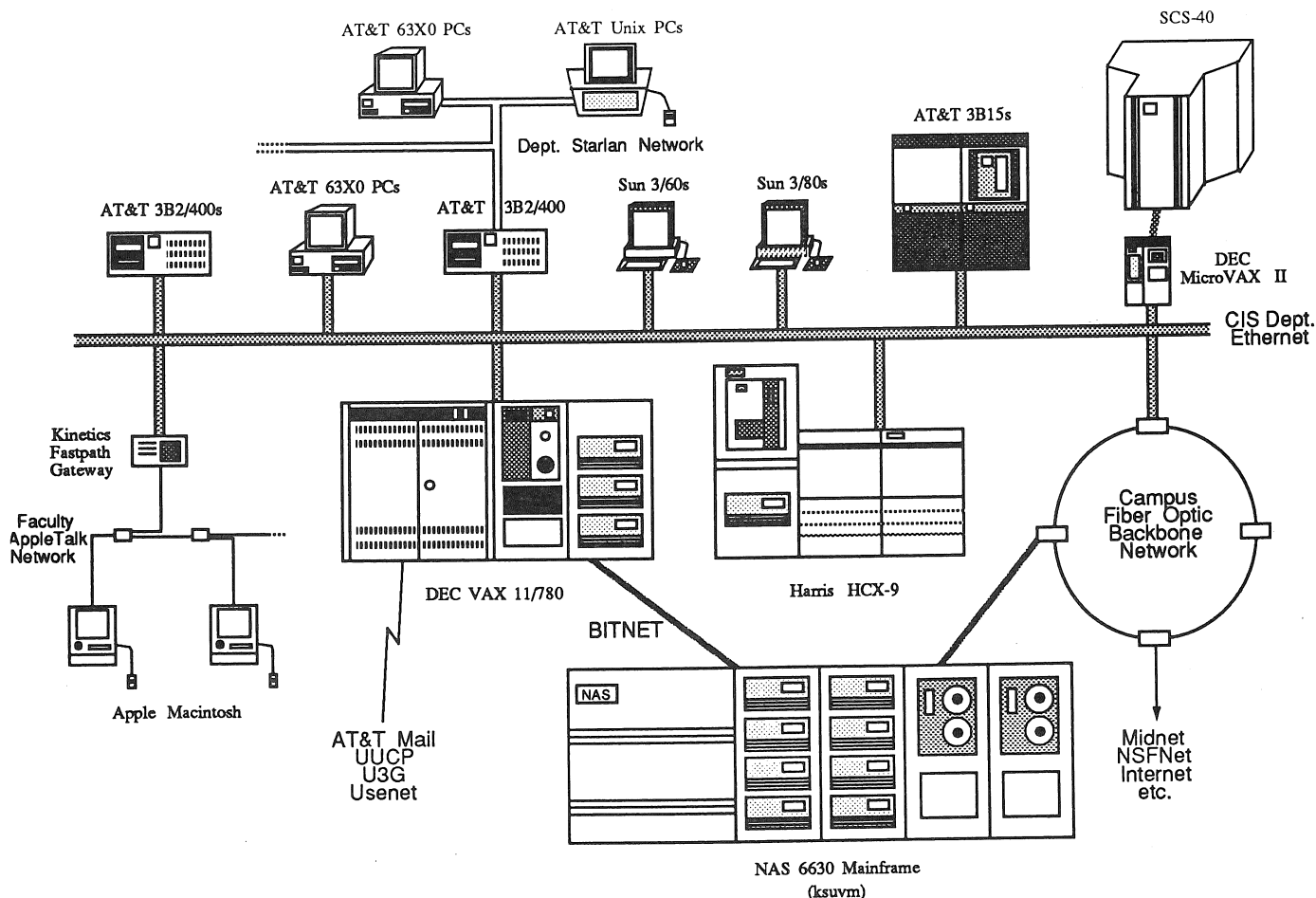


# Networking: The Backbone of the Information Age

Imagine having a car in your driveway and no street ant the end of the driveway. You could only drive between your garage and the curb. Anything that you wanted to transport beyond the curb must be loaded onto a horsedrawn cart. This is equivalent to having a PC and no networking. Information has no value unless it is shared with others; and transporting it with floppy disks is very cumbersome. Thus, a heavy emphasis has been placed on departmental and campus networking. Throughout Nichols Hall we have four different kinds of networks: ethernet, starlan, broadband coax, and Appletalk. Students, faculty, and staff utilize these facilities to be more produc-

tive and share information. They transfer files, send/receive electronic mail, hold computer conferences, access bulletin boards, etc. Since the campus is equipped with fibre optic cable, access to other departments is easy. With access to the national Internet network (remember the Internet Virus), we can access the world. Below you can see the interconnectivity of the department, the equipment being donated by industry. Few departments have such an extensive array of networking facilities, making us one of the best equipped in the Midwest. Thanks, Industry, for caring about the future of computing professionals.

