University Computer Center Newsletter

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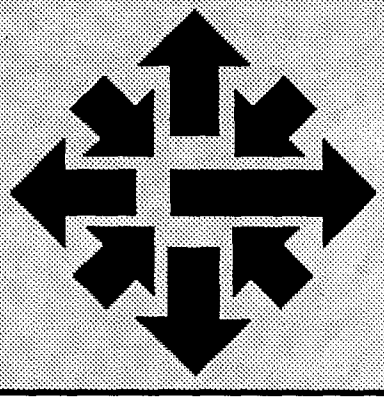

UCC Spins Off Supercomputing

On January 1, 1986, the University Computer Center will cease to exist under that name. It will be replaced by "Academic Computing Services and Systems" (ACSS).

The mission of this new department is to serve the computing needs of the University of Minnesota (Twin Cities) for instruction, research, and public service. ACSS will develop partnerships and liaisons with colleges, departments, and other agencies to provide the facilities needed by the faculty to deliver instruction to students effectively via computing technology and to excel in computer-based research programs and initiatives.

In pursuit of these goals ACSS will upgrade its VAX, CYBER, and UNIX services to better support University instruction and research. ACSS is now negotiating to acquire a VAX 8600 (running the VMS operating system), a dual-processor CYBER 830 (in addition to its 845, both running NOS 2), and a VAX-11/780 (in addition to its SUN, both running UNIX).

In the future we will develop new services in text production, graphics, artificial intelligence and expert systems, microcomputing, data base management, bibliographic searching, electronic mail, and other areas and provide new facilities, including advanced workstations.

ACSS will thus serve the computing requirements of the University at the microcomputer, the mainframe, and the supercomputing levels. In all these developments the Telecommunications Department will play a key role by providing students and faculty access to these machines.

Supercomputing, however, is not part of the mission of ACSS except insofar as it provides supercomputing services to the faculty and students of the University of Minnesota. Supercomputing services will be provided by Research Equipment, Incorporated, (REI) on the CRAY-2 and CYBER 205. The Supercomputer Institute will continue its present role in facilitating faculty research and graduate student training on supercomputing systems.

As UCC disappears in January, therefore, and as ACSS takes its place, the transformation involves much more than a mere change of names. It signals an intensive renewal of commitment to academic computing in research and instruction, bringing more services, software, and hardware to more members of the University community and making these computing facilities more accessible.

Barbara Wolfe
Assistant Vice President for
Information Services

VAX/VMS GRANTS AVAILABLE IN 1986

We are pleased to announce that faculty and graduate student grants will be extended to include our VAX/VMS service. This is the same program that is available on the CYBER. You pay $50 and receive $1000 worth of computing services. If you currently have a Computer Center grant, you can call UCC Accounting to have this grant applied to the VAX. Grants will be available beginning January 1, 1986, the start of our operation as the new Academic Computing Services and Systems.

Selecting a Microcomputer:

An 18-Month Adventure with the Apple Macintosh

by *L. A. Liddiard*

The Test Drive

In the spring of 1984 a microcomputer appeared in the UCC Micro Lab without any documentation. The salesperson who loaned the micro to the lab told us, "Try it—you'll like it." We found that the machine was easy to use without the existing documentation. As acting UCS Director, I had a Shepherd Lab office not too far from the Micro Lab, so I could easily slip in and try the loaner. The excellent resolution of its small screen and its ability to create images using a new graphics program called *MacPaint* made the hours slip away. I had discovered the Apple Macintosh.

Selection Criteria

Anyone shopping for a microcomputer should select a machine using the following criteria:

- Ability to do the required task. Find the software you need first and then purchase a machine that runs the software.
- Ease of use, including good software and hardware interfaces.
- Cost. Consider not only the price of the machine itself but also its reliability, charges for software updates, and maintenance.
- Long-term potential.

Judging the Macintosh by these criteria, let's see how it measures up.

Software: The principle software packages for microcomputers include a word processor, a spreadsheet, a data base program, programming languages, a graphics package, and communications software. MacWrite, Multiplan, MacPaint, and MacTerminal were the software packages available in June 1984 to partially satisfy the first criteria, with Macintosh Pascal (among other languages) and many data base programs now available.

