KSU Computer Science: Fairchild Hall, 1971-85

The history of KSU CS can be grouped into these "eras":

- Fairchild Hall: 1971-1985
- Nichols Hall, part 1: 1986-2000
- Nichols Hall, part 2: 2001-2015
- Engineering Hall: 2016-present

These slides summarize the "Fairchild Hall era"

Computer Science Originated within the KSU Statistics Dept.

In support of the anticipated creation of a Department of Computer Science, a series of four eminent computer scientists was brought to the campus by the Department of Statistics and Statistical Laboratory during the period October 12, 1967 through the week of April 15, 1968. Each lecturer spent most of a week on the campus giving at least four lectures and visiting with faculty, students and some administrators about the various aspects and uses of computer science.

The visitors: Alan Perlis (CMU), William Lynch (Case Inst.), Calvin Gotlieb (Toronto), Edward Feigenbaum (Stanford)

from Statistics Dept. History document, 1990

The CS program began in Arts and Sciences, not Engineering

On October 19, 1967, the Kansas Board of Regents gave their approval to changing the name of the Department of Statistics to the Department of Statistics and Computer Science. Thus the decision by President McCain and Vice President for Acadmeic Affairs Bevan to develop the work in Computer Science within the College of Arts and Sciences was approved by the Kansas Board of Regents. This was helpful because the College of Engineering also wanted the work in computer science under its sponsorship. Such a sponsorship naturally would have narrowed the scope of the activities in the areas of computer science considerably as compared to sponsorship under the College of Arts and Sciences with its 25 or so departments covering the fields of biological science, social science, physical science, and the humanities.

Initial course offerings

1) Introduction to Algorithmic Processes

2) Computer Organization and Planning

3) Non-numeric Programming

4) Algorithmic Languages and Compilers

5) Computer and Programming Systems I & II

6) Data Reduction and Control Programming

7) Computer Logic

8) Automata Theory

In 1968, 4) - 6) were dropped, and these were added:

1) Fundamentals of Computer Programming

2) Mathematical Machines and Computability

3) Introduction to Information Structures

4) List Processing Languages

5) Programming Systems

6) Programming Languages

The joint Statistics/Computer Science Faculty

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1967-68 DEPARTMENT OF STATISTICS & COMPUTER SCIENCE /KAES STATISTICAL LABORATORY
     W. JAY CONOVER
     ARTHUR D. DAYTON
     IVAN N. ERDELYI, PhD, University of Cluj, Romania
     ARLIN M. FEYERHERM
     PAUL FISHER
     HOLLY C. FRYER (Head / Director)
     YOUNG OAK KOH
     LESLIE F. MARCUS
     RAJA F. NASSAR
     ELIZABETH A. UNGER, MS, Michigan State University, East Lansing
     CHARLES S. WALKER, MS, University of Kansas, Lawrence
     RAY A. WALLER, PhD, The Johns Hopkins University, Baltimore, MD
     MICHA YADIN, DSc, Technion, Israel
     SHELEMYAHU ZACKS
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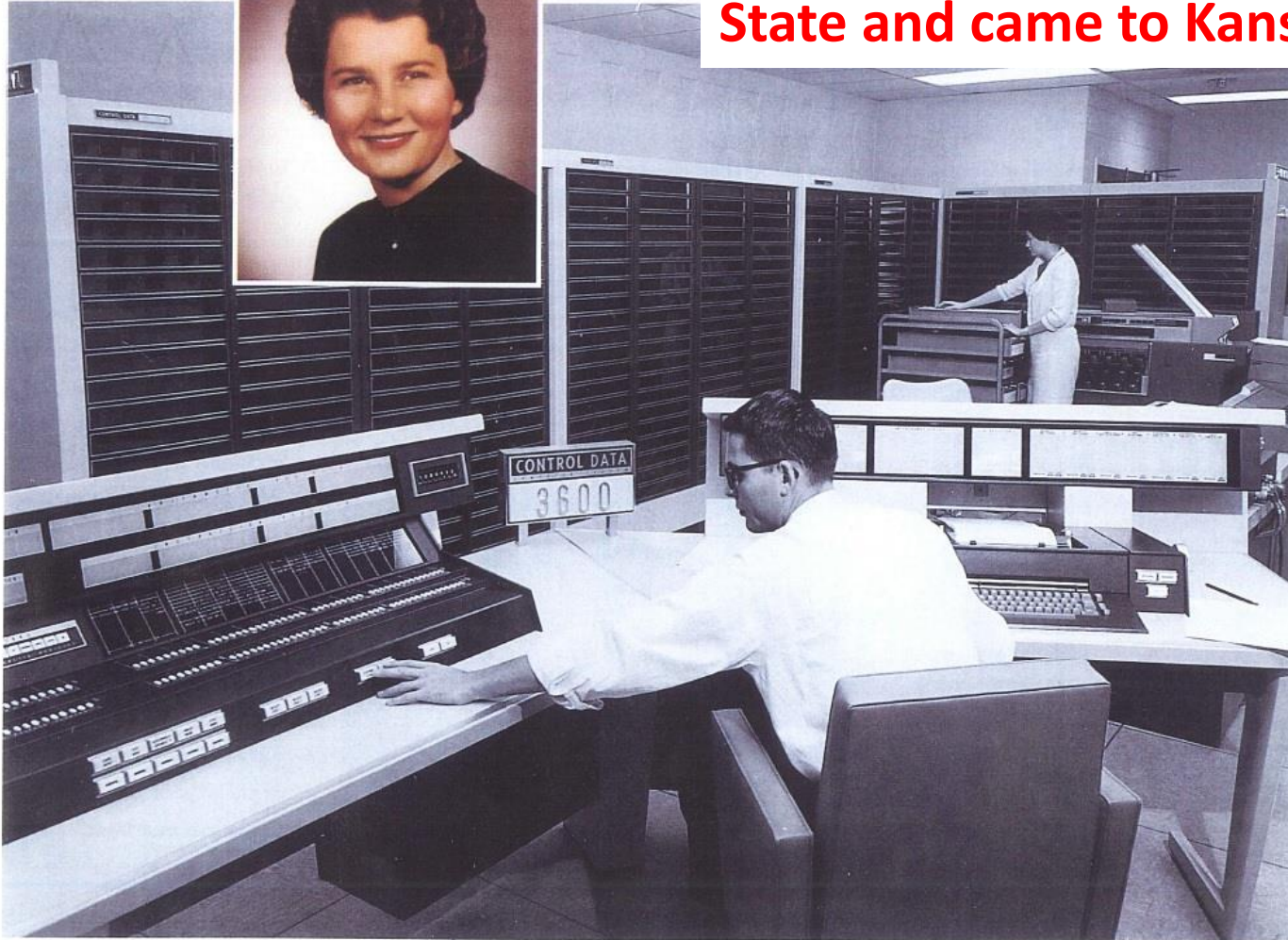
Paul Fisher and Beth Unger were the first two computer scientists at KSU!

From KSU Statistics Newsletter, 1990

Beth, 1961

Beth Unger started at Michigan State and came to Kansas in 1966

tape, and on the CDC 3600, which soon replaced the MISTIC. She says, "Wayne mentored me in how to be a professional, a manager. He made my career."

Unger moved to Kansas in 1966 with her

FOREGROUND: The Control Data Corporation (CDC) 3600, which used transistors instead of vacuum tubes, was installed in MISTIC's place in June 1963. It was housed on the third floor of the Computer Center. BACKGROUND: Beth Unger loading linear programming codes for researchers in agricultural economics (circa 1964). She says, "That is me with the card tray. I remember that white wool suit."

MSU Currents Magazine 2-2 (2003)
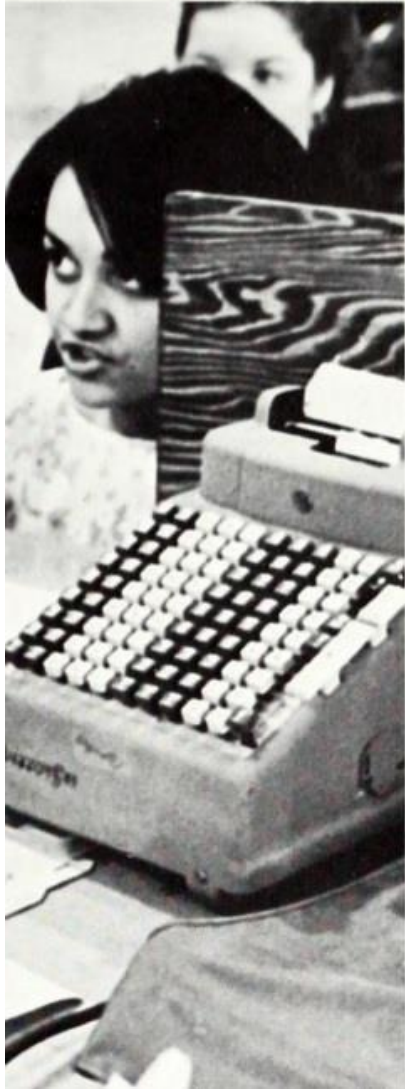
Administrative Heads —
Harold Alford, director of
continuing education;
Donald Hoyt, director of
educational research;
Elizabeth Unger, acting
director of computing
center.

Royal Purple Yearbook, 1970

Beth also worked at the KSU Computing Center and was Director in 1969-70.

Paul Fisher came from Arizona State, specifically to build the CS dept.

