A dancer is about to materialize from the steam rising out of a coffee cup. *Over Coffee*, a completely computer-generated animated film by Professor Ken Perlin and a team of graduate students in the Computer Science Department, was recorded using ACF graphics facilities. Details on inside back cover. Related stories on pages 1 and 3.
Locations of ACF User Work Areas

Education Building,
35 West Fourth St., 2nd floor
Elmer Holmes Bobst Library,
70 Wash. Square South, B-Level
14 Washington Place,
one flight below street level
Third Avenue North Residence Hall,
75 Third Avenue at 11th St.
(Currently available only to those with special "Microcomputer Access Cards". See pages 9 and 11.)
Tisch Hall,
40 West Fourth St., lower concourse
Warren Weaver Hall,
251 Mercer St., 3rd floor
(The ACF's Warren Weaver Hall computing facilities are for faculty and research personnel only. ACF administrative and accounts offices are in Warren Weaver Hall.)

Key ACF Telephone Numbers

<table>
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<tr>
<th>Category</th>
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<tr>
<td>General Information (ACF)</td>
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<tr>
<td>Account Information</td>
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<td>Computer Status (recording)</td>
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<td>Tape Librarian</td>
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Applications Consultants:
- 14 Washington Place: 998-3399
- Tisch Hall: 998-3434
- Education Building: 998-3435
- Warren Weaver Hall: 998-3037

Computer Operators:
- 14 Washington Place: 998-3457
- Tisch Hall: 998-3409
- Education Building: 998-3421
- Warren Weaver Hall: 998-3456

Dial-in Access to ACF Computers

If calling from
- NYU: 53626* 110 - 1200
- Off Campus: 777-7600* 110 - 2400
- 995-3600* 110 - 2400
* Via the NYU Computer System Selector (the MICOM Port Selector, or "switch"). If you dial 777-7600 and get no answer, please try 777-6030 or 777-8730, instead.

Hours at ACF Sites

### Regular Hours

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<tr>
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<tr>
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Consultants:

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<tr>
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### Holiday Hours

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<tr>
<td>Third Ave. North</td>
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</tr>
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* Hours at the Third Ave. North Residence Hall are still tentative. A final schedule will be posted via our online news and bulletin board facilities.

Notes:
1. The ACF's public terminals on the B-level of Bobst Library are available during library and study hall hours.
2. The ACF offices in Warren Weaver Hall are closed on University holidays.
3. Currently, the Third Avenue North Residence Hall site is available only to students with "Microcomputer Access Cards". Please see the article on page 9.
Researchers in the physical and social sciences use computer-generated graphics and animations to help them examine their research problems and findings. Over the past several years, the Academic Computing Facility has worked to acquire a range of software and hardware that can be used in the production of computer-generated animations, and to make them available to NYU faculty and graduate students doing research in a variety of academic disciplines.

This article offers a few introductory notes on computer-generated animation. Subsequent articles will focus on new developments in the ACF's animation facilities. Individuals who are interested in beginning an animation project should see the box below.

**What is an animation?**

Animations are a way of looking at time-dependent phenomena, or at static objects from different perspectives. Producing an animation involves taking a series of pictures that differ by a little in shape and/or orientation, and displaying them in rapid succession, so as to produce the appearance of motion to the viewer.

"Flipbooks", an early form of animation, are sometimes used today as an inexpensive "preview" of a proposed film or videotape project. In flipbooks, the sequentially changing pictures are bound at one edge into a book; when the pages are flipped, the objects in the pictures appear to be moving.

**How do computers assist?**

Today, animations are produced using film and video technologies. A single image is recorded, the film or video medium (tape or optical disk) is advanced, and another frame is taken. At the ACF, we have helped NYU researchers use computers to produce animations on both film and videotape, and have even provided computer support in the production of a "flip-book".

Computers can be used to accomplish a variety of tasks in animation projects. For example, in a comparatively simple application, one has a group of hand-rendered images that have been stored in the computer, and one uses animation software to control the recording of these images in the proper sequence. By comparison, a quite complex animation project might involve doing billions of computations on a supercomputer to generate the input needed for the images, and then transferring the results via a high-speed computer network to a graphics workstation or recording device. In most cases, a computer will be controlling the recording device — a film or videotape recorder, for example.

**Animations take planning and time**

Animation projects can take time. First, it is important to plan and organize your animation in advance so that the result will be understandable to your colleagues. There are various techniques to help you with this planning stage, including the use of a "story board", on which you would plot the key frames of your animation.

You will also need time to learn the software that you decide to use; to create the images comprising your animation; to obtain supplies like film or videotape; to deliver film to be developed, and pick it up; to wait while the computer runs your program; to produce the actual animation and possibly to do additional, post-production, processing. (Videotaped animations will generally require less time than film, since usually you can record the image faster, and you do not need to get the videotape developed.) If you also choose to do some programming yourself (rather than use a graphics software package), you will need even more time. As a result, some animations may take several days to complete.

Animations also require computer time. The computation to produce an animation can take much

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**Thinking about getting started?**

There is a wide range of choices here at NYU for researchers interested in computer-generated graphics and animations. Examples of a variety of animation approaches are available for viewing at the ACF's Visualization Center. To see them, please contact Jeffrey Bary (998-3049) for an appointment. He and Ed Friedman will also be happy to meet with you to help you decide on the best approach to your graphics needs.
longer than that required for just a single picture. Since you may be producing anywhere from one to 30 frames for each second of finished product, you could increase your consumption of computing resources — CPU time, disk space, and so on — by an order or two of magnitude. Such factors have to be considered before you start a project.

Types of images

In general, there are three types of images that can be produced: two-dimensional, wire-frame and solid. (See the illustrations on this page.) Two-dimensional images are what many people think of as “computer graphics”. They are usually some sort of plot with $x$ and $y$ axes and lines drawn in to indicate something about the data. A wire-frame is a picture of a three-dimensional object in which just the edges are drawn. The edges are depicted as lines, making the figure look like a model made out of wire. Finally, a solid model is a fully-shaded rendering of a three-dimensional object. It uses different colors or shades to give the impression of depth and solidity, much as a representational graphics artist would.

Animation at the ACF

Here at the ACF, we can help researchers make animations using a variety of media—including flipbooks, film, videotape and videodisk. Individual frames and sequences of frames can be previewed on monochrome or color displays available at the various ACF sites. State-of-the-art workstations are also available for use in the development, display and recording of the images as animations. The newest and most advanced is the IRIS 4D/80GT graphics workstation (see the related article in this section for details).

Images can be generated using existing high-level software systems such as MOVIE.BYU, NCAR-GKS, CHEM-X and so on. Users can also develop and tailor their own software to generate images using software libraries such as GKS or the IRIS Graphics Library, or even develop their own applications, using a programming language and supplying their own device drivers.

The ACF is also affiliated with a number of national supercomputer centers. If the computer graphics facilities available here at NYU do not suit your needs, then perhaps we can guide you to a visualization program at one of these centers that will. The National Center for Supercomputer Activities in Champagne-Urbana, Illinois has one of the best graphics facilities. We have a videotape of much of the recent work done there.