Ease of Use: The Mac's mouse combined with pull-down menus and scrollable "windows" integrated with the software provide a superb user interface to meet the second criteria.

Cost: Peter Roll, Shih-Pau Yen, and others at the University worked with manufacturers and central administration officers to set up a deep-discount microcomputer purchase program for IBM PCs, Apple Macintoshes, and Zenith PCs. Thus the third criteria of low cost was met.

Long Term Potential: Apple Computer, Inc., seemed to be a good bet for long-term potential with its intensive involvement with the education community and use of the advanced Motorola 68000 processor in the Macintosh, thus meeting the fourth point.

I made a down payment in June 1984, and a 128K Macintosh with an Imagewriter dot-matrix printer arrived in July. Thus the adventure began.

The Mac at Work

I've used the Macintosh and its software in many ways in the past year:

Microsoft *Multiplan* : This spreadsheet was used in all phases of the UCC budget process. We made projections and trends on CRAY-1 income and UCC supply incomes and produced several quick and informative pages illustrating particular facets of UCC incomes or expenditures. I used *Multiplan* at home to demonstrate for the finance committee of my church that the total income from 1979 through 1985 was level when adjusted for the Urban Consumer Price Index (CPI), besides doing the fiscal 1986 budget with delta increment and percentage columns to show trends and absolute dollar amounts.

Microsoft *Chart* : This business graph package produced charts for central administration officers showing that new research and graduate grants caused corresponding reductions in user funding compared with previous years. At home my daughter used *Chart* to produce graphs for her University microbiology lab course. I made graphs for my church finance committee, showing trend lines for expense categories and the deep reduction in operating reserve percentage between 1979 and 1986. One graph is worth 500 words (about one-half a picture).

MacPascal : In order to become familiar with the Macintosh mouse and spatial ability of the windows, I programmed *Life* and *Mastermind* games with *MacPascal*. When investigating the Cray-2, I used *MacPascal* to program an instruction timer to determine loop times for matrix and other code kernals. When I tried to simulate the interesting memory access on the CRAY-2 with its Quad Port structure on my

128K Mac, I stretched the interpretive *MacPascal* to its limit. Only by eliminating comments was I able to run the program, and the 200 interpreted execution statements per second made for long simulation runs.

***MacWrite* and *MacPaint*:** I write all of my *Newsletter* articles (including this one) and University correspondence with *MacWrite*. I also used the package to reduce the original five-page set of CRAY-2 foreground processor instructions to a single, more understandable page. At home I reported the complete soccer season for my other daughter and wrote our Christmas letter in the Venice font (with a *MacPaint* illustration of our house). My youngest son uses the package to keep track of his 108 *Dr. Who* novels, categorized by the first through sixth doctor. Unfortunately even *MacWrite* cannot motivate a procrastinating letter writer; I still owe year-old replies to associates in Indiana, England, and Australia.

***MacDraw*:** Before the Computer Center moved from Experimental Engineering to Wulling Hall, UCC's Karen Prince mapped the location of each bookcase, desk, chair, and piece of office furniture in the Wulling administrative offices with a *MacDraw* floor plan. We taped these plans on the doors at Wulling so that the movers could move the items into the proper place. (This is in addition to those nice organization charts that *MacDraw* can produce.)

Others: The *ThunderScan* device for the Imagewriter is a best buy; it provides digitized graphical input for a couple of hundred dollars. The free *MacForth* disk (version 0.9) has several deepend problems, but it is an excellent sample of games, graphics, and demos. The *Music-Works* Christmas and Hanukkah demo disk makes the Macintosh a pleasant four-voice music player. The *Bloom County* system on public software is good for several chuckles; its *Megaroids* game is a favorite with my preteen son.

Other Advantages

Documentation: The PCs in neighboring offices usually have a two- to three-foot shelf of boxed manuals for their software. Macintosh advertisements used to show a tall stack of manuals replaced by a few slim volumes. (Of course, the competition retorted that the lack of software was the reason for Apple's slim stack, and for a time that was true.)

