Academic Computing and Networking at NYU

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Below many of the bylines in the newsletter are electronic mail (E-mail) addresses. If you do not use E-mail but would like to, see the box on page 30 for information about opening an appropriate account.

This issue was prepared on Apple Macintosh Quadra and Iici computers, using Aldus PageMaker, Microsoft Word, Adobe Type Manager, and Adobe Photoshop. Fonts used in this issue are Palatino for the text and Gill Sans bold for headlines, along with Zapf Dingbats and Courier for special effects; the logo is set in Adobe Garamond bold italic. Screen shots from DOS and Windows programs were produced on a Gateway 486 and a Zeos 386, using Hijaak for Windows. Camera-ready copy of text and screen shots was produced using a 600-dpi QMS 1700 printer. The cover image was enhanced in ImageMagick on a Sun workstation and modified in Photoshop on a Macintosh Quadra. Tabloid-size prints from a 3M Desktop Color Proofer were screened for half-tones by Echo Graphics, which did other half-tones from photographs, as well as printing and binding the newsletter.

Opinions expressed in the articles in this newsletter are those of the authors and not necessarily those of the Academic Computing Facility or of New York University.
Managing Color on the Desktop, from Scanned Image to the Printed Page

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Current desktop computing systems support color graphics as a matter of course, and many support 24-bit color at an affordable price. But as artists and other media producers have found, having a 24-bit color card and monitor is only the first step towards a useful digital imaging system. On a typical desktop computer, simply scanning an image and then printing it out will usually result in colors that are faded, muddy, or just plain wrong.

For computer artists, desktop publishers, and many others, the goal is to have an integrated system where images can be scanned from paper and film, viewed and manipulated on the monitor, and then output using a variety of draft and final print devices, all the while viewing and maintaining the same colors throughout the process. This process of using and displaying color consistently across various media and devices is referred to in the industry as color management.

Color management is easy to understand as a goal, but difficult to deliver as a product. A number of technologies, systems, and tools for color management are currently competing in a quickly evolving marketplace. This article provides some general background regarding color management, with specific attention to color management on arguably the most important platform in this arena, the Macintosh.

Color Systems and Gamuts
The most widely understood color system used on computers is the RGB system. This additive-color system corresponds to the way a computer monitor, or television, synthesizes the color spectrum by mixing varying amounts of the three primary colors for light—Red, Green, and Blue. RGB color is also used by most scanners, on which one pass or distinct sensor is used for each primary, and is the basis of 24-bit color, where each primary is allowed 8 bits of color resolution (or 256 levels) in memory.

Print media, on the other hand, exhibit subtractive color by reflecting only part of the available white light.

Cachet uses the EfiColor color-management system to allow an artist to adjust the color on one photo (the lower one in this case), using a second image as a reference.
Software at the ACF's Arts and Media Studio

The software listed below is installed in the ACF’s Arts and Media Studio in the Education Building at 35 West Fourth Street, which is equipped with powerful desktop computers and color printers. (For the latest information about equipment, hours, and access policies, please call the ACF HelpLine, 998-3333.) Similar hardware and software are available for use by faculty in the Innovation Center in Warren Weaver Hall; call 998-3044 for further information.

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The color spectrum is synthesized by mixing varying amounts of the three primary colors for pigment, Cyan, Magenta, and Yellow (approximated by blue, red, and yellow when taught in grade school). While black could, in theory, be created from the three primary pigments, in practice black pigment is typically used to complete the CMYK system.

A fundamental problem of color management is color separation, i.e., the transformation of a given color from its representation as an RGB value on the computer screen to a CMYK value for the printer. In addition, every medium offers a unique range of color, referred to as its color gamut. In general, various forms of media offer color gamuts from largest to smallest in the following order: film, prepress scanners, dye sublimation printers, computer monitors, offset printing presses, television, desktop scanners, draft-quality color printers. It is quite common, for example, to view on a computer monitor a range of colors from scanned film that cannot be reproduced in print.

Effective Color Management, ColorSync, and EfiColor

A number of software systems for the Macintosh have been introduced to manage color on a systemwide basis. All of these systems are evolving, and so far no single system provides complete color management. Apple provides a basic color management system called ColorSync as part of the operating system. This system provides simple color management for non-critical applications, and provides a framework that third parties can build upon.

EfiColor, from Electronics for Imaging, Inc., is a system that provides a software architecture for professional color applications. EfiColor is often presented in the context of “the 4 C’s of Color Management” those being characterization, calibration, correction, and communication.

• Characterization refers to the use of device profiles to define, among other things, the color response of the given medium. The color response includes both the color gamut, or limits, of the medium, as well as the proportion of color output for a given color input. With a profile for every scanner, monitor, and printer being used, the software can then make the adjustments needed as an image is moved from device to device. ColorSync profiles use fairly simple linear definitions based on a few data points to define a device’s color gamut and response. EfiColor, on the other hand, defines the response based on hundreds of color space points, and can represent complex nonlinearities in the device’s color response.

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• **Calibration** refers to the process of taking a given device and bringing its operation to within the specifications published by the manufacturer. For example, two computer monitors of the same model showing the same image side by side will display visible differences in color. In addition, manual controls, such as contrast and brightness, or software controls, such as *white point* and *gamma*, can also have a dramatic effect on the "look" of the monitor. The *white point* can be adjusted to simulate the hue of various lighting conditions such as daylight or fluorescent light. The *gamma* setting defines the curve used to set the brightness of midrange colors. Calibration software, typically used in conjunction with a hardware sensor that is attached to the screen with a suction cup, is used to specify the white point and gamma, measure the physical response of the screen, and adjust tables in the video card to bring the display within spec.

• **Correction**, or *color correction*, is a manual process of adjusting the way the image looks, for esthetic reasons. In some cases it is necessary to correct for earlier problems such as using the wrong film type or filter at a photo shoot. In other cases the artist may wish to compensate manually for known inadequacies in the color gamut of the target medium. A good color-management system allows the artist to use a monitor to accurately apply color correction to an image destined to be printed or displayed with another medium.

• **Communication** is the mechanism used to pass color information from one software application to another. For example, a photo may be retouched in Photoshop and then imported into QuarkXPress for page layout. In some cases the image file can have color-management information added to the file format, to be used automatically by the importing program, and in other cases the information may have to be specified manually.

EfColor is provided as modular software, and includes an EfColor processor that acts as an engine in the system folder to execute needed transformations; a number of profiles for the user's scanner, monitor, and printer devices; and interfaces to applications. EfColor is apparent to the artist only through the applications that use it, and operates in the background rather transparently.

EfColor provides a number of services. The most obvious service it provides is the accurate translation of images from one device's color space to another, allowing even low-cost color printers to produce output with good color fidelity. In addition, EfColor can be used to simulate various output media on the monitor, and can produce accurate full-color separations for various high-end digital printers and standard presses.

In addition, EfColor can provide *gamut alarms*, which give the artist a visual indication on the monitor of colors in a given image that are beyond the range of the target printer. *Gamut mapping* allows the artist to control how out-of-gamut colors are transformed into colors that can be reproduced on the target printer. Choosing the *photographic* (or perceptual) rendering style will shift both in- and out-of-gamut colors to preserve the relative range in the image, but choosing the *solid-color* (or...
colorimetric) rendering style will only shift the out-of-gamut colors to the closest available in-gamut colors.

**Future Color Technologies**

Even though color management as described is still evolving as a somewhat hidden enabling technology, and has only recently appeared at the user level in products such as QuarkXPress, new technologies for improved color are under development. While they will first appear in the high-end color-printing industry, they will soon affect the prepress tools artists currently use.

Leaf Systems has developed a 48-bit color standard, TIFF-file specification, and set of software tools for use with high-end scanning equipment. While most computer users think of 24-bit color as "true color," in fact the human eye can differentiate colors with the equivalent of up to 48-bit precision. High-end scanners, such as the LeafScan 45, actually capture 16 bits of color level per primary, and so are a close match to human perception. In use, however, these scans are "rounded down" to 24-bit precision, and color information is lost.

The Leaf HDR (for High Dynamic Range) system preserves 48 bits of color resolution throughout the production pipeline. This allows scanned photographs, for example, to retain detail in areas of shadow and highlight that can be brought out digitally. In addition, digital images archived with 48-bit color resolution will be able to take full advantage of future imaging technologies.

A group of companies including Apple Computer, Adobe Systems, EFI, Fuji, Pantone, Scitex, and many others is backing a research project by Davis Inc. called HiFi Color. The focus of this research is to create printing processes that have an increased color gamut by using a system of seven or more inks. Unlike the current CMYK systems, HiFi Color will only use at most three inks per color, drawing from two achromatic colors (black ink on white paper) and two of six chromatic colors (such as cyan, magenta, yellow, orange, violet, and green). In the future, rather than creating a four-color separation, an image file with color-management tags may be sent to the printer and then separated at the press site, optimizing the ink set for the given image.

A recent innovation called *stochastic screening* will also be part of HiFi Color. Current presses print images by using screens that generate dots of variable sizes that are equally spaced along parallel lines of constant angles. Stochastic screens use much smaller dots distributed in a random pattern, but with a density that corresponds to the color intensity. Already available from both Linotype-Hell and AGFA for traditional CMYK presses, stochastic screens increase the apparent resolution and eliminate artifacts such as moiré patterns, rosettes, and other screen-related patterns.