If you are interested in finding out more about any of these facilities, please see Thinking about getting started? on the preceding page.

— Jeffrey Bary, with Estelle Hochberg

(Extracted from a document currently under preparation, with technical review by Ed Friedman. Copies of a draft edition will be available shortly from the ACF’s Documentation Office, Room 306 Warren Weaver Hall.)
IRIS is Available for Scientific Graphics

Advanced Graphics Workstation Comes to the ACF

The Academic Computing Facility has just acquired a state-of-the-art, high-performance, Silicon Graphics IRIS workstation which will enhance its graphics resources. The new machine is particularly well suited for applications requiring high-speed computations coupled with real-time, animated, three-dimensional color graphics.

In addition to high speed, the IRIS provides extremely high-quality graphics. Smoothly shaded three-dimensional objects with hidden surface removal, transparency, coloring and lighting are rendered with the high-speed graphics processors under software control. (See the accompanying box for the IRIS’ “specs”.)

In addition to being a stand-alone computing system, the IRIS will become a node of NYU-NET, the NYU network. This will allow users to work on the IRIS remotely as well as at the IRIS graphics console, where images can be displayed and manipulated in real time. The network connection will also allow users to fetch and display data from remote sites, like the National Science Foundation supercomputing centers.

It is expected that the IRIS will be used for a broad range of instructional and research purposes. Currently, the Evans & Sutherland PS 340 three-dimensional color graphics system is being used by researchers and students in the areas of mathematical modelling of biological systems, robotics, molecular modelling, economic analysis and forecasting, and for the teaching of three-dimensional computer graphics. Students, faculty and researchers from Mathematics, Computer Science, Economics, Biology, Chemistry, and the School of Continuing Education are actively using this important research tool. It is likely that the IRIS will be able to further their research, by allowing them to more speedily produce higher quality graphic images. The IRIS-4D/80GT will make it easier to generate, display, animate, and record scientific visualizations.

—Ed Friedman

The IRIS, in detail:

IRIS workstations have RISC-based processing (RISC stands for “reduced instruction set chips”).

The ACF’s new IRIS-4D/80GT is rated at 13 MIPS (millions of instructions per second), and has a floating point coprocessor rated at 1.5 MFLOPS (millions of floating point operations per second). Other characteristics include:

- 16 Megabytes of physical memory
- 380 Megabyte hard-disk
- Genlock board (Standard Video Output)
- UNIX Operating System
- NFS Software
- FORTRAN 77.

An Amiga is Here

User-Friendly Amiga Has 3D Color Graphics

The ACF’s Visualization Center has acquired a Commodore Amiga 2000 personal computer for examination by NYU faculty, research personnel and graduate students, and for use as a graphics workstation by scientific researchers. The ACF’s Amiga has software for three-dimensional rendering of animations, and the ability to make real-time animations and record them on video. The software has a very user-friendly interface for interactive programming and manipulation of graphic displays. It is also possible to generate files on another computer which can then serve as input to the graphics software on the Amiga.

There are many possible scenarios for use of the Amiga in scientific graphics. One would be to perform complex computations on a mainframe, and then use the Amiga as a three-dimensional rendering device and animation tool. Another would be to produce titles for a video production. As a third, one could design a model, compute the image, and store the image.

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(Amiga continues from previous page)
on disk, for subsequent transfer and
display on some other workstation.

**Graphics Software**

*Sculpt* and *Animate* are the principle software for graphics and animation on the Amiga. *Sculpt* allows you to interactively design and render three-dimensional color figures, using powerful menu and mouse commands. The user-friendly interface is much like that of the Apple Macintosh.

*Sculpt* also has a command-line interface, enabling the creation and use of input files. One could compute figures on another machine (a mainframe or a supercomputer, for example), and output a file which could then be downloaded to the Amiga and input to *Sculpt*. This is especially convenient for figures that are too complex to design interactively.

*Animate* takes a series of *Sculpt*-format master frames and performs the inbetweening necessary to create an animation. (Inbetweening refers to an extrapolation between master frames so as to create transitional frames that make the movement from master frame to master frame appear smooth.)

**Programming Your Own System**

Commercial software packages can sometimes be too general in purpose to fill the requirements of a particular project, or may simply not have some needed capability. Because of its custom graphics chip set, the Amiga is an ideal platform for the development of graphics applications, so long as they are not CPU-intensive. (Keep in mind that the Amiga is a personal computer, rather than a mainframe, and therefore is not an appropriate machine for CPU-consuming applications, like large simulations.) The Amiga comes with a version of BASIC that has the ability to access all the Amiga’s graphics capabilities. Software to support programming in FORTRAN, C, Pascal, or perhaps some other language might also be acquired, if your application needed it.

**Why the Amiga?**

The Amiga was obtained so that a “low-end” graphics workstation could be tried out for scientific applications. Its cost is reasonable, and it is known for its graphics capabilities, particularly for its screen management, which is much faster than that of many other machines. This is because, in the Amiga, screen management is performed by a separate set of chips (see box), and therefore does not have to compete with other computations for central processing resources. What this means for the user is that smoother animated displays are possible.

---Jeffrey Bary with Estelle Hochberg

**The Amiga, in detail:**

The Commodore Amiga 2000 in the ACF’s Visualization Center has a two-megabyte memory card from Micron Inc., a 30 megabyte hard disk drive from Supra Inc., a flickerFixer from MicroWay Inc., and a Zenith Flat Screen Monitor.

Both the Amiga 2000 and its popular smaller brother, the Amiga 500, are based on the 16/32 Bit 7.14 MHz Motorola 68000 CPU— the same one that’s used in the Mac SE and the Atari ST.

A notable feature of the Amiga is the 3-chip coprocessor system known as Denise, Agnus, and Paula. Denise is the display chip to control the way images are created on the monitor screen. Agnus is the animation chip to draw and move figures on the screen. Paula is the peripherals/sound chip to create sounds and to send data back and forth between the motherboard and the peripherals, such as the disk drive, mouse, and keyboard. The 68000 micro-processor does not need to poll these three chips; instead it is interrupt-driven by them, a feature which contributes significantly to the overall speed of the Amiga system.

The Amiga 2000 uses its 2.56 Kbytes of ROM (Read Only Memory) to keep a large part of its operating system constantly available and thus avoids having to load non-resident portions from disk. The Denise, Agnus, and Paula chips are restricted to accessing only the lower 512 Kbytes of RAM (Random Access Memory), popularly known as “chip” memory. Hence the 68000 microprocessor will encounter no coprocessor memory contention when accessing RAM beyond the first 512 Kbytes of RAM.

The Amiga operating system, known as AmigaDOS, is priority-based, non-preemptive, and multiprocessing. Although it can be used as a multi-user system, AmigaDOS is practically always run as a single-user system.

The Interchange File Format (IFF) provides a structure for the interchange of data among different software packages. IFF encodes program code, text data, graphic data, sound data, and even animation sequences.

Much more can be said about the ACF’s Amiga 2000, especially about its sound, graphics, and video possibilities. If you are interested in finding out more, please contact Jeffrey Bary at 998-3049.

