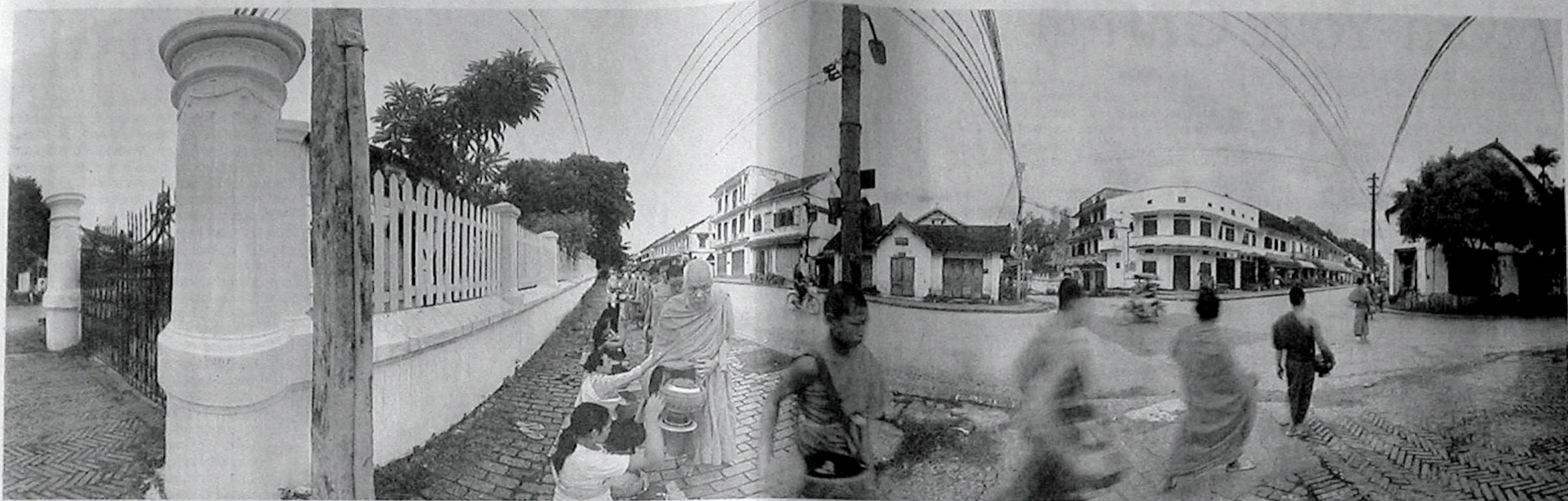# The Sweeping View From Inside a Digital Bubble

Tito Dupret

PANORAMA Buddhist monks collect a donation of rice in Luang Prabang, Laos, a World Heritage site photographed by Tito Dupret. He uses software to "stitch" a series of photographs together into a seamless sphere.

By MATTHEW MIRAPAUL

BORDERS don't bother Tito Dupret. When Mr. Dupret, a Belgian photojournalist, travels in his homeland, an hour's drive in almost any direction will put him in another country. "A border is something I don't really understand," he said in a recent telephone interview.

So when Mr. Dupret embarked on an international mission to photograph the 754 sites, from the Statue of Liberty to the Taj Mahal, that have been registered as World Heritage sites by Unesco, it seemed apt that he would document them as interactive panoramic images. These digital pictures, which offer online viewers a 360-degree view, are essentially photographs without borders.

Since Mr. Dupret left Belgium in July 2001, he has visited 52 places and posted more than 270 panoramas at his World Heritage Tour Web site (www.whtour.net), including 10 images of the Forbidden City in Beijing that were added this month. Online viewers can explore an Egyptian pharaoh's tomb that has been closed to visitors since 1991 or take a literal spin around Angkor Wat in Cambodia.

Mr. Dupret hopes the immersive nature and universal accessibility of his photographs will stimulate interest in the World Heritage sites. Given that his travels are largely self-financed and the number of World Heritage sites is growing, Mr. Dupret, 32, expects his quest to take another 20 years. But if he still has a long way to go, his site demonstrates how far online panoramas have come in recent years.

Initially the panoramas were the province of enthusiasts who snapped a careful series of photographs, used a computer to assemble them into a horizontal array, and then displayed the results in a small portion of a browser window. Viewers could rotate these cylindrical images from side to side, but not up and down.

Several factors have combined to broaden the appeal of online panoramas. High-resolution digital cameras have reduced the need to build panoramas from scanned photographic prints. Image-stitching programs, which automatically align adjacent and overlapping pictures into a continuous field, are more adept at combining photographs seamlessly.

Programs like Apple's QuickTime VR Authoring Studio and the free PanoTools have made it possible to create spherical panoramas in which a viewer can look up and down as well as around. These images are so much more absorbing that Mr. Dupret, who made cylindrical panoramas at his first stops in Warsaw and St. Petersburg, feels compelled to return and reshoot them.