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**Color Management at the ACF**

At such ACF Arts and Media facilities as the Student Studio and the Innovation Center, EfiColor is included as part of our standard system folder. An immediate advantage is that HP XL300 color-inkjet prints can be made with improved color fidelity. The 3M Rainbow dye-sublimation printer in the Innovation Center can be used as a prepress proofing machine and has its own color-management system, which was developed to parallel the 3M MatchPrint system. We expect to add an EfiColor profile for the 3M Rainbow as soon as it becomes available, and it will then be integrated into the EfiColor system.

EfiColor is currently supported by QuarkXPress 3.2 and Cachet 1.0.2, and we expect to add EfiColor support to Photoshop 2.5 in the near future. As part of the Quark 3.2 desktop-publishing system, EfiColor provides greater accuracy in generating color separations, and in matching monitors to printed output, and greater control in color correction. Cachet 1.0.2 is a product from EFI, the makers of EfiColor, and is a powerful tool for enhancing and correcting color images and achieving consistent color. For example, having corrected a given image from a roll of film with exposure problems, the resulting script could automatically be applied to the other images on the roll. In addition, printing to the HP XL300 printer from Cachet is the easiest and most accurate way to do so under EfiColor management. Until EfiColor is added, color printing from Photoshop 2.5 will be less accurate than from Cachet.

The HP Iic and Microtek flatbed scanners are generally used with the Ofoto scanning package. Ofoto uses Apple ColorSync but not EfiColor. We have recently received EfiColor profiles for these scanners, and hope to bring them under EfiColor support. The LeafScan 45 in the Innovation Center is not supported under EfiColor but seems to generate very accurate color nevertheless.

All Arts and Media computer monitors are calibrated weekly using a SuperMac Supermatch screen calibrator, which updates both EfiColor and ColorSync profiles. In addition, the Arts and Media section of the Innovation Center has 5000K lighting and neutral-colored surfaces for proper color viewing.

— P.G.
Computing in the Humanities

Computer Advances in Egyptology Produce Benefits for All the Humanities

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What, you might ask, does Egyptology, the study of Ancient Egypt, have to do with computers? These days, a great deal. Computer scientists have long offered their assistance to my specialty, since the problems of handling hieroglyphic text lead to solutions that can be useful in handling other problems. With the development of graphically oriented environments such as the Macintosh's operating systems and Windows on DOS-based IBM-compatible computers, Egyptologists all over the world have rapidly adopted the desktop computer as a major tool for conducting research.

This summer I had the pleasure of attending the tenth annual conference on Informatics and Egyptology in Geneva, Switzerland. More than two dozen papers were given in the conference, so here I can only mention what they revealed about emerging trends in the use of computers in Egyptology. In retrospect, I realize that much of what was discussed was equally applicable to other fields in the humanities. In this article and others to follow, I hope to show the generalization — how the topics discussed at this specialized conference can be of practical value to other disciplines.

When I browse through the collected papers from previous conferences, I am struck by how far computer-aided Egyptological research has progressed in just a few years. At the first five conferences, the biggest issue was the development of a universally acceptable encoding system for hieroglyphic texts. The result of this is the so-called Manuel de codage, containing a list of over 4000 signs and their codes. In the subsequent years,

Professor Goelet is a member of the Department of Near Eastern Languages and Literatures (FAS), where he teaches Egyptian Language and Culture.

Glyph for Windows is a program that can be used with Word for Windows to convert transliterated text to full hieroglyphs for display on the screen and transmittal to a printer.

the conferences focused on how to print hieroglyphic text and display it on a computer screen. The tremendous advances in microcomputer hardware and software technology have had an enormous impact in this area. Today, an Egyptologist with a standard off-the-shelf computer can use a standard commercial word processor such as Word for Windows in conjunction with a wonderful program called Glyph for Windows, and easily write a scholarly article containing normal text, transliteration with diacritical marks, and hieroglyphic signs (see illustration). Of course, similar products have been developed for the Macintosh as well.

(continued on page 8)
WordPerfect 6.0 for DOS: A First Appraisal

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This summer, WordPerfect released version 6.0 for DOS, the newest version of the popular word-processing program, more than three years after the previous version (5.1) came out. Version 6.0 represents a giant leap, comparable to that from version 4.2 to 5.0; it reportedly has some 639 improvements or new features.

WordPerfect 6.0 for DOS could easily fool a user into thinking that it is a Windows product; it has much of the look and feel of its Windows counterpart. Those contemplating switching to 6.0 from their tried-and-true version 5.1 may take comfort from the fact that most of the old key commands apply to the new version. They'll probably be delighted to learn that now, instead of having only two document screens to work with (as in 5.1), in 6.0 they can work on nine documents at the same time. In addition, there are pull-down screens, dialogue boxes, scroll bars, and even support for faxes, E-mail, and color printing.

Changing to a New Key

Many users will breathe a sigh of relief to learn that some keys have changed: the Help key is now <F1>, as in most other commercial DOS packages. The <Escape> key no longer displays the mysterious message Repeat Value = 8, but rather assumes the traditional role of the Cancel key. (If you absolutely insist on seeing the Repeat Value = 8 message, you can simply issue the Ctrl-R command.) It really does appear that WordPerfect has been listening to its customers. There is now an Undo command, which undoes any format changes. It will even return a spell-checked and corrected document to its former incorrect state. The Undelete key (a.k.a. the Escape key) is still able to recall the last three deletions.

WordPerfect 6.0 lets you work on as many as nine documents at once; shown below are two versions of a screen with five windows "tiled" to fill the screen (alternatively, you could shift from one to another, or you could cascade them, so that only one is fully visible).

There are now three ways to view a document— the familiar Text mode (left below), Page mode (which looks like the view mode in 5.1, but permits editing), and Graphics mode (right below), which shows...
You can function quite well in 6.0 without a mouse, but there are certain advanced features that simply can’t be used without one, especially in the realm of graphics. So if you plan to create any fancy newsletters or brochures containing graphic figures, I would recommend that you splash and buy a mouse; you can get one for as little as $20. In fact, WordPerfect 6.0 may seduce you into going the mouse route in preparation for what may be the inevitable switch to Windows.

For the DOS wordsmith, a useful new feature is the inclusion of Grammatik, which may be used to check the grammar and style of your documents. Of course the familiar standbys, the Speller and Thesaurus, are both there. A novel feature is the document-specific dictionary, which records the words peculiar to your document and is saved together with the document. (You can still create supplementary dictionaries of words that you’ll be using in several documents.) The Document Information feature calculates and displays many statistics about your document, such as the number of characters, words, sentences, and pages.

Formatting Codes and Innovations

The familiar Reveal Codes screen is still there, although its default size is smaller now, only about a quarter of the screen, leaving you with a larger document screen (as before, you can customize the size). But there are several small changes worth noting. The paired codes, such as [BOLD] and [bold] have been replaced by the more explicit [Bold On] and [Bold Off]. Similarly, the underline codes have become [Und On] and [Und Off], which should make WordPerfect novices a little happier.

As in version 5.1, these paired typographical codes can be placed with function keys — F6 for Bold, for instance — toggling on before the affected words and off after. Or you can block an area with the mouse or cursor and apply the feature. You now have the added convenience of obtaining Bold, Underline, and Italics by the commonly used Ctrl-B, Ctrl-U and Ctrl-I commands, respectively. Pressing Ctrl-N cancels these commands and returns you back to normal typing.

A nice innovation in 6.0 is that you can now block text to apply other sorts of formatting, too. For example, suppose you have typed several single-spaced paragraphs. Suppose now you want to make the second paragraph double-spaced. What you had to do in WordPerfect 5.1 and its predecessors was to place the cursor before the second paragraph and change the spacing. However, since this double-spaced the rest of the document, you then had to go to the end of the paragraph and set the spacing back to single. Now all you have to do is to block the paragraph in question and apply the command to double-space the blocked text. This places a [+Ln Spacing:2] code at the beginning of the blocked area and a [-Ln Spacing:1] code at the end, to ensure that the rest of the document is single-spaced.

You probably thought that having four kinds of margin styles was enough for all your needs. Not so, my friend. In addition to Left, Right, Center, and Full Justification, there is now a fifth one called Full, All Lines. This feature has the effect of fully justifying even the last line of a paragraph, a line that is terminated by a Hard Return. This is convenient when you want to stretch a title from one margin to the other.

Searching with Wild Cards

As 5.1 users will recall, the Forward Search is initiated by pressing the F2 key. Something new and possibly quite useful has been added. In WP 6.0, you can use wild cards in the search. As usual in DOS (and in some other WP features, such as the look-up feature of the Spell Check command), the asterisk, *, is used for as many characters as you like and the question mark, ?, is used for a single character. For example, the search

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graphics in place. WordPerfect 6.0 will wrap text around the shape of a graphic if you select “Contour” (above left). And it allows you to see a sample of any available font in the size you select in the Fonts dialogue box.

— Julia R. O’Brien
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Virus Alert! Brochure Available from the ACF

Computer viruses are an unfortunate fact of life — especially anywhere, such as a university, where machines and disks must be shared. Viruses are small programs designed to write themselves onto computer disks whenever they get a chance, and then to do unwanted things, from bouncing balls across the screen to ruining all the files on a hard disk.

The Academic Computing Facility recently prepared a Virus Alert! brochure for use in its microcomputer labs. Since some of the advice in the brochure applies only to a site where each computer will likely be used by several people each day, the ACF hopes soon to issue a different brochure for general users. Meanwhile, if you would like a copy of the Virus Alert! brochure, you can pick it up at the ACF's Innovation Center on the second floor of Warren Weaver Hall (998-3044) or at any of the ACF's microcomputer labs.