Paul S. Fisher received a B.A. in Mathematics from the University of Utah in 1963, an M.A. in the same field in 1964, and a Ph.D. in Computer Science was awarded him by Arizona State University in 1967. From 1967 to 1972, he worked as an Assistant Professor in the Department of Computer Science at Kansas University and was thereafter advanced to the position of Associate Professor. His current position as Head of that Department was presented him in 1973, and he was awarded a full professorship in July, 1978. Dr. Fisher has served as a reviewer for Computer Reviews ACM, CACM

Photo from journal article, 1977

Paul was trained in automata theory but soon moved to databases.

2015, U. North Carolina, Charlotte

KSU's Computer Science program grew rapidly and broke from Statistics in July, 1971

Table 1. Enrollment in Computing Courses 1963-1971

Year	63-64	64-65	65-66	66-67	67-68	68-69	69-70	Estimated 70-71
Under-graduate	111	214	367	443	507	831	1424	1800
Graduate	0	0	0	8	81	165	360	420

Computer Science

HAROLD SACKMAN, Head of Department

Professor Sackman; Associate Professors Ahmed, Conrow, Gallagher and Weinberg; Assistant Professors Brewer, Calhoun, Fisher,* Miller, Sincovec, Trump and Unger.

UNDERGRADUATE STUDY

The first digital computer, the Harvard Mark I, was demonstrated in 1944. The first electronic digital computer, the ENIAC, was exhibited in 1945. Today there are thousands of digital computers in use in the world. These machines represent what is called the hardware of digital computing.

A computer must be directed to do computations, store information, and produce the final information required in a usable form by means of programs known as software.

The creation and utilization of the best possible hardware and software is, broadly speaking, the field of computer science.

A person seeking an undergraduate degree in computer science must fulfill the general

puter science. If so they may need to take one or more courses for undergraduate credit. They also will take two academic years to complete the requirements for the Master of Science degree unless full use is made of Intersessions and Summer Sessions.

The Doctor of Philosophy degree in computer science is offered jointly by the University of Kansas and Kansas State University so that students will have, to some degree, the benefits to be derived from both faculties. The fields of highest concentration in computer science are divided between the two universities in the following manner:

Identified with Kansas State University

Machine Languages — Language processors, conversational languages, extensible languages

Computer Design and Architecture — Computer logic, switching theory

Programming Systems

Biological and Ecological Systems Simulation

KSU General Catalog, 1971-72

Key CS Faculty

Harold Sackman (Fordham), Dept. Head

Myron Calhoun (Arizona State), joint with EE

Paul Fisher (Arizona State)

Richard Sincovec (Iowa State)

Elizabeth Unger, joint with KSU Computing Center

Also joint with Computing Center: Ken Conrow, Tom Gallagher, Mike Miller

Also joint with EE: Nasir Ahmed

# Myron Calhoun worked 0.7-time in CS and 0.3-time in Electrical Engg.

- Born in Michigan and raised in Florida, Myron did his PhD work at Arizona State U. (He also has degrees from Graceland U. (Iowa), Colo. State, and KU.) Myron researched hardware and played a key role in the Department's first research projects.

- Myron was *the* main instructor for core undergrad courses throughout his career, helping beginners prepare for advanced courses.

- He was a Fulbright Fellow and spent a year in Nigeria.

- Myron is a life-long barbershop singer, 2nd Amendment supporter, and gardener.
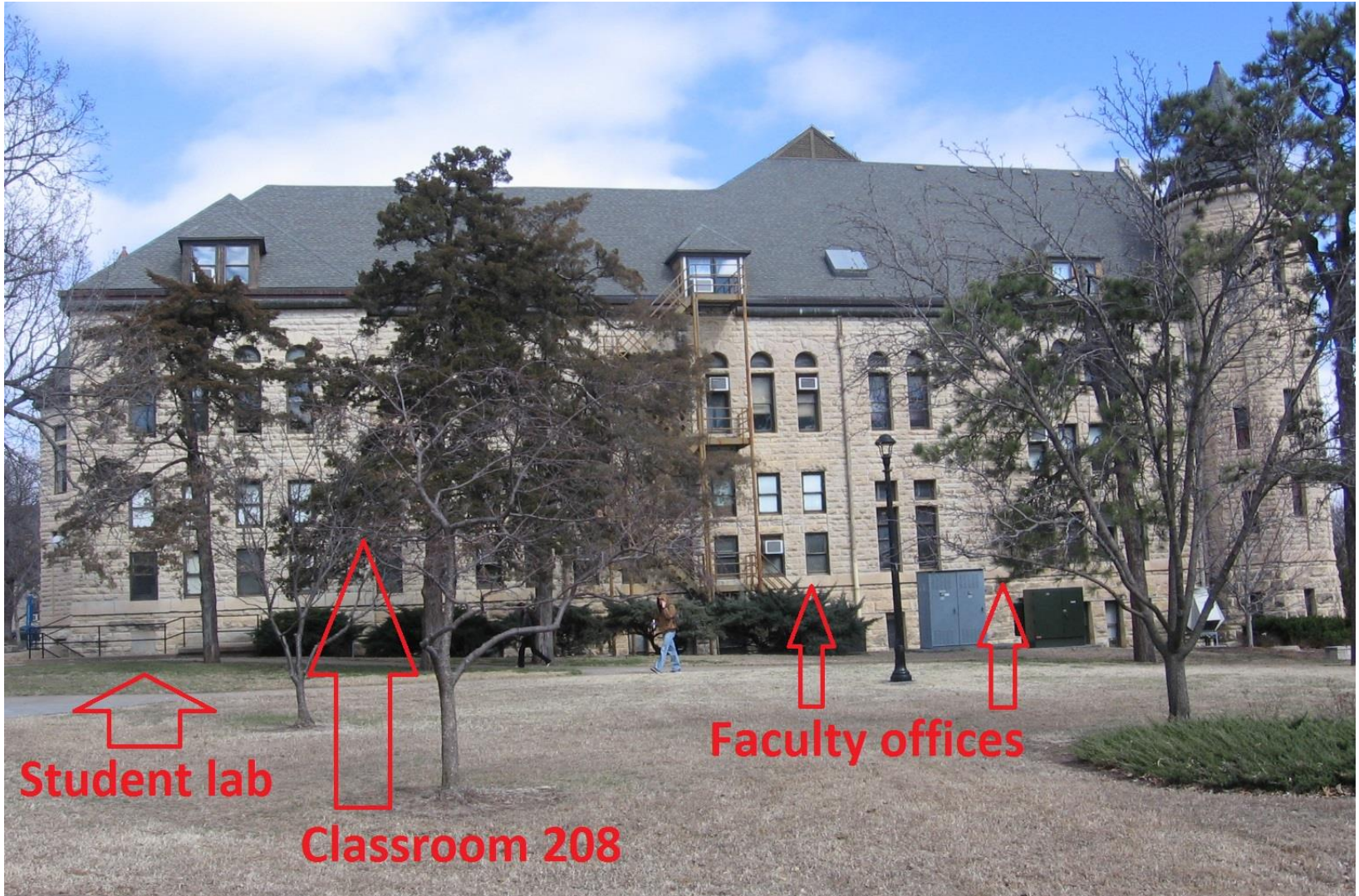
Rich Sincovec was a numerical analyst, hired from Iowa State U.

- Played key roles in research and administration, produced one of the Department's first PhD graduates

- Moved to Boeing in 1977, then to Univ. Colorado, Colo. Springs, then to Univ. Nebraska as Head
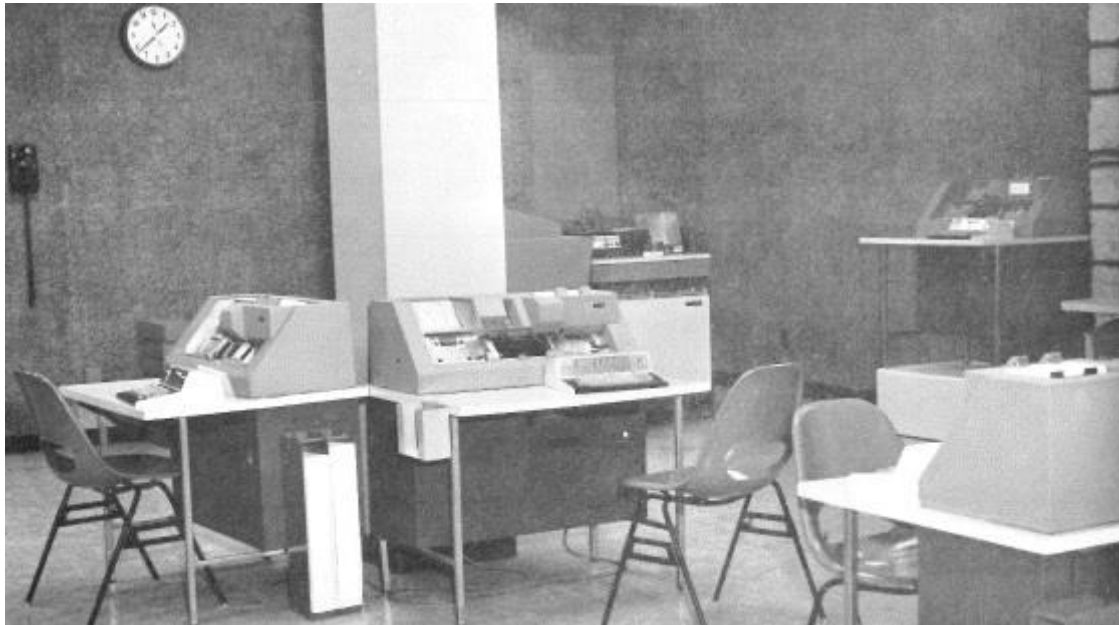
CS was squeezed into Fairchild Hall:

Dept. Head's office

Machine room

Student lab

Classroom 208

Faculty offices
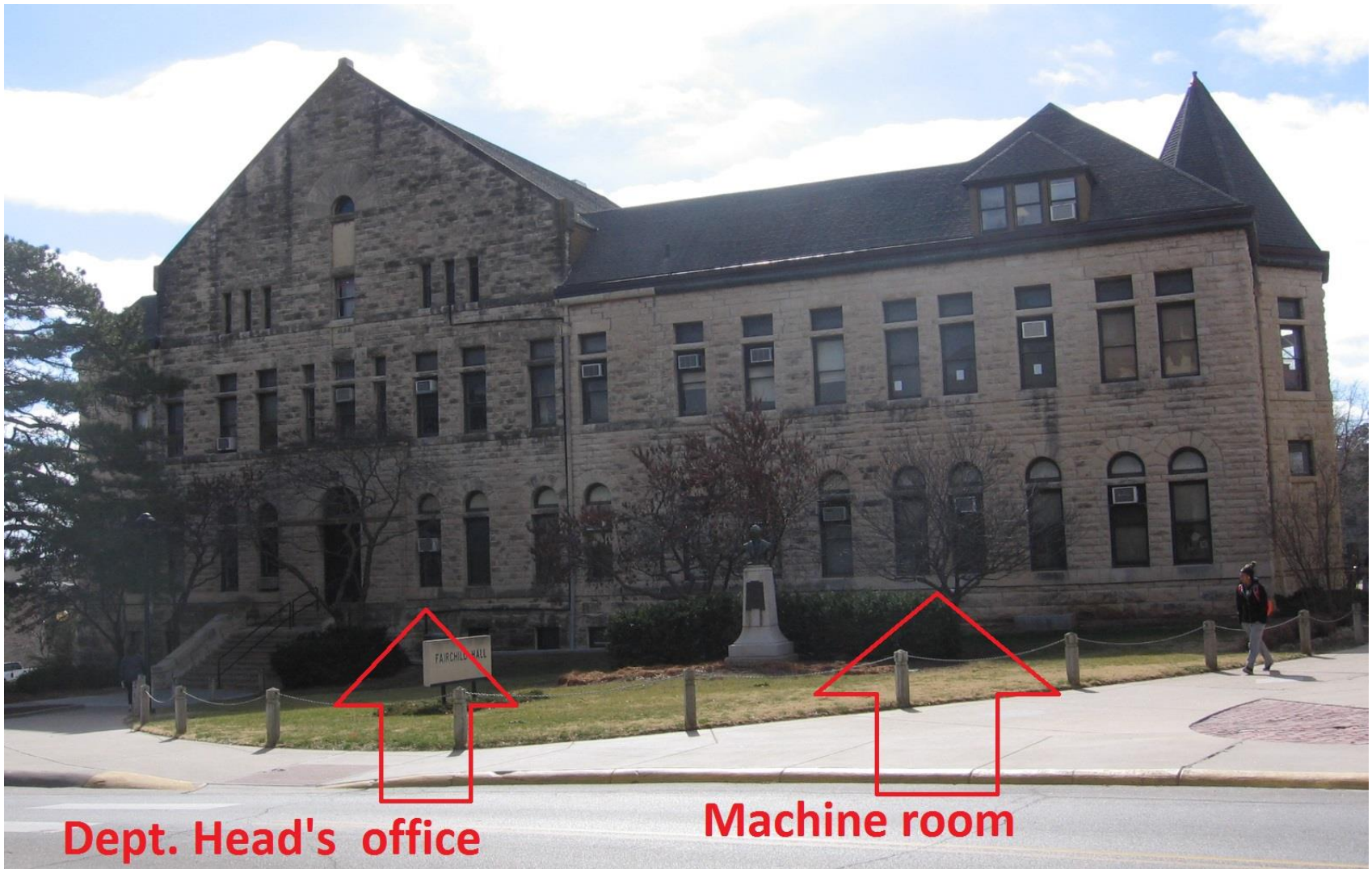
The facilities were less than ideal....

The Fairchild ``dungeon" computing lab

(Tom Gallagher, just below...)

From Department brochure, 1975

The Seaton Hall basement lab (it had windows)

The CS B.S. degree, 1971

MATHEMATICS & STATISTICS		Hours
Calculus I		4
Calculus II		4
Determinants and Matrices		0
or		3
Elements of Applied Linear Algebra		0
Introductory Statistics Course		3
	Total	14

COMPUTER SCIENCE		
Fundamentals of Computer Programming		3
Introduction to Algorithmic Processes		3
Computer Organization and Programming		6
Numerical Analysis		4
Data Structures		3
Programming Languages		3
	Total	22

ELECTIVES	
Two additional courses in Science or Engineering	6
Electives from supporting area(s)	15

The first few years were rocky…

Sackman was the head for only one year; he used a "participatory democracy" approach, which apparently did not go well:

H. Sackman, the new Head of the Department of Computer Science, runs the department as a participatory democracy, a plan of operation derived from his professional work in studying the effectiveness of various planning techniques. Although it requires a dedication which some faculty members find onerous, it is an effective way of ensuring faculty participation in establishment and achievement of departmental goals.

From Computer Science Plan, 1971

Sackman was succeeded by Paul Fisher. Weinberg, Trump also left.

Fisher was a "take charge" administrator, an "entrepreneur," often at odds with central administration. He was known for his colorful tactics and his incessant use of "Good Morning!" regardless of the time of day.

A story, related by Mike Barnes: "Fisher was always having trouble reserving meeting rooms at the Union for guest speakers.

"When the Department received one of the first computer printers on campus, Paul used it to print hundreds of room reservation forms, which were completed by the computer to reserve every Union meeting room at every hour for the entire next semester. Paul took the forms to the Union's reservations office and said, `Now, I own all the rooms for next semester, and you must contact me if you want to use any of them! Or, we can forget this happened, and you can find me a meeting room from now on whenever I phone you!'

Paul got his wish!"

Irritated by the University's seizure of 1/3 of all research funding for "overhead expenses", Fisher formed his own consulting company and directed some projects to it. This generated friction at multiple levels.

Several new faculty were hired: Bill Hankley, Virg Wallentine, Fred Maryanski, Linda Shapiro.

Beth Unger kept her job at the Computing Center till 1974, when she moved to CS full time.

At that point, she started PhD studies at the Univ. of Kansas, which she completed (done while working as a full-time Asst. Professor!) in 1979.

Faculty size stayed constant around ten people --- not enough to handle student load, let alone foster research.

Bill Hankley came from Utah

- A graphics specialist but soon moved to software engineering, with emphasis on specification languages

- From his home page: *"Bill Hankley joined the department in fall 1972, partly under recommendation from Prof. Bill Viavant at the University of Utah and partly from the warm relationship of members of the department. Initially, he was active in the graduate program, including teaching courses in Kansas City, Wichita, Command and General Staff College at Fort Leavenworth, ATT Summer program, and distance education courses.... He directed seven PhD students and many master's students. He was instrumental (with Profs Wallentine and Gustafson) in starting the Master of Software Engineering Program with the MSE portfolio requirement."*
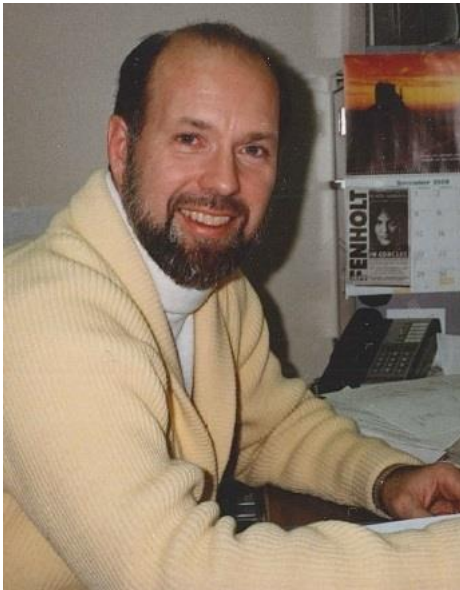
Virg Wallentine had a long history with the Department

- Recruited from Iowa State University by Rich Sincovec in 1972

- Interested in theory and practice of distributed systems

- A key player in Departmental research

- Department Head for 26 years (1983-2009), a University record!

Because of their long tenures and positions as Department Head and Dean/Provost, respectively, Virg and Beth Unger were the two most influential people in the Department's history.

Beth was known for her work ethic and devotion to her many students. In addition to leading database research for many years, Beth served as Associate Dean of the Graduate School (1990-1994) and then as Vice Provost for Academic Services and Technology until she retired in 2007. Beth "wired" the KSU campus and helped develop K-State Online and the Information Technology Assistance Center (iTAC). Beth coordinated her Dean-work with Virg and ensured that the CS Department got its fair share of resources.

Virg was an energetic researcher, landing the Department's first "real" research grants. He spearheaded the Department's distributed computing research, pioneering the use of Concurrent Pascal as a systems implementation language. As Department Head, he fought hard for resources and eventually doubled faculty size to 18. He led the move to Nichols Hall and then to the Engineering College. As Head, Virg was a tireless promoter of the Department, building a loyal alumni network.

Both Virg's and Beth's efforts came at great personal sacrifice.