—John Hailu
Departments look to computer networks as a means of getting more out of their computers. Computer networks can enhance the functionality of the computer resources which a department already has. They can do this in a number of ways. Most notably, they can make it easier for departmental computer users to share information, software, and devices, and can offer new capabilities, such as the ability to exchange computer mail.

However, while networks provide many positive benefits, they can also involve added expense and can bring new layers of complexity to the use and management of a department's computer facilities. Planning — both before and after a network is selected and installed — can help to maximize the benefits of a departmental network, and to keep potential problems and expense to a minimum.

This article offers background information on some of the issues associated with networking, and on the context in which they should be considered by the members and chairs of departments at NYU. We hope this article will be helpful to departmental planners, whether or not they are already linked to a small departmental network in place or are just beginning to think about computer networking.

Once departmental planners have begun to consider connecting their computers into a network — or to evaluate an existing departmental network — we invite representatives of the department to consult with the appropriate ACF staff members. They can help you to plan a successful network and, particularly, to address issues discussed in this article. For information on whom to contact, please see the box on page 7.

Departmental networks and NYU-NET

A purely departmental network will link only the computers that belong to the department. These days, a department's computers and networks exist within a larger context of potential network connections and their associated resources. At NYU, this larger context is NYU-NET, the University's campus-wide network, as well as the computers and services — both within and outside of NYU — which are linked to it. As a result, departmental network planners have a number of options with respect to the scope of their network links. And it is worthwhile to think about these options during the planning stage, no matter how small they believe the scope of their networking needs to be.

Capabilities available through NYU-NET extend the scope of the resources which are available to departmental PC's, whether or not they are already linked to small departmental or office networks. These added capabilities include access to BobCat, Bobst Library's online catalog system; to the ACF's mainframes and mini-computer systems; to computers at many distant universities and other research institutions, via external network connections, whether for purposes of computer mail, file transfer, or resource use; and to modems for establishing telephone connections with computers outside of NYU that are not accessible via networks. These and similar resources are becoming increasingly important to members of the University community.

A fundamental choice for departmental planners with regard to NYU-NET may be whether to connect individual microcomputers to NYU-NET, or to connect an entire departmental network to NYU-NET.

Under the first option (see Figure 1), a separate link to NYU-NET is established for each of the department's microcomputers (or for some portion of them), so that each of these microcomputers can be used as a "smart" terminal to the larger computers and services on the network. The user of each separately connected microcomputer has individual access to all of the added capabilities listed in the preceding section.

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Some typical questions

Questions like the following typically arise when departmental networks come under consideration.

- Should our department network its microcomputers?
- What are the advantages, costs and potential problems involved in doing so?
- What kind of network hardware and software should we use?
- How would our departmental network fit in the broader context of the University's campus-wide network, NYU-NET?
- More generally, how does departmental computing relate to campus-wide computing?
Figure 1. PC's connected individually to NYU-NET.

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paragraphs. (Under the same scheme, terminals — rather than microcomputers — can also be connected separately to NYU-NET. Users would have all of the capabilities listed above, except for file transfer.)

Under the second option (illustrated in Figure 2), a departmental network is established, and the network itself is connected — as a network — to NYU-NET. This second option — which offers all that the first does, and a great deal more — is the focus of this article. Many departments, however, may prefer to begin with the simpler and less expensive first alternative (linking individual microcomputers), and upgrade at a later time to the second alternative (linking a departmental network to NYU-NET).

What is a computer network?

A computer network is a combination of hardware and software which allows computer users to share access to resources — to printers, modems, files, and so on. In addition, networks typically provide mail and messaging capabilities to users.

Thus, for example, a department could purchase one high-quality laser printer, and provide access to it from any microcomputer in the department. Different kinds of networking software permit different schemes for sharing software and files. For example, with one kind of network arrangement (see Figure 3), every one could have access to a "server" — a central computer with a hard disk containing software packages and data files. Under another, a user at one microcomputer would be able to directly access files on the hard disk of another user's micro.

What are the components of a network?

Networks employ hardware, software, and sets of protocols (communication rules).

Hardware and software

In order for microcomputers to participate in a network, it is necessary to equip them with some combination of networking hardware and software, as well as to provide wiring to connect the various computers together.

The purpose of the hardware (typically network adapter boards inserted into the computer) is to provide the physical link between a computer's hardware and the network wiring.

The network software provides a software link between the computer's operating system and the networking hardware, and gives the computer user a set of capabilities, such as accessing files on another computer or sending mail to another computer user. Networking software must be installed on each microcomputer in the network. As a result, an important concern is the amount of memory used by the network software, and whether it will leave enough memory in the microcomputer to run the other applications normally used.

A few computers, including the Apple Macintosh and SUN workstations, are equipped automatically by their manufacturers with networking hardware and (some) software; by contrast, for IBM PC's and their clones, these are added-cost options available from many different companies. As is typical of the IBM PC "world", there are seemingly innumerable choices of hardware and software; this creates both a range of

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opportunities and considerable difficulty in making informed decisions.

Communication standards

Meaningful communication between computers is governed by protocols, sets of rules which define the format and control of information to be sent over a network. Protocols are defined at different levels: for example, some protocols deal with physical/hardware issues, whereas others relate directly to the application software which computer users find on their systems. There are many dozens of different protocols which have been defined and adopted by manufacturers.

For NYU-NET, some of the most important protocols are IP (Internet Protocol), TCP (Transmission Control Protocol), FTP (File Transfer Protocol), Telnet (network terminal protocol), and SMTP (Simple Mail Transfer Protocol). These protocols (along with others collectively termed the "IP/TCP protocol suite") are used extensively by the University's larger computer systems for interconnecting within NYU and for connecting to computers outside the University. It should be noted that our campus-wide network is connected both to the "Internet" (a large national "network of networks" including universities and many companies) and to "BITNET" (an international network linking educational institutions).

Unfortunately, most microcomputer networks are not based upon these protocols. Examples of protocols in use by pure microcomputer networks are: IPX (used by Novell networks), NETBIOS (utilized by many PC applications on networks), the AppleTalk protocol suite used by Apple Macintoshes, and the XNS protocol suite (used by 3COM networks). Although in most cases it is possible to interconnect networks that use different protocols and different types of wiring, there may be some added expense, complexity, and limitations.

This situation has developed because, for the most part, microcomputer networks have evolved rapidly over the past decade and somewhat independently from large-computer networks, with the result that many mutually incompatible networking schemes have arisen. The issue of compatibility is relevant to networking at NYU, just as it is at other universities. We have one kind of network for our campus-wide NYU-NET (a "broadband" network suitable for large-scale networking, based on the IP/TCP protocols). Yet individual departments who wish to link the computers within their units via a small office network will almost certainly utilize a different technology, and which technology is utilized will depend upon the department's equipment, physical layout, desired network capabilities, and so on. Unfortunately, the development and acquisition of networking tools seems to keep outpacing the industry's effort to integrate different kinds of networks, at both the hardware and software levels.

