She was one of the founders of IBM's biannual worldwide conference for technical women, and has been very active in IBM's Academy of Technology, including five years on its governing Technology Council.

She has authored over twenty articles and holds more than a dozen patents.

Diane holds a Sc.B. in Applied Math from Brown University and a Ph.D. in Computer Science from the University of North Carolina in Chapel Hill.

Diane lives in Chapel Hill, NC with her husband, Mark, and their 17-year old daughter, Lauren.

STEVEN M. BELLOVIN

“Security and Software Engineering”

Steven M. Bellovin earned a B.A. from Columbia University, and an M.S. and Ph.D. in computer science from the University of North Carolina at Chapel Hill. While a graduate student, he helped create USENET. For this Steve, Tom Truscott and Jim Ellis were awarded the 1995 Usenix Lifetime Achievement Award. The Usenix Lifetime Achievement Award recognizes and celebrates singular contributions to the Unix community in both intellectual achievement and service.

USENET was an experiment started in 1979 to create an electronic bulletin board to facilitate the

Programming then is fun because it gratifies creative longings built deep within us and delights sensibilities we have in common with all men.

FPB

posting and reading of news messages and notices. Today it has more than 10,000 discussion groups, known as newsgroups, on a wide variety of subjects, tens of thousands of USENET sites, and many millions of participants.

Currently, he is an AT&T Fellow in the Communications Information Systems Research Department at AT&T Labs Research in Florham Park, New Jersey. He does research on networks, security and why the two don't get along. He is the co-author, with Bill Cheswick, of the 1994 book *Firewalls and Internet Security: Repelling the Wily Hacker*.

He is a member of the Internet Architecture Board, and has served on a National Research Council committee on Information System trustworthiness. In 2001, Steve Bellovin became the first UNC-CH Department of Computer Science graduate elected to the National Academy of Engineering.

J. CRAIG MUDGE

“Computer Security Viewed as an Integral Part of Business”

J. Craig Mudge is Managing Partner of Pacific Challenge, a Silicon Valley based consultancy focusing on Internet technology and e-commerce. He works with two contrasting sets of clients: major corporations and venture-capital-backed startups. With major corporations he works on product strategy, often advising on moving innovations from research labs to the marketplace. In technology management, his clients have included AT&T Labs, Citigroup, DSTO, and CommerceNet. In e-commerce, his firm has a strong financial services sub-practice, where clients include Visa, CommerceNet, First Data, and e-Citi, the Internet development organization of Citibank.

He has served on the advisory boards of various startup ventures in Internet technology and information security and maintains links with leading research labs.

I think the most important single effort we can mount is to develop ways to grow great designers.

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As director of the Computer Science Lab at Xerox PARC in the mid nineties, he built a management team to take responsibility for commercial results. At PARC he also nurtured the development of the next generation Internet Protocol, IPv6, worked on microtransactions in electronic commerce, and launched several Internet businesses.

He was founding CEO of a semiconductor startup, Austek Microsystems. Following a first round financing of \$6.7 million in 1984, the company developed the first single-chip cache controller and other complex logic chips used by PC manufacturers in the U.S, Asia, and Europe.

His experience includes computer design on PDP-11 and VAX computer projects with Digital Equipment Corporation (now Compaq), semiconductor research at the CSIRO VLSI Program, and faculty positions in computer science

at Caltech, Carnegie Mellon University, and Flinders University in Adelaide. He co-authored "Computer Engineering" with Gordon Bell, has published over sixty papers, and holds several patents.

Mudge holds a Ph.D. in computer science from the University of North Carolina at Chapel Hill and an undergraduate degree in mathematics, statistics, and economics from the Australian National University. His formal management education occurred at the Australian Graduate School of Management and Harvard Business School.

In 1984 Dr. Mudge was elected as a Fellow of the Australian Academy of Technology Sciences and Engineering.

BOB O. EVANS

“Telematics, An Imaginative New Electronics Approach”

Mr. Evans spent 33 years at IBM where he was the President of four major divisions including heading the Federal Systems Division, the System Development Division, responsible for worldwide hardware and software engineering and the Communications Systems Division. His best-known IBM contribution was to propose an integrated, new product line and then lead the worldwide engineering program that resulted in the IBM Systems 360.

Later he guided the development of IBM's System 370 Advanced Function, products that were pivotal in IBM achieving leadership in the computer industry. Mr. Evans also proposed and then led IBM's work in communications satellites with the IBM-Aetna-Comsat partnership that established Satellite Business Systems, a commercial venture that brought satellite communications to businesses throughout the United States.

