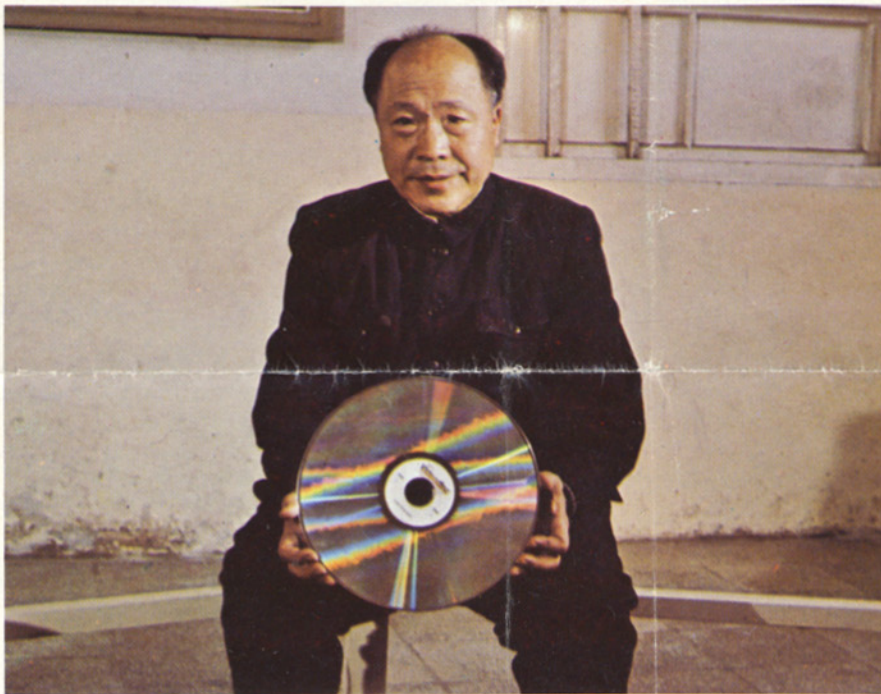


The Emperor's New Videodisc

²⁵
An American team opens the door for an interactive China



photos by Rus Gant

by Steve Gowin

The People's Republic of China is currently embarking on a new era of development which includes an enormous need for electronic systems to educate and inform its more than 1 billion people. Much as Ch'ing Shih Huang Ti, China's first emperor, unified the country with

Steve Gowin is a San Francisco-based freelance writer and English instructor at Cogswell Polytechnic College in Cupertino, California.

1-408-253-5550

standardized writing, today's Beijing government is pursuing similar goals through computer and interactive video systems. Ironically, one prototype package nearing completion electronically documents the first emperor's tomb.

Rus Gant, of MIT's Center for Advanced Visual Studies, whose team is producing *Project Emperor-I: China's Treasure Revealed via Videodisc Technology*, explains that work began in 1982 when he and Dr. Ching-chih Chen of Boston's

Simmons College began looking for a suitable vehicle for an educationally (rather than financially) driven interactive model. Gant believes academic interactive video is the least developed of the new medium's applications. So, documentation of the first emperor's grave, an extensive environmental art installation near Xi'an, offered an appealing opportunity. Moreover, it presented a chance to assist the Chinese in organizing the voluminous information the



Rus Gant on location at China's Great Wall.

tomb has produced.

To start work on *Emperor-I* Chen, the project director, and Gant, its producer/director, identified two audiences: the Chinese archaeologists and museologists who will use the project as a cataloging and database system, and American academics who will employ it in colleges, universities and libraries as a database and courseware. This design dictated that *Project Emperor-I* be a bilingual interactive video.

Next, Dr. Chen, a U.N. consultant to China on microcomputers who understands both Chinese governmental and American grant-giving bureaucracies, secured \$220,000 from the National Endowment for the Humanities Project in Libraries, as well as \$59,000 from her own Simmons College. Digital Equipment Corporation also donated two IVIS systems to control *Emperor-I's* double videodisc and software. Meanwhile, a research team headed by Dr. Robert Stueart, graduate dean of library and information science at Simmons, began preparing content material and coordinating additional research and information from Harvard's Dr. K.C. Chang and Dr. Robin Yates.

As Chen set out to procure government permission to get an interactive video crew into China, Gant, who has worked on similar projects in the Mideast, began the project's documentation. This process goes beyond linear scripting to what Gant describes as "production flow—being able to track, in time, the delivery of the right thing at the right stage at certain times."

Gant then began choosing the production equipment and crew, both of which had to mesh with postproduction methods and technical capabilities. The project needed equipment that would answer budgetary requirements, perform reliably under tough field condi-

tions and bring home the highest quality images. Because the crew would be small, both its technical and artistic versatility were essential.

Gant decided upon Ben Davis of Atlanta and Mike McKay of Sunnyvale, California for his team. Davis, an accomplished video artist/producer, and head of the Electronic Imaging Department at The Atlanta College of Art, had worked with Gant previously on interactive disc design and production. For postproduction, Davis supervised still-image-to-disc transfers. McKay's background included video studio design, audio engineering, and software and hardware engineering at Digital Equipment. With experience as a linear video producer and work on Atari's Firefox interactive video game, McKay also supervised postproduction. During the shoot, Gant directed and acted as primary

camera operator; Davis did secondary camera operation and primary in situations where Gant directed. Technical direction was handled by McKay, who served as sound man and all-around electronics wizard. Dr. Chen simultaneously conducted and translated interviews.