Departmental Planning Issues

It is worthwhile to think about your network both before and after it is installed. Four important planning tasks and issues that can be used as the focus of discussion are the following: requirements definition, site planning, network administration, and technical support.

• Requirements definition. First, try to identify the desires and requirements of the computer users in the department. What kinds of microcomputers do they use? What kinds of software, and what particular software products, do they wish to use? What services, such as file sharing or electronic mail, would they like to have? Is the cost of the network justified in terms of its benefits? What remote computers do they need to access?

• Site planning. Next, give some thought to the physical layout of the network. Where are the computers and printers located? Is there wiring already installed which could be utilized, or must new wiring be run? What kind of wiring should be used? If new computers or communications devices will be acquired as part of the networking, where will they be located? Who will have physical access (important for security and maintenance considerations) to the various pieces of equipment on the network?

• Network management. These issues should also be confronted during the planning stage. Computer networks entail both "administrative" and "technical" duties. For example, at an administrative level, someone must decide who

Whom to contact for help:

Help in the planning of departmental networks at NYU is available from the Academic Computing Facility. The ACF invites departmental representatives to consult with the appropriate ACF staff members, who can clarify the technical issues involved and help ensure that departments' decisions will make sense in the overall context of computing at NYU.

Begin by contacting Gary Chapman at the ACF's Faculty Microcomputer Lab (998-3045), in order to arrange a consultation. For more complex situations, such a meeting may involve several ACF staff members, each with a different area of expertise.
has access to which files on a shared hard disk. At a technical level, someone must implement such decisions by utilizing network configuration software. Thus, you should think about who will be responsible for “administering” the departmental network.

- Technical support. The importance of having one or more trained individuals who oversee the operation of the network cannot be over-emphasized. Someone must install the network or participate in its installation; learn how to utilize its capabilities and train other users; help solve problems as they arise; deal with software upgrades (and, possibly, incompatibilities), with new connections to other computers, new resources, and new users; deal with hardware and software vendors when repairs or the purchase of new equipment (hardware or software) become necessary. If a department’s network is to be connected to NYU-NET, it is also important that the department’s designated network administrator serve as a liaison to the ACF’s network management. Should both “administrative” and “technical” duties be performed by a single person, or should there be a division of labor?

What help is available?

Many books and periodicals are available to provide information on networking. LAN Magazine, for example, contains articles suitable for people at different levels of expertise; and the periodicals which focus on specific kinds of microcomputers, such MacUser and PC Magazine, frequently run articles on networking.

Help in the planning of departmental networks at NYU is also available from the Academic Computing Facility. Please see the accompanying box for information on whom to contact.

—Gary Chapman with Estelle Hochberg

**Notes on BITNET**

BITNET is an international network of over 2,000 computers at universities and research centers. BITNET services include electronic mail links, electronic conferencing, and over 30 “list servers” or bulletin boards.

Public subscriptions to three widely read BITNET LISTSERVERS are maintained on the ACF’s cluster of VAX/VMS computers, and are also accessible through the ACF’s INFO system. (No computer account is needed to use INFO. See the item below for details.) Typing BBOARD SAS, BBOARD SPSS and BBOARD ISO8859 will connect a VAX/VMS user with ongoing electronic discussions of the statistical packages SAS and SPSS, as well as of issues in statistics, software design, and international standards. Posting of questions or suggestions is encouraged. INFO users can select the same bulletin boards from that system’s BBOARD menu.

For less widely read topics, VM/CMS and VAX/VMS users may subscribe to various BITNET LISTSERVERS and receive postings in their mail files. To subscribe to the BITNET monthly magazine (mailed to you electronically), VM/CMS users should type (on one line) TELL LISTSERV@MARIST SUBSCRIBE NETMONTH your_name. VAX/VMS users should enter (on one line) SEND LISTSERV@MARIST SUBSCRIBE NETMONTH your_name.

For listings of all the available BITNET LISTSERVERS, interested users on VM/CMS should use the command TELL LISTSERV@BITNIC GET LISTSERVS. VAX/VMS users should type SEND LISTSERV@BITNIC GET LISTSERVS instead.

In an upcoming ACF seminar (Tuesday, April 10 in Room 1302 Warren Weaver Hall at 2:30 p.m.), Jeffrey Bary will demonstrate many BITNET features. All are welcome.

—George Sharrard

**Accessing INFO**

A small but growing collection of electronic bulletin boards and online services at NYU are available via the ACF’s INFO system. INFO is available to all users of NYU-NET, and you do not need an ACF computer account to use it.

To access INFO from NYU-NET, you first connect to the ACF’s cluster of VAX/VMS computers, by typing CONNECT ACF*. Next, in response to the "Username:" prompt, type INFORMATION, and press the <Return> key. ("INFORMATION" is a special guest account which has been set up to enable free public access to the INFO system.) After a brief wait, you will receive a menu of bulletin boards and other services available through INFO. To make your selection, follow the directions that appear on the screen.

(Note: INFO can also be accessed from the NYU Computer System Selector: type INFO in response to the "Selection:" prompt, and press <Return>. After a brief wait, you will receive the INFO menu and instructions.)
ACF Opens New Site on Third Avenue

Computing Facility Offers PC's, Macintoshes, and Advanced Workstations

Spring 1989 has brought the opening of a new ACF site. An attractive space of two large user areas located in the basement of the Third Avenue North Residence Hall (Third Avenue and 11th Street), it opened to users on the first day of the spring semester.

The new site offers a mix of several types of workstations and microcomputers. As we go to press, these include thirty IBM-type personal computers, thirty Apple Macintosh SE's, nine IBM "Academic PC" workstations (IBM 6152's running both DOS and UNIX — see the related article on page 11), and nine advanced SUN workstations. Some other advanced workstations may be added in the near future. The PC's and workstations are networked locally within the site and will soon be connected to NYU-NET, the University's campus-wide network, with access as well to the ACF's mainframes and minicomputers.

The new facility is open seven days a week: from noon to 2 a.m. on Mondays through Fridays, and from noon to 8 p.m. on Saturdays and Sundays. It consists of two large rooms where users can work comfortably at the micros and workstations. A reception area separating the two user work areas and overseen by an operator offers reference manuals for use at the site, as well as ACF documentation for "taking away". Laser printers for users' hardcopy output are also located here.

The facility will initially be available only to students in classes whose instructors have applied for the appropriate microcomputer accounts. (The IBM 6152 workstations will also be available by special computer account to faculty and — by arrangement of a faculty member — to individual students as well as classes; please see the article on page 11.) If you are an instructor and would like your class to use this new facility, please complete ACF form #772, "Request For Course Work Computer Account Numbers". Copies of the form are available at the ACF Accounts Office (Room 305, Warren Weaver Hall, 998-3035). If you would like to discuss technical issues on the use of the facility, please call Gary Chapman at 998-3045.

— Estelle Hochberg

Hardware Available in the ACF's Faculty Microcomputer Lab

The following hardware is available for examination in the ACF's Faculty Microcomputer Lab. (See following page for more about the Faculty Micro Lab.)