Environment: From working in a mainframe environment of CYBER and VAX systems I knew that complete documentation of those systems' software required several shelves full of manuals costing hundreds of dollars. The UNIX set was only two feet long, but those manuals were cryptic and not at all user-friendly. The Macintosh has saved trees by making a slimmer stack of reference manuals possible.

Minnesota Proven: The Minnesota chill is a condition that floppy disks and other storage media acquire when carried around in mid-January in our climate. When brought in out of the cold, moisture in the air collects on the media. Thus punched cards thicken, paper tape acquires electrostatic charges, floppy disks acquire a watery surface, and magnetic tapes will not rewind properly unless they are permitted to acclimate. Two or three 3.5-inch Macintosh disks carried in your shirt pocket (next to your heart) avoids all these problems.

Footprint: As Apple has pointed out, the Macintosh's 60-watt power consumption is less than one-third of the power required for other systems. Instead of saying "compact," we computerize another word and talk about the *footprint* of a computer system. Thus a CRAY-1 or CRAY-2 has a smaller footprint compared to comparable supercomputers and the Macintosh's footprint is smaller than other PCs. With its small size come correspondingly reduced annual hardware maintenance fees.

Compact Size: The 20-pound weight of the Macintosh in its carrying case made it more portable than several of the 30-pound "portable" microcomputers available in early 1984. But I don't recommend that you take your personal Macintosh to work unless your household insurance covers it there. If your personal microcomputer is damaged or stolen, the University will not replace it unless your department has required you in writing to have it at work.

The Future: Interconnection is a requirement for human progress and communication. The AppleTalk Local Area Network provides a reliable and inexpensive (by an order of magnitude) microcomputer network. The first device for this network was the LaserWriter printer, which has become the standard for our micro and general newsletters and for business correspondence at UCC. Within UCC, AppleTalk Macintosh networks are used in our administration, documentation, microcomputer, and system groups. The new InteCom telecommunications switch scheduled for next spring will allow an order of growth in interconnected desktop workstations for the University community. UCC plans to have central systems that will work with both Macintoshes and other PCs.

If we are to learn from the past, then the lack of address space affected the longevity and expansion of both mainframes and minicomputers series. The word address was limited to 15 bits on the CDC 1604, 17 bits on the CDC

6600, and 23 bits on the CRAY-1 mainframes. The byte address was limited to 12 bits on the PDP-8 and 16 bits on the PDP-11 and early microprocessors.

The Macintosh, however, has an advantage in that it uses an 8-megahertz Motorola 68000 processor with 32-bit addressing. (The paths in this 68000 chip are 16-bit, which means that an instruction acting on a 32-bit data item may require 5 memory loads for both items.) An upward-compatible 68020 chip that is three times faster, with 32-bit paths and an instruction cache to reduce those 5 memory references to 2+, is now being introduced in other workstations.

The Constant Critic

Even though the Macintosh has been out for less than two years, there are many changes and products we users would like to have. Foremost is a network file server, followed by internal and external disk drives with at least twice the current 400K-byte capacity. Then hard disk drives (the Hyperdrive, for example) and, always, more memory. And when will the color screen arrive and a laser storage device be available for the network? Is Switcher the only way to get better response time when moving from one application to another?

Zealot

You can probably tell that this article is not an impartial evaluation of the Mac but rather an enthusiastic account of my experiences with it.

I continue to demonstrate my Macintosh to neighbors, friends, and relatives as an example of good computing with user-friendly interfaces. Most new users I have introduced to the Mac have been able to learn it quickly and use it in a productive way in a short time. My co-workers seem to have caught my enthusiasm for I notice that most of them have a Mac. In the non-computer world where "structured, top-down, stepwise refinement" might mean a "well-built convertible that prances down the road exquisitely," the Macintosh-like user interfaces will make computing accessible to all. I have heard someone say that "the highly integrated quality of the Macintosh is a sweetness to be tasted."