Perfect Pricing for NYU

And now for price. WordPerfect offers a sharp educational discount for NYU faculty and staff with its Customer Advantage Program. If you take an officially approved departmental requisition form to the NYU Computer Store, you can get a copy of the program for the unbelievable price of $20. A staff member will actually copy the seven high-density disks for you, so if you don’t want to fork over an additional $16 for a box of ten new disks, take your own new unformatted disks with you. The $20 fee does not include documentation, but there is no shortage of books on WordPerfect 6.0 at the Computer Store.

Egyptology (continued from page 5)

Since we have more or less solved such practical matters as printing and displaying hieroglyphs, the cutting edge of computer-based Egyptological research has now shifted towards database projects, with the emphasis on lexicographical studies and electronic catalogues of material in museum collections or from archaeological excavations. These two interrelated topics have played an increasingly important role at the past few conferences, since nearly all Egyptologists will either participate in an excavation or work with material in museums at some moment in their career.

The opening session was held jointly with a gathering of representatives of Egyptian departments from most of the major European and American museums.

We adopted a resolution formally establishing the minimum standard fields that will be in the object databases now being created in museums around the world. We hope that scholars will eventually be able to retrieve certain basic information about the objects in any collection, such as dimensions, materials, provenances, accession numbers, etc.

In light of this proposal and the number of museum curators attending, one of the most frequently discussed topics was the creation of thesauri or lexicons, those databases which act as an interface between the users and databases. For example, to ensure that users do not enter misspellings or unorthodox terminology, a simple lexicon for materials might contain two fields — a name and a code number: WOOD 1; STONE 2; etc. A user selecting “STONE” in the lexicon will actually be entering the number 1 in the main database. This technique not only greatly reduces the storage requirements in the main database, but it also makes searches much faster and more efficient.

This has become a critical problem, since museums will also need to develop software so that scholars can search through these databases using a wide variety of terms — in several different languages! — for the same type of object. For example, Ushebti, Shawabti, and Funerary figure are all terms commonly used terms for a type of magical object given the deceased for his afterlife labors. (For further details on lexicons, see my article in the March/May 1991 issue of this newsletter.)

Several other papers, including my own, were concerned with programs and techniques for entering both the textual and the pictorial material that will be stored in these databases. The discussions frequently dealt with such problems as lexicons, bibliographical databases, file compression, transmission of data over phone lines, tricks and techniques with scanners, computer animation — subjects that are all increasingly important, no matter what one’s field is. These topics will be treated in later articles.
EDUCOM Courseware Awards for 1993 Are Announced

Each year the best new instructional software is selected for the prestigious EDUCOM Higher Education Software and Curriculum Innovation Awards. This year’s winners showed an emphasis on learning by doing, along with an increase in the sophistication of user interfaces. The ten recipients, most of whom were faculty members at colleges and universities around the country, were chosen by peer review from more than 140 entries as innovative and effective users of information technology in their fields.

The award winners in the natural sciences were two biology programs — Biology Explorer Series: Photosynthesis, and Genetics Construction Kit (GCK) — and System Behavior and System Modeling, an atmospheric-science program.

The award winner in social sciences was Shadow President, a program that places students in the role of the United States President in the month before the Iraqi invasion of Kuwait. Using graphics to display maps and other materials, the user makes appropriate decisions.

The Law category winner was An Electronic Course Kit: Computer Law on Disc.

In the humanities, the winners were Mexico Vivo: Multimedia Learner’s and Teacher’s Partners for Spanish, a program that provides a complete set of materials for the first three semesters of Spanish instruction and a set of multimedia materials for both classroom and stand-alone use; and HyperChinese: The Grammar Modules. HyperChinese is a set of 14 HyperCard stacks that provide an introduction to some of the central points of Chinese grammar.

The Best Engineering Software award went to CPU SIM 2.2, a program that designs and programs computer central processing units (CPUs). In the area of mathematics, the winners were Curves and Surfaces via Mathematica, and Differential Equations Laboratory Workbook.

For more information, or for a copy of the software, contact Ruth Holder via e-mail at holder@educom.edu or at (202) 872-4200.

EDUCOM is a non-profit consortium of 600 colleges and universities concerned with computing and communications issues in higher education. EDUCOM is the sponsor of the Educational Uses of Information Technology Program (EUIT). For an announcement of a EUIT conference, see page 27.

ISEE — Colloquium Presents Statistical Inference Software Developed at NYU

A software package developed at NYU for teaching statistical inference was presented at a November 5 colloquium, too late to be reported on in this issue. Professors Richard Maisel and Caroline Persell of the Department of Sociology (FAS) discussed ISEE, a computer program that enables students and instructors to perform empirical experiments interactively, sampling from known populations, as a means of introducing the theory of statistical inference. ISEE, which was developed under Professors Maisel and Persell by Eray Ekici (now with the Academic Computing Facility), is presently being used in NYU Sociology courses.

The presentation, part of a series of colloquia on uses of computers and communications, was sponsored by NYU’s Academic Computing Facility in cooperation with the Faculty of Arts and Science; the Courant Institute of Mathematical Sciences; and the FAS Departments of Computer Science and Sociology, with support from Apple Computer, Inc.
What's New in the NYU CWIS: A New Service and More Information

David Ackerman
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NYU CWIS — the New York University Campus-Wide Information System — made its formal debut on September 15 (see the previous issue of this newsletter). The NYU CWIS is an online repository of current information about NYU events, programs, and facilities, as well as being a gateway to similar repositories around the country and the world.

Use of the CWIS is growing briskly. During the first week of October, there were 6,000 requests for information; in the last week there were nearly 10,000. To help meet the growing demand, new features, services, and information have been added to the NYU CWIS.

A New Service: The Federal Register Online

The Academic Computing Facility has obtained a two-month trial subscription to an electronic version of the full text of the United States Federal Register. The Federal Register contains an enormous amount of information, including hundreds of grant opportunities each month and information about regulatory activities.

There are several ways to approach the online Federal Register. You can look things up by subject, under categories such as agriculture, commerce, defense, education, environment, and so on. By agency, the categories start with Administration on Aging, Administrative Conference of the United States, African Development Foundation, and Agency for Health Care Policy and Research, and include over a hundred federal agencies. You can also scan the Federal Register by date of issue. Counterpoint, the company that prepares and publishes the electronic version, makes daily updates, so the material is always available in minimum time.

Initial response to this new CWIS service has been good. Since a number of offices at the University now pay for subscriptions to the print version of the Federal Register, it may be more economical to subscribe to the electronic version on the NYU CWIS.

The three menu screens you'll encounter on your way to the electronic Federal Register on the NYU CWIS.
The Federal Register

The Congressional Record publishes everything about the legislative branch: speeches, hearings, acts of Congress, etc. Similarly, the Federal Register is required to publish all regulations (both proposed and approved) that are devised to carry out acts of Congress, along with other legal notices from federal agencies. These include presidential proclamations, executive orders, grant opportunities, notices of hearings and meetings, and federal agency documents that have legal effect, are of public interest, or that Congress requires to be published. The Federal Register is published daily.

People seeking funding opportunities, or interested in matters of regulatory compliance, will find an electronic version of the Register a great convenience. This electronic service will make the Federal Register available a week before a second-class paper version would usually arrive, giving an interested party longer to respond.

Students of government, business, environmental science, and many other disciplines will find the electronic Federal Register a boon to their research. Searching for information by category will save hours of valuable time. Open up the submenu Federal Register Listed by Subject Category. After selecting one of the categories, the first item of the next menu allows a keyword search. Try this with a paper version of the Federal Register!

The Federal Register is available on NYU CWIS by selecting Information Sources: Phones, Places and Publications from the main menu, then Worldwide Information Sources and finally United States Federal Register.

More NYU Information

University departments have been making new and valuable information available through NYU CWIS. The University Information Center is providing schedules and information about transportation services at NYU, including Trolley Service, Shuttle Services, and the Explore New York Program. Look under the menu New York University: General Information, then New York University Transportation Services. Bobst Library has made information available about the New York University Archives. They have also provided access to the CARL system, a network of library catalogs and databases. There is also extensive information about using BobCat. Of course, BobCat itself is just an easy menu selection from the NYU CWIS! Explore all this under Library Facilities and Catalogs, then Bobst Library.

One of the many advantages of delivering information electronically is the ability to keep it accurate. For example, although the NYU phone book is published only annually, Telecommunications has the up-to-date information about phone numbers. Obviously, since there are changes almost daily, the printed book cannot reflect this. In the NYU CWIS, the NYU Telephone Directory, submitted by Telecommunications, has very current information. Look up phone numbers and E-mail addresses in Information Sources: Phones, Places and Publications, under NYU Telephone and E-mail Directory.

Another example of the advantage electronic information can offer was the Fall 1993 Closed/Canceled Class List provided by the Office of the University Registrar. Throughout the registration period at the beginning of the semester, the Registrar updated the closed and canceled course listing a number of times each day, thus providing students with the most up-to-date listings possible. This valuable service will be continued each semester.

The NYU Financial Aid Office is supplying extensive information to help students apply for aid and to answer their questions. Look under the Admissions, Financial Aid, and Registrar menu, then select Financial Aid.

The Computer Store has prices and other information about hardware, software, books, and its service department. Look for this under the main menu item New York University: General Information, and then Book Centers, and Computer Store. Look here for specials, as well.

Coming Soon to a CWIS Near You

Bobst Library plans to add information about library hours, make their research and information guides available, and add access to electronic journals and various other Internet resources. In the words of a Bobst spokesperson, “Watch for new developments and additions as we modify our area of the NYU Gopherspace.”