<table>
<thead>
<tr>
<th>Hardware Product</th>
<th>Company</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac II</td>
<td>Apple</td>
<td>Computer</td>
</tr>
<tr>
<td>Mac Plus</td>
<td>Apple</td>
<td>Computer</td>
</tr>
<tr>
<td>Unix PC</td>
<td>AT&amp;T</td>
<td>Computer</td>
</tr>
<tr>
<td>386/20</td>
<td>Compaq</td>
<td>Computer</td>
</tr>
<tr>
<td>PC/AT</td>
<td>IBM</td>
<td>Computer</td>
</tr>
<tr>
<td>PS/2 Model 30</td>
<td>IBM</td>
<td>Computer</td>
</tr>
<tr>
<td>PS/2 Model 60</td>
<td>IBM</td>
<td>Computer</td>
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<tr>
<td>Kaypro 10</td>
<td>Kaypro</td>
<td>Computer</td>
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<tr>
<td>SuperSport Laptop</td>
<td>Zenith</td>
<td>Computer</td>
</tr>
<tr>
<td>Apple SC</td>
<td>Apple</td>
<td>Computer</td>
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<tr>
<td>3363 WORM drive</td>
<td>IBM</td>
<td>CD-ROM drive</td>
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<tr>
<td>Fastpath</td>
<td>Kinetics</td>
<td>Gateway</td>
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<tr>
<td>SmartModem 1200</td>
<td>Hayes</td>
<td>Modem</td>
</tr>
<tr>
<td>ImageWriter LQ</td>
<td>Apple</td>
<td>Printer</td>
</tr>
<tr>
<td>Laserwriter Plus</td>
<td>Apple</td>
<td>Printer</td>
</tr>
<tr>
<td>Laser Jet II</td>
<td>Hewlett-Packard</td>
<td>Printer</td>
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<tr>
<td>P2200</td>
<td>NEC</td>
<td>Printer</td>
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<tr>
<td>P6</td>
<td>NEC</td>
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<td>Datacopy 830</td>
<td>Datacopy</td>
<td>Scanner</td>
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<tr>
<td>SP-1000AP</td>
<td>Seikosha</td>
<td>Printer</td>
</tr>
<tr>
<td>NetBridge</td>
<td>Shiva</td>
<td>Bridge</td>
</tr>
</tbody>
</table>

—Prepared by Gary Chapman
About the ACF's Faculty Microcomputer Lab

The ACF's Faculty Microcomputer Laboratory is a place where faculty, research staff, and administrative personnel can learn about different kinds of microcomputer hardware and software, and obtain expert advice in the selection and use of personal computers, workstations, departmental networks, and related products.

The Micro Lab is located in Room 317 Warren Weaver Hall. Visits to the lab are by appointment. Please call 998-3044 to arrange a time. Hours between 12 noon and 8:00 p.m., Monday through Friday, are usually available.

New Software in the ACF's Faculty Microcomputer Lab

The following software was either newly acquired or updated within the past few months. It is available for examination in the ACF's Faculty Microcomputer Lab.

<table>
<thead>
<tr>
<th>Software Product</th>
<th>Version</th>
<th>Company</th>
<th>For Application type</th>
</tr>
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<td>4th Dimension</td>
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<td>Acius Mac Database</td>
<td>PC Database</td>
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<tr>
<td>Agenda</td>
<td>1.00</td>
<td>Lotus Mac Database</td>
<td>PC Database</td>
</tr>
<tr>
<td>AppleShare PC</td>
<td>1.00</td>
<td>Apple PC</td>
<td>PC Networking</td>
</tr>
<tr>
<td>cT</td>
<td>1.00</td>
<td>Carnegie Mellon University Mac Languages</td>
<td></td>
</tr>
<tr>
<td>Data Junction</td>
<td>2.00</td>
<td>Tools &amp; Techniques PC Utilities</td>
<td></td>
</tr>
<tr>
<td>DiskTechnician</td>
<td>1.00</td>
<td>Prime Solutions PC Utilities</td>
<td></td>
</tr>
<tr>
<td>Excel</td>
<td>2.00</td>
<td>Microsoft PC</td>
<td>PC Spreadsheet</td>
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<tr>
<td>GradPlus</td>
<td>3.10</td>
<td>Jewell Technologies PC Utilities</td>
<td></td>
</tr>
<tr>
<td>Hal</td>
<td>1.00</td>
<td>Lotus PC</td>
<td>PC Utilities</td>
</tr>
<tr>
<td>IBM TCP for PS/2</td>
<td>1.00</td>
<td>IBM PC Networking</td>
<td></td>
</tr>
<tr>
<td>Kermit</td>
<td>2.32</td>
<td>Columbia University PC Communications</td>
<td></td>
</tr>
<tr>
<td>Liaison</td>
<td>1.0.1</td>
<td>InfoSphere Mac Networking</td>
<td></td>
</tr>
<tr>
<td>Mathematica</td>
<td>1.00</td>
<td>Wolfram Research Mac Mathematics</td>
<td></td>
</tr>
<tr>
<td>MKS Toolkit</td>
<td>2.3b</td>
<td>Mortice Kern Systems PC Utilities</td>
<td></td>
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<tr>
<td>NCSA Telnet</td>
<td>2.2</td>
<td>NCSA PC Networking</td>
<td></td>
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<tr>
<td>Norton Utilities</td>
<td>4.5</td>
<td>Peter Norton Computing PC Utilities</td>
<td></td>
</tr>
<tr>
<td>NOS/VE Workstation</td>
<td>1.00</td>
<td>Control Data Mac Communications</td>
<td></td>
</tr>
<tr>
<td>Omnigrafix</td>
<td>1.0</td>
<td>Caere Mac Optical Character Reading</td>
<td></td>
</tr>
<tr>
<td>Optune</td>
<td>1.1</td>
<td>Gazelle PC Utilities</td>
<td></td>
</tr>
<tr>
<td>PC Nomad</td>
<td>2.00b</td>
<td>Must Software PC Database</td>
<td></td>
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<tr>
<td>PixelPaint</td>
<td>1.10</td>
<td>SuperMac Mac Graphics</td>
<td></td>
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<tr>
<td>Splash</td>
<td>1.00</td>
<td>Spinmaker PC Graphics</td>
<td></td>
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<tr>
<td>Suitcase</td>
<td>1.2.1</td>
<td>Software Supply Mac Utilities</td>
<td></td>
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<tr>
<td>Turbo Assembler</td>
<td>1.00</td>
<td>Borland PC Languages</td>
<td></td>
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<tr>
<td>Turbo Debugger</td>
<td>1.00</td>
<td>Borland PC Languages</td>
<td></td>
</tr>
<tr>
<td>Windows 386</td>
<td>2.10</td>
<td>Microsoft PC Operating System</td>
<td></td>
</tr>
<tr>
<td>WordPerfect</td>
<td>5.0</td>
<td>WordPerfect PC Word Processing</td>
<td></td>
</tr>
</tbody>
</table>

Software Distributed at the ACF's Faculty Microcomputer Lab

Qualified members of the NYU community may obtain the following microcomputer software packages at the ACF's Faculty Microcomputer Lab.

