

INTRODUCING...

Some New Faces at CIS

Computing and Information Services is happy to announce the arrival of several new staff members in our department.

Kynn Bartlett is the new Web administrator for HMC. His duties include managing the primary HMC Web server, implementing new Web technologies, and supporting institutional Web publishing efforts. Previously, he was Web communications manager for the Claremont Graduate University. In 1995, he founded Idyll Mountain Internet, an Orange County Web design firm, with his wife, Liz. He also serves as the president of the HTML Writers Guild, the world's largest organization of Web authors. Kynn will be working in the Data Services Group with Susan Selhorst and David Williams.

Peter Sanchez is joining our department as the new PC Support Person. He will provide Windows and Macintosh support for the academic and administrative departments on campus. Peter has a great deal of hardware experience and will be working on setting up and configuring new machines as well. Before coming to HMC Peter worked for Southern California Edison in their user support department. He will be working in the User Support Group with Elizabeth Hodas, Patience Brooks, Beverly Kelley, and Michael Meyka.

We hope you will join us in welcoming Kynn and Peter to Harvey Mudd College. 🐾

Be Creative!

New Digital Cameras in A/V



Feeling creative? Want to add some spice to your Web pages? Computing and

Information Services has the answer! We recently purchased two new digital cameras for our Audiovisual Office: the Olympus D-500L and the Hitachi MPEG1A. These cameras are available for on-campus loan to faculty and staff. Students may borrow the cameras if they are working on a faculty-sponsored project or a clinic project. Off-campus use can also be arranged.

The Olympus D-500L digital camera looks very much like a conventional camera, but instead of recording the photographic images onto film that must be developed, the images are recorded in digital format onto its internal memory card. The images are stored in JPEG format on a 2 MB

resolutions. Three levels of compression are available: SQ - standard quality, HQ - high quality, and SHQ - super high quality.

The camera has a 3X zoom lens that lets you zoom out for a wide angle shot, equivalent to 50mm on a 35mm camera, and zoom in with a telephoto focal length equivalent to 150mm. It also has a macro focus feature for close up shots from 11.8 inches to 2 feet. The camera has many other popular camera features including a through the lens viewfinder, date and time stamps on the images, and a tripod mount. The autoflash has a working range of up to 15.7 feet, red-eye reduction, and fill flash for bright lighting shadow reduction.

The camera also has a color LCD panel where you can view one image at a time or up to 9 images in thumbnail format. The camera comes with software and cables for downloading the images to your PC or Macintosh computer. The software first downloads thumbnails of all of the images so that you can select which images you want to download to the hard drive. Once you've downloaded the images you can print them to a color or grayscale printer, insert them on your Web pages, or into other programs such as Macromedia Director, Microsoft Word, Powerpoint, or PageMaker.



Olympus D-500L

removable SmartMedia card which can hold from 3 to 25 images, depending on the resolution and compression level of the images taken. The camera can create images at 1024 x 768 and 640 x 480 pixel

The Hitachi MPEGcam functions much like a camcorder in that it can record approximately 20 minutes of full-motion video. Unlike a camcorder, it records the video directly in MPEG1 format onto its internal 260 MB hard drive. The camera can be connected to a TV for viewing but

IN THIS ISSUE

Some New Faces at CIS----- cover

New Digital Cameras in A/V --- 2

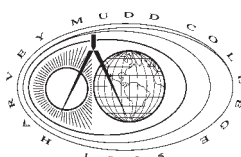
Editor's Notes ----- 3

Constructing the HMC Network ---- 4

Tricks & Tips----- 7

Q&A----- 8

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can also be connected to a dedicated PC to download the video to the hard drive. Another option for downloading the video is to remove the camera's hard drive and insert it into a computer with a PCMCIA card slot, such as a Windows laptop or Macintosh Powerbook.



Hitachi MP-EG1A

The advantage of the Hitachi MP-EG1A over using a camcorder is that the video is instantly available to be put on your Web page, on a CD-ROM, or another multimedia presentation. There's no need to digitize the video using a video capture board to encode the video in MPEG1 format.

The camera can also be used as a still camera. Approximately 3,000 JPEG format images can be stored on the internal hard drive. The camera has an interval mode for automatically timed pictures as well as a rapid sequence effect. You can even attach approximately 10 seconds of audio annotation to each JPEG image. Approximately 1,000 still images with audio can be stored on the hard drive. The JPEG stills taken by the MP-EG1A are 704 x 480 which is higher than the lowest resolution of the Olympus, but not as high as the high-resolution images that the Olympus can take.