## Computing and Information Sciences Departmental Network



## Alumni News: Kirk and Melody Norsworthy

Kirk Norsworthy, a 1978 MS/CS graduate, recently returned to KSU to present AIX and OSF Topics as part of the joint ACM/Computing and Information Sciences Department lectures. Kirk is with IBM's Austin Development Laboratory and was until recently the Development Manager responsible for the development of IBM's AIX Kernel. AIX is IBM's UNIX based Operating System and has been available since 1982 on the IBM RT Systems. Kirk went on to explain the relationship that AIX has to the new independent software consortium, Open Software Foundation, which is attempting to establish an open set of standards for the UNIX market place. OSF is using AIX as the foundation for its Operating System offering and soliciting a variety of technologies for inclusion.

Kirk's first programming assignment with IBM was as a SQL Data Base Administrator with System R, the research prototype for SQL/DS and DB/2. He worked directly with the IBM Research Division to implement the largest Relational Data Base of its time for a Department of Defense Contract. The programs from this development were later extended for use with other contracts including B/52 and Space Shuttle. After the development of SQL/DS, he transferred to Austin where he worked on the development of Displaywriter's Report Pack and a Relational Data Base System for the RT System. This was followed by

a stint in Product Planning where he reviewed emerging software technologies such as Office Automation and Desktop Publishing and assisted the start-up companies in their efforts to port their products to new hardware.

In 1987 Kirk assumed responsibility for the AIX Operating System Kernel and VRM where he worked closely with Open Software Foundation to make several key software deliveries. Currently, Kirk is a Technical Assistant to the Vice President of the Advanced Workstation Division.

Kirk was teaching PI/1 to business majors in 1977 when he met Melody Taylor. Melody went on to receive her MS in Computer Science from SUNY Binghamton and began her career at IBM writing functional test programs for military computers like those used on the Space Shuttle. Melody worked in a variety of areas while at the Austin Laboratory including MVS support, Competitive Product Evaluation, and the design and development of IBM's PC family Voice Communications Option for Text-to-Speech and Speech Recognition.

For the last two years, Melody has worked in the State of Texas Sales Branch as a Customer Engineer supporting the Texas Parks & Wildlife State Agency. Kirk and Melody have found their experiences at KSU valuable to their careers. They have had their lives further enriched by the birth of their little girl Stacey.

### Nichols Nugget: Possible Jobs

Frequently we get requests from business and industry that they are looking for experienced computer professionals, especially high quality

individuals like KSU alums. If you are interested in such opportunities, please send us your resume.

### Nichols Nugget: Departmental Library Keeps Students Informed

Since 1986, the CIS Department has maintained its own library. The departmental library collects newsletters, technical reports, and magazines that the University library does not. Its current holdings include a complete collection of ACM Special Interest Group newsletters, technical reports from 63 universities and research centers

worldwide, journals published by ACM, IEEE, and AT&T, and a variety of popular computing magazines. Student's MS reports and PhD dissertations are also kept.

The library's subscriptions and staff (which consists of a student worker and a volunteer), are funded by donations and grants.

FROM

**BUSINESS**  
FIRST CLASS

POSTAGE WILL BE PAID BY ADDRESSEE

Kansas State  
P.O. Box 180  
Manhattan, KS 66506

## In memorium: Bradford G. Blaker

Brad Blaker became part of our Department in 1983 as an undergraduate student. It was Brad's third career; he already had a degree in music from Kansas State University and was well-known as a musician and photographer. Initially Brad blended in with his fellow students, but as he progressed in his studies he began to have an effect on the Department. His maturity made him a spokesman for his fellow undergraduates, and those in the Department learned to listen and to appreciate what he had to say.

In the last semester before his graduation Brad learned that he had an uncommon form of lymphoma. It was a major ordeal that put all Brad's plans for graduation and a career awry. But with heavy chemotherapy Brad conquered the disease and came back more determined than ever to pursue an advanced degree in computer science and to become a teacher in that field.