<table>
<thead>
<tr>
<th>Software</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kermit</td>
<td>For Macintosh and IBM-PC. Please bring 1 blank diskette. There is no fee.</td>
</tr>
<tr>
<td>Operating System</td>
<td>For Macintosh. Please bring your copy of the Mac operating system and 4 blank diskettes. There is no fee.</td>
</tr>
<tr>
<td>Microsoft Word 3.01</td>
<td>For distribution to owners of older versions of the Mac system. Please bring your copy of MS Word 3.00 and 2 blank diskettes. There is no fee.</td>
</tr>
<tr>
<td>NCSA Telnet</td>
<td>For Macintosh and IBM-PC. Please bring 1 blank diskette. There is no fee.</td>
</tr>
<tr>
<td>ProComm</td>
<td>For IBM-PC. Please bring 1 blank diskette. There is no fee.</td>
</tr>
<tr>
<td>SAS</td>
<td>For IBM-PC. Please bring 29 blank diskettes. There is no fee.</td>
</tr>
<tr>
<td>SPSS/PC+ and Advanced Statistics module</td>
<td>For IBM-PC. Please bring 15 blank diskettes to receive both the base package and the module. The fees are $100 for the base package and $50 for the Advanced Statistics module.</td>
</tr>
</tbody>
</table>

(Prepared by Gary Chapman)

For hardware available for examination at the Faculty Micro Lab, see the preceding page.
Grant from IBM Gives ACF Special PC's

IBM has provided nine “Academic PC’s” and a PC/RT server to the Academic Computing Facility for use in a study. The study (principal investigators: M. Goldstein and H.J. Bernstein) will compare usage patterns of MS-DOS and UNIX in an academic workstation environment.

The IBM 6152 “Academic PC” combines high quality color graphics with the ability to run either MS-DOS, the most commonly used operating system on PC’s, or UNIX, the most commonly used operating system on larger workstations. Each machine will have its own disk storage, as well as token-ring network access to a common server, which will also provide connectivity to the rest of the NYU network.

The systems have been installed at the ACF’s new site in NYU’s Third Avenue North Residence Hall (see the item on page 9 for details), and will shortly be ready for use. Advanced students and faculty are welcome to use these machines for both research and coursework, in exchange for cooperation in the study. This will include occasional interviews to find out what users think of the machines and how they utilize them. These will be supplemented by questionnaires and special logging mechanisms in the system, to give us hard data on how much time people spend in MS-DOS as compared with UNIX, and which applications are most popular in each system.

Users should plan on bringing their own disks (3.5 inch, 720K), or should arrange for an account on another ACF system (a mainframe or minicomputer) to which their files can be uploaded for storage.

Faculty and advanced students who are interested in using the new IBM Academic PC workstations must apply for a special ACF computer account. (Student applications — whether for an individual or an entire class — must be made through a faculty member.) Applications are available in the ACF’s Accounts Office, Room 305 Warren Weaver Hall. Please be sure to specify “IBM 6152” on the form.

— Herbert J. Bernstein

Statistical Help for PC Users at Tisch Hall

Help with SPSS-PC and SAS-PC running on IBM personal computers and their clones is now available from the ACF statistics consultants in Tisch Hall (Room LC-7). A new IBM PS-2/50Z microcomputer has been installed in LC-7, to assist the consultants in providing help to users of these two statistics packages.

When seeking help, users must bring a disk copy of the program and the data file associated with their problem or question. The PC is equipped with a 3 1/2” disk drive and an external 5 1/4” low density drive (360 K). Both Base SAS (version 6.03) and SPSS-PC are installed on the consultants’ PC.

A self-service workstation for the uploading and downloading of files to or from mainframes continues to be available at the ACF’s site on the second floor of the Education Building.

—Bert Holland

More on microcomputers...

Microcomputer users may also be interested in the following:

• ACF workshops in the use of popular microcomputer packages (see inside back cover).

• Electronic bulletin boards accessible through INFO, several of which deal with topics in microcomputer use (see page 8).

• The ACF’s Education Building site, which has Apple Macintoshes and IBM PS/2’s for use by students in classes whose instructors have applied (at the ACF Accounts Office) for microcomputer use. (See inside front cover for locations and hours.)
The Astronautics ZS-2


The ACF has acquired a new "super-minicomputer", the Astronautics ZS-2, under a special "beta-site" arrangement. For several types of applications, particularly those which do not vectorize well, this machine has proven faster than our "mini-supercomputer", the CONVEX CL. We invite all faculty, research personnel, and graduate students with suitable projects to contact the ACF Accounts Office about access to this machine.

The ZS-2 will be suitable for your project if it involves moderate-sized production codes, or production codes which you wish to prototype for the supercomputer centers. It runs a UNIX operating system.

The Astronautics ZS series of computers is capable of a peak performance of 45 million instructions per second and 22.5 million floating point operations per second. We have run applications at average speeds of over 8 million floating point operations per second, making this the fastest of the "compute servers" at the ACF. Our machine has two CPUs and 128 megabytes of memory. The standard floating point word size is 64 bits, so the machine performs REAL*8 operations just as fast as REAL*4. While it cannot deliver its full speed for all applications, it is much less sensitive to "vectorization" than other compute servers, because it is designed as a very fast scalar machine, rather than just as a vector machine. This makes it effective for difficult-to-optimize applications, such as linear recurrences.

— Herbert J. Bernstein

Update on Supercomputing at JvNC

Currently, the John von Neumann National Supercomputer Center at Princeton, N.J. is operating two production CDC CYBER 205 supercomputers at near full capacity. In addition, a four-processor ETA-10 model E has been installed recently and is now available for use. The same operating environment that exists for the CYBER 205s is also available on the ETA-10 — that is, VOS, FTN200 on the supercomputers, and the PEP procedures on the VAX front end machines. Each processor on the ETA-10 has improved vectorization and also runs about twice as fast as a CYBER 205.

The ETA-10 computing environment is now considered stable enough by JvNC to permit the migration of current users from the CYBER 205s to the ETA-10. Accounts are also being issued to new users. The machine is currently configured as four separate partitions running as independent machines. A non-partitioned four processor system will soon be available with a multi-processor software library. With some changes to their source programs, researchers will be able to run their applications simultaneously on the various processors. It is expected that this high-speed, parallel, multi-processing environment will greatly reduce the time it currently takes to process existing analyses and permit the solution of more complex problems.

At the site coordinators' meeting held December 1, 1988, Dr. Doyle Knight, president of the Consortium for Scientific Computing, operator of JvNC, revealed future plans for the center. These include upgrading the ETA-10 model E to eight processors some time early in 1989, with a further upgrade to a model G later in the year. Knight asserted that the model G, when it becomes available, will be the equivalent of 36 CYBER 205 computers. Initially, the computing environment will appear the same as that which existed for the...
JvNC-ACF Workshops to be held at NYU

This spring, a series of seven presentations on programming and graphics at the JvNC will be held at the ACF's Education Building site (35 West Fourth Street). The series will begin with two introductory-level films on programming techniques for the JvNC supercomputers: JvNC Quick Start and Intro to Vector Processing (2:00 p.m., March 29 and 30). Ed Friedman will be available on both days to discuss programming considerations. In two full-day presentations (April 10 and 11, 9 a.m. to 5 p.m.), representatives from JvNC will discuss graphics at JvNC — packages, capabilities and facilities. JvNC representatives will return for three full-day presentations on advanced programming techniques for supercomputers (April 17, 18 and 19, 9 a.m. to 5 p.m.). All talks except JvNC Quick Start and Intro to Vector Processing require reservations; contact Frank LoPresti at 998-3398.