Fred Maryanski had multiple interests

*Fred at UConn
In 2000*

- Studied at Univ. Connecticut
- Expert on simulation, finite-state machines, and later, (back-end) databases
- Left KSU for U. Conn., where he became Provost
- Became president of Nevada State University, where he died of cancer in 2010 (Fred was a pipe smoker, alas….)

Linda Shapiro was another Iowan

- Graduated from Univ. of Iowa; KSU was her first job
- Specialized in image recognition and computer vision, at a time when this was a novel, "hot" area
- Stayed at KSU for four years, leaving in 1978. She eventually settled in Seattle, where she is a Professor at Univ. Washington.

Ed Basham was the Department's first instructor/advisor

Ed was a retired military officer, West Point grad, and Viet Nam vet. He taught the Department's MIS-based courses during 1975-84 and interfaced with the Department's military contractors; his efforts were a major reason why the Department received funding from the DOD.

In 1984, Ed took over management of Paul Fisher's CIS Corporation, which competed with the Department for contracts. (The Corporation was a source of friction between Fisher and the University and eventually led to Fisher stepping down as Head.)

Ed was a kind man and treated everyone fairly. He retired in 1986 and died in 2001:

http://apps.westpointaog.org/Memorials/Article/15749/

Departmental Research

With limited resources and time, this was tough! Paul Fisher looked to military contracts to generate research funding. Many of these were implementation work, but in 1975 the Department landed a two-year, $265,000, USARO contract for implementing a mini-computer network using Per Brinch-Hansen's Concurrent Pascal.

Virg Wallentine was the lead on the networking project.

Functionally Distributed Systems for Software Development and Production
US Army $190,000

Abstract

The purpose of this 20-month effort is to examine, develop and test where feasible, ideas and concepts surrounding functionally distributed networked computing systems. Development will consider use of back-end minicomputer concepts and bear on portability of programs. Advantages in the use of host/back-end systems for supporting data bases will be considered. Known technical difficulties inherent in this investigation are: multiple systems architecture within a network, accessibility of data bases within networks, mixture of hardware within networks, and communications (message control) within networks. Using state-of-the-art techniques, a prototype solution of these technical problems will be developed and delivered. This effort is on-going with completion scheduled for October 1977.

Minicomputer Diagnostic Routines
Unified Industries Inc. $25,612

Abstract

The objective of this study was to design computer routines that would effectively and efficiently test the operation of a NOVA 840 computer. Specific tests were designed to test the CPU's efficiency and ability to decode and execute a broad spectrum of program instructions. Routines were developed to test memory and memory addressing under dynamic load. Routines were written to test arithmetic/logic unit, real time clock control, floating point arithmetic and general logic and arithmetic functions. After validation of support test modules, a generalized diagnostic test was developed to perform a fast automatic check of the NOVA 840 main frame computer, providing diagnostic messages of test results. The resulting general diagnostic program was delivered to the grantor at the conclusion of the project, March, 1975.

Research Into and Development of a Low-Cost Hardware Monitor
US Army $29,690

Abstract

The objective of this research was to design a hardware monitor, its controlling software and the user instructions needed to analyze the data collected by the monitor. The research took into account the various monitors that are currently available from commercial sources. The shortcomings of the existing monitors were analyzed so that a new design would alleviate those shortcomings. In the design, a need for a user-oriented monitor was recognized. The design concept centered on the use of a minicomputer to control data collection and data display. The report provides a complete specification for the monitor including the specification for a computer language for users of the monitor. The recommendations were provided to the U.S. Army Computer Systems Command, Ft. Belvoir, Va. Grant No. DAHC04-74-G-0103, July 1975.

From Dept. brochure, 1975

As part of the ARO networking project, Myron Calhoun and his team hand-wired six prototype "routers," the KSUbus!

Photo from Myron Calhoun

Hardware room, Fairchild Hall, 1975: Linda Shapiro and Earl Harris

(all the Department's hardware was moved into the room's NE corner for this photo!)

A note about **Earl Harris**: Earl joined the Department in 1975, fresh out of the military, as a hardware technician. Earl has fulfilled the role non-stop from that date to the time I am writing these slides (Dec. 2016) --- 40 years!   Earl had/has responsibility for maintaining all Departmental hardware inventory. (He also runs lots of cable.) Earl is well known for his direct manner and wry sense of humor.

Earl, 2012

In its formative years --- the mid-1970s --- the department was developing expertise in networking, concurrency theory, and database systems. There were active undergraduate and graduate programs and multiple funded research projects.

Despite understaffing, the faculty and staff maintained a friendly workplace and a positive morale.

But not everything went well --- some projects were unsuccessful, most notably, a significantly funded, multi-year project to port hundreds of thousands of lines of mainframe COBOL to Interdata minicomputer COBOL. The failure of this project led to a significant pause in the Department's funding from the U.S. Army:

How to make lemonade from lemons --- write a research paper about the whole mess!

Software Engineering: An Example of Misuse

PAUL S. FISHER

Department of Computer Science, Kansas State University, Manhattan, KS 66502, U.S.A.

AND

JACOB SLONIM

NDX Corporation, Toronto, Canada

Jacob Slonim received a B.S. in Computer Science and Mathematics from the University of Western Ontario in 1971, an M.S. in Computer Science in 1973, and a Ph.D. in the same field was awarded him by Kansas State University in 1978. His professional experience includes the following: system designer, programmer, and project manager for Canadian Jurimetrics Limited; international project manager for the National Center of Scientific and Technological Information, Israel; and research assistant and instructor at Kansas State University. He is a member of the ACM SIGMINI and SIGIR.

A highly experienced PhD student, *Jacob Slonim*'s database expertise enhanced the department's commitment to database research, which was then led by Fisher, Maryanski, and Unger. He was the most important student of the Department's early years.

INTRODUCTION

An interesting trend current in many large, diversified organizations is the writing and testing of software systems upon large, central computer facilities, with distribution of that software to numerous sites for execution upon other computers or minicomputers. As price performance ratios of minis and micros continue to improve along with the high cost of software development, the trend of central software production and distribution to remote sites will continue at an increasing rate.

The porting of software from one machine to another gives rise to many problems. This paper describes an inventory control system consisting of more than 150,000 lines of COBOL. It currently runs on a large computer and will at some point be ported to more than 100 minicomputer sites for actual utilization. However, all maintenance and any further development will occur only at the large computer site, which is managed by the central development group. This permits concentration of skilled personnel resources, as well as large scale machine resources.

The remainder of this paper examines the problems encountered in the software engineering approach adopted by the sponsoring organization. Two significant problems encountered are next discussed. These two problems deal with redundancy and complexity. The next section details the authors' experience with the actual porting activity of the system. The last section contains the conclusions derived from this effort.

The M.S. program was well run and successful

II. REQUIREMENTS FOR ADMISSION

1. a Bachelor's degree from an accredited institution;

2. either a "B" average or better during the junior or senior year

   or demonstration of mature performance in the industrial environment;

3. experience equivalent to the breadth of material in a B.S. in Computer Science.

4. Application forms:

Graduate School:	Application and Information Blank (yellow)
Computer Science Dept.:	Application for Graduate Study (white)

   In addition to the above, International Students must have:

   - TOEFL: Score from Ed. Testing Service, Princeton, NJ
     (satisfactory score: 575)
   - KSU International Student Medical Certificate
   - Financial Statement: Graduate School

5. Submit Graduate Record Examination (GRE) Score in Computer Science
   to the Department.

From M.S. requirements, 1982

C. <u>Specific Requirements for the M.S. Degree</u>:

Six required courses are included in the M.S. curriculum.

CMPSC-670   Discrete Computational Structures   (3   credit   hours)
             (mathematical foundations and programming science)

CMPSC-740   Software Engineering (3 credit hours)

CMPSC-700   Translator Design I (3 credit hours; Prereq. 405, 305)

CMPSC-720   Operating Systems II (3 credit hours; Prereq. 420)

CMPSC-761   Data Base Management Systems (3 credit hours; Prereq.
             561)

CMPSC-897   Graduate Seminar (1 credit hour)

One 800 level course which has a 700 level prerequisite is
         required.

Candidates for the M.S. degree must show competence in two areas:
implementation and writing.

The implementation component may be satisfied by:

         - conducting M.S. thesis research which includes a
           significant implementation project.

    or - completing the course CS690 Implementation Projects

    or - validated work experience (all work presented for
         validation must be in the public domain and well
         documented).

The writing component may be satisfied by:

- writing an M.S. thesis

or - writing an M.S. report

or - writing a publishable paper

Each student (in consultation with the Supervisory Committee) must select one of the following three options.

1. Write a thesis for six to eight semester hours of credit.

2. Write a report for two semester hours of either research or problem work on a topic in Computer Science.

3. Elect to take formal course work only, and show evidence of scholarly effort.

If option 3 is selected, the department interprets "evidence of scholarly effort" as follows: the student, in conjunction with the major professor, is to produce a paper which is to be submitted for publication with the student being the principal author. The format and content are not controlled by formal university regulations.

Quality control was the key

In the 1970s, every M.S. student was required to pass a four-hour comprehensive exam (the ``M.S. exam''), based on the M.S.-required courses, to obtain a degree.

All Ph.D. applicants were required to pass the M.S. exam at a higher level. (The exam counted as one of the four, four-hour written preliminary exams required for the Ph.D. degree.)

The M.S. exam was dropped in the 1980s (too many students, too much work for the faculty!), and ultimately, so were the Ph.D. written prelims   )-:

Faculty developments, 1979

- Several people left: Sincovec, Shapiro, then Maryanski

- Beth Unger finished a PhD degree from KU and was immediately promoted to Associate Professor with Graduate Faculty status. She took a lead role in database research.