From 1981 until 1995 Mr. Evans was the computer and electronics member of the Republic of China's Science and Technology Advisory Group that reported to the Premier. He was also a member of the Republic of China's Strategy Review Board.

In 1984 Mr. Evans retired from IBM and joined Hambrecht and Quist as a Venture Partner. In 1988 he moved to a spin-off from H&Q, Technology Strategies and Alliances, where he continues as Managing Partner. In 1995-'96 he served as founding President of Vanguard International Semiconductor Corp, a Taiwan-based semiconductor manufacturer. In 1997-'99 he served as President of Interactive Voice Systems. He presently is Chairman of the Cambridge Technology Group, a Washington, DC-area software firm and is founding Chairman of a new company, VCommand, that is developing advanced voice recognition products.

Mr. Evans has served on numerous Boards throughout his career and is currently on the Board of Foresight Systems, Cambridge Technology Group and Taiwan-owned Excellence in Communications.

Mr. Evans was elected to the U.S. National Academy of Engineering in 1972, was awarded a Republic of China distinguished service medal by Premier Y.S. Sun in 1983 and, together with Dr. Fred Brooks and Eric Bloch, was awarded the U.S. Medal of Technology by President Reagan in 1985.

Mr. Evans, an Electrical Engineering graduate of Iowa State University also completed his MS degree course work in Mathematics and Electrical Engineering at Syracuse University.

Mr. and Mrs. Evans are parents of four children and reside in Hillsborough, California

GERRIT BLAAUW

"Ships on the Beach"

Gerrit A. Blaauw is Professor of Computer Science emeritus at Twente University of Technology in the Netherlands. A pioneer in computer architecture, he participated first in the design of the Mark III and Mark IV calculators at Harvard University, and then the ARRA and FERTA computers. He was later one of the architects of the Stretch computer and of System/360 at IBM.

Professor Blaauw received his B.S. in electrical engineering from Lafayette College, and his PhD in applied science from Harvard. While at Harvard, he was on the staff of the Computation Laboratory and participated in the design of the Mark III and Mark IV calculators. From 1952-1955, he was on the staff of the Mathematical

Center in Amsterdam, Netherlands where he was involved in the design of the ARRA and the FERTA computers.

In 1955, Dr. Blaauw joined IBM at the Poughkeepsie Product Development Laboratory. He was one of the architects of the Stretch computer and of the System S/360. In 1965, he left IBM to become a professor of Electrical Engineering and Computer Science at the Twente University of Technology in the Netherlands.

Dr. Blaauw is the author of *Digital System Implementation* (1976) and numerous other publications, and co-author with Dr. Fred Brooks of *Computer Architecture: Concepts and Evolution* (1997). Dr. Blaauw holds several patents, has received many honors including the De Groot Award for his contributions to electrical engineering, and is a recipient of the Computer Pioneer Award.

Dr. Blaauw is a Fellow of the IEEE, and a member of the ACM, Sigma Xi, the Royal Dutch Academy of Science and is a Foreign Associate of the National Academy of Engineering.

*Brooks' Law: Adding
manpower to a late
software project
makes it later.*
FPB

*If we recognize our artifacts as tools, we test them by
their usefulness and their costs, not their novelty.*

FPB

MIKE PIQUE

“Scouting Expeditions in Molecular Graphics”

Since 1986 **Michael Pique** has been on the staff of The Scripps Research Institute Department of Molecular Biology in La Jolla, California. Before that, he worked for 13 years at the University of North Carolina at Chapel Hill under Professor Frederick P. Brooks as part of the Computer Science Department's GRIP Molecular Graphics Project. He received a BS in Physics from Eckerd College in 1973 and an MS in Computer Science from UNC Chapel Hill in 1980.

During the mid-1970's, he helped build the UNC GRIP-75 molecular graphics system, which ran on coupled IBM/360-75 and DEC PDP-11/45 computers and a Vector General 3-D graphics display. GRIP-75 enabled X-ray crystallographers for the first time to use interactive computer graphics and joysticks instead of brass models and wrenches for fitting molecules into their electron density map data.