A number of other departments are in the process of making information available via the NYU CWIS. Look for what’s new under the menu About NYU CWIS, and then select New and Noteworthy. This is where you’ll find out about the latest services as NYU continues to add to the growing information base.
Members of the NYU community dialing in to NYU-NET will find faster service accessing the 2400-baud modem pool (995-3600). The ACF has enhanced this resource by adding several lines (bringing the total number of modems in the pool to 80), an extensive overhaul of all the modems’ firmware, and the installation of a new advanced terminal server.

Users who have upgraded to faster modems will be happy to know that 64 lines are now dedicated to a 14,400-baud modem pool (995-4343) supporting the V.32 and V.32bis protocols. We hope to be announcing the availability of the SLIP (Serial Line IP) and PPP (Point-to-Point) protocols sometime soon. We are also looking forward to providing the Remote AppleTalk protocol (ARA) sometime in the near future.

We have also placed a pool of outbound 14,400-baud modems into production use for connecting to dialup services (e.g., CompuServe) from NYU-NET. This new service complements our existing “dialout” NYU-NET resource, which runs at a lower baud rate. The new resource is available by connecting to “hsmodem” on NYU-NET.

In an average month, the NYU-NET modem pools complete over 60,000 incoming phone calls, which translates into better than 700,000 calls yearly. Efforts will continue to upgrade our modem resources in order to provide a reliable and versatile dial-in service.

To connect to NYU-NET, users can access the modem resources listed below. You’ll find more information in the ACF guide Connecting to NYU-NET, available at the ACF Innovation Center, second floor, Warren Weaver Hall.

— Carlo Cernivani
cernivani@acfcluster.nyu.edu

<table>
<thead>
<tr>
<th>Phone No.</th>
<th>Supported Speeds</th>
<th>No. of Modems</th>
<th>Terminal Server</th>
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<tbody>
<tr>
<td>995-4343</td>
<td>4800 thru 14400 bps</td>
<td>64</td>
<td>Xylogics Annex III</td>
</tr>
<tr>
<td>995-3600</td>
<td>300 thru 2400 bps</td>
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<td>995-4335</td>
<td>110 thru 1200 bps</td>
<td>8</td>
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</tr>
</tbody>
</table>

### Subscribing to Discussion Lists and Electronic Conferences

Users of the ACF’s UNIX, VAX/VMS, and VM/CMS computers — and holders of the ACF’s Electronic Mail Accounts — can subscribe to electronic conferences and discussion lists by sending an E-mail message containing only the command

```
subscribe list_name your_name
```

replacing list_name with the appropriate list name (e.g., acsoft-1) and your_name with your first and last name — i. e.,

```
subscribe acsoft-1 mary smith
```

Send the message to the “subscription address” listed in the article. If you are using an Electronic Mail Account or a regular account on the ACF cluster of VAX/VMS computers, use the address format shown below under “VMS.” Address formats for UNIX and CMS systems are also shown. POP (post office protocol) mailers — programs that handle E-mail on microcomputers, such as Eudora for the Macintosh and NUPOP for the IBM-type PC — use a simple address form.

#### VMS

- Internet in"%username @node"
- e.g., in"%listserv@vm.usc.edu"

#### UNIX

- username @node
- listserv@vm.usc.edu

#### CMS

- username at node
- listserv@vm.usc.edu

#### Eudora and NUPOP

- username @node
- listserv@vm.usc.edu

#### BITNET

- in"%username @node.bitnet"
- e.g., in"%listserv@wumvd.bitnet"

- username @node.bitnet
- listserv@wumvd.bitnet

- username at node
- listserv at wumvd

- username @node.bitnet
- listserv@wumvd.bitnet

You will receive an E-mail acceptance of your subscription, which will include instructions for unsubscribing. Be sure to save that information, or you may find it hard to get off the list. Then sit back and wait for your messages to start arriving.
NYSERNet Conference Focuses on Educational Uses and Issues

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This year’s NYSERNet conference focused on educators: teachers, K-12 administrators, and librarians. Of these, the aspect devoted to finding information on the Internet was probably the most popular, and not just for librarians.

Once people have found the resources, support, and technical expertise to put a computer on the network, the problem is to find all the information that “everyone” knows is out there. The network used to be a kind of club. If you wanted to know where to find information, it was a small enough club that you could find out whom to ask, and that person would tell you where the information you sought could be found. But the network has become unmanageably huge. Word-of-mouth is no longer adequate for the seeker of archives and databases.

Rick Gates — the gentleman behind the Internet Hunt, an informal monthly treasure hunt for network resources — probably described the situation best with his analogy to the wild and woolly frontier. There’s gold in them there networks, but there are pitfalls along the way, too. How does one get around the “Telnet quicksand traps” and all the fool’s gold to find the true ore?

Today’s information miner can employ guides, in the form of programs such as Gopher or Archie. Using those guides, the data stored at sites worldwide becomes manageable. Of course, the frontier is a lawless place. None of the data you find is guaranteed to be good, and low-quality ore abounds. And as for laws that regulate societies — well, if you offend too many people you’ll suffer a “virtual lynching” in the form of a flood of angry E-mail. But specific rules with specific penalties don’t really exist.

What are Rick’s favorite guides to resources? The alt.internet.services newsgroup is very useful, as are the pacs-l and nettrain mailing lists. WUarchive — the archive at Washington University in St. Louis — has a great collection of software that you can bring back to your home machine, all of it either free or shareware. Gopher is one of the most useful programs available for navigation. If you don’t know how to use Veronica for searching and bookmarks for keeping track of your favorite menus, come to one of the ACF’s (free) talks on the Internet, as these two tools make Gopher triply useful.

K-12 on the Internet

Use of the Internet in grade and high school was highlighted. Navigation was again mentioned. Teachers can “Ask Eric” about anything to do with education (from a teacher’s perspective) or about navigating the Internet. They just need to send electronic mail to askeric@ericir.syr.edu and an answer will be sent back within 48 hours. ERIC — the Educational Resources Information Center — even has an archive of questions and answers, sorted by topic, that you can reach via Gopher, so those teachers who would rather find things by themselves, or haven’t the time to wait, can try to find the answers on their own.

The question of just what K-12 classrooms are doing with their network connections was answered over and over again. A big National Science Foundation project is the Copernicus National Testbed. One of the schools involved in this is the Ralph Bunche School in Manhattan. Copernicus is trying to establish a project-oriented classroom community, increase productivity, and allow

(continued on page 18)
World-Wide Web: Another Route Through the Network

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As the total information available on the Internet continues to grow, it becomes harder and harder to sift through it all and locate the pieces that are relevant. A user may find a useful document one day, only to realize, when a colleague asks a week later where she obtained it, that she cannot recall the address of the source. And with the proper address, many users of the network find it unduly cumbersome to use the necessary Telnet and FTP commands.

Recently, Gopher servers — which facilitate access to information all over the Internet through the menu-driven Gopher software from the University of Minnesota — have become phenomenally popular (for more about Gopher, see Hochberg and Ackerman’s article in the September issue of this newsletter). This demonstrates that an improved mechanism for spanning file structures across the Internet can vastly increase the usefulness of networked information.

More developments are to be expected. As a taste of what we can anticipate with the coming broadband-information highway, we need look no further than the World-Wide Web. Otherwise known as WWW, W3, or simply the Web, it has emerged from the high-energy-physics community; its chief software developer was Tim Berners-Lee of CERN, the European particle-physics laboratory. The Web utilizes hypertext — that is, text with key words marked with tags that can be activated to call up related information — which lends it a degree of flexibility not presented by Gopher’s menu hierarchy. But other means of navigating the Internet are not ignored; from within the World-Wide Web, one can take advantage of a number of different network protocols. Thus, besides accessing WWW servers, one can reach the large number of Gopher services and WAIS key-word searches, as well as FTP and Telnet.

Within the high-energy-physics community where this software has grown up, large groups of collaborating researchers working in different countries are essentially using the Web as their “groupware.” CERN has placed the software kernel for WWW in the public domain, for use by anyone who wishes to provide information. A small collection of personal notes on a workstation can be seamlessly integrated across the Internet, just as data from an IBM mainframe can be. Even though much of the traffic on the Web now is related to physics, many other subject areas are growing — legal texts are one example.

The best way to learn about World-Wide Web is to try it out. There are many ways to do so, from the simplest Telnet connection to sophisticated clients — software packages that provide an interface between

Carol Hutchins is the Director of the Courant Institute Library.
the Web and the user's computer or terminal. It's possible to telnet to info.cern.ch and access it from there. But it's better to use a browser closer to home — Lynx, at the University of Kansas (ukanaix.cc.ukans.edu), is an interesting alternative; it displays hypertext as highlighted letters, even on a dumb terminal. Anyone with an account on ACFl or ACf4 can use the simple Web line-browser, which is started by typing www. What you will get is a "home page," with text and numbers in square brackets, each representing a hypertext link to another page of information (see illustration).

Other clients are either available now or under development. For X Windows, there are Midas and Mosaic, the latter now supported by NCSA. A client for the Macintosh has recently been released, and Cello, a client for MS-Windows on the PC, is being developed at Cornell. The various clients have different capabilities. The X Window clients can display full-color graphics, motion video, and sounds. The hypertext links change color to remind the user that a particular link has been used during a session.

Finding Proteins on the Web

As a result of the Human Genome Project, the structures of more and more proteins are being resolved through the use of X-ray crystallography and NMR techniques. The central depository for protein structures, the Brookhaven Protein Data Bank (PDB), now has roughly 2,000 structures available for public use. By 1998 more than 10,000 entries are expected.