Recommended Reading: For any aspiring MacZealot, I would recommend, besides the slim, excellent reference manuals delivered with the software, a number of Hayden Books, including the two-volume *Macintosh Revealed* by Stephen Chernicoff and McGraw-Hill's *Multiplan Made Easy (Macintosh Edition)* by Walter A. Ettlin. I would also urge new Mac owners to subscribe to *MacWorld* with the caveat that many reviews in the magazine seem to be on "futureware"; read the old issues for hints, advice and "actualware." Finally read the UCC Microcomputer *Newsletter,* which is chock-full of useful information. You can get a subscription by writing to the Microcomputer *Newsletter*, 125 Shepherd Labs, 100 Union Street SE, University of Minnesota, Minneapolis, MN 55455.

Hats Off and a Joyful Hurrah

Remembering those Latin phrases of yesteryear, we can state that the Macintosh is *auspicium melioris aevi* (an omen of a better age). My thanks to Stephen Jobs and his Macintosh group, wherever they are, and to the unsung individuals in our UCC Micro Group who have helped all at the University to a better understanding of Schumacher's phrase "Small is beautiful."

Reminders

NOS 2 on the CA: The CYBER CA system will be upgraded to NOS 2 on December 15. For information on the changes see the NOS2 and NOS2DOC WRITEUPs.

Archived Files: CYBER CA files that have not been accessed for 30 days are removed from disk storage and archived. VAX files that have not been accessed for six months are also archived (unless the amount of available disk space permits us to leave them).

You can reload CYBER files from our archives with the RELOAD command. You can reload archived VAX files by calling the HELP-Line (376-5592). There is a charge for reloading tapes on the CYBER and the VAX. Please note that UCC does not keep archived files indefinitely but purges them after one year. At that point the files cannot be retrieved.

You are responsible for preserving your files. UCC recommends that all users make back-up files on magnetic tapes.

UCC Shuttle Route: UCC shuttle vehicles are now parked overnight in spaces at the west entrance to Ramp A (at Washington Avenue and Union Street). The first shuttle run of the day (at 7:15 for the van and 7:40 for the station wagon) begins from this location.

For Lind Hall stops, the shuttles park at the Amundson Hall loading dock for most stops. But for extended stops (more than 30 minutes) or if the loading dock area is full, the shuttles will park in the

Official University Vehicle spaces on the north side of Amundson.

For Wulling Hall stops (which are very brief), the shuttles park at the Scott Hall dock opposite the Wulling north entrance.

Shuttles leave from Lind Hall at the same times they previously left Experimental Engineering: a quarter after the hour on weekdays. They depart from Wulling about five minutes later, proceed to our Lauderdale central site, and then return to Lind, with periodic trips to West Bank and St. Paul sites throughout the day.

UCC has published a **new shuttle schedule** (available at our Lind, Lauderdale, St. Paul, and West Bank sites) that gives departure times for all locations.

Punched Card Output Ends December 1985

The peak year for punched cards at UCC was in fiscal year 1979 when more than 5 million cards were perforated. In March 1985 only 16,155 cards, an annual rate of 194,000, were punched. CDC made their last card punch in May of 1977 and told us this year that they would no longer maintain our CDC 3446/415 card punch after the next fiscal year. The combination of low usage and continuing fixed cost for card punch maintenance and supplies forced us to raise the rate from 1.1 cents per card to the current 2.5 cents per card. In addition, with the conversion to NOS 2 on the CYBER CA in December, UCC plans to eliminate the punching of cards as a service.

Math and Statistics Packages

CYBER MINNLIB CHANGES

We will make the following changes to CYBER MINNLIB on December 15, 1985: We will correct SETRAN and RANDOM to generate the same random number sequence whether or not the restart capabilities are used. Thus, if the sequence is saved and restarted later, it will be the same as if there had been no interruption.

In addition, an error in the code has been corrected so that the random number sequence will now match that of the CRAY-1. **Warning: This changes the random number sequence from the previous versions of SETRAN and RANDOM.**

HELP-Line Changes

Starting Monday, October 28, there will be new hours for the general HELP-Line. The phone line (**376-5592**) will be answered from **8:00 a.m. to 5:00 p.m.**, Monday through Friday for questions regarding the CA, ME, MD, and VA machines.

There will be a new HELP-Line phone number for supercomputer users of the CRAY and CYBER 205 machines. The phone line (**376-9628**) will be answered from **7:00 a.m. to 7:00 p.m.**, Monday through Friday.