If you are interested in borrowing one of these new digital cameras please contact Michael Meyka in the Audiovisual Office. Documentation for using the cameras is included, as are any software or cables that you'll need. 🐾

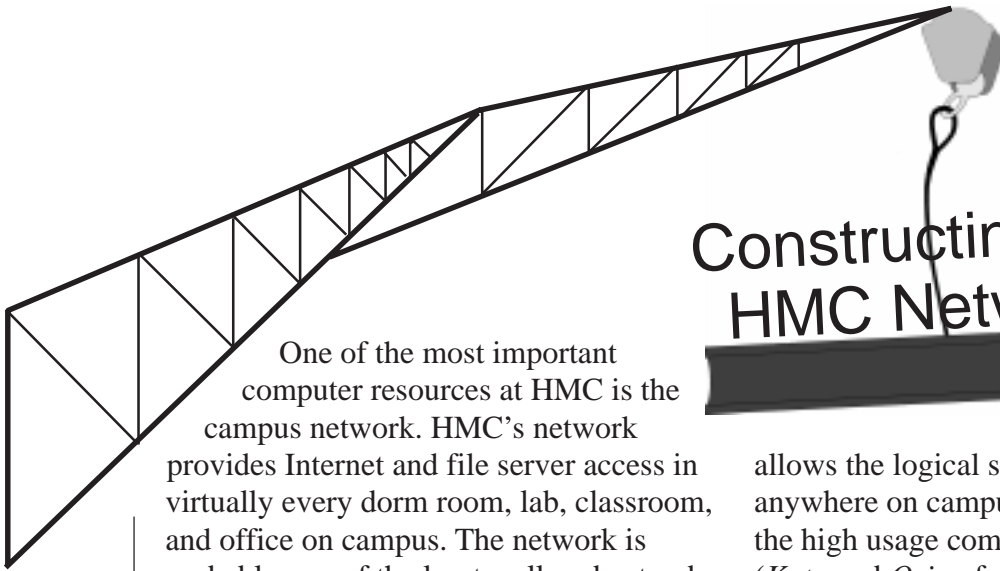
Editor's Notes

Our department has been going through a lot of changes over the past couple of months. It has been a challenging experience for us, getting to know our new users on both the academic and administrative sides of the campus. While the changes may not have been as obvious to our users on the academic side, we know that it has been a big adjustment for many of our administrative users, some of whom are using a PC in their offices for the first time. Users can always call the Help Desk if they have a problem or question by dialing extension 7-7777 or by sending email to help-desk@hmc.edu. If you have more general concerns or questions, or a problem that just doesn't seem to be getting solved please feel to come talk to me personally or give me a call.

In addition to introducing our two new staff members, in this issue of *Occasional Downtime* we have a special article by our Network Manager, Andy Davenport, on how the HMC campus network is constructed. We also have a short article describing our new digital cameras, the Olympus D-500L and the Hitachi MP-EG1A. If you'd like to see a sample of what the Olympus can do take a look at the campus map on the Web. All of the photographs, including a great aerial shot of the campus, were taken with the Olympus.

—Elizabeth Hodas

Occasional Downtime is published bimonthly by the Computing and Information Services Department at Harvey Mudd College. It is also available in a variety of formats on the HMC Web Server. Comments and questions can be directed to downtime@hmc.edu.



Constructing the HMC Network

One of the most important computer resources at HMC is the campus network. HMC's network provides Internet and file server access in virtually every dorm room, lab, classroom, and office on campus. The network is probably one of the least well understood resources on campus, however, and we've made many changes and upgrades to the network over the past couple of years. So we thought our readers might be interested in a general description of how the HMC campus network is constructed.

The HMC campus network is divided into subnetworks along logical boundaries—one for each of the academic departments, one for administration, one for the dorms, and a handful of others for special purposes. Each subnet has a block of network (IP) addresses assigned to it.

The primary physical backbone of the HMC network is built with a recent technology called ATM (Asynchronous Transfer Mode) that runs over optical fiber to interconnect the various buildings. ATM uses a very small, fixed length 53 byte data packet called a cell as its unit of transmission. The small fixed size of the cell allows efficiencies in the network equipment that promise to scale up to higher speeds, longer distances, and the eventual large scale incorporation of voice and video into the network. Large data packets from computers are broken up for transmission through the network into a succession of cells which are then reassembled at the destination.