Searching, retrieving, and viewing PDB structures used to be a rather cumbersome and time-consuming task. With the implementation of a Gopher site at Brookhaven's PDB (which allows searching headers by key words), the process was greatly simplified. Brookhaven's Gopher server can be accessed directly via Gopher (pdb.pdb.bnl.gov), or indirectly from several of the World-Wide Web's excellent Home Pages (e.g., the ANU Molecular Biology).

Mosaic, available at the ACF's Scientific Visualization Center, permits the user quick and easy access to all Gopher and Web sites. In addition, the Silicon Graphics machines running Mosaic also house such molecular viewing programs as XMol, Spartan, and Insight II. This permits the user to search, retrieve, and view proteins all within a matter of a few minutes. Using Insight II adds the extra dimension of viewing several protein structures simultaneously on screen for structural comparison. — Marvin Rich

Those interested in providing information through World-Wide Web will need to produce the hypertext links for their information, using a standard called Hypertext Markup Language (HTML). Because HTML is defined in terms of the ISO Standard Generalized Markup Language (SGML) — which is viewed as a key component in the development of electronic publishing — it is easy to see that World-Wide Web may play a role in enabling the publication of electronic journals and multimedia documents. (For more on SGML and electronic texts, see De Belder's article in the May 1993 issue of this newsletter.) Indeed, some physicists are already using it for the online retrieval and screen display of physics preprints, complete with mathematical symbols and formulas.

For Further Reading . . .

For more information on World-Wide Web, the most readily available source is chapter 13 of Ed Krol's Whole Internet User's Guide and Catalog, available for $24.95 at the NYU Computer Store and on reserve in almost all of the NYU libraries. For more technical information, see Tim Berners-Lee, et al., "World-Wide Web: The Information Universe," Electronic Networking: Research, Applications and Policy, volume 1, number 2, 1992.

Obtaining an EMIS Account

The ACF's Electronic Mail and Information Services (EMIS) Accounts provide E-mail connectivity and network access from your desktop computer to information resources at NYU and around the world. (E-mail is also available automatically to those with accounts on ACF mainframes and minicomputers.)

EMIS Accounts are available to all NYU faculty, research staff, and administrators, and to all students enrolled in degree or diploma programs. Simply apply at any ACF computer lab (see inside back cover for locations and hours). And, if you are unfamiliar with E-mail and network use, ACF classes and pamphlets will help you get started.

Faculty and staff members, if they prefer, may request EMIS Accounts by letter. Please use departmental letterhead with the department's address and phone number, and include your name, title, and campus address and campus phone number. Please send your request to the Academic Computing Facility Accounts Office, Room 305, Warren Weaver Hall. For additional information on ACF computer accounts, please contact the ACF Accounts Office at 998-3035.
After Glasnost: NYU Colloquium on Nets, Government, and Business in Russia Today

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Anatoly Voronov — Russian activist, journalist, satirist, electrical engineer, and networker — recently told a rapt NYU audience about the difficulties of doing business and running a network in present-day Russia, and of the role that the free network, Glasnet, sought to play in Russia’s emerging democracy. On September 21, at the first of this fall’s NYU colloquia on the uses of computers in communications, Voronov spoke of governmental chaos, of two opposing forces more intent on impeding each other than on governing the country. Later that day, we learned that Boris Yeltsin had dissolved the Russian Parliament, and Parliament had retaliated by removing Yeltsin from office. Voronov had not exaggerated.

What is the role of a free network in Russia today? Two weeks after Voronov’s NYU talk, as supporters of Parliament marched through Moscow and assaulted the mayor’s office and the television station, Glasnet was sending reports to its subscribers in Russia and its friends abroad. When units of the Russian army bombarded the Parliament building, more reports came. When Yeltsin censored the newspapers, Glasnet published the censored articles. When elections were called, Glasnet began posting descriptions of the various parties and their platforms, and obtained absentee-voting instructions for Russians overseas.

Glasnet’s Background
Glasnet proclaims its mission in its name: to be an open network. In Russia the government has a large network that tends to be secretive, but is presumably state-of-the-art, including a project to extend fiber-optic cable along the Trans-Siberian Railway to Vladivostok; but it is closed to outsiders. Sprint is setting up a commercial network whose fees are high enough to preclude its use by ordinary Russians (a single fax costs about $10); it is used mainly by foreign firms for communication between their Russian branches and their home offices. RelCom Demos, another Russian network, has moderately high rates and seems to be oriented toward Russian business users. Glasnet aims to democratize electronic communications, which means having the lowest possible rates (roughly $10 a month).
Monitoring Moscow via NYU-NET

I had invited Anatoly Voronov home with me after the colloquium. When we walked into the house, the television set was tuned to CNN and my wife exclaimed, “Look what’s happening right now in Moscow!” Voronov watched the television for five or ten minutes, and then asked me if I had a computer at home. We went to the computer and I logged in on one of my ACF accounts. He telnetted to his host computer in Moscow and looked at the current news traffic and mail on the system. After a few minutes, he said, “Don’t worry; nothing much is going to happen tonight,” and wrote a letter to his sister asking for more information. We then logged off both computers and joined my wife for dinner.

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The network was launched in January 1991, after preliminary testing with a core group of twenty subscribers. At this point there are about 1200 subscribers. Through Infotel, there are connections with local nodes in seven cities. About half of the subscribers are individuals, and roughly 20 percent are small businesses. Another group comprises nonprofit organizations such as research institutes. A group of some seventy schools form a logical network within Glasnet called PilotNet.

The host computer in Moscow has about twenty-five telephone lines. Subscribers can connect by modem directly to Moscow or through the nearest subhost.

Connections between Moscow and the subhosts are made through the separate network originally set up for the Communist nomenklatura, whose lines can now be leased.

Glasnet first connected to the west through dial-up connections with a host computer in San Francisco owned by the Association for Progressive Communication, of which Glasnet is a full member. Full real-time Internet connections have been available only since August, through the National Science Foundation. There is now a 64-kilobit-per-second line linking Moscow directly with Washington, and thence to the Internet.

Communications within Russia are of course based on the code for the Cyrillic alphabet. Transmitting Russian text for transmission to the west is problematic, since there is no dominant standard for transliterating between the Cyrillic and Roman alphabets.

Operating in Political and Economic Chaos

The chaos in Russia and the rest of the former Soviet Union makes any form of communication, electronic or otherwise, problematic as well. Voronov dwelt on several of the problems that result.

With several of the former Soviet republics now issuing independent currencies that are themselves inflating, currency exchanges are too volatile for reliable communication and billing, so it is impractical to have permanent connections via leased lines with subhosts in the independent republics. Subscribers abroad are

NYU-Sponsored Press Information Center in Moscow Gears Up for Elections

The staff of the Russian-American Press and Information Center is busy these days, helping journalists throughout Russia plunge into covering the campaigns and the historic parliamentary elections to take place on December 12.

Russian journalists desperately need not only information on virtually every topic they cover but also training in how to acquire and use this information. The Center’s full-time staff — four librarians with expertise in networks and databases — provide both.

The Moscow Center, which opened in the summer of 1992, has been heavily supported by the NYU ACF facility since its inception. ACF consultants helped to design the electronic library and were instrumental in training the computer librarians, who have made two training trips to New York since 1992.

The staffs of the Moscow Center and the NYU Center for War, Peace, and the News Media are in daily contact thanks to NYU’s Internet connection. When the Moscow staff members are unable to obtain information for journalists in Moscow, they send requests to the CWPNM staff, who retrieve the requested information by availing themselves of NYU’s vast resources.

Under development since 1988, the Russian-American Press and Information Center was opened in May 1992 by the CWPNM in cooperation with the Institute for the Study of the USA and Canada, part of the Russian Academy of Sciences. The Moscow Center bases its work on the premise that the free and effective dissemination of information and opinion is one of the pillars of democratic politics and a market economy. By taking the lead in strengthening Russian media institutions and practices, the Center is in the forefront of the effort to contribute to a democratic and prosperous Russia.

— Julie Raskin
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Julie Raskin is Director of Eurasian Programs at NYU’s Center for War, Peace, and the News Media. We hope to have a report from Yevgenia Vornonina of the Moscow Center in a future issue.
therefore forced to use international telephone links for modem connections to one of several local hosts within Russia.

With rampant inflation, estimated at 30 percent a month, how can a relatively modest network avoid being paid late, in devaluated currency? Glasnet has hit upon the scheme of requiring subscribers to pay for their usage in advance. Various services are charged in terms of an internal unit called ECS (or EKS or X, for electronic communications system), and those charges do not change from month to month. Each month, however, the price of an ECS in rubles can be adjusted, so during inflationary times it is to the subscriber’s advantage to buy the ECS in advance, at a cheaper rate.

Other problems contribute to the general difficulties. Computer equipment, virtually all imported, is very expensive and hard to get; equipment donated by well-meaning foreigners to public institutions often ends up in private hands. Income taxes are high in the upper brackets, and since they’re based on pre-inflation norms, too many people are in the upper brackets. Laws governing taxes and businesses are complex, frequently rewritten, and contradictory.

This colloquium was sponsored by the Academic Computing Facility; the Faculty of Arts and Science; the Courant Institute of Mathematical Sciences; the FAS Departments of Politics, of Computer Science, and of Slavic Languages and Literatures; and the Center for War, Peace, and the News Media (FAS), with support from Apple Computer, Inc.