- Dave Gustafson, Roger Hartley and Cliff Stark were hired:

Dave Gustafson was a Departmental fixture till 2015

Dave was a graduate of the Univ. of Wisconsin and a life-long specialist in software engineering. He taught the core undergrad and grad S.E. courses throughout his long career. Along with Bill (Hankley) and Virg, Dave developed the Master of Software Engineering program.

He authored a widely-used set of Schaum's notes on software engineering as well as several other texts.

As a sideline, Dave supervised the KSU Robotics team, who won several national titles at the AAAI competitions. These accomplishments led Dave to be named one of the Top-100 scientists in Kansas history!

Dave is known for his dry sense of humor, his calm demeanor, and steadfast friendliness.
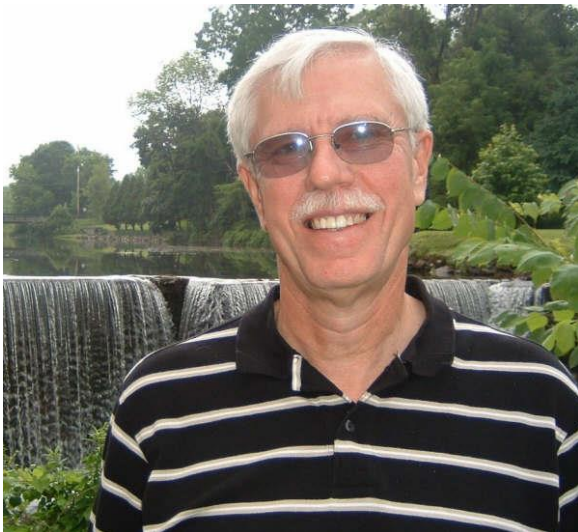
Roger Hartley and Cliff Stark

- Roger and Cliff arrived in 1978: Roger from Brunel Univ. (England) and Cliff from Univ. Edinburgh (Scotland)

- They shared interests in artificial intelligence and worked together informally

- In 1985, Roger moved to New Mexico State Univ. and Cliff to Univ. Edmonton, Canada
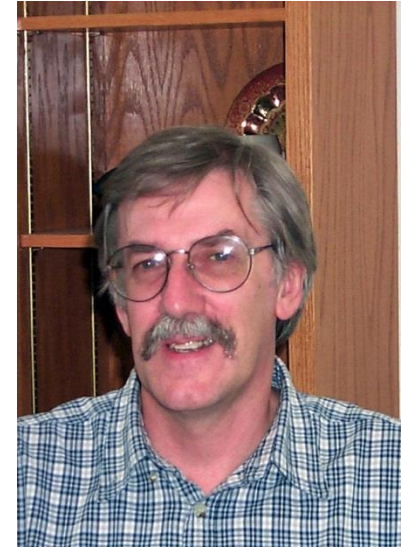
Roger, approx. 1995

(Sorry --- no photo of Cliff!)

The Ph.D. Program in Computer Science at the University of Kansas and Kansas State University

I. INTRODUCTION

Computer science has rapidly become an integral part of the higher educational pattern, equipping aspiring scientists, scholars, engineers, administrators, and teachers with the computer science understanding essential to their future careers. In response to the broad need for advanced training in computer science the University of Kansas and Kansas State University jointly offer the Ph.D. in this field. The doctor of philosophy degree in computer science is granted by each institution. The resources of both institutions are available to each doctoral candidate and his degree is granted by the institution with which his dissertation director is affiliated.

Application for admission to the Ph.D. program may be made to the Department of Computer Science at either the University of Kansas or Kansas State University. Once admitted to the program, a student in good standing need make no further application to enroll in classes on either campus.

Assistantships and fellowships are ordinarily available on each campus and are awarded according to the established procedures of each school and department.

Did you know: There was/is only one PhD program in computer science in the state of Kansas – a joint one!

From program brochure, 1971

Identified with Kansas State University

Machine Languages — Language processors, conversational languages, extensible languages

Computer Design and Architecture — Computer logic, switching theory

Programming Systems

Biological and Ecological Systems Simulation

Data Organization and Manipulation — File management and data processing, information storage and retrieval, text processing.

Areas of Current and Essential Interest to Both Campuses

Numerical Analysis

Artificial Intelligence

Identified with the University of Kansas

Formal Language Theory — Theory of grammars, formal languages, formal semantics

Natural Languages and Symbol Systems — Computational linguistics, pattern generation in the humanities and fine arts, sound synthesis and analysis

Automata and Mathematical Logic — Theory of automata, computability, recursive function theory

Machine Systems

Information Systems Theory and Design — Analysis of information networks, information acquisition, social implications of information systems.

From KSU General Catalog, 1971: areas of PhD specialization

Q: why a joint PhD program?

A: in the 1970s, computing hardware was expensive, and the State wanted the two grad programs ``on the cheap" --- they were supposed to share faculty and hardware resources!

But the joint PhD program almost *killed off* graduate CS at KSU *and* KU!

PROPOSAL FOR THE OPERATION OF A PH.D. PROGRAM IN COMPUTER SCIENCE
OFFERED JOINTLY BY THE
UNIVERSITY OF KANSAS
AND
KANSAS STATE UNIVERSITY

This statement resulted from a meeting of both faculties Jan 30, 1971

INTRODUCTION

The following is pursuant to "A Plan for an Inter-University Ph.D. Program in Computer Science," issued by the Council of Chief Academic Officers (COCAO) of the Regents' institutions, January 1971. The determining principle for such a joint undertaking is that there is to be a single program operating on and making use of the resources of both campuses. The marshalling of talent under the plan will afford the student a much wider range of educational opportunity than either school would be able to provide separately. Moreover, the plan has great future significance in view of increasing emphasis on coordination of and cooperation between programs among the several institutions.

In planning for optimal use of the resources of the University of Kansas and Kansas State University at the doctoral level, an important consideration is the division of labor within the field of computer science so that expected development may proceed without overt and wasteful duplication. A blueprint for such a division, arrived at by the faculties from the two campuses, serves as the point of departure for the doctoral program. Every effort has been made to achieve a rational differentiation of research specialties. The division of the field is neither unique nor exhaustive, however; but it illustrates agreement upon separate *areas* of the field.

November 17, 1972

The Joint Faculty weren't so joint…

John Chalmers, Vice President
Campus

Dear Vice President Chalmers:

We are writing to formally state the opinions of the KSU contingent of the Steering Committee. The Steering Committee met November 15 here at KSU and by the conclusion of that meeting it was again clear that the developing joint program can not follow the guidelines outlined within the originally approved document (1).given the attitudes of the KU representatives.

We sincerely believe that a program as outlined is in fact a workable plan which could be made acceptable to both faculties, if that was the goal of all concerned. We firmly believe that if such a program could be implemented then it would have direct benefit to both students and faculty of both departments. The course which the program has taken to date is one consisting of actions maintaining separation. Let us hasten to add that we do not feel that a program so conceived (1) is necessarily easy to implement, but if both departments were in fact committed to it then a workable program could be well underway at this point in time.

We believe that there are several courses of action which are open at this time. We believe that continuing on the present basis would be a serious mistake. The other extreme possibility is that which simply does away with the program, and we consider this an equally serious mistake. Between these two possibilities there must be other courses which would improve the situation. We formulate this letter to solicit help in

The Board of Regents weren't so helpful
(from Feb. `72 minutes)

4. Some COCAO members expressed surprise and dissatisfaction when told it was possible for a student to obtain a Ph.D. degree entirely on one campus (with no course work at the other institution). The co-chairmen were surprised by this and reacted by asking for COCAO's definition of "jointness." COCAO's answer was that they intended for every student to have some formal contact (preferably course work) on both campuses and that this would be achieved by a) transporting students; b) transporting faculty; c) courses offered via telecommunications network; d) specially scheduled courses, seminars, and colloquia. The ensuing exchange brought out two points

   i) forcing people to commute against their will is not viable

   ii) a multilevel communications network would permit achieving COCAO's intent

COCAO = Council of Chief Academic Officers

SUMMARY OF VIEWS
DOCTORAL PROGRAM IN COMPUTER SCIENCE
University of Kansas and
Kansas State University

The two faculty disagreed on most things.

General Philosophy	One PhD program divided between two campuses but with a single faculty.	Coordinated but separate PhD programs on the two campuses with a sharing of resources. Considerable autonomy maintained by the separate faculties.
Steering Committee	Responsible for maintaining uniformity*of policies and practices; previews courses and specialties of faculty appointees to determine appropriateness with respect to differentiation.	May make recommendations which take effect upon ratification by faculty on each campus. Reviews courses, faculty appointments after they have been established to determine extent of differentiation of specialties.
Faculty decisions in relation to PhD program	Effected by the total faculty as they determine academic policies and requirements of the program with individual members voting in the usual manner.**	Since there are two degree programs, institutional autonomy must be retained, and the collective vote of the combined faculty cannot bind either constituent. Questions should be decided by unit voting with consensus sought in case of deadlock.
Reciprocity in admissions, examinations	Applications screened by faculty on both campuses. Graduate faculty members of each institution belong to the graduate faculty of the other. Candidacy established on one campus recognized by the other.	