<table>
<thead>
<tr>
<th>Quick Start</th>
<th>Wednesday, March 29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro to Vector Processing</td>
<td>Thursday, March 30</td>
</tr>
<tr>
<td>Graphics</td>
<td>Mon. - Tues., April 10 &amp; 11</td>
</tr>
<tr>
<td>Advanced Programming Techniques</td>
<td>Mon. - Wed., April 17, 18 &amp; 19</td>
</tr>
</tbody>
</table>

second ETA-10, an 8-processor Model G, has been installed and is being tested.

—Ed Friedman

Time on Cornell Supercomputer Available to NYU Students

Instructors Must Apply for Students’ Accounts

The Cornell National Supercomputer Facility (CNSF) has invited applications from instructors at selected institutions who would like to use the supercomputer facility in either undergraduate or graduate coursework. Such courses should offer students the opportunity to explore supercomputing techniques for parallel and vector processing, exploiting large memory, and visualization tools.

The instructor must be willing to provide the first level of technical consulting support for the students. The CNSF consulting staff will work with the instructor (or his/her teaching assistant) in resolving any problems. The instructor will receive the CNSF User's Guide, an opportunity to attend a Remote User Training Workshop, and a copy of an Overview of the CNSF for each student. There are also on-line training tools.

At the end of the course, the instructor will be required to submit a brief report outlining the work accomplished by the students. A limited number of courses can be selected for this program. All applications will be reviewed by the CNSF staff.

For further information on CNSF student class accounts, NYU instructors should contact Jeffrey Bary at the ACF (998-3049). He is the ACF’s local coordinator for the NCSA and for Cornell’s Center for Theory and Simulation in Science and Engineering.

Time on the Cornell supercomputers has been available through the ACF to NYU faculty, research personnel and graduate students for some time. Interested individuals should apply through the ACF’s Accounts Office, 305 Warren Weaver Hall, 998-3035.

—Extracted and adapted from a CNSF electronic bulletin.
SPSS-X on the IBM Mainframe

Versions 3.0 and 3.1 Offer New Features for WYLBUR and CMS Users

SPSS-X is currently installed in two different versions on the two IBM systems. On OS/MVS (WYLBUR), SPSS-X is available as version 3.0; on VM/SP (CMS), it is available as 3.1. SPSS-X, Inc. has informed us that, while there are certain differences between these two versions, it does not plan to upgrade the OS/MVS version to 3.1. Thus, for the near future, the WYLBUR version will not include the enhancements described below under CMS.

Version 3.0 (WYLBUR)

The major additions in SPSS-X version 3.0, as implemented on OS/MVS, are a macro facility and two procedures for nonlinear regression. The interactive capability cannot function under WYLBUR. These features and some other minor ones were described in the May 1988 issue of this newsletter. (Copies are available from the ACF’s Documentation Office, Room 306 Warren Weaver Hall.) To produce a fuller description of all the changes that appear in version 3.0, use the WYLBUR instructions displayed in the accompanying box.

SPSS-X TRENDS, the package of procedures for analyzing time-series data, is not currently available on the IBM mainframe, although it is installed under the VAX/VMS system running on the ACF cluster. Procedures for analyzing time series data can be found in SAS as implemented on the IBM systems and the VAX, in TSP on the IBM and the CYBER, and in RATS and LIMDEP on the IBM.

Version 3.1 (CMS)

SPSS-X on VM has been upgraded from version 3.0 to 3.1. The main features of version 3.0 have been described previously. The interactive capability, introduced in Version 3.0, can function under CMS.

Version 3.1 introduces a new procedure, RANK, which can create new variables based on the ranks, normal scores, Savage scores (exponentials), or percentiles or percentile groups (e.g., quartiles) of numeric variables. Several options are available for how ties are ranked, and how normal estimates are calculated. The new variables can be added to the active file, and the analysis can continue.

The REGRESSION procedure now provides several useful new statistics, including four indicators of collinearity, four aids for selecting sets of regressors, and seven case-wise statistics to help assess influence and fit. In CROSSTABS, kappa, relative risk, Goodman and Kruskal’s tau, and Spearman’s rho have been added. Some corrections have been made to LISREL and to some other procedures.

New Release of SAS on IBM

A new release of SAS, Release 5.18, has been installed on CMS, and should replace Release 5.16 on MVS (WYLBUR) some time in April. While SAS 5.18 is essentially a “maintenance release”, there are the following important changes:

- The FORMAT procedure now supports “user-written informats” which make the recoding of character values into numeric values or into other character values possible. The important effect is that one can now perform recoding of variable values in a more efficient way (i.e., avoiding all those “IF..THEN..”

(continued on following page)

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For more on SPSS-X:

To produce a printed description of changes in the new versions of SPSS-X, use the following instructions.

**WYLBUR**

```
// JOB
// EXEC SPSSX
//SYSIN DD *
INFO FACILITIES PROCEDURES SINCE 2.2
FINISH
```

**CMS**

```
SPSSX *
INFO OUTFILE=SPSSXDOC FACILITIES PROCEDURES SINCE 3.0.
FINISH.
PRINTNYU SPSSXDOC LISTING (DEST dd FORM PORT CC
where dd can be RM2, RM7, ILPA, or any other printer destination.
```
• Log-linear modeling within the CATMOD procedure can now be specified by using the LOGLIN statement. The syntax is:

```
LOGLIN effects i option;
```

where the 'effects' are the design effects containing dependent variables from the MODEL statement. This form supplants the REPEATED statement for log-linear models, although REPEATED is still available for actual repeated measures analyses. When the LOGLIN statement is used, the keyword _RESPONSE_ should be specified in the MODEL statement. Here is an example:

```
PROC CATMOD;
  MODEL NB'C~_RESPONSE_, LOGLIN AIBIC@2;
```

• The MODECLUS procedure clusters observations using one of several algorithms based on nonparametric density estimates. The data can be numeric coordinates or distances. MODECLUS can perform "approximate significance" tests for the number of clusters, and can hierarchically join nonsignificant clusters.

• The HAZARD procedure models and estimates shaping and regression parameters for parametric survival analysis. The procedure HAZPRED predicts the survivorship and hazard functions and their confidence limits, given the output of HAZARD, and a variable specifying the time for which the prediction is to be calculated.

• The LOGIST procedure for ordinal response data has been enhanced to support partial proportional odds models. The estimates for the partial proportional odds model can also be constrained.

• The procedure QUANT performs multidimensional scaling using Hayashi's Type I quantification theory.