Brad did not wait for his master's degree; he became an enthusiastic and popular graduate teaching assistant who could be found leading and supporting his students at almost all hours of the day or night. Brad became especially well known for the vast amounts of work he did in support of the compiler course taught by Dr. Pittman; the results of that work are heavily used even now.

Brad was not easy on his students: he made them search for solutions rather than taking the short route and simply supplying answers. But he also had the knack of helping people over a hurdle with his fine and gentle sense of humor.

In the Fall of 1987, with firm plans for his

thesis project in place, Brad again received the dreaded news of a recurrence of lymphoma. Through the winter months of 1987/88 Brad rose from initial despair to a resolute optimism and strength that the proposed treatment of bonemarrow harvest, chemotherapy and radiation would put the ordeal behind him. He took a computer to the KU Medical Center and laid plans to meet his obligations as a teaching assistant and graduate student by grading work and returning comments by electronic mail. His attitude and outlook are reflected in the password he used for his computer accounts: "courage".

Brad's hopes did not come true. Surrounded by a steady stream of blood donors and supporters from the Department and from his wide circle of friends, Brad succumbed to his illness on the first of March. A memorial service was held on the 24th of March in the Danforth Chapel, with a small reception in the Nichols Hall atrium afterward.

In response to the wish of Brad's wife Sue, the Bradford G. Blaker Memorial Fund has been created with the dedication that the fund be used in support of educational activities in the Department of Computing and Information Sciences. The Fund is administered by the KSU Foundation, Hollis House, KSU. We hope that the fund will grow to sufficient size to become an endowment, so that it can become a permanent tribute to Brad's example as an inspiring and dedicated teacher.

## Bradford G. Blaker Library Dedication

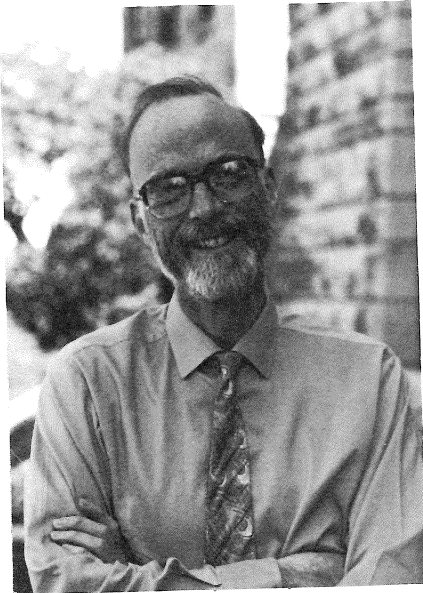
The dedication of the Department library in the name of Brad Blaker took place on February 24, 1989. The speaker was Bill Scherer, an independent systems-consultant from New Jersey. His topic was the need for quality communication between developer and user in software systems.

There is some good news concerning the memorial fund established by Brad's family. An anonymous donor has given a commitment to

match any new donations to the fund, up to an additional \$1,000. If the full amount is reached, the fund would have a self-sustaining principal. The Department library is not funded by state monies and a portion of the donations may be used to help support the library. Any persons interested in contributing may use the form in this newsletter and indicate that the funds be earmarked for Brad's memorial fund.

## Department Visitor: C.A.R. Hoare

Last May, the Computing and Information Sciences Department was visited by one of the most distinguished researchers in computing, Professor C.A.R. Hoare, Professor of Computation, Oxford University, England. Professor Hoare attended a workshop sponsored by the De-



partment, met with faculty, and presented his research. C.A.R. Hoare is famed for the variety and quality of his contributions to computing. He invented the "Quicksort" sorting algorithm, helped design the Pascal data typing system, formulated the

"monitor" synchronization construct, and established the area of axiomatic programming language semantics. Most recently, he developed the Communicating Sequential Processes (CSP) notation and an implementation based on its ideas (Occam). His book, "Communicating Sequential Processes," was published in 1985. In recognition

of his contributions to computing, the Association of Computing Machinery awarded Professor Hoare its 1980 Turing Award.

Professor Hoare's visit came during a 10-day excursion to the U.S. He attended the "Workshop on Categorical Aspects of Data Flow Analysis" at KSU, which was organized by Austin Melton and Dave Schmidt of the Department. Professor Hoare talked about his research on applying category theory to correctness proofs of concurrent systems and he gave a public lecture on applications of predicate calculus to C-MOS design; the latter lecture was part of the KSU Graduate School Distinguished Faculty Lectureship Series.