The NYU Colloquia on Computers and Communications: Stay Tuned for More

Also featured in this fall’s NYU colloquia on computers and communications was a presentation by W. Russell Neuman, Director of the Edward R. Murrow Center at Tufts University’s Fletcher School of Law and Diplomacy, and author of the forthcoming *The Gordion Knot: Political Gridlock and the Communications Revolution*. A report of his talk, *The Communications Revolution: Who Wins, Who Loses?* will appear in the January issue of this newsletter, along with a more complete report of a third colloquium discussed briefly on page 9 of this issue.

The NYU colloquia on computers and communications are sponsored by the Academic Computing Facility and the Faculty of Arts and Science, with support from Apple Computer, Inc. Individual colloquia are co-sponsored by other University departments, depending on topic.

As we go to press, additional colloquia are being planned for the spring 1994 semester. Look for announcements in future issues of this newsletter, as well as in the NYU Campus-Wide Information System and in NYU Events, the University’s bi-weekly calendar. Electronic flyers are also “E-mailed” approximately two weeks before each event: to have your name added to the ACF’s colloquium E-mailing list, send a request via E-mail to document@acfcluster.nyu.edu or call the ACF HelpLine at 998-3333.

— Estelle Hochberg
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Census Data Are Now Available on CD-ROM in dBASE Format

Frank LoPresti and Bob Yaffee
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As more and more social science datasets come to the University on CD-ROMs (Compact Disks, Read-Only Memory), the Data Base Archive has been helping researchers access these data on the new medium. The data on the early CDs were formatted like those on tapes for use on mainframe computers — large rectangular arrays of ASCII data in some fixed format. They came with a program that allowed the data to be viewed and captured a single record at a time. Thus, additional keystrokes are needed to collect data for each additional census tract — not a useful way to compile the data for all of the thousands of tracts in a New York county.

Other programs have been available to extract data across fields. For example, the complex package Ex-

tracts can be used on STF files, but it requires a major investment of time — several days — to start it up.

Recently, however, there has been a move to using dBASE format. dBASE organizes the data into records, or cases, with the names of the variables included as part of the database. The dBASE variable names agree with those in the Census Bureau codebooks, usually available in a Document or Doc directory on the same CD.

Usually no more than two lines of dBASE code written into a program file are needed to take data from a 650-megabyte CD and write the specific variables from records selected on some criteria. The first command simply SETs the console output off. The second command is a LIST command noting the desired variables, selection criteria, and naming the file to be written to. Five minutes is usually enough time to select 20 megabytes of tract-level data from a Census CD-ROM and create a file on the user’s hard disk.

The Inter-University Consortium for Political and Social Research (ICPSR) usually sends large data sets on nine-track tapes. Nine-track data tapes have routinely been copied to tape cartridges for use on WYLBUR and CMS — our IBM mainframe systems. This was done for ease of handling, since datasets on these cartridges get catalogued and may be referenced by name — making for easier programming for the researcher, who can ignore the fact that the data are on a tape. The same type of cartridge is beginning to be available directly from ICPSR.

A researcher working on the ACF’s cluster of VMS/VAX computers with the ETAPE command allows these cartridges (or, in fact, the original tapes) to be accessed for use on the Cluster. This is the best path
to take to download data to a microcomputer. For researchers wishing to do some part of their work on IBM-compatible PCs or on Macintoshes, transferring files from WYLBUR is not as direct as from the cluster. And the "scratch disk" on the cluster (type help scratch at the VMS prompt) makes it possible to find temporary room for large datasets.

**Study on Domestic Violence**
Professor Jo Dixon of the Department of Sociology (FAS) is engaged in two studies concerning domestic violence for which she is using the *National Crime Survey*. In one of these studies, she is examining sexual symmetry regarding injury, attacks, and self-defense. In the other study, she is examining the deterrent value of arrest as compared with social service intervention or mere passivity.

*National Crime Survey National Sample, 1986 through 1991*, provides information on the level of crime victimization in the United States by supplying data on the characteristics of criminal incidents and victims. From a stratified multistage cluster sample of all persons in the United States over the age of 12, the National Crime survey asks screening questions to ascertain whether the respondent was victim of a crime during the past six months. Data concern the type of crime, description of the offender, the seriousness of the crime, injuries or losses, and demographic information on household members — for example, age, sex, race, education, employment, median family income, marital status, and military history. ICPSR 8864

**Young Physicians**
For Professor Barbara Heyns of the Department of Sociology, the Academic Computing Facility has ordered a two-part survey of young physicians by the American Medical Association Educational and Research Foundation. *Practice Patterns of Young Physicians* was a simple random sample (with minority oversampling) of physicians under the age of 40 who had been out of residency for at least one year. Part I of this study supplies data on their perceptions of the future of medicine, contemporary practice arrangements, career choices, family background, patient care services, current income and expenditures. Within these areas, data are available on their views of malpractice problems, the number and types of practices (solo, group, HMO, hospital, or medical school), and their relationship to underserved populations of minorities, uninsured, and disabled. Moreover, the data deal with fees, patient loads, and practice satisfaction. Part II of this study, the Socioeconomic Monitoring System study, is the AMA biannual survey on young physicians' income, expenses, hours worked, patient visits, as well as the various procedures performed and the fees charged for them. The codebook was checked against the datafile for errors by ICPSR. ICPSR 9277

**National Health Interview Surveys**
*National Health Interview Survey, 1991*. There are Household, Person, Medical Condition, Doctor Visit, and Hospital Record files in this hierarchal data collection. The 49,000 Household records include variables describing the household size and geographic region. The 120,000 Person records portray the demographics for the individuals in the survey, using age, sex, race, marital status, and education and job codes. These records also code the limits of activity for the individuals. The 88,000 Condition records, 26,000 Doctor Visit records, and 12,000 Hospital records in separate files contain information on each reported health condition, doctor visits within a two-week period, and hospitalization. ICPSR 6049

Many other National Health Interview Surveys are available with longitudinal or single-survey data.

**Microdata Sample for Teaching**
*Census of Population and Housing, 1990 [United States]: Public Use Microdata Sample: 1 in 10,000 sample*. The Public Use Microdata Sample (PUMS) 1 in 10,000 sample contains household and person records in a hierarchical file for a sample of households that completed the "long form" of the 1990 Census. It includes 500 occupation classifications, age by single years up to 90, and wages in dollars as high as $140,000. For each respondent there is a household record, containing information such as family income and type of household. This dataset comes on floppy disk for pedagogical purposes. ICPSR 6150
Electronic Resources Center: New Services and Aid for Patrons with Disabilities

Tom McNulty
mcnulty@acflcluster.nyu.edu

Returning students, faculty, and staff are sure to notice some changes in Bobst Library’s computing center, located in the B-level. Formerly the Microcomputer Center, the new Electronic Resources Center (ERC) continues to provide access to both Macintosh and IBM-compatible computers, but the Center’s new name reflects the enhanced services and new applications provided for researchers and scholars in a number of disciplines. The searching of online databases and the manipulation of electronic texts now supplement the traditional applications — desktop publishing, word processing, and spreadsheets — that formerly characterized the bulk of the Center’s activities. To support the many new research-oriented activities of the ERC, new and upgraded PCs, many with CD-ROM drives, have been added to the Center’s PC classroom.

The Electronic Text Center of the ERC houses the Library’s collection of electronic texts. Major sources included in the Center’s seed collection of e-texts include the CETEDOC Library of Christian Latin Texts on CD-ROM and the Global Jewish Database. Documents contained in these and other collections of e-texts allow researchers to use the power of the computer to perform textual analysis, create concordances, and manipulate texts in many other ways. Questions about the Electronic Text Center may be directed to the Electronic Services Librarian via E-mail at etext@acflcluster.nyu.edu or by phone at 998-2497.

Remote Access to RLIN and CitaDel Databases

NYU staff, faculty, and students with E-mail accounts can access RLIN (the Research Libraries Information Network). RLIN lists books and serials, scores, and visual and archival materials owned by over 100 major research libraries. It also contains CitaDel, a citation database. They can also search the Hispanic American Periodicals Index (HAPI), the Avery Index to Architectural Periodicals, the History of Science and Technology Database, and Inside Information, a table-of-contents database produced by the British Library. Passwords are not required. Once logged on to ACF through your E-mail account, the following steps will take you to RLIN and the databases.

1. Choose Option 5, Software, from the main Information Services menu
2. Choose Option 2, Communications-Related Utilities
3. Choose Option 3, RLIN
4. Choose Option 1 or 2, RLIN or logRLIN

Logon will be automatic. For more information on RLIN and the CitaDel databases, contact the Electronic Services Librarian at 998-2497.

The range of online information sources available in the Electronic Resources Center reflects the diverse research interests of the University community. DIALOG databases, which include databases of citations and full texts in virtually all disciplines, are supplemented by highly specialized databases such as ARTFL (an online database of French language discussed by Kurt De Belder in the May 1993 issue of this newsletter), and the Dartmouth Dante database. NYU students and faculty are reminded that in order to use DIALOG databases, they must attend a workshop in database searching (continued on page 23)

Tom McNulty is at the General and Humanities Reference desk at Bobst Library.
FRIENDS: Biomedical Databases Expanded and Updated

Jean Reibman
Jean_Reibman@macmail.med.nyu.edu

FRIENDS, the collection of online biomedical databases made available over the NYU-NET by the NYU Medical Library, has been updated, moved to a Unix computer, and expanded with the addition of new databases. FRIENDS was named after the Friends of the Medical Library, whose generous support made the move to the Unix system possible. The databases that may be searched on FRIENDS include MEDLINE, CancerLit, AIDSLine, Health Planning and Administration, Nursing & Allied Health (CINAHL) and PsycINFO (see box).