In 1982 he helped make the video “What Does A Protein Look Like?”, presenting 40 different computer graphic visualizations of the atomic-level data describing the enzyme Copper, Zinc Superoxide Dismutase (SOD). In 1984 he helped produce a sequence for the ACM SIGGRAPH educational

All programmers are optimists. Perhaps this modern sorcery especially attracts those who believe in happy endings and fairy godmothers. Perhaps the hundreds of nitty frustrations drive away all but those who habitually focus on the end goal. Perhaps it is merely that computers are young, programmers are younger, and the young are always optimists. But however the selection process works, the result is indisputable: “This time it will surely run” or “I just found the last bug”.

FPB

OMNIMAX film “The Magic Egg” in which the audience drops through a blinding rainstorm of electrostatic field lines, flies over the protein surface into its interior, dodges its atoms and chemical bonds, and passes safely out the other side.

His occasional film-making notwithstanding, his chief interests are interactive 3-D visualization and molecular modeling. He is currently involved in protein docking and visualization, metalloprotein structure analysis and protein metal site design, and the creation of tangible molecular models to serve as computer input and output devices.

Hitching our research to someone else's driving problems, and solving those problems on the owners' terms, leads us to richer computer science research.

FPB

DICK SITES

“From Flushatrons to Alpha and Back”

Dick Sites wrote his first computer program in 1959. During his undergraduate years, he worked part-time at IBM where he became interested in computer architecture and compiler design. He attended UNC 1969-70 specifically to take Fred Brooks' computer architecture course. He subsequently transferred to Stanford and earned a Ph.D. in Computer Science in 1974. After 1/2 year of hitchhiking and a year at Burroughs, he taught at UC/San Diego for four years.

In 1980, he moved to Massachusetts and started a 16-year career at Digital Equipment Corp. While at Digital, Dick worked on cache design and microcode for VAX processors. In 1988 he became co-architect of the Alpha computer line, finally making some use of his UNC technical training.

Upon leaving Digital in 1996, Dick settled at Adobe, switching from hardware to software design. He has worked on OCR, Acrobat digital signatures, eBook security, and digital imaging.

Dr. Sites has published numerous articles and one book. He is the holder of 32 patents.

JOHN CRAWFORD

“Moore’s Law in
Microprocessor Performance: a
look back and a glimpse ahead”

John Crawford is an Intel Fellow at the Intel Corporation, Santa Clara, California. Mr. Crawford is investigating emerging technology directions and issues for future Itanium™ Processor Family products.

Mr. Crawford joined Intel in 1977 and worked until 1982 in compiler development. Mr. Crawford was the Chief Architect of both the Intel386™ and Intel486™ microprocessors, and co-managed the development of the Pentium® microprocessor. He was named an Intel Fellow, Intel’s highest technical position, in 1992. Most recently he managed the joint Intel/HP research team that defined the Itanium Processor Family instruction set architecture.

In 1995, Mr. Crawford received the ACM/IEEE Eckert-Mauchly Award for contributions to Computer and Digital Systems architecture, and received the IEEE Ernst Weber Engineering Leadership Recognition in June 1997.

Mr. Crawford supports Intel’s K-12 education outreach programs as a National Engineers Week “All Star”, as a judge for the International Science and Engineering Fair and as assistant coach on the Redwood Middle School Mathcounts team.

Mr. Crawford has been married for seventeen years to Norma B. Crawford. They have one son, J. Alexander (Alex), who is fifteen years old, and one daughter, Rebecca Ruth (Becky), who is twelve years old. John and Norma are Christians, and are members of Crossroads Bible Church in San Jose, where John is the Music leader of the Awana Club.

Mr. Crawford was born in Philadelphia, Pennsylvania. He received a ScB in Computer Science from Brown University, and an MS in Computer from the University of North Carolina, Chapel Hill.

Two of our criteria for success in a tool are:

- *It must be so easy to use that a full professor can use it, and*
- *It must be so productive that full professors will use it.*

FPB

HENRY FUCHS

"Immersion and
Tele-Immersion
in the Office of
the Future"

Henry Fuchs is the
Federico Gil

Professor of Computer Science, an Adjunct Professor of Biomedical Engineering, and an Adjunct Professor of Radiology Oncology at the University of North Carolina at Chapel Hill. He leads several research groups who have developed some of the highest performance graphics computers to date. He has also established research groups that have made some of the world's fastest and most accurate tracking systems for virtual environments, as well as for head-mounted display applications of virtual environments to assist in 3D interactive surgical procedures. He is particularly interested in medical applications, specifically collaborative techniques and how tele-presence can aid in tele-collaboration.