The workshop attracted a number of other noteworthy visitors. Attendees heard lectures by Stephen Brookes, Carnegie-Mellon University; He JiFeng, Shanghai University; Flemming Nielson, Danish Technical Institute, Denmark; and David Benson, Washington State University.

When asked about the workshop, co-organizer Dave Schmidt said, "It was quite a success; the workshop's participants gained much from Professor Hoare's ideas and presence. Our department's students also benefited from seeing Professor Hoare, a world-class researcher, present state-of-the-art results."

The workshop was funded by Dr. Virg Wallentine, Dean Thomas Isenhour, and Dean Robert Kruh.

## Nichols Nugget: Ethics Course Added

Because of their computing expertise, computing professionals have an important responsibility to protect the privacy of individuals, ensure the correct operation of our business, industry, education, and government agencies, and enhance the quality of life in general. To support these goals, the Department has developed a new course, under the leadership of Dr. Maarten van Swaay, entitled "Computers and Society". It is a

study of the impact of computer and associated technologies on society including such topics as ethics of computer use, computer fraud, and protection of privacy. In addition, the students study the legal, moral, and public policy-making responsibility of their future profession. While an anonymous donor has initiated a fund to bring in outside speakers to enhance this effort, additional help is needed for this vital part of our curriculum.

## Faculty Activities

Faculty members have been extremely productive these past two years. They are establishing international reputations as researchers and they have published 42 articles; they are also providing state-of-the-art education to both graduates and undergraduates - a very busy lifestyle. 84 baccalaureate degrees and 81 MS and PhD degrees have been awarded during the two-year period. In this section we will point out special accomplishments of the faculty.

Austin Melton was granted a one year sabbatical to study Partial Evaluation at the University of Aarhus in Denmark. Beth Unger will go on sabbatical during spring 1990 semester to study Deterrents to Compromise of Information in Data Bases. Dave Gustafson received a NATO grant to travel to London and work with researchers from Iowa State, Colorado State, City University (London), and South Bank Polytechnic University (London) on Software Metrics. Rod Howell, algorithms and complexity, has joined us from the University of Texas at Austin. K. Ravindran, distributed systems and computer networks, has joined us from Bell Northern Research in Ottawa, Canada. Dave Schmidt and Masaaki Mizuno received a NSF grant of \$157,000 to continue their research in "Semantics-Driven Compiler Synthesis." The award, covering the period June 1989 through November 1991, supports summer salaries, travel, and computing expenses for the two. A postdoctoral research fellow, Dr. Pascal Fradet from the University of Rennes, France, is also funded by the grant. The goal of the research is to make effective implementation of results developed by Schmidt and Mizuno on program-

ming language analysis. Schmidt has pioneered the use of "single threading" data structure analysis techniques in the construction of compilers from denotational semantics definitions in programming languages. Mizuno has developed compile-time/link-time data flow analysis for modular, distributed programming systems. These results are being integrated into the PSI compiler synthesis system, developed by colleagues of Schmidt's at the University of Aalborg, Denmark. Continuing cooperation between Aalborg and Kansas State is a secondary aim of the project.

Austin Melton and George Strecker were awarded an Office of Naval Research Grant to study Galois connections and programming language semantics; and Tom Isenhour (Dean of the College of Arts & Sciences) and Maria Zamfir-Bleyberg received a NSF grant to study chemical laboratory automation with robots. Maarten van Swaay deserves special recognition for his leadership in creating the Computers and Society course. William Hankley has shown real leadership in the development of both undergraduate and graduate curricula. Finally, Joseph Campbell has done an excellent job in advising undergraduate students (along with many other duties). We now retain more than 80% of our freshmen students.

We have lost three faculty members since the last newsletter. Dr. Paul Fisher is now Department Head at North Texas State, Dr. Richard McBride is at the University of South Dakota, and Dr. Thomas Pittman is working in private industry in California.

## Faculty Research Interests

**Myron A. Calhoun**, Associate Professor

Major Interests: Computer architecture, computer aided design, digital systems design, micro-computer applications.

**David A. Gustafson**, Associate Professor.

Major Interests: Software engineering methodologies, software physics, validation techniques, AI techniques in software development, expert systems, software testing.

**William J. Hankley**, Professor.

Major interests: Software Engineering (formal specification languages, verification; direct manipulation graphic interaction), Programming Languages (Ada, object-oriented & logic programming).

**Rodney Howell**, Assistant Professor.

Major Interests: Petri nets, computational complexity, analysis of algorithms, self-stabilization, real-time scheduling.