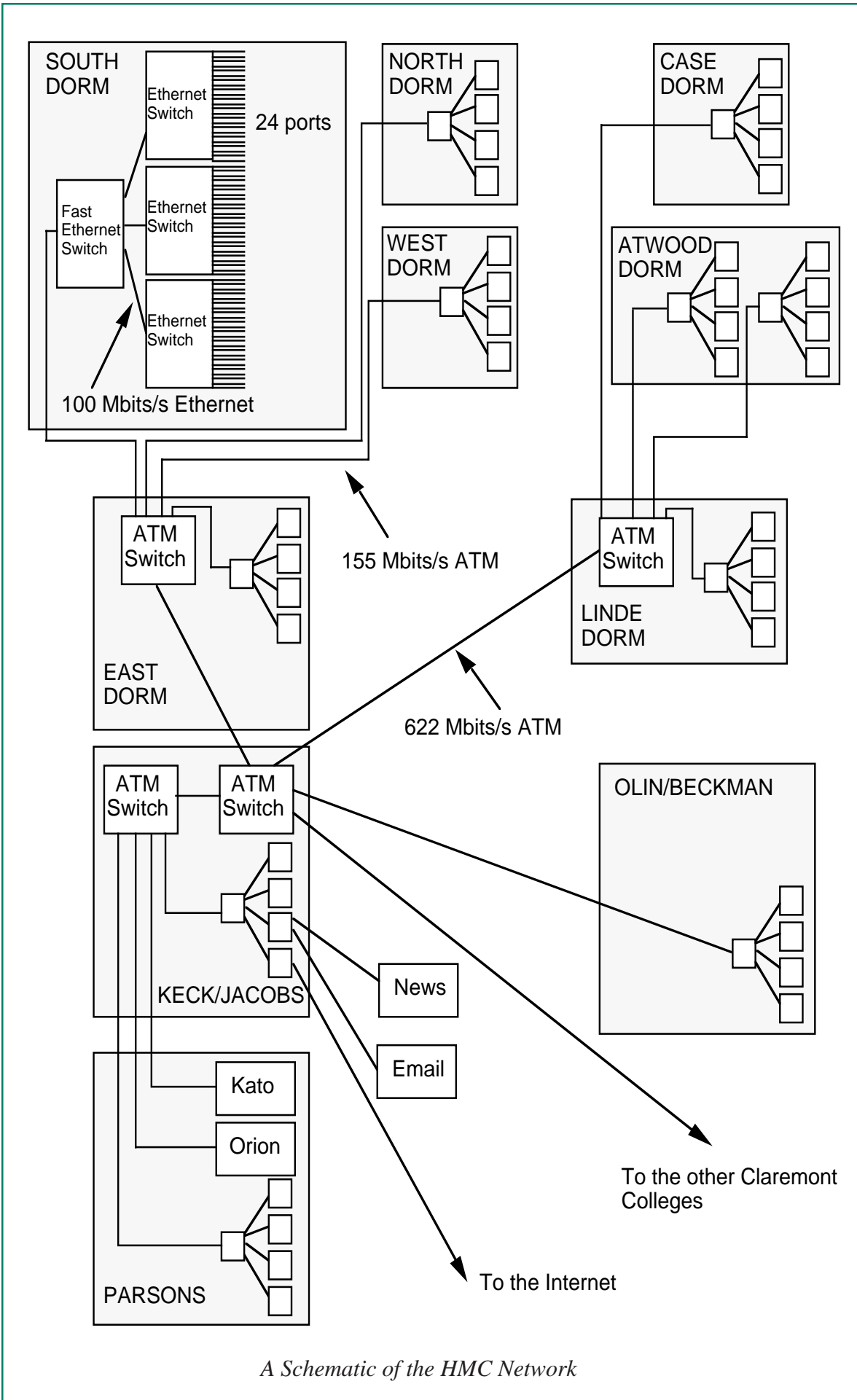
The ATM based physical network also provides a powerful VLAN (Virtual Local

Area Network) facility that

allows the logical subnetworks to appear anywhere on campus as required. Some of the high usage compute and file servers (*Kato* and *Orion* for example) connect directly to the ATM network and connect to all or most of the VLAN/subnetworks so that traffic to and from them is as direct as possible for highest performance. Smaller servers for services such as news, email and the Internet router connect via Ethernet to an ATM connected switch.

The connection at most ports on the network is Ethernet (10 Mbits/s) or its newer, faster cousin Fast Ethernet (100 Mbits/s). Making this possible is several hundred miles of wire linking wall jacks to nearby wiring closets. Each wiring closet has a sufficient number of 24 port Ethernet switches to meet demand for ports in a building. Each 24 port switch has a high speed uplink to a fast Ethernet switch in the closet that itself uplinks to a very high speed ATM switch fabric. ATM switches in Linde and East dorms and in the Jacobs building pass network traffic between each other as necessary. The figure on the next page shows some of the major components of the HMC network. The administrative buildings of Kingston Hall, Thomas-Garrett Hall and the Platt Campus Center are wired in a similar manner.