Interface Updated
The FRIENDS search interface has been upgraded. This latest upgrade has evolved into a sophisticated and powerful search system with pull-down menus, dialog boxes, context-sensitive definitions, and readily available help support. During a search of the databases, explanations for every action appear on the right-hand side of the screen: subheadings are defined and options are explained. When you enter a search term, the mapping feature directs you to the most appropriate, specific indexed term (indexers assign headings to all the articles referenced in the databases). Your search criteria may then be saved and repeated over other years and across different databases.

The pull-down menus list a wide selection of options and search tools, such as indexes and thesauruses for every database. Searches can be conducted on every field including institution. Users with their own computers may customize FRIENDS to match their preferences and configure it to meet the specifications of their own hardware and software.

Unix Computer
The collection of databases on FRIENDS has been moved to a powerful IBM RS/6000 computer, running under Unix, with 9 gigabytes of storage. Response time is very fast. The greater storage has made it possible to add more online materials. A full-text version of the New England Journal of Medicine will be added soon, along with other online journals and databases.

Searching FRIENDS
FRIENDS is available over NYU-NET, and may be searched at no charge from a station at the Coles Science Library, on the ninth floor of Bobst Library, and from stations at the Dental and Medical libraries.

If you want to search FRIENDS from your own computer, in the Database Selection window of FRIENDS, the item highlighted on the left is defined in the box at the right.

Jean Reibman is Associate Director for Information Systems at the Frederick L. Ehrman Medical Library of the NYU School of Medicine.

November 1993 Academic Computing and Networking at NYU
Databases Found on FRIENDS
MEDLINE, the bibliographic database of the National Library of Medicine (NLM), is the primary source for information from the biomedical journal literature. It contains over 6 million references to articles from over 3,500 journals since 1966. Most citations entered after 1975 include abstracts.
CancerLit. Produced by the National Cancer Institute in conjunction with the NLM, this database contains references, meeting abstracts, and commentaries on cancer and related subjects. Since 1985.
Nursing and Allied Health (CINAHL). Includes citations to nursing journals, publications of the American Nurses' Association, the National League for Nursing, and primary journals in allied disciplines. Since 1983.
Health Planning & Administration (HEALTHPLAN). Citations on nonclinical aspects of health care and delivery: administration and planning of health-care facilities, health insurance and financial management, licensure and accreditation, personnel management, staffing, planning, quality assurance, health maintenance organizations, etc. Produced by the National Library of Medicine and the American Hospital Association, since 1975.
AIDSLine. A newly added database with about 70,000 references and abstracts to the literature on AIDS published since 1980. Data sources include MEDLINE, HEALTH, CancerLit, CATLINE, AVLINE, the International Conference on AIDS, the American Society for Microbiology, and the Symposium on Non-human Primate Models for AIDS.
PsycINFO. Another newly added database, produced by the American Psychological Association. Contains summaries of the world’s journal and book literature in psychology and related disciplines. To integrate behavioral information from other fields, PsycINFO scans publications from related disciplines such as sociology, linguistics, medicine, law, physiology, business, psychiatry, and anthropology. Since 1974.

Computing for Library Patrons with Disabilities
The introduction of microcomputers and the rapid proliferation of information resources in electronic formats have been compared with the invention of movable type and the spread of printing in their profound effect on the dissemination of knowledge. For students, faculty, and other researchers with “print impairments” (blindness, low vision, learning disabilities), computerized information is now accessible in a number of alternative ways. From synthetic-speech output to desktop braille printing, computer users with disabilities can now gain independent access to previously restrictive (print) materials.
Bobst Library has added a number of hardware and software products to make computing more accessible for library users who have disabilities. Two PCs equipped with synthetic speech devices, located in private, soundproof rooms adjacent to the Electronic Resource Center, offer disabled users access to many of the ERC’s information services and applications software. ZoomText, a large-print software program, enlarges text to the size needed for effective use by people with limited vision. IBM Voice-Type allows individuals with mobility problems to bypass the keyboard completely and enter commands and text verbally to the computer. A braille printer, attached to the ERC’s network, allows users to print braille, the medium preferred by many blind individuals. For further information on Bobst Library’s adaptive computer facilities or other services for readers with disabilities, please contact Tom McNulty by phone at 998-2519 or via E-mail at mcnulty@acfcluster.nyu.edu.
Venus Observed: Magellan Probe Reveals Signs of Impact Volcanism

Volcanic action is the eruption of molten rock from under a planet's surface. The traditional view among geophysicists is that all such action results from forces within the planet. That view is being challenged by Professors Cheryl Stewart and Michael Rampino, of NYU's new Department of Earth System Science (GSAS), and Dr. Cordula Robinson of the Harvard-Smithsonian Center for Astrophysics.

Like Mars and our moon, and like the Earth, Venus has many impact craters. Perhaps the most striking feature of Venus's impact craters is that most of the larger ones (50 to 150 kilometers in diameter) have volcanic outflows from their centers or rims, such as those shown here, which suggests that the impact, rather than interior causes, triggered the flow.

Oddly, there are no giant impact craters (greater than 150 km) to correspond to the giants evident on Mars and the moon. However, there are large circular volcanic provinces (110 to 1000 km) of enigmatic origin called coronae — and the distribution of these moon, are formed when meteorites collide with a planet. This one shows clear signs of curving volcanic flows (detail, below), which, according to Professors Stewart and Rampino and Dr. Robinson, resulted when the impact triggered an upwelling of the already convectively unstable mantle.

A 75-kilometer-diameter impact crater on Venus, named in honor of Harriet Beecher Stowe. As Magellan orbits the planet, its side-scanning radar penetrates the thick atmosphere and surveys the terrain. The digital data are sent to Earth, where computers turn the billions of observations into a coherent image. The light areas here represent steep or rough areas that reflected the radar's beams; the result looks as if the sun is shining from the left on Venus's surface. (The dark stripe, parallel to the satellite's orbit, represents a gap when no data were received.) Such craters, visible on our
coronae corresponds neatly with the distribution expected of the missing giant craters. Stewart, Robinson, and Rampino therefore propose that giant meteorite impacts triggered the short-lived mantle upwellings that are generally accepted as the mechanism that created the coronae.

None of these observations would have been possible without the masses of information collected by the phenomenally successful Magellan mission to Venus. The data have been transmitted continuously since mid-1990 — over 40 gigabytes of high-resolution side-scanning radar data so far, in addition to lower-resolution emissivity, topography, and gravity data. On the radar images, one pixel represents 75 meters — a resolution more precise than satellite images of parts of the Earth. In terms of megabytes of data recovered per dollar spent, Magellan is the most successful mission NASA has ever run. The data — collated into quadrants showing areas about 75 km square, two of which make up the lower image on the previous page, and indexed through compound browsing images such as the upper one — are distributed by NASA on 67 CD-ROMs that can be read on Macintosh, Sun, and Silicon Graphics systems like those at NYU’s Academic Computing Facility.

High-performance computing and state-of-the-art scientific visualization are required to process and display the enormous volume of information that has been collected by these interplanetary probes. High-capacity computer-based networks capable of allowing scientists to collaborate and exchange information — both within an institution and, more importantly, at remote locations — have now become an integral part of scientific research. Sophisticated scientific software systems are needed to process and display the collected data. Resources to record the visual reconstructions, on paper or video, are also required. The researchers can then report and show their investigations at scientific meetings and journals.

The skilled staff of the Academic Computing Facility plays a key role in this research by providing and supporting all these technologies. The latest computers, scientific-visualization workstations, software, network connections, high-resolution color and gray-scale printers, and video recording devices have been utilized in this

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Professor Cheryl Stewart has recently joined the faculty of the newly formed Department of Earth System Science (GSAS), chaired by Professor Michael Rampino. A paper on the subject outlined here is being submitted to the Journal of Geophysical Research.

SUPERCOMPUTING NEWSBYTES

Fortran Inventor Wins Top Engineering Prize
John Backus, who invented the programming language Fortran in 1953, was recently awarded the $375,000 Charles Stark Draper Prize in engineering.

In the 1950s, I was at the Watson Scientific Computing Laboratory of IBM at Columbia University; so was John Backus. I was busy wiring computer plugboards in order to compute the orbits of the outer planets. Upstairs, John Backus was inventing the first of the third-generation computing languages, Fortran (the name is a contraction of formula translation). Fortran is still the language of mathematicians, engineers, and scientists, and John has finally won a prize for his invention.

The New York Times quoted Dr. Backus as saying, “At that time, there were very few computers, and they were enormously expensive. I wrote the system for one computer and had no idea that it would be used on any other computers, let alone for so long.”

— Eleanor Kolchin
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HPCwire for Information on High-Performance Computing
For the latest information on high-performance computing, you need look no farther than your own computer — if you have a modem or a direct connection to NYU-NET.

HPCwire, the high-performance computing industry’s global electronic exchange for news and information, is available free on Internet, and is as easy to use as reading your E-mail.

The service was launched in the spring of 1992 and by now has more than 20,000 registered users. Users can scan notes on the latest offerings from high-performance computer vendors, and chat with other users in Openline. All of the information on HPCwire is archived, so the service acts as an electronic library of information on high-performance computing.

To access the service, either use Telnet (from a VMS account) or Rlogin (from a Unix account) to connect with hpcwire.ans.net or use a modem to dial up (408) 428-2565 (set N-8-1, and a VT100 terminal emulation). At the log-in prompt, type hpcwire. You can become a registered member simply by answering some questions after you log on.

