The artist and the computer: enemies no longer

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Using a program he eventually titled "Distraction," computer artist/programmer Jim Squires created the striking image on this issue's cover. This abstract image, "Desert Discovery," was loosely inspired by the energy exploration theme of the article by Thomas Gardner and H. Roice Nelson that begins on page 33. But, according to Squires, who has been studying computer art since 1978 at UCLA under John Whitney, Sr., the interpretation of the cover image "ultimately rests with the viewer."

The Distraction graphic arts package—which received its name from Squires' discovery that "every implementation of an idea led me to three new ones"—had software modules con-

tributed to it by Jerry Reed and Rich and Ron Moszkowski. It was developed by Squires in Assembly and C on a Chromatics CGC 7900 color graphics computer, a machine that runs the Idris operating system (a Unix look-alike) and which also produced the cover image and the other images seen here on pages 6 and 7.

For this application, Squires used a CGC 7900 with 1M byte of user RAM (the machine's capacity is 8M bytes) and 1M byte of screen RAM. A joystick was used to build the images, but the Distraction graphic arts program is structured so that data can also be entered through a digitizing tablet. Visible pixel resolution is 1024 × 768, and the program supports the selection of 16 million colors (256 are simultaneously displayable). Hard copy in the form of 35mm Kodak Ektachrome slides was produced from the CGC 7900's screen on a Matrix 3000 color camera.

Squires considers Distraction to be a first-generation version of a program that will eventually create key frames of an animation sequence. His anticipated second version will take two key frames and interpolate the image, thus "animating" a sequence from one key frame to the next. Last year the first working prototype of Squire's program was used to generate color background for the video visual music of Bradley Friedman's videotape, Hot Splice. (For a more detailed description of visual music, see Ware Myers' "Selective Update" story on page 80 of the January/February issue of IEEE CG&A.)

Distraction is based on a grid coordinate system. To create an image, the user can specify areas of color and fill them. He or she can also create curves and shaded groupings of polygons, filtering and smearing areas under precise control. As an example, to create the radiating "sky" in "Desert Discovery," Squires started with several superimposed circles; this resulted in a moiré pattern that was then smoothed by a programming rou-
tine. The "mesa" in the image is an outlined black polygon, and the "desert floor" consists of color strips that are linearly shaded in value.

In Squire's opinion, the most important computer technique that he has access to, the one that helps him the most in the creation of his artwork, is the ability to test and evaluate tens of thousands of colors for a given image in a matter of minutes. This is particularly important in a potential animation program because, depending on how certain images are shaded, they can appear to be either approaching or receding from a viewer. But this ability to test the effects of color on an image also gives Squires occasional moments of discomfort. "I can't help feeling guilty at times," he admitted. "No artist has ever had tools like this before. It would take hours or days of painstaking work for many conventional artists to change the colors on one of their images even once."

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The CGC 7900 is a particular favorite of Squires, who has worked as a technical consultant with Chromatics for about a year, because it gives him instantaneous feedback. "The Chromatics machine is not timeshared," Squires said, "so it can be completely dedicated to the whims of the artist."

Stand-alone machines like the CGC 7900 are within the financial reach of many potential artist users, Squires noted, and thus give computer artists the ability to do something they've wanted to do for a long time—create their own environment around their computer. "The traditional image of the computer artist, which has, for the most part, been accurate," Squires conceded, "is that of a programmer who had to sneak back into a place like JPL at 2 a.m. just to spend some 'creative time' on his computer—and it was usually in the bleakest surroundings imaginable. Needless to say, this sort of environment is not exactly conducive to aiding the creative process." Squires smiled at this observation. "But now," he said, "all that is changing."

"The Last Survivor" (above) and "The Revenge of the MCP" (below) were both designed by computer artist Jim Squires using his Distraction graphic arts program. In "The Last Survivor," note the one lit window in the building at the far right of the image. Whoever is in there has a "good view of the approaching holocaust, whatever it is," Squires commented. "The Revenge of the MCP," or Master Control Program (the image was inspired by the film Tron), started with the "eyes." According to Squires, it represents a huge beast coming over the edge and confronting what is in the real world. Formed by concentric filled polygons propped with color shading, the beast can either approach or recede from the viewer, depending on the color shading selected. By his own admission, this is only one of the "problems" Squires faces as he modifies his program to eventually animate the static pictures he can now create. "There are a lot of unknowns," he said. "For example, how do you correlate music, form, and color? How do you choreograph all of this? Certain "hot" colors just don't go with certain forms."