The HMC network is very modular and portions of it are upgraded periodically without much fanfare. During Summer 1997 the dorms were upgraded from hubs that allowed only 10 Mbits/s divided amongst all of the (continued on page 6)



A Schematic of the HMC Network

users in a dorm to the present equipment that provides 10 Mbits/s to every user simultaneously. Similar changes in the academic buildings were carried out in Summer 1998 that upgraded ports to 100 Mbits/s capability.

HMC was an early implementor of campus networking with special emphasis given from day one to wiring the dorms. The HMC dorms saw at least two generations of wiring before the industry ever got around to standardizing how it should be done. The first effort got underway in the Summer of 1987 using summertime student labor to pull wire through conduits and attach network jacks and wallplates. A subsequent reworking of the dorm network wire was carried out by the local cable TV company when they were installing cable in the dorms. Being first on the block with dorm network wiring has been a two-edged sword. While nearly a dozen classes of HMC students have benefitted from the dorm network, the wiring in the dorms is now the oldest on campus. It is showing signs of wear and is imposing some technological limits. Plans are on paper for yet another reworking of the dorm network. Future changes will likely also include upgrading dorm Ethernet switches to 100 Mbits/s and ATM uplinks to 622 Mbits/s.

Occasionally we are asked what network bandwidth is available in the dorms or elsewhere in the HMC network. The answer is: "It depends." A better way to approach the question (and easier to answer) is:

"What are the bottlenecks that my network traffic encounters, and with what other user's traffic is mine competing for passage through a given bottleneck?"

Taking the dorms as an example, each user is limited to the 10 Mbits/s speed of the port. The traffic on that port joins the

traffic from the 23 other ports on that switch to compete for the uplink. Since 24×10 Mbits is 240 Mbits, and the uplink is only 100 Mbits, in periods of very high usage, your traffic may slow down. In turn the traffic from your switch's uplink combines with the traffic from two or three other switches in the same closet at the next layer in the hierarchy. That switch takes the four 100 Mbit uplinks and concentrates them into a 155 Mbit ATM uplink to the ATM switches. At this point potentially 960 Mbits of traffic ($10 \text{ Mbits/sec} \times 24 \text{ ports} \times 4 \text{ switches}$) are competing for 155 Mbits of uplink. In principle this sounds bad. In practice not everyone is consuming network bandwidth at the same time, and we rarely see any of the uplinks saturate.

At the other end of the connection (at a file server let's say) your traffic competes with that of all other users of the file server for the file server's own network connection. The file server may be in use by many users coming from many different building uplinks so the constraining bottleneck may actually be the server's network connection. Likewise your Internet traffic may be limited by the speed of the network at the remote Web site more than by the HMC network. In the unlikely event that you are the only user on any of the campuses with traffic to the Internet, you would only be limited by the speed of the Internet connection.

HMC participates in a network that interconnects the Claremont Colleges to each other. The colleges share a common connection to the Internet and a handful of jointly operated services such as Usenet news. At present the Internet connection operates at a little under 6.8 Mbits/sec. This is another "bottleneck" for which each user competes with all of the other users at all of the Claremont colleges. 🐾

by Andy Davenport

Tricks & Tips

& Tricks

INVERTED TEXT WRAPS IN PAGEMAKER

If you're wondering how we created the inverted text wrap on the front cover of this month's issue of *Occasional Downtime*, read on. The default behavior of the text wrap feature in PageMaker is to wrap text around the outside of a graphic object. To apply a text wrap you select the graphic by single-clicking on it and then choose the Text Wrap command from the Element menu. The photographs on page 2 were wrapped with this technique.

PageMaker also allows you to create custom text wrap outlines. By single-clicking on the border of the text wrap you can create additional "handles" which you can then move to conform to the shape of the graphic. The text wrap around the headline graphic on page 2 was created using this method.

To create an inverted text wrap where the text wraps inside the graphic you need to trick PageMaker, however. It is not a built-in feature. First select the object and apply a regular text wrap to all sides. For our example we'll draw a simple box and apply a text wrap to it.

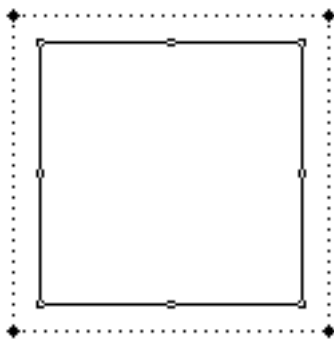


Figure 1

Now we'll invert the text wrap by selecting the top left-hand handle and dragging it across to just past the top right-hand handle. Then drag the top right-hand handle to where the top left-hand handle was previously located. It should look like Figure 2.