From Feb. '73 report to the Regents

STATE OF KANSAS
BOARD OF REGENTS

April 26, 1973

Ms. Sally Yeates Sedolow
University of Kansas
Mr. Richard Sincovic
Kansas State University
Co-Chairmen
Steering Committee for the
  Joint Doctoral Program

The Regents got mad

If the issues hereby identified in the "Summary of Views" are not resolved in the context of the above referenced documents by the Steering Committee in a written report to COCAO at its May 24 & 25 meeting, it will be COCAO's plan to recommend to the Council of Presidents that no additional students be admitted into the Joint Ph.D. Computer Science program until such time as all issues are resolved."

Dear Mr. Sincovic:

I am writing at the request of the Council of Chief Academic Officers to inform you of the Council's action in regard to the Ph.D. Computer Science program and to forward to you copies of materials pertinent to action they are requesting you to take.

The minutes of the last COCAO meeting which pertain to the Ph.D. Computer Science program read as follows:

"COCAO reviewed separate reports from the co-chairman of the Ph.D. Computer Science Steering Committee at K.U. and K.S.U. These reports were in response to COCAO's request at the February meeting that "the Steering Committee identify basic questions regarding the Committee's role and authority that are unresolved and submit these questions to COCAO for review and resolution by COCAO." COCAO does not view the reports submitted to be responsive to the points in question or to identify issues unresolved with the Steering Committee.

Life smoothed over by 1975, when Bill Hankley (KSU) and Neil Jones (KU) headed the Joint Faculty Steering Committee

The point: It's hard to build a research program (or anything else) when energy is sapped by fighting. This hurt both schools, and eventually KU's CS Department was *disbanded* and absorbed into Electrical Engg.

Practical consequences of the joint PhD program in the 1970s-80s:

- Each term, one dept. offered an evening grad course for students in other dept. to attend
- Each PhD student had a committee member from the other school on her POS

These requirements are now forgotten….

The first CS text published by a CS faculty member:

Computer science fundamentals: an algorithmic approach via structured programming

Computer Science Fundamentals
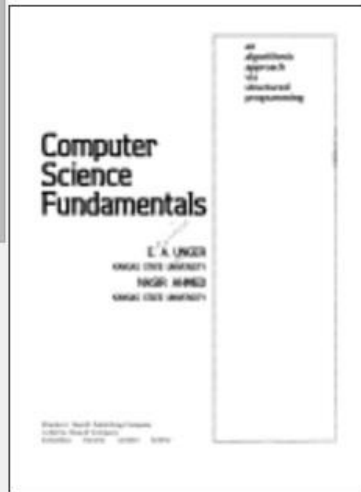
Elizabeth A. Unger, Nasir Ahmed

Merrill, 1979 - Computers - 387 pages

Common terms and phrases

actual parameters Additional learning objective arithmetic assigned Assume average binary search calculate called character string constants COBOL columns computer memory COMPUTER SOLUTION computer system consider consists corresponding COUNTER data processing DATA STRUCTURES decimal number definite loop Develop device digits EBCDIC element END-OF-FILE Endbal evaluated example executed external sorts field width fixed decimal flowchart language formal parameters FORTRAN function given hexadecimal illustrated initial solution input data input stream input/output integer invoking algorithm label list argument machine magnetic tape Memory contents memory location number system operations output Payt PL/I business PL/I scientific pointer programming languages punched card Repeat Steps RETURN RETURN statement robot roman numeral Scan score search argument SELECTED EXERCISES sequence shown in Figure Sinking sort sort statement storage stored structured algorithm structured flowchart student subalgorithm Symbol trace table

Beth Unger and adjoint faculty Nasir Ahmed based the text on their CS 200 course.

Additional Faculty Hires

Rodney Bates: KSU grad (PhD, EE, 1971); came from Boeing, Wichita; worked with compilers and programming languages. Rod and Dave (Gustafson) reworked the Barrett and Couch compiler text and helped republish it:

COMPILER CONSTRUCTION: Theory and Practice. Second Edition.

Barrett, William A.; Bates, Rodney M.; Gustafson, David A.; Couch, John D.

Published by Science Research Associates, Inc., Chicago, 1985

ISBN 10: 0574217657 / ISBN 13: 9780574217653

Rich McBride: KSU CS PhD grad, a networking specialist; worked at KSU for 5 years and then moved to Univ. South Dakota, where he spent the remainder of his career. Rich was a quiet, competent teacher well liked by students.

Maarten van Swaay

- Maarten, a native of the Netherlands and PhD graduate of Princeton, moved from his faculty position at Leiden to the KSU Chemistry Dept. His interests in computing led him to transfer to CS in 1979.

- Maarten specialized in data structures and systems programming and taught most of the undergrad core courses during his career. He was known for his precision of work and his high standards.

- Martin worked hard to develop civilized students who were aware of the ethical consequences of their work --- he developed the Department's computing ethics courses and gave an endowment for funding speakers on the topic.

- Maarten retired in 1996 and resides in the Kansas City area.

Major transitions

Paul Fisher left KSU for North Carolina (Charlotte), and Virg Wallentine became Department Head in 1982.

With Maryanski's and Fisher's departures, Beth Unger assumed management of the Department's substantial database research program.

In 1979, the Department initiated a summer school for Western Electric employees: 6 course credits each summer for 5 summers equaled an MS degree. 30 students attended each summer term. The ``*Summer on Campus''* program generated significant salaries and equipment ($160,000+ each summer):

Western Electric became AT&T, and the Summer on Campus program motored on. The program generated quality MS students from 1979 into the 1990s. The program was known for both its work and social life:
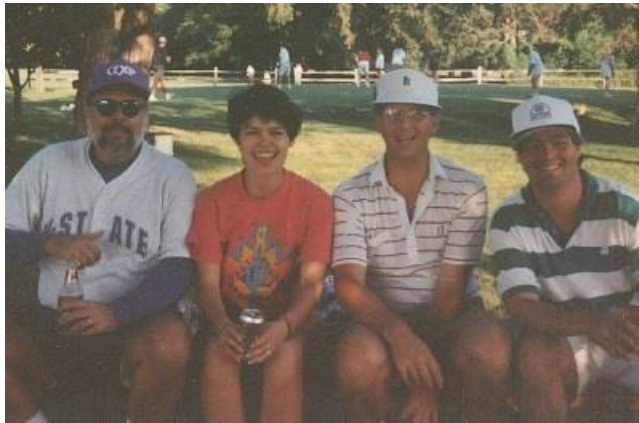
The Department hired its second full-time instructor/advisor, **Joe Campbell**, in 1979. A retired Navy vet, Joe was known for his insight, calm demeanor, and sense of humor. He was a major reason that the Department stayed a friendly place through thick and thin.

Joe carried a heavy advising and teaching load but nonetheless stayed with the Department until 1997.

He died in 2007 and is sorely missed.
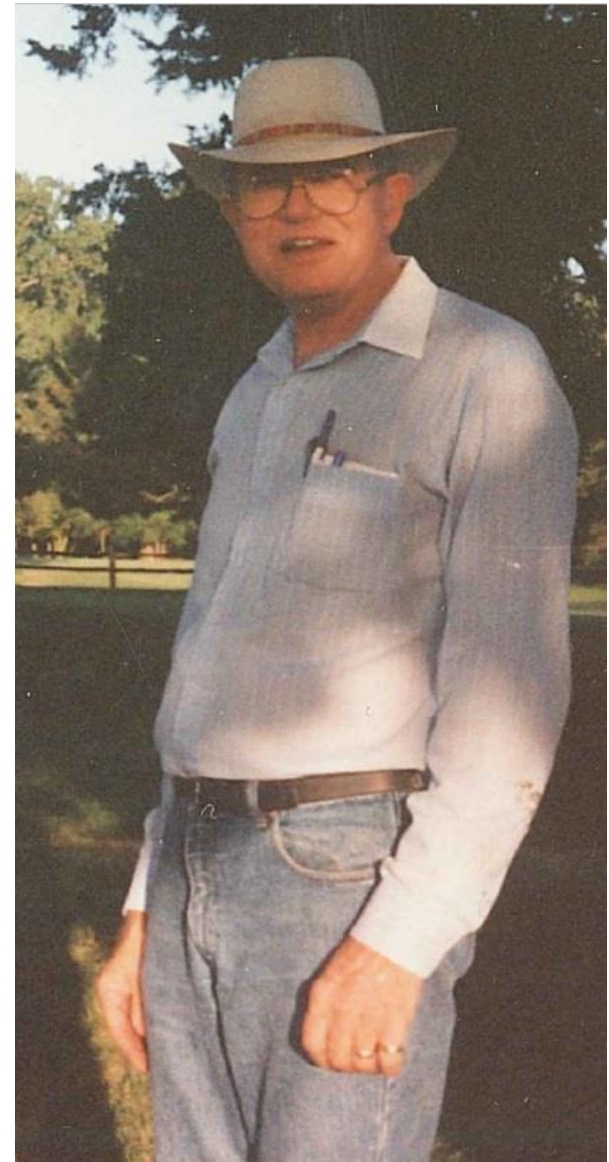
First M.S. theses

- The first M.S. thesis from the Dept. of Statistics and Computer Science *was "The Frequency of Occurrences of Syntax Errors for Beginning Programming Students,"* by Linda Rust (supervisor, Holly Fryer), 1969.

- The first M.S. from Computer Science was *"A Computational Method for Reducing Words to their Generic Roots Using a Suffix Editing Routine,"* by Martin Zola (supervisor, Paul Fisher), 1971.