Fall Quarter Short Courses

DI3000 Graphics Routines	Nov 4-15	(MWF)	2:15-4 pm	$35,$45,$80
Magnetic Tapes in NOS 2	Nov 12-21	(TTh)	2:15-4 pm	$25,$35,$60
SPSS (Statistics Package)	Nov 11-15	(MWThF)	2:15-4 pm	$25,$35,$60
Introduction to Lotus 1-2-3, section 2	Nov 26	(Tu)	1:30-4 pm	$25,$35,$60
Advanced Lotus 1-2-3	Nov 19	(Tu)	9:30-Noon	$25,$35,$60
Introduction to dBase II & III, section 2	Dec 3-5	(TTh)	9:30-Noon	$40,$50,$80

REGISTRATION: Registration is located at the UCC Reference Room, 128A Lind Hall (Hours: 8:00 am to 4:30 pm, Monday through Friday). Mail registrations will be accepted. Deadline for registering is Reference Room closing time on the last working day BEFORE class begins. Course fees may be paid by cash, check, or a signed University journal voucher. We can no longer charge short courses to UCC user accounts. NO refunds will be made after the class has begun. Refunds will be made in the same form as the fee was paid, i.e., check, journal voucher. If you have questions on short courses or registration, call Jerry Stearns at 376-8806.

Data Base Product Update

NOS 2 CONVERSION

On December 15, the following packages will become unsupported and we will remove them from the CYBER 845 (CA) computer:

FMS, KWIC, TRIAL, S2KAIDS(BUILDLS, CLEAN, S2KCRUN, S2KEST, S2KSINP), the past version of S2000(2.60), PLICOB, PLIFOR.

We encourage all those users using S2000 version 2.60 to convert to version 2.80, which is the current version. Data bases that have been created under version 2.60 are upward compatible with version 2.80. You need not make any changes to your data bases to access them with the interactive language. You must, however, change the terminator used to end commands from a colon (:) to a semicolon (;). This change in the command terminator will also affect strings of multiple commands separated by colons.

PLI programs must be recompiled with the PLEX precompiler. To recompile, use the following directives:

FORTRAN example:

```
ACQUIRE,FILE1. {FORTRAN program with plex
PLXFOR,I=FILE1.                commands}
COPYBR,PLXLGO,LGO,Z.
FTN5,I=TAPE3.
COPYBF,PLXLGO,LGO.
LOAD,LGO.
NOGO,ABSOLUT.
ABSOLUT.
```

COBOL example:

```
ACQUIRE,FILE1. {COBOL program with plex
PLXCOB,I=FILE1.                commands}
COPYBR,PLXLGO,LGO,2.
COBOL5,I=TAPE3.
COPYBF,PLXLGO,LGO.
LOAD,LGO.
NOGO,ABSOLUT.
ABSOLUT.
```

S2000 products on the CYBER 845 (CA) after December 15 are:

Version	Immediate Access	COBOL/FORTRAN Interface
2.80	S2000	PLXFOR PLXCOB

On Sundays leading up to the conversion to NOS 2 on the CA computer, we encourage you to test your data bases under NOS 2. To test your data bases under version 2.80, access the file KOS280 with the following commands:

```
ACQUIRE,KOS280/UN=YZE6088.
KOS280{optional parameters}
```

If you have any questions regarding the changes taking place on December 15, please feel free to call the Data Base HELP-Line Monday through Friday from 10:00 to 11:00 a.m. at 376-1761.

