Focus on Publishing

by Robin Peek

Is the Web Ready for 3-D? Should You Be?

Think twice before shaking off your flat 2-D site for a rich 3-D world

Pick up any major computer magazine today and you are likely to see 3-D or virtual reality mentioned somewhere on the cover. In their latest versions, Netscape and Internet Explorer have bundled 3-D graphic plug-ins with their respective browsers. Is it time to start thinking about shaking off your flat 2-D site for a rich, interactive 3-D world? The answer to this question is "no" if you are on the Web and "probably not" with an intranet.

Now don't get me wrong here. When a new gee-whiz application comes along, I am one of the first to say "gee-whiz." When one of the first virtual reality development products, VR, came into the marketplace a few years ago, I had to have it. I also think that virtual reality will have an important role to play in the future of publishing.

So, why am I cool about Web 3-D? Two reasons—speed and VRML 2.0.

A Resource Hog

First, virtual reality is a piggy application. Not only are the files large, but running virtual reality can fully occupy your microprocessor, and it elbows for every inch of RAM it can get. When running locally off a CD-ROM, virtual reality works quite well on current computers because when viewing 3-D on a CD-ROM, the application is devoted to the task. But, the 3-D on a local machine is different from the 3-D on the Web.

The standard for creating 3-D graphics on the Web is VRML (Virtual Reality Modeling Language). While VRML is called a modeling language, it actually contains a minimum of geometric modeling features as well as other features not associated with modeling languages. True virtual reality programming can provide a richer and more complex experience than VRML.

In order to view VRML files on the Web, a VRML browser or plug-in is needed. These browsers and plug-ins give the user the ability to "move" through the virtual reality site. Therefore, the application must be concerned about doing network and browser tasks in addition to viewing VRML.

One good site for locating VRML plug-ins and browsers is the VRML Depository (http://www.sdsc.edu/vrml). This site, maintained by the San Diego Supercomputer Center, contains a comprehensive collection of resources relating to VRML. Another good site is VRMLUser (http://www.zdnet.com/products/vrmluser.html), a site supported by Ziff-Davis Publishing.

Even with their limited capability, the VRML browsers and plug-ins require horsepower. A Pentium PC and 16 MB of RAM is typical, although I have encountered products that require a minimum of a 133-MHz Pentium and 32 MB of RAM. And, as is becoming more and more the case on the Web, these products are usually geared to Windows 95 and Windows NT.

Visualization is also enhanced by the use of 3-D acceleration cards, which improve the processing to the monitor. While new computers are frequently being shipped with such cards, most users today do not have them. Industry reports suggest that manufacturers will be shipping VRML browsers that are optimized to their cards.

Clunk, Clunk, Clunk

Even if you have a machine that screams and a LAN that blazes, waiting for the file to resolve can be painful. I have a 200-MHz Pentium with plenty of RAM connected to a switched Ethernet/ATM LAN. Our internal network is faster than our T-1. I have been using a beta copy of RealPlayer 5.0 for streaming audio, video, and animation. There is a bit of a wait (usually 10-15 seconds), but the playback is impressive and smooth.

Now, VRML files are another matter altogether. Loading typically comes in chunks. A few polygons here, a little background there, and eventually (maybe) the virtual world evolves. Depending on the complexity of the virtual world, moving about in it can be a little clunky, too. With a slower computer and a slower connection—well, remember that patience is a virtue.

If you want to give VRML a try, the Center for the Computation and Visualization of Geometric Structures, a National Science Foundation Science and Technology Center at the University of Minnesota, has a good site (http://www.geom.umn.edu/software/weboogl/zoo). These VRML demonstrations provide good examples of what the potential of 3-D publishing could be. They show how 3-D can really improve the presentation of information where traditional 2-D publishing falters.

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Not Quite Ready for Prime Time

The shapes in a VRML world are made of 3-D polygons. The more complex a shape, the more polygons are required. In order for VRML to become like HTML, there needs to be a standard regarding matters such as how to make the polygons.

The HTML standards are established by an industry consortium, and so is VRML. These specifications are established by a 60-member industrial group called the VRML Consortium (http://www.vrml.org). A draft standard, VRML 97, has been submitted to the ISO and is expected to be official by the end of the year. VRML 97 replaces the current, non-ISO standard VRML 2.0 that has been in place since August 1996.

VRML 2.0 was a considerable step up from VRML 1.0, which was much more static. Even so, the graphical qualities that are available in VRML 2.0 are cartoonish in nature. We certainly are not talking about the virtual reality qualities that sci-fi movies, like *Lawnmower Man*, make virtual reality out to be.

VRML browsers are not as compatible as the HTML browsers. Backward compatibility to 1.0 is frequently a problem. There are also differences in the interfaces and the features among the browsers. And, software publishers use nonstandard extensions, such as the popular Live3D. So, even if you have VRML capability in your browser, some sites may require you to load their own application in order to view the VRML content.

An example of this can be found at the Ziff-Davis site. In the link to the gallery you will find several selections, including one that provides a VRML site map for the Ziff-Davis site. If you click on this selection you are connected to a page that tells you "what you need to fly." You can view the site if you have Internet Explorer 3.0 or Netscape Navigator 3.0 with the Intervista WorldView plug-in, or Internet Explorer 4.0 if you also download the Microsoft VRML add-in component. If you are using Navigator 4.0 you are out of luck; a plug-in is supposed to be available by the end of the year.

If you do not have the correct browser configuration you are strongly recommended not to visit the VRML site. This is good advice. To see what would happen, I entered the site with my Navigator 4.0 browser loaded with a few flavors of VRML plug-ins. Not only did my machine become baffled, it even bypassed the blue-screen-of-death error message and ejected itself out of Windows 95.

So I fired up Internet Explorer 4.0, added the necessary VRML component, rebooted the computer, and returned to the Ziff-Davis site. I started the VRML site map and waited about 30 seconds for an image to appear (this was on a Saturday afternoon). I see the Ziff-Davis logo against a sky background. Whoopee! Only when I attempted to navigate did the links to the map appear. Click on one of the links and you are "transported" forward to a new set of links—sort of cute, but hardly worth the wait.

Someday ...

One of these days we will have buckets of bandwidth. We will shudder at the memory of downloading at 28.8. We will all become nostalgic at the recollections of the early computers that graced our desktops. The equipment will not be an obstacle. I don't know *when* that day will be. I am also sure that someday we will have a cure for the common cold. I don't know when that day will be either.

Every new technology needs people who are willing to tweak things just because they are there. So, yes, I do believe there will be good uses for virtual reality that will rise beyond being simply cute or merely annoying. However, don't expect a "gee whiz" from me if I visit your Web site and find virtual reality that has not been elevated beyond cute, and, most importantly, beyond annoying.

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technologies to build the infrastructure for electronic publishing, such as copyright management systems.

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[*Editor's Note: A number of identifier systems have emerged recently, of which the DOI system is one example. One familiar to most of us is URL (Uniform Resource Locators) identifiers for the Web; some others are PURL, developed by OCLC, URN, and SICI. I encourage readers interested in understanding these systems, the issues, and the ongoing developments to read an article by Clifford Lynch, Executive Director, Coalition for Networked Information, that appeared in the October 1997 ARL newsletter ("Identifiers and Their Role in Networked Information Applications," available at http://www.arl.org).* Information Today *will continue to report on the DOI system and related news in upcoming issues.*]