First Ph.D. dissertations

- "The distribution of certain operating system functions to microprocessors." Daniel Codespoti, 1977 (supervisor, Fred Maryanski)

- "A language, a procedure, and automated tools for analysis of problems and design of algorithms in a student-oriented environment." Miguel Ulloa, 1977 (supervisor, Bill Hankley)

- "A model of extensible-contractible languages and their translators." Gary Anderson, 1978 (supervisor, Virg Wallentine)

- "Mesh rezoning in the numerical solution of PDEs." David Melgaard, 1979 (supervisor, Rich Sincovec)

Representative faculty publications
(from DBLP: *dblp.uni-trier.de --- sorry, not in strict order!)*

1979

- [j3] Niel K. Madsen, Richard F. Sincovec:
  Algorithm 540: PDECOL, General Collocation Software for Partial Differential Equations [D3]. ACM Trans. Math. Softw. 5(3): 326-351 (1979)

1972

- [c1] M. A. Calhoun:
  SYMBOL hardware debugging facilities. AFIPS Spring Joint Computing Conference 1972: 359-368

- [j2] Richard F. Sincovec, Niel K. Madsen:
  Software for Nonlinear Partial Differential Equations. ACM Trans. Math. Softw. 1(3): 232-260 (1975)

- [j1] Richard F. Sincovec, Niel K. Madsen:
  Algorithm 494: PDEONE, Solutions of Systems of Partial Differential Equations [D3]. ACM Trans. Math. Softw. 1(3): 261-263 (1975)

1978

- [j1] David Neal, Virgil Wallentine:
  Experiences with the Portability of Concurrent PASCAL. Softw., Pract. Exper. 8(3): 341-353 (1978)

1980

- [c1] William Hankley, Virgil Wallentine:
  Color graphics for remote teaching. SIGGRAPH 1980: 147-153

1977

- [j1] Fred J. Maryanski, Taylor L. Booth:
  Inference of Finite-State Probabilistic Grammars. IEEE Trans. Computers 26(6): 521-536 (1977)

- [c1] Fred J. Maryanski, Kuang Chan Wu:
  Nonlinear parameter estimation for probabilistic finite-state automata. AFIPS National Computer Conference 1977: 827-831

1978

- [j2] Fred J. Maryanski:
  A Survey of Developments in Distributed Data Base Management Systems. IEEE Computer 11(2): 28-38 (1978)

Publications, cont.

1979

- [j2]   Jacob Slonim, Dave Schmidt, Paul S. Fisher:
  Considerations for determining the degrees of centralization or decentralization in the computing environment. Information & Management 2(1): 15-29 (1979)

- [j1]   Fred J. Maryanski, Paul S. Fisher, Virgil Wallentine:
  Data access in distributed data base management systems. Information & Management 2(6): 261-270 (1979)

1978

- [c1]   Jacob Slonim, Fred J. Maryanski, Paul S. Fisher:
  Mediator: An Integrated Approach to Information Retrieval. SIGIR 1978: 14-36

1982

- [j5]   Elizabeth A. Unger, Paul S. Fisher, Jacob Slonim:
  Evolving to distributed database environments. Computer Communications 5(1): 17-22 (1982)

- [j4]   Jacob Slonim, L. J. MacRae, Richard A. McBride, Fred J. Maryanski, Elizabeth A. Unger, Paul S. Fisher:
  A troughput model: sequential vs concurrent processing. Inf. Syst. 7(1): 65-83 (1982)

1981

- [j3]   Paul S. Fisher, Jacob Slonim:
  Software Engineering: An Example of Misuse. Softw., Pract. Exper. 11(6): 533-539 (1981)

1984

- [j3]   Ariel Pashtan, Elizabeth A. Unger:
  Resource Monitors: A Design Methodology for Operating Systems. Softw., Pract. Exper. 14(8): 791-806 (1984)

1985

- [c3]   Brad C. Gaylord, David A. Gustafson:
  Requirements analysis using Petri nets. ACM Annual Conference - The range of computing: mid-80's perspective 1985: 194-198

- [c2]   David A. Gustafson:
  A requirement model for the 5th generation. ACM Conference on Computer Science 1984: 149-156

- [c1]   David A. Gustafson:
  Guidance for test selection based on the cost of errors. AFIPS National Computer Conference 1984: 423-429

Publications, concl.

1981

■ [j5] David K. Melgaard, Richard F. Sincovec:
General Software for Two-Dimensional Nonlinear Partial Differential Equations. ACM Trans. Math. Softw. 7(1): 106-125 (1981)

■ [j4] David K. Melgaard, Richard F. Sincovec:
Algorithm 565: PDETWO/PSETM/GEARB: Solution of Systems of Two-Dimensional Nonlinear Partial Differential Equations [D3]. ACM Trans. Math. Softw. 7(1): 126-135 (1981)

1985

■ [c2] Roger T. Hartley:
Representation of Procedural Knowledge for Expert Systems. CAIA 1985: 526-531

1984

■ [j1] Roger T. Hartley:
CRIB: Computer Fault-finding Through Knowledge Engineering. IEEE Computer 17(3): 76-83 (1984)

1981

■ [c1] Roger T. Hartley:
How Expert Should an Expert System Be? IJCAI 1981: 862-867

1978

■ [j2] Linda G. Shapiro:
**Inexact matching of line drawings in a syntactic pattern recognition system.** Pattern Recognition 10(5-6): 313-321 (1978)

■ [c3] M. Catherine Neal, Linda G. Shapiro:
A Portable Graphics system for minicomputers. ACM Annual Conference (2) 1978: 704-712

■ [c2] Linda G. Shapiro:
Data structures for picture processing. SIGGRAPH 1978: 140-146

1977

■ [j1] Linda G. Shapiro, Robert J. Baron:
ESP³: A Language for Pattern Description and a System for Pattern Recognition. IEEE Trans. Software Eng. 3(2): 169-183 (1977)

In 1977, the Department's students gained membership in the Upsilon Pi Espsilon honorary society.

Bill Hankley was the Departmental advisor.

The first KSU yearbook photo of the student ACM (Association for Computing Machinery) group (1977):

association of computer machinists

TOP ROW: Sue M. Hiltz, Tom Gallagher, Sue K. Kusyner. BOTTOM ROW: John H. Olsowski, John E. McCormick, Jim R. Ratliff.

John McCormick was ex-military, a nice guy; Jim Ratliff was a "wizard" before they were called that; Sue Kusnyer moved to California, became Sue Buchanan, started her own company, and sold it in 1997 for $275 million:
http://cjonline.com/stories/110397/bus_silicon.html#.V_K4P_krK9U

A "snapshot", 1983

Faculty:

Dr. Paul S. Fisher, Professor ....

Dr. William J. Hankley, Professor ....

Dr. Elizabeth A. Unger, Professor ....

Dr. Virgil E. Wallentine, professor and Head ....

Dr. Myron A. Calhoun, Assoc. Professor ....

Dr. Maarten van Swaay, Assoc. Professor ....

Dr. Rodney M. Bates, Assist. Professor ....

Dr. David A. Gustafson, Assist. Professor ....

Dr. Roger T. Hartley, Assist. Professor ....

Dr. Richard A. McBride, Assist. Professor ....

Dr. Roger V. Terry, Assist. Professor ....

Clifford G. Stark, Instructor ....

From Departmental Summary Report 1983
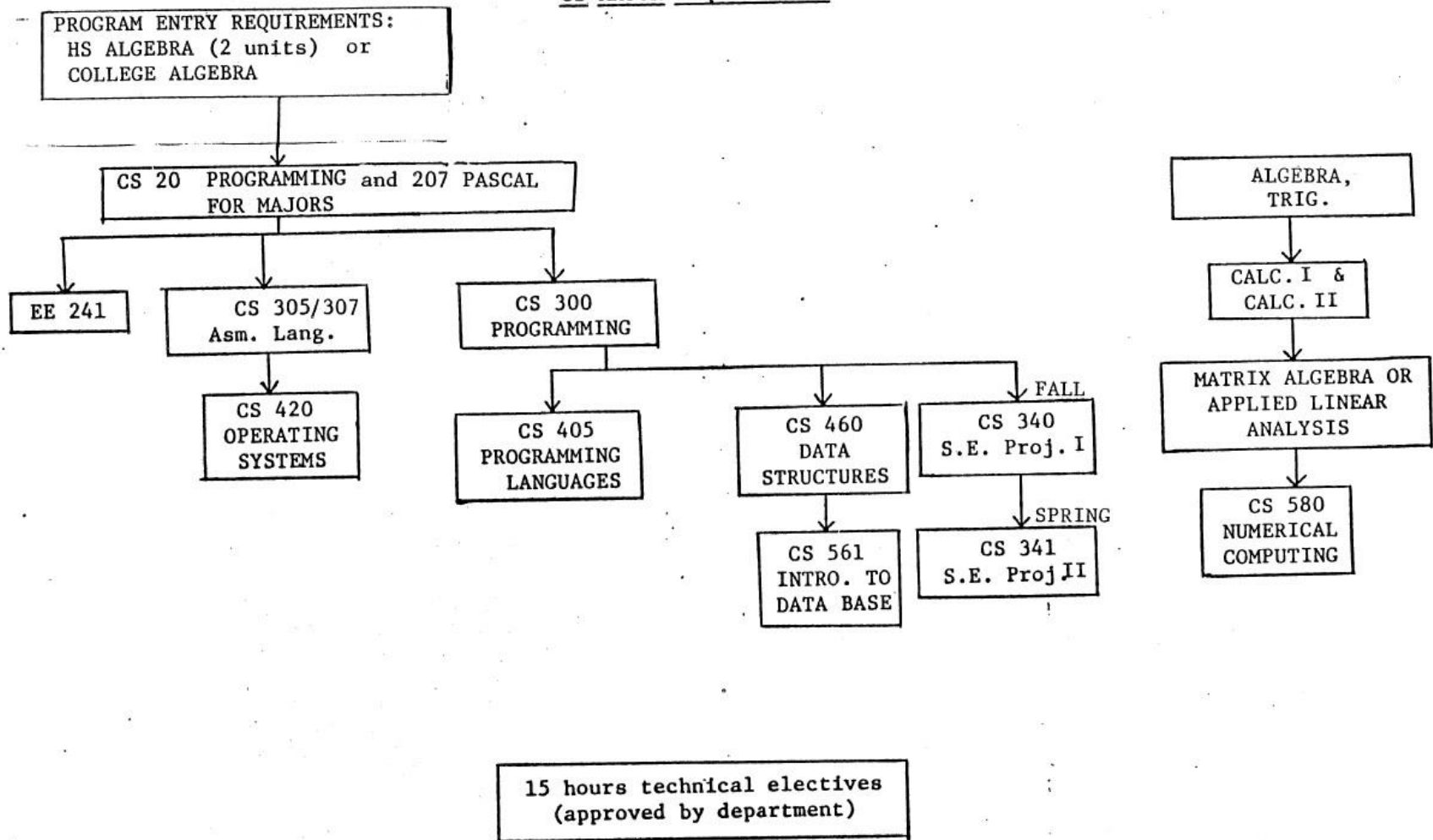
Equipment:

```
2 Motorola 68000 systems running UNIX           2    Meg bytes
3 Perkin-Elmer 32 bit systems running UNIX      2.5  Meg bytes
1 PDP 11/34 running UNIX                         256K bytes
3 IBM PCs running VISION operating system        1   Meg bytes
1 APPLE II                                       64K  bytes
1 ATARI 800                                      64K  bytes
1 Chromatics                                     64K  bytes
2 Western Digital Pascal Microengines           256K bytes
```