These changes and others are documented in SAS Technical Report P-175, Changes and Enhancements to the SAS System, Release 5.18, Under OS and CMS. A copy is available for examination in Room LC-7 Tisch Hall.

—Bert Holland

As we go to press: SAS on the ACF's cluster of VAX/VMS computers is soon to be upgraded to Release 5.18.

---

**SPSS and SAS On ACF Mainframes and Minis**

<table>
<thead>
<tr>
<th>Product</th>
<th>System</th>
<th>Version</th>
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<tbody>
<tr>
<td>SPSS-X</td>
<td>CDC CYBER</td>
<td>VAX/VMS</td>
</tr>
<tr>
<td>SPSS-X</td>
<td>NOS</td>
<td>2.01</td>
</tr>
<tr>
<td>SPSS-X</td>
<td>NOS/VE</td>
<td>2.2</td>
</tr>
<tr>
<td>SPSS-X</td>
<td>Cluster</td>
<td>3.1</td>
</tr>
<tr>
<td>LISREL</td>
<td>MVS</td>
<td>3.0</td>
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<tr>
<td>TABLES</td>
<td>NOS</td>
<td>3.1</td>
</tr>
<tr>
<td>GRAPHICS</td>
<td>NOS</td>
<td>3.1</td>
</tr>
<tr>
<td>TRENDS</td>
<td>NOS</td>
<td>3.1</td>
</tr>
<tr>
<td>SCSS</td>
<td>NOS</td>
<td>3.1</td>
</tr>
</tbody>
</table>

* Use SPSS-X instead, since Version 3 is now interactive/conversational.

**IBM 4381**

<table>
<thead>
<tr>
<th>Product</th>
<th>System</th>
<th>Version</th>
</tr>
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<tbody>
<tr>
<td>BASE</td>
<td>VAX/VMS</td>
<td>5.16**</td>
</tr>
<tr>
<td>ETS</td>
<td>MVS</td>
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**IBM 4381**

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**Statistical Packages on the IBM Mainframe**

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**Prepared by Ed Friedman**

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**Prepared by Bert Holland and Lisa Barnett**
New Studies in the ACF's DBA

The following studies have been added to the ACF's Data Base Archive.

- Survey of Income and Program Participation (SIPP) Waves 3 & 4 (the rectangular core and topical module files) have been added to the NYU holdings.
- The Current Population Survey - Voter Supplement File 1986 has been added to NYU's present collection of CPS-VSF data covering federal election years from 1972 - 1984. Also in the Current Population Survey series, NYU has received the June 1986 Immigration, Fertility and Birth Expectations file, as well as the January 1987 Occupation Mobility and Job Tenure data.
- The Panel Study of Income Dynamics (PSID) now spans 17 years (1968-1984) with NYU's collection including the Family-Individual file, Waves I-XVII.
  In addition many smaller, non-serial studies have been added to NYU's local holdings.

— George Sharrard

International Financial Statistics Available on IBM 4381

The International Financial Statistics database, distributed by the International Monetary Fund, is once again available on the ACF's IBM mainframe. The IFS database is a major source of data for research in international economics. It has over 100 economic variables for more than 100 countries and regions, and includes annual data from 1948 through the present, and quarterly and monthly data from 1957 to the present.

The IFS database tape is supplied by Professor Richard Levich of the International Business Department of NYU's Stern School of Business. It is maintained on the IBM by the ACF as part of its Data Base Archive. The current tape is dated October 1988. The current plan is to replace the database on the IBM with an updated version semi-annually.

Information about how to access the database is available from ACF consultant Bert Holland (998-3434).

— Bert Holland

As we go to press...

The Government Finance Statistics database, also produced by the IMF, will shortly be available on the IBM mainframe. This file provides about 36,000 time series showing central government revenue, grants, expenditures, lending minus repayments, financing, and debt. The data cover up to 18 years for 135 countries.
About our front cover:

Our front cover illustration is a scene from *Over Coffee*, an animated color film by Ken Perlin and a team of graduate students in the Computer Science Department (GSAS). In the film, the steam rising from two coffee cups materializes into two cloaked dancers, who perform a pas de deux in midair before dematerializing again into steam and blowing away.

The film is completely computer-generated. As a move away from the more usual "high-tech" look of computer graphics, the film borrows from impressionistic painting by giving a pastel-like character to the images.

Professor Perlin and his students have used *Over Coffee* as a vehicle for exploring such research areas in computer graphics as shadow penumbra algorithms, continuous transition between atmospheric and solid objects, interactive human motion design, and motion of nonrigid objects such as steam or fabric.

The film was directed by Professor Perlin, and co-directed by Asya Kamsky, a graduate student in the Computer Science Department. All design and rendering software was written in-house. All computation was done on Sun Workstations at the Robotics Research Laboratory of the Computer Science Department. Images were displayed and recorded using ACF computer graphics facilities, including the Evans & Sutherland PS 340, the Loge-Dunn film recorder, and the Lyon-Lamb video animation system. The final result was filmed onto 16 mm film and dubbed onto videotape. The motion was choreographed and synced to an existing recording of an aria from Delibes' opera *Lakme*.

For this newsletter, the image shown on our front cover was downloaded to the ACF's IRIS workstation and hardcopy was generated on the Howtek Pixelmaster color printer. ACF Systems Group members Jeffrey Bary, John Kesich, Libby Netland, David Wood worked on the software that made this possible. (Articles on computer animation and the ACF's IRIS workstation appear on pages 1 and 3.)

Also available from the ACF:

**Talks, Seminars, and Tutorials**

Each semester, the ACF offers a series of talks on topics of interest to computer users, and a program of introductory-level tutorials in the use of ACF computers. For a complete schedule and additional information, contact the ACF's Documentation Office (306 Warren Weaver Hall, 998-3036).

**Microcomputer Workshops**

The ACF's Microcomputer Workshops are half-day, hands-on sessions in the use of popular word processing, graphics, spreadsheet and database management packages for IBM and Apple Macintosh personal computers. They are open to all NYU faculty, graduate students, and administrative staff. Registration is required, and there is a $20 fee to cover materials. A schedule and further information are available from the ACF's Documentation Office (998-3036).

**Information About The ACF**

To find out more about the ACF, call 998-3058. If we cannot answer your question, we will find an ACF staff member who can.

Credits

Special contributions to this issue were made by the following members of the ACF staff and associates (in alphabetical order): Jeffrey Bary, Lisa Barnett, Herbert J. Bernstein, Gary Chapman, Ed Friedman, Bert Holland, Stephen Ritterspom, George Sharrard.

Newsletter Editor: Estelle Hochberg

Editorial assistance: Debra Rudick

This issue was prepared on Apple Macintosh SE microcomputers, using Aldus' PageMaker, Adobe Illustrator (for special type treatment), and MacDraw (for illustrations and figures).

Newsletter Design: Valerie Sauers of NYU's Advertising and Publication Services

Page design and Macintosh layout: Debra Rudick

Our special thanks to Valerie Sauers for our "new look" and for her helpful advice on implementing it in this issue.
Featuring:

- Graphics
- Networks
- Data Base Archive
- Microcomputers
- Supercomputers
- Mainframes & Minicomputers