HPCwire’s main menu includes such items as What’s New, About HPCwire, Bookstore, General Information, HPC LiveWire, Job Bank, Magazines, Newsletters, Openline, and Trade Show. To find a specific item, you can use a keyword search, and

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Do You Really Need Help? Trouble-Saving Tips from the Computer Service Center

Kevin J. Edwards  
edwardsk@acfcluster.nyu.edu

NYU’s Computer Store has opened a new Computer Service Center at 7 East 12th Street (between Fifth Avenue and University Place; 998-4231), on the fifth floor. Although we’re always happy to serve our customers, we’ve found that many trips to the Service Center could have been avoided, saving our customers time, money, and aggravation. Some of the most common problems that our customers have experienced could have been prevented by following these tips.

- **Use virus protection.** There are a variety of virus-protection programs for both IBM compatibles and Macintosh computers. I highly recommend that any computer owner get either Norton Anti-Virus for IBM-compatible PCs, or Disinfectant for Apple Macintoshes (the latter is available free from the ACF). Read the manual and use the program!

- **Remove Virus protection before installing new programs.** Many virus-protection programs interfere with installing software on the system; some interfere even when they are disabled. Make sure to remove the virus protection before installing any software. But make sure that the disks are free of viruses before you install the software.

- **Refer to manuals when troubleshooting, and look at the readme files.** Computer manufacturers are constantly making minor changes to their systems. Many of these changes are listed in the manuals, and the readme files that come with the installation software have the latest updates. Even if you are experienced in setting up computers, printers, and software, make sure to look in the manuals for any changes that might have occurred. Most manuals contain a troubleshooting guide at the back. Check out this section before you conclude that your equipment is defective.

- **Call the Service Center first, before you bring the equipment in.** If you’re still having problems with your system, and think you should bring it in for services, call first! Many problems can be resolved quickly over the telephone.

- **Get a clear description of the symptom.** Write down any error messages exactly as they appear on the screen. Keep track of when these errors occur. Think about any changes you made to your system before the error.

- **Keep a list of system information.** When you call for technical support, the technician will ask you questions about your system. It’s a good idea to keep a log of your computer system. Be sure to include the make, model, memory (RAM), hard drive (storage), operating system, monitor, printer, installed software, etc. Also, keep your receipts when you pick up your equipment. These will be necessary for repairs to be made under warranty.

- **In an IBM-type PC, keep a list of changes to your config.sys and autoexec.bat files.** It’s best to back up these files prior to altering them.

- **Back up your files.** You know you need to back up your hard drive regularly, right? You need copies of all files that have changed in case your hard drive crashes. But there are some times when it’s especially important. Always back up before bringing in your computer for repair or upgrade, transporting it, or installing additional equipment.

Kevin J. Edwards is the Service Manager for the NYU Computer Store.

(continued on page 27)
Program to Honor the Memory of Max Goldstein
A special program of talks on December 3 will honor the memory of former Academic Computing Facility Director Max Goldstein. At 1:00 pm, Deputy Chancellor Sylvia Baruch, ACF Director George Sadowsky, Professor Peter D. Lax, and other colleagues and friends will share their memories of Professor Goldstein, who died last year. Beginning at 3:00 pm, there will be two technical presentations by Herbert B. Keller, of the California Institute of Technology, and Malvin H. Kalos, Director of the Cornell Theory Center. Professor Keller will speak on *Numerical Experiments on the Circle Lattice Problem*, and Professor Kalos will focus on *Scalable Computing: What It Is, and Why We Need It*. For more information, please call 998-3333.

Professor Goldstein was the first ACF Director. Upon his retirement in September 1990, he was succeeded by Dr. Sadowsky.

EASI Seminar at Medgar Evers College November 19
The Americans with Disabilities Act, which mandates providing equal access to educational facilities, of course applies to computer facilities as well. To help those who must provide those services, EDUCOM (see page 9) has developed Project EASI (Equal Access to Software and Information). EASI conducts seminars designed “to offer strategies for developing adaptive computer-technology services at schools and universities.” On November 19, there will be a one-day three-seminar EASI session at Medgar Evers College, a division of the City University of New York. The series costs $150, but a few scholarships are available for minority participants and those from city school districts. For information, send E-mail to nrcgsh@ritvax.bitnet or call (716) 475-2462.

Other Meetings of Interest
Focus: Celebrating women’s achievements in computing and encouraging collaboration across the subfields of computing. Sponsors: the Computing Research Association (CRA) and the Association for Computing Machinery (ACM). For information, send E-mail to hopper-info@pa.dec.com.

Medicine Meets Virtuality Reality II: January 27-30, 1994, San Diego, Calif. Focus: Visionary applications for simulation, visualization, and robotics in healthcare. Sponsor: UCSD School of Medicine. For information, call Karen Morgan at (619) 751-8841 or send E-mail to 70520.1227@compuserve.com.

IGIS ’94: International Workshop on Advanced Research in Geographic Information Systems: February 28–March 4, 1994, Ascona, Switzerland. Sponsor: Esprit Project 6881 of the EC, and ETH Zurich. For information, contact Thomas Roos via E-mail at roos@inf.ethz.ch.

HPCwire (continued from page 25)
can then download the articles you find to your system.

HPCwire also offers a weekly interactive magazine called *Select News*. A subscription costs $195 a year. For a free four-week trial, just send an E-mail message to trial@hpcwire.ans.net with no text. Each week, the table of contents will be sent to you via E-mail. You then select the articles of interest and send a message with the articles’ identifying numbers; they will be sent to you by E-mail.

— Frances Bauer
bucher@acfcluser.nyu.edu

Trouble-Saving Tips (continued from page 26)

- **Register your software and keep the original disks and documentation.** Software packages come with registration cards. Make sure to fill them out and send them in promptly. By doing so, you will be able to get technical support, bug fixes, and special discount offers from the software manufacturer.
- **Keep system disks, backup disks, and driver software in a safe place far from your computer.**

The NYU Computer Service Center is licensed by the manufacturers to perform service on both Apple and IBM machines. Repairs are made at the center on 12th Street, or can be done at your home or office. ■
Equipment at the ACF Micro Labs
The following microcomputer equipment is available at the ACF's instructional computer labs. All systems are connected to local networks and are linked to the campus-wide network, NYU-NET, and are connected locally to Novell-based file servers and laser printers. Over 100 packages of software are available. For hours of operation, see opposite page.

Third Avenue North Residence Hall, basement (86 computers):
- 9 DEC 486 computers with 8 MB of memory, 120 MB hard disks, and color monitors
- 28 IBM and IBM-type computers with VGA color monitors
- 19 Macintosh IIx computers with color monitors
- 30 Apple Macintosh SE computers, with two floppy drives

Education Building, 2nd floor (89 computers, excluding Arts and Media Studio):
- 20 Macintosh Quadra 700 computers with 80 MB hard disks, 20 MB memory, and 16-inch color monitors
- 2 Quadra 800 computers with CD-ROM drives and color monitors
- 6 Mac IIVX computers with CD-ROM drives and color monitors
- 17 Macintosh IIx computers with color monitors
- 20 Macintosh IIci computers with color monitors, and 17 MB memory
- 24 IBM PS/2 computers, model 555X, with VGA color monitors

Tisch Hall, Room LC-8 (63 computers):
- 25 IBM PS/2 computers, model 555X, with VGA color monitors
- 15 IBM PS/2 computers, model 30, with monochrome monitors
- 23 Macintosh Plus computers

14 Washington Place (62 computers):
- 20 DEC 486 computers with 8 MB of memory, 120 MB hard disks, color monitors and 486DX processors
- 6 Gateway 2000 computers with 486 processors, 8 MB memory, and Super-VGA monitors
- 36 IBM PS/2 computers, model 70, with VGA color monitors; 25 with numeric coprocessor and joystick drives
- 14 IBM PS/2 computers, model 555X, with VGA color monitors
- 20 IBM PS/2 computers, model 555X, with VGA color monitors
- 15 IBM PS/2 computers, model 30, with monochrome monitors
- 23 Macintosh Plus computers

Access to the ACF’s Micro Labs
NYU degree and diploma students, faculty, and staff may use ACF microcomputers, at no charge, as general users or by obtaining a priority account. Priority accounts are issued for specific academic purposes and allow priority access to ACF computers. (For hours of availability to general users and to holders of priority accounts, see box on opposite page.)

Obtaining an ACF Account
To use the lab as a general user, simply bring your current, valid NYU ID (please note that ID cards stamped “General” — which typically are issued to non-degree, non-diploma students — are not included in this category, unless also stamped “faculty”) to any of the labs listed at right. Priority access accounts (individual and class accounts) are obtained at the ACF’s Accounts Office (Room 305 Warren Weaver Hall, 998-3035). Once an instructor obtains a class account from the Accounts Office, students are eligible to register for computer use at any of the labs. Students requesting individual accounts must have their application forms signed by an instructor.
**Important** ACF **Telephone Numbers**

- ACF HelpLine: 998-3333
- Account Information: 998-3035
- Computer Documentation: 998-3036
- Innovation Center: 998-3044
- Statistical Consultants: 998-3434

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

**Dial-in Access to ACF Computers**
(Via NYU-NET, NYU's campus-wide network.)

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<td>Off Campus</td>
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<td>995-4343</td>
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*This number is recommended if you are using an older modem that has no error-correction.

**Holiday Hours**

Exceptions to regular hours: Confirmed holiday schedules will be posted via our online news and bulletin board facilities. ACF offices in Warren Weaver Hall are closed on University holidays.

**Regular Fall Hours at ACF Sites**

**User Work Areas:**

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<th>Third Ave. North</th>
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**Consultant Hours:**

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</table>

*Available to general users from 8:30 am to 1:00 pm, Mon. through Fri., and to priority access account holders during all hours of operation.
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