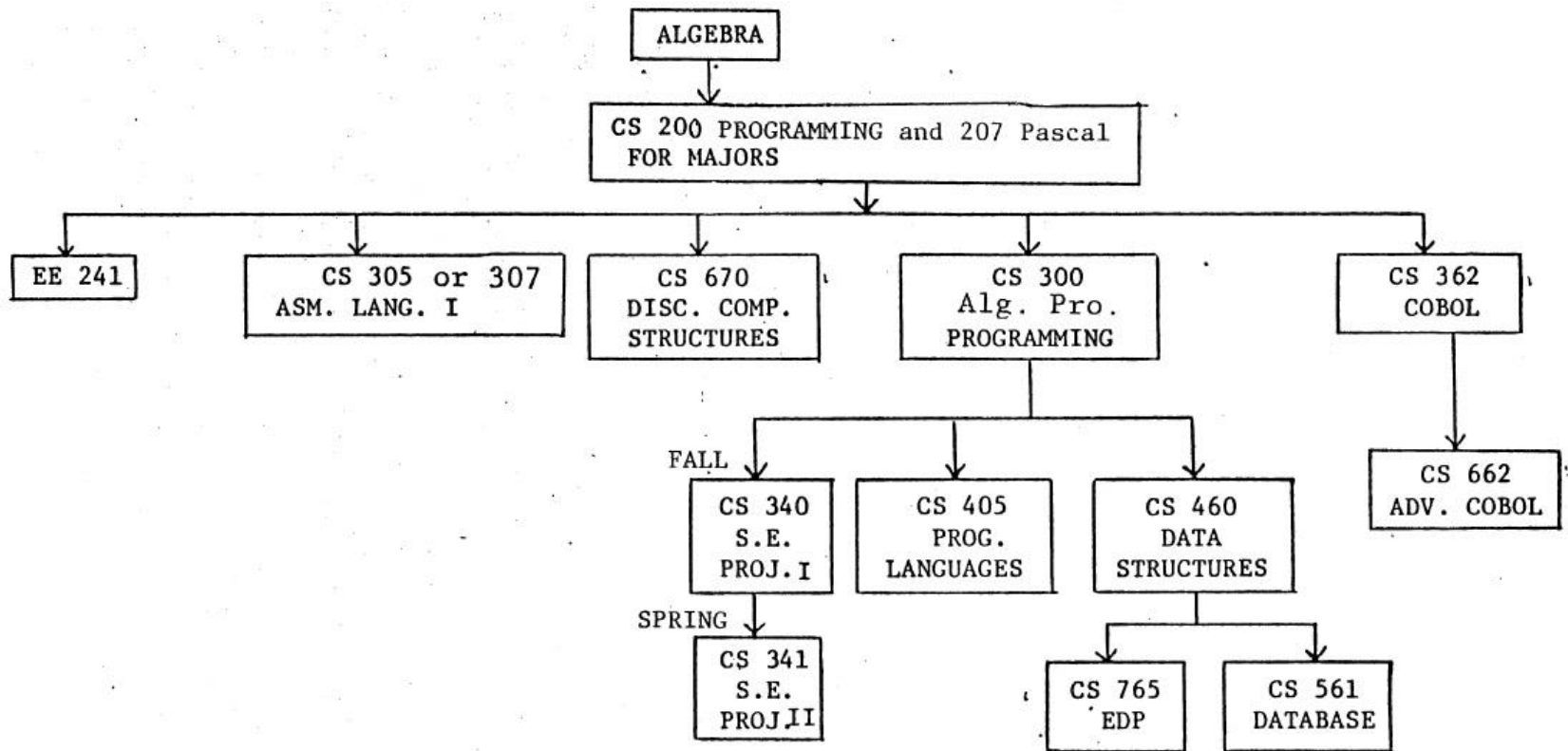1 Tandem Non-stop II   (4 Mbytes dual processor)

The peripheral equipment includes:

```
50 CRT terminals
 1 Stand alone graphics computer
 1 Portable printing terminal, T1700
 4 Magnetic tape units
 1 Color graphics printer
 3 Line printers
 3 Letter quality printers
 5 Graphics printers
Disk subsystems totaling 700 megabytes
```

Computer science Bachelor's degree:

PROGRAM ENTRY REQUIREMENTS:
HS ALGEBRA (2 units) or
COLLEGE ALGEBRA

CS 20 PROGRAMMING and 207 PASCAL FOR MAJORS

ALGEBRA, TRIG.

EE 241

CS 305/307 Asm. Lang.

CS 300 PROGRAMMING

CALC. I & CALC. II

CS 420 OPERATING SYSTEMS

CS 405 PROGRAMMING LANGUAGES

CS 460 DATA STRUCTURES

CS 340 S.E. Proj. I — FALL

MATRIX ALGEBRA OR APPLIED LINEAR ANALYSIS

CS 561 INTRO. TO DATA BASE

CS 341 S.E. Proj II — SPRING

CS 580 NUMERICAL COMPUTING

15 hours technical electives (approved by department)

The Department added a Bachelor's program in *Information Systems:*

ALGEBRA

CS 200 PROGRAMMING and 207 Pascal FOR MAJORS

EE 241

CS 305 or 307
ASM. LANG. I

CS 670
DISC. COMP.
STRUCTURES

CS 300
Alg. Pro.
PROGRAMMING

CS 362
COBOL

FALL

CS 340
S.E.
PROJ. I

CS 405
PROG.
LANGUAGES

CS 460
DATA
STRUCTURES

CS 662
ADV. COBOL

SPRING

CS 341
S.E.
PROJ. II

CS 765
EDP

CS 561
DATABASE

15 hours technical electives
(approved by department)

Sample elective courses:

1. Business Electives

    286 306 Operating Systems Laboratory

    286 662 Business Data Processing (COBOL II)

    286 765 EDP Systems Analysis

    305 260 Fundamentals of Accounting

    305 270 Managerial Cost Controls

    (or any course required for a BS in Business)

2. Computer Software Electives (also the core of the MS program)

    286 740 Introduction to Software Engineering

    286 700 Translator Design I

    286 720 Operating Systems II

    286 760 Information Organization and Retrieval

3. Scientific Computing Electives

    245 222 Analytic Geometry and Calculus III

    245 240 Series and Differential Equations

    286 780 Numerical Solution of Ordinary Differential Equations

    286 785 Numerical Solution of Partial Differential Equations

    550 571 Introduction to Operations Research II

    286 710 Computer Simulation Experiments

Transitions to the next era

- Virg Wallentine became Dept. Head in 1982

- Virg searched for a new home for the soon-to-be named *Computing and Information Sciences Department*

- Austin Melton was hired as faculty in 1984, ushering in programming-semantics research at KSU

  (more to come about this...)
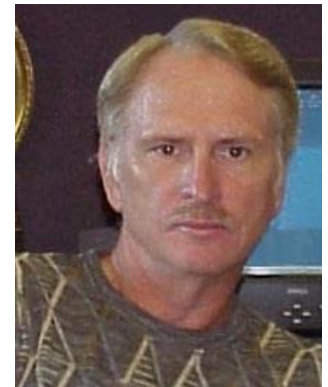
The ``Nichols Hall era'' comes next.

Postscript: I was able to assemble this history because I was there, from Jan. 1976 on, as a grad student:

David A. Schmidt was born in Colby, Kansas on May 10, 1953. He received the B.A. degree (Mathematics) from Fort Hays (Kansas) State University in 1975 and the M.S. degree (Computer Science) from Kansas State University in 1977, where he is currently working towards the Ph.D. degree. His research interests include denotational semantics and computational complexity. Mr. Schmidt is a member of the IEEE Computer

(I know a lot more stories than the ones recounted here; ask me sometime….)