Next repeat these steps with the bottom two handles. When you're done your display should look like a normal rectangular text wrap. You've actually

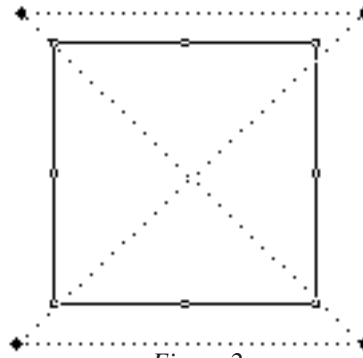


Figure 2

inverted it, though, so that the borders will force the text to wrap inside the text wrap. You can now move or create additional handles to form an interesting shape. In our example we'll create a triangle.

We'll need to do one more step before actually placing your text. This is a trick that will make it easier to force PageMaker to place your text inside the text wrap. As long as any part of the text wrap is outside the text block, PageMaker will make the text fit inside it. So we'll create four closely-spaced handles and then drag the middle two out to create a long corridor. Now we can go ahead and place our text block, making sure that it doesn't cover the outer text wrap handle. The final step is to select the original box and change the Line to None. When you're done it should look like Figure 3. 🐾

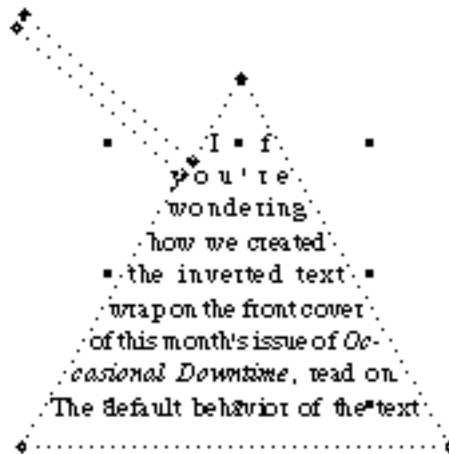


Figure 3

Adapted from *Inside PageMaker*, Vol. 3, No. 7, July 1997, pp. 14-15.

QUESTIONS *and* ANSWERS

Q: How do I access the Mastering Computers CBT workshops from my office computer?

A: The Mastering Computer CBT workshops are a series of CD-ROM-based courses that have been installed on the CIS file server Kato. We have nine courses available: Microsoft Windows 95 Fundamentals, Microsoft Windows 95 Advanced Topics, Microsoft Word 97 Proficient User, Microsoft Word 97 Expert User, Microsoft Excel 97 Proficient User, Microsoft Excel 97 Expert User, Microsoft Access 97-Part 1, Microsoft Access 97-Part 2, and Microsoft Powerpoint.

To access these courses from your office PC you must first run the Setup program to install the courses locally on your hard drive. If you are running Novell's Application Launcher on your machine the Skillb Setup program is located in the Training folder on Kato. If you are not using the Application Launcher the Setup program is located on the G: drive at
G:\Apps\Training\Skillb\Setup.exe.

Double-clicking the Setup program icon launches a wizard which will walk you through installing the courses locally on your hard drive. Installing the courses on your hard drive is preferable to running the courses over the network. You can choose which courses to install. You can install additional courses at a later time. Once the courses have been installed you can access them by clicking on the Start button and selecting Skill Vantage from the Programs menu. If you have not yet

tried one of the courses you will first need to register as a user by clicking on the Self Register button. The Skill Vantage Manager uses a database on the server to keep track of what courses you have taken and your progress in each course.

Unfortunately the courses are only available for the PC. If you use a Macintosh you can access the courses from our computer labs.

Q: I installed Acrobat Reader on my computer by downloading the installer from Adobe's Web site. But Netscape still complains that I don't have the right plug-in even though the PDF Viewer is in my plug-ins directory. How do I fix this?

A: Sometimes Netscape needs to be specifically configured to use the right helper application for a particular file type. It's easy to configure Netscape to do this, though. In Netscape 3.x select General Preferences from the Options menu. Select the Helpers tab and click on the entry for PDF files. Click the Edit button and then select the Plug-in radio button. If the PDF Viewer plug-in is in your Netscape plug-ins folder it should then select it automatically. Click OK.

The instructions for configuring Netscape Communicator 4.x are basically the same except you first select Preferences from the Edit menu and then select Applications from the Navigator category. 