Henry Fuchs is a member of the National Academy of Engineering, a fellow in the American Academy of Arts and Sciences, and is a fellow in the ACM. He is the recipient of the 1997 Satava Award at the Medicine Meets Virtual Reality Conference, the 1992 National Computer Graphics Association Academic Award from NCGA, as well as the 1992 Computer Graphics Achievement Award from Siggraph.

One can expect the human race to continue attempting systems just within or just beyond our reach; and software systems are perhaps the most intricate and complex of man's handiworks. The management of this complex craft will demand our best use of new languages and systems, our best adaptation of proven engineering management methods, liberal doses of common sense, and a God-given humility to recognize our fallibility and limitations.

FPB

He received his Ph.D. from the University of Utah in 1975. He has over one hundred publications resulting from his research in computer graphics, particularly interactive, three-dimensional computer graphics.

JIM SNEERINGER

“Personal Reminiscences”

Dr. Sneeringer holds a BS in mathematics from Duke University and a PhD in Computer Science from the University of North Carolina at Chapel Hill. He has been the Product Development Director and partner of NavPress Software (now iExalt, Inc.) in Austin, Texas and the Director of Software Development at NavPress in Colorado Springs, Colorado. From 1987-1989, he was the proprietor of WORDworks Software Architects, in Austin, Texas where he conceived, designed and programmed the WORDsearch Bible software system, which facilitates studying the Bible in the original languages and with multiple translations.

Dr. Sneeringer is currently the Director of Application Development at Conclusive Strategies in Dripping Springs, Texas and a consultant to the Attorney General of Texas on computer systems for elections. His primary interests include the design of simple, understandable, powerful human interfaces for software, especially office and home applications, Internet, operating systems, telephony, word processing, and interactive software-development environments. Other interests include technology transfer from research to development, computer instruction-set architecture, and programming style.

Dr. Sneeringer is also currently serving on the Board of Trustees of the Leander Independent School District.

Not only do I not plan to retire, but I plan NOT to retire.
FPB

SAM WILIAMSON

“What Fred Brooks Taught Us About Leadership”

Dr. Sam Williamson is President Emeritus of The University of the South and the Robert M. Ayres, Jr. Distinguished University Professor History. His current projects involve a study of civil-military relations in July 1914, a memoir on higher education administration as ministry and essays on the history of Austria-Hungary, 1900-1914.

He has had a distinguished professional career that has included a number of high profile positions including

Dean of the College of Arts and Sciences at UNC-CH (1977-85), Provost of UNC-CH (1984-88),

Too many interests, too many exciting opportunities for learning, research and thought.
What a marvelous predicament!

FPB

President of The University of the South (1988-2000) and was a faculty member at Harvard University (1966-72).

His honors include honorary degrees from Furman University, Centre College and the Virginia Theological

Seminary. He is a past Chair of the Board of Visitors at the Air University, USAF, and won the George Louis Beer Prize of the American Historical Association in 1969.

KEN IVERSON

“Exploring Math”

Dr. Iverson received his Ph.D. in applied mathematics in 1954 from Harvard University. He taught at Harvard as an assistant professor of applied mathematics from 1955 to 1960. He then took a position as a research staff member at the IBM Corporation and became an IBM Fellow in 1971 in recognition of his contribution to the development of APL. Dr. Iverson is the designer of the programming languages APL and J. His current area of interest is the use of J in teaching.

Dr. Iverson is the recipient of the prestigious Association of Computing Machinery A.M. Turing Award, which cited him for "his pioneering effort in programming languages and mathematical notation resulting in what the computing field now knows as APL".

He has written four books on programming languages and mathematics: A Programming Language; Elementary Functions; Algebra: An Algorithmic Treatment; and Elementary Analysis. Dr. Iverson has also published numerous articles on programming languages and mathematics.

Dr. Iverson is also the recipient of the American Federation of Information Processing Societies' Harry Goode Award, is a member of the National Academy of Engineering, and holds an honorary degree from York University.

The architecture of a computer system we define as the minimal set of properties that determine what programs will run and what results they will produce. The architecture is thus the system's functional appearance to its immediate user, its conceptual structure and functional behavior as seen by one who programs in machine language.

GA Blaauw and FPB

NOTES



*We graphicists choreograph
colored dots on a glass bottle
so as to fool eye and mind into
seeing desktops, spacecraft,
molecules, and worlds that are
not and can never be.*

FPB

NOTES