



## Capturing the Sky — Part 2: Being There

This month's column is an extrapolation into the future of astronomy software. The continued improvements in graphics resolution, microprocessor speed, communication link bandwidth and modem baud rate seem to point in the direction of *telepresence* as the next quantum leap for this genre. The following scene could be occurring at your home PC in less than 10 years...

"Computer?" "READY..." "Run PlaneTrek." "WORKING..." As my PC linked to the USGS data base I stepped onto the treadball, slipping my custom-fit VR helmet into place. "A great investment," I thought, "considering how many hours I've been logging lately." The helmet was expensive but worth it; ergonomically molded of the newest light-weight composites, I barely felt its cushioned presence. In the temporary darkness of null cyberspace I watched the floating image of my PC screen as its voice, now over headphones, echoed the scrolling text. "CONNECTION..." As the screen faded away, it was replaced by the now familiar logo of the U.S. Geological Survey suspended over an image of their headquarters building. Arrayed directly in front of me were the menu icons. I pointed deftly toward the 3rd cube, Planets. The icons faded and were replaced with the spheres of 9 planets and a generic asteroid. I pointed again toward the 4th sphere, Mars, thinking "I really must try the Moon again some night. Since I got PlaneTrek 5.0 I've been almost nowhere but the Red Planet, and these latest enhancements really make it a different trip!" This latest version incorporated new algorithms for changing the Sun angle and brightness, generating more realistic shadows from the topographic data base. You could actually watch a sunset if you were at the right place at the right time. My reverie was interrupted by the next request, this time in Uncle Sam's bland monotone. "SPECIFY COORDINATES..." "Longitude 60, latitude negative 15" I replied, thinking how nice it would've been if they'd used Shatner's or Stewart's voice print as an envelope. "DATA DOWNLOADED. THANK YOU FOR USING USGS." As my Intel Octium based system began crunching the voluminous database through its parallel board, I watched the Red Planet icon spin slowly in the distance, growing ever larger as Planetrek's photoplanimetric routine neared completion. "SPECIFY TIME" my PC queried. "1800 hours" I replied.

As I hiked the short distance to the edge of Valles Marineris I marveled at the detail created by the fractal surface emulations. "Too bad this headset can't generate fractional gravity," I thought, as I rounded a small knoll near an old crater. The Sun slowly came into view, perched a few degrees above Ophir Planum beyond the north rim of the canyon. I had to walk fast, as it was still about half a kilometer to the south rim. I made a mental note to save the actual rim coordinates this time, a detail forgotten twice before due to my fixation on the spectacular view. As I approached the edge the bottom limb of the Sun was just touching down. Eerie hues played across the walls of the canyon as the tiny disk dropped rapidly out of view, the shorter sunsets being exacted by Mars' 1.5 AU distance and nearly equal rotation period. Darkness descended rapidly over the landscape, the thin martian atmosphere providing little twilight scattering. As details started to fade, and a light CO<sub>2</sub> frost began forming on the rocks, I was thankful that the headset didn't also simulate temperature. "Computer?" I prompted. "READY" "End program." What little surface detail remained faded into blackness, replaced again by the floating PC screen. Removing the helmet, I shook my head slowly, noting that once again I'd forgotten to save the rim coordinates.

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