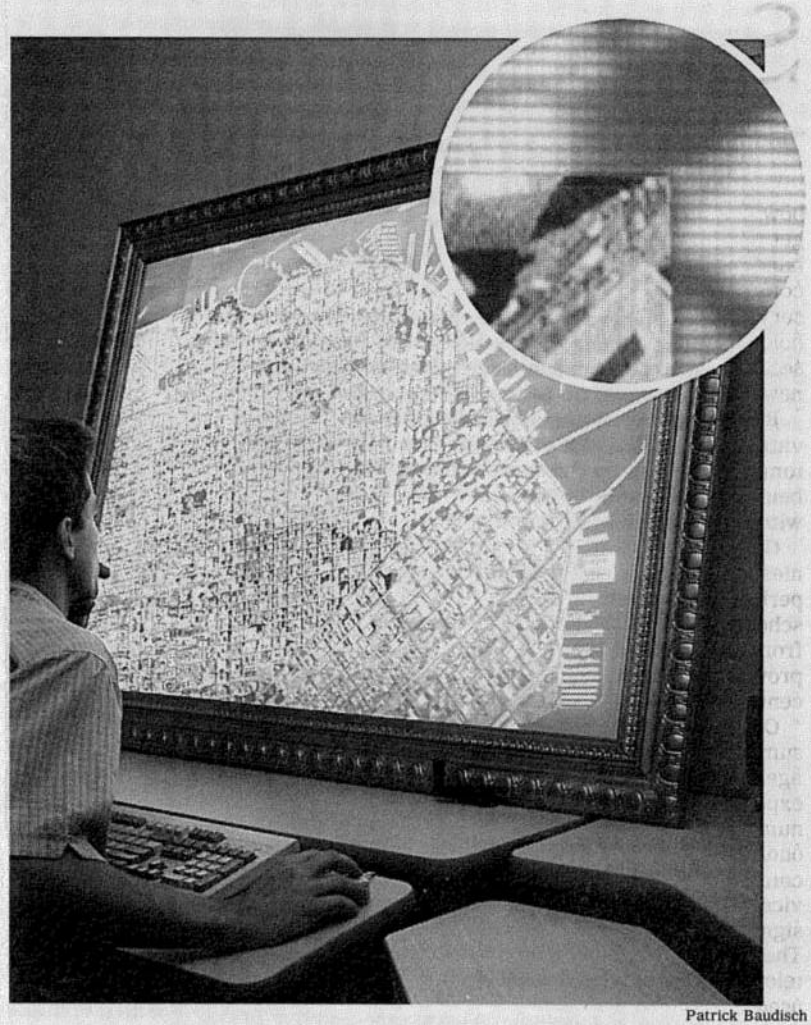
In a Seamless Image, The Great and Small

By YUDHIJIT BHATTACHARJEE



Patrick Baudisch

TWO IN ONE A screen display at the Palo Alto Research Center allows the computer user to focus on a detail without losing the overview.

IN the daily business of print journalism, losing sight of the big picture is not just a metaphorical expression. It is a very real experience for thousands of graphic artists and page designers working on computer screens, zooming in to look at the details of an image and zooming out to look at the overview.

The same is true for anybody browsing a map on the Internet. Click on the street you want to look up and the neighborhood vanishes. Click again to view the neighborhood, and the street shrinks to a fine line that is barely visible. To see the map clearly in your head, you have to switch back and forth between the two views. It is an annoyance that reflects the limitations of the standard computer screen.

To get around that limitation, engineers at the Palo Alto Research Center (formerly Xerox PARC) are designing a display that would allow computer users to focus on one part of an image without losing the overview. Looking at a city map, for example, the user would be able to get a close-up of an outlet mall and view the mall's location within the larger township at the same time.

The display consists of a flat-panel monitor embedded within a larger rectangular screen made of foam. A projector installed behind the user projects a low-resolution image of the content onto the screen surface. The monitor at the heart of the screen displays the section of the image that the user wants to see in detail.

Together, the projection and the high-resolution view on the monitor form a large, seamless picture presenting overview as well as detail. The user can move the picture around to bring any part of it into the area of focus, meaning the flat-panel display.

Dr. Patrick Baudisch, who led the design of the display and the software that makes it work, said the technology was intended for professionals who have to work with documents too large to fit on the standard computer screen. That includes chip designers, graphic artists and air traffic controllers.

In studies at the Palo Alto Research Center, users compared Dr. Baudisch's focus-plus-context screen with two other display systems. The first was a regular computer screen on which users could zoom and pan images by mouse clicks. The second was a configuration of two monitors placed side by side — one for detail and the other for overview.

"The users reported that they could work faster using the focus-plus-context screen," Dr. Baudisch said. "In one experiment, in which they played a video game, the users made less errors when using our screen compared to when they used the others."

George Robertson, a senior scientist at Microsoft Research and an expert on focus-plus-context visualization, said the research center's technology offered a way to get many of the benefits of high-resolution wall-size screens at a much lower cost.

"Their studies show that people are able to take advantage of information in the periphery, even when it is at a substantially lower resolution," Mr. Robertson said.

In addition to the more obvious applications, the Palo Alto researchers expect the screen to be used for videoconferencing, classroom teaching and for making 3-D video games more user-friendly.

The New York Times, Thursday, March 14, 2002