For equipment, the team decided on four Nikon 35mm still cameras and a Betacam package from Varitel Video, of San Francisco, which also handled postproduction. The crew also took a recordable videodisc system for data collection and demonstration purposes. With this system, Gant says, "We did what I believe was the first on-site optical disc recording in China." Comparable in size to a 1-inch video deck, the Panasonic Optical Memory Disc Reorder (OMDR) uses an eight-inch write-once laser disc. *Emperor-I* used it to demonstrate to the Chinese what interactive video is and how to use it.

Permissions granted, schedules arranged, equipment secured and tickets in hand, the technical crew and administrators (Chen, Stueart and Wu Tung, assistant curator of Chinese art at Boston's Museum of Fine Art) set out for Beijing, Shanghai and Xi'an late last March. Dr. Paul Poon of Hong Kong Polytechnic joined the team in China to provide administrative support. Chen and Tung doubled as interpreters. Stueart, for his part, continued to coordinate research and information documentation.

Emperor-I's crew had prepared well for a variety of location hardships, but the shoot still presented surprises. Among other obstacles, they had to contend with severe environmental conditions, distance from service centers for Betacam support, and an often unsteady power supply that meant lots of battery shooting and uncertainty about recharging. According to Gant, McKay braved



Chinese archaeologists work on excavating terracotta warrior figures from the tomb.

"an ongoing adventure as to what to plug into next," and McKay's triumphs included "tapping into power poles and converting power through two or three levels of frequency and voltage."

Careful preproduction planning helped lessen the damage caused by equipment problems and a harsh environment. Varitel president Michael Cunningham explains that Sony and Varitel had arranged to fly good equipment to Beijing within 24 hours as back-up for down gear if needed. Before leaving for China, Varitel had also arranged for McKay to take a crash course in Betacam maintenance. "I was prepared to debug the equipment down to the component level if necessary," McKay says. Heavy dust and air pollution did make maintenance necessary several times, but the system performed well and without replacement.

Two years of negotiations before the shoot helped head off another location problem—political haggling. Gant admits, however, that "there were still some issues that had to be resolved on the fly—when we would say, 'We want to do this,' and they'd say, 'No you can't.'" Dr. Chen and the administrative crew took over in such situations.

After the five-week visit to The People's Republic of China, where they'd shot over 4,000 stills and 40 hours of motion sequence including interviews with 10 Chinese experts, the *Emperor-I* crew came home for a brief rest. In June, the technical crew reassembled at Varitel in San Francisco for postproduction. According to Gant, postproduction is interactive's most demanding aspect: "The technical perfection required is the highest in the video industry—the field-specific nature of editing, the control of large amounts of information with field accuracy, the con-



Mike McKay and Ben Davis interact with the local scenery.

rol of thousands of still photographs related to motion material."

One reason Gant chose to post 3,000 miles from home was that the *Emperor-I* post required concentrated attention and effort, so he wanted to remove his crew from home distractions and commitments. Technical staff and post house support were also key considerations. Gant explains that with Mo Shore of Varitel as editor and Mike McKay doing technical supervision he was working with people he knew and at a facility that McKay and Shore helped design. In postproduction, McKay's recommendations during the shoot paid off. His suggestion to use double-system audio recording with four-track cassette allowed an audio split edit at post and provided high-quality audio with a bypass of tape-stored audio.

Varitel was also attractive for its expe-

rience with Betacam. Originally, they had hoped to use complete RGB component Beta editing, but as Varitel's Cunningham explains, "One of the most severe disadvantages we've found here is that the switching and special effect equipment to handle the Beta signal in its component form is significantly more expensive than equipment used to process an NTSC-type Beta signal."

So for *Emperor-I* to stay on budget and meet field specificity; video signal and color balance; and sound modulation requirements, the project employed a mixture of component and NTSC editing. Gant and Cunningham agree that such a method requires high technical expertise which, given comparable equipment, distinguishes good from mediocre interactive post houses. With an arrangement to work nights, *Emperor-I* successfully completed postproduction utilizing Varitel's resources including 1-inch and Beta formats, computer graphics (with Paintbox) and a Rank Cintel.

Currently, Gant's MIT team is examining several software packages to fulfill the system's authoring and database requirements. After they finish this computer programming step (within the next couple months), they will test the interactive *Project Emperor-I* with MIT and Harvard students. Furthermore, Gant and Dr. Ching-chih Chen will return to China in late March or early April to make application evaluations there.

Gant points out that since China, with its centralized government, has no existing interactive video technology, it can standardize interactive video systems. This may account for an enormous interactive video market there very soon. But Gant sees a bright future for interactive at home as well. "Many of the ranges have not yet been defined," he says. "Interactive video is very exploratory, very open."



Dr. Ching-chih interviews deputy head of Shaanxi cultural bureau.