Jook Leung

VERTIGO Jook Leung, a commercial panoramic photographer from Englewood, N.J., who shoots "people landscapes" in Manhattan, created this view of Grand Central Terminal in 2002.

Meanwhile, viewers have become more comfortable with video-game environments, making them less likely to careen sideways as they navigate a virtual image. And faster Internet connections can now deliver lush, detailed, screen-filling images of scenic vistas and urban landmarks. The Danish photographer Hans Nyberg, who maintains a Web site (www.panoramas.dk) with links to 400 sites containing 30,000 panoramas, features a new full-screen example every week.

Jook Leung, a commercial panoramic photographer in Englewood, N.J., frequently shoots panoramic images in Manhattan (www.360vr.com). Because the scenes are often crowded with a diverse population, he said, "these are people landscapes." Mr. Leung also captures more intimate moments among friends seated around a table in a restaurant. There is always a bottle at such gatherings, Mr. Leung said, so he built a camera bracket that rotates inside the neck of a wine bottle.

Peter Murphy, a commercial panoramic photographer in Sydney, Australia, started a Web log showcasing panoramic work (www.mediavr.com/blog) in March. He said that working with such images had changed the way he looks through the camera. He is now more conscious of what is omitted from conventional photos. "You become aware of what's behind you all the time," he said. "It's kind of like being a paranoid cyclist."

Mr. Murphy is keen on the photojournalistic potential of panoramas taken at public events, sometimes hoisting his camera on a pole 20 feet over a crowd and spinning in place while he triggers the shutter. Such images are different from conventional photographs because they capture more than an instant. "The end product has this illusion of the single moment," he said, "but in fact it's cobbled together."

Not everyone is awed. Fred Ritchin, director of the online magazine Pixel Press (www.pixelpress.org) and an associate professor of photography and communications at the Tisch School of the Arts at New York University, said the full potential of online panoramas has yet to be realized. "Nobody's really explored what the panoramic can do on the computer," he said. Mr. Ritchin said that viewers — and photographers — are still accustomed to the conventional photograph's single viewpoint. He said he would like to see the panoramic image present multiple viewpoints to better effect.

Because panoramic images can contain links to other panoramic images, Mr. Ritchin also imagines their use in elaborate nonlinear narratives. For instance, a family portrait taken at the dinner table could contain links to panoramic portraits of each person's circle of friends. When the panorama is used this way, Mr. Ritchin said, "it becomes sort of a giant hypertext."

The site that is perhaps closest to his notion of how panoramic images might be used is 360degrees (www.360degrees.org), a social-documentary project. To raise questions about the nation's criminal justice system, in-

dividual cases are told from multiple perspectives. As prisoners, judges and family members are heard in audio clips, cylindrical panoramas depict their cells, offices and living rooms.

Mr. Murphy and others are experimenting with video-like transitions between panoramic scenes. (His demonstration can be viewed at www.mediavr.com/bronte1.htm.)

Others are working on methods to pack greater detail into a scene. At the moment, viewers who zoom into a panorama will often see the image deteriorate into blurry blocks of oversize pixels. At least one company, Zoomify, has developed software that streams additional detail into a scene as needed. When used in renderings of the cathedral and baptistry in Parma, Italy, paintings and frescoes remain distinct, if a bit fuzzy, upon close inspection (vrm.vrway.com/projects/parma).

Others are exploring augmented panoramas, which add animated characters or streaming Webcasts of real people to panoramic photographs. These experiments are welcomed by Erik Goetze, a Web designer in Palo Alto, Calif., who maintains a blog about panorama technology (www.vrlog.com). "One of the things about panoramas is they're fairly static," he said. "They typically just show a place; they don't tell a story."

Augmented panoramas can bring those scenes to life. In one online demonstration, animated bicyclists zip around a Beijing street (click on Beijing at www.throbbing.com/bikerace). In another, a woman stands in the middle of a room talking (www.fieldofview.nl/spv.php). And Mr. Murphy is working on a panoramic version of an Australian museum gallery so that viewers can look around the room while a curator describes each work.

Mr. Dupret will have to wait for these advances to catch up with him. He travels with a small backpack, half of which is taken up by his camera, monopod, laptop computer and other electronic gear. To produce each panorama, he usually shoots 18 images, 9 pointing up and another 9 pointing down. It can take him up to two days to stitch the final image.

For now, Mr. Dupret intends to focus on World Heritage sites that are not often seen online, which means he hopes to spend much of the next year in India, Pakistan and Nepal. Nor is he daunted by the prospect of spending the next 20 years crossing borders. "The more you eat roads, the more you want to eat them."