P. Oberg

THANKSGIVING HOLIDAY HOURS

	DOWN	UP
CRAY-1	Midnight Wed 11/27	7:00 am Fri 11/29
CYBER CA	4:00 am Thu 11/28	7:00 am Fri 11/29
CYBER ME	3:30 am Thu 11/28	7:45 am Fri 11/29
CYBER MD	1:30 am Thu 11/28	8:00 am Fri 11/29
CYBER 205	4:00 am Thu 11/28	8:00 am Fri 11/29
VAX 11/780	4:00 am Thu 11/28	7:00 am Fri 11/29
Lind I/O Station	10:00 pm Wed 11/27	6:00 pm Sun 12/1

PHONE NUMBERS

Access:
- CYBER(CA)—10, 30 cps 376-5730
- —120 cps 376-5706
- MERITSS(ME)—10, 30 cps 376-7730
- —120 cps..... 376-7120
- VAX/VMS(VA)—(autobaud) 376-8070

Accounts:
- MERITSS 373-7745
- User Numbers 373-4548

Computer-Aided Instruction 376-2975
Computer Hours (recorded message) 373-4927
Consulting:
- HELP-line 376-5592
  8 a.m.–5 p.m., Monday-Friday
- Statistics Packages 376-1761
  1–2 p.m., Monday-Friday
- Data Bases 376-1761
  10–11 a.m., Monday-Friday
- Microcomputers 376-4276
  9:30 a.m.–noon and 1:30–4 p.m., Monday-Friday
- Scribe, Text Analysis & Humanities Computing 376-2944
  1–3 p.m., Monday, Thursday, Friday

Contract Programming 376-1764
Data Base Applications 376-1764
Engineering Services 376-1023, 376-8153
Equipment Purchase/Information 376-8153
Lind Hall I/O 373-4596
Graphics Software 638-0541
HELP-line 376-5592
8 a.m.–5 p.m., Monday-Friday
HOURS-line (recorded message) 373-4927
Information, Wulling Hall 373-4360
Information, Lauderdale 373-4912
Instructional Labs 376-2703
Instructional Services 373-7745
Lauderdale Computer Room 373-4940
Lauderdale Services 638-0523
Newsletter Subscription 376-1491
Permanent File Restoration 376-5605
Professional Services Division 376-1764
Project Assistance 376-1764
Reference Room 373-7744
Remote Batch (RJE) Services 376-2703
Short Courses 376-8806
Shuttle Bus Service 376-3068
System Status (recorded message) 373-4927
Tape Librarian: see Lauderdale Services

OPERATING HOURS

	CYBER(CA)	Low rate	CRAY(CR)	MERITSS(ME)	VAX(VA)
M-F	7 a.m.- 4 a.m.	8 p.m.- 4 a.m.	7 a.m. - midnight	7:45 a.m. - 3:30 a.m.	8 a.m. - 6 a.m.
Sat	4 a.m.- 5:15 p.m.	4 a.m.- 5:15 p.m.	7 a.m. - 5 p.m.	7:45 a.m. - 3:30 a.m.	24 hours
Sun	4 p.m.- 1 a.m.	4 p.m. - 1 a.m.	4 p.m. - midnight	4 p.m. - 3:30 a.m.	24 hours

PUBLIC LABS-TWIN CITIES CAMPUS

Location	Batch	Interactive	Micro
East Bank			
Arch 160			X
CentH		X	
ComH		X	
DiehlH 207		X	
EltH 121, 125		X	
EltH N640	X		
FolH 14, 14a	X	X*	X
FronH		X	
LindH 26		X	
LindH 128B		*	
LindH 306B			X
MechE 308		X	
Physics 69		*	
PlH		X	
SafH		X	
TerrH		X	
VincH 4		X	
Walib 9		X	
West Bank			
BlegH 25		*	
BlegH 90		X	
BlegH 140		X	
MdbH		X	
OMWL 2		X	
SocSci 167			X
St. Paul			
BaH		X	
ClaOff 125	X		

* Research cluster; access to CYBER CA and VAX/VMS
X in interactive column indicates access to MERITSS

For more information see WRITEUP(LABS)

Contents

Michael M. Skow, Acting Director

The *UCC Newsletter* is published monthly by the University Computer Center. Deadline for articles is the 10th of the month preceding publication; deadline for short announcements is the 15th. The *Newsletter* is produced with an Apple Macintosh running Microsoft Word, MacPaint, MacDraw, and Aldus Pagemaker software, with camera-ready copy produced on the Apple LaserWriter. The *Newsletter* is printed at the University Printing Department.

Comments, suggestions, articles, and announcements should be directed to the editor, 121 Lauderdale Computing Facility, (612) 376-1491.

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