CREATING A PC GAME

BY TOMI PIERCE

To make a state-of-the-art adventure requires millions of dollars, dozens of computer whizzes and lots of work. A game designer relives the four years of fun, anxiety and caffeine it took to bring one from an idea to reality.

HOW ABOUT THIS AS THE FIRST LINE OF THE story: *"I was taking the night train to Munich…"* That's how it started—over coffee one morning in 1993, Jordan Mechner and I decided to make what is known in the computer trade as an "adventure" game. By lunch, we had a setting: *The Last Express,* the final prewar trip of the Orient Express in July 1914—just before the outbreak of World War I. At dinner, we roughed in the main elements of the story: our hero, Robert Cath, boards the train in Paris in response to a mysterious telegram from his best friend, Tyler Whitney. Cath finds Whitney dead, and takes on his identity to solve his murder.

But creating a game from this story—an interactive adventure thriller that is entertaining and will work on thousands of people's computers—that is the hard part. Jordan and I are both seasoned software veterans; Jordan had made several hit games, including Karateka and Prince of Persia, and I a line of educational products. But the industry is changing rapidly. The American PC game market is a $1.2 billion business.

Five years ago a talented programmer and an artist could make a hit. Today a state-of-the-art game is a multimillion-dollar collaborative project. The Last Express would need new animation and programming technology. It would also be a new form of interactive storytelling. A computer game doesn't have to be a mindless flurry of simulated mayhem and murder; Jordan and I wanted our players to come away from the game with an appreciation of the prewar era and some of the complex political issues that shaped World War I. To make this happen, it turned out, would take everything we had—and a lot more that we had to create.

The first thing we did was find out as much as possible about the 1914 Orient Express. Fortunately, its parent company, the Compagnie Internationale des Wagons-Lits, is still in business. But when we contacted it we got our first bad news: all original records for the Express of 1914 had been destroyed in a space-saving move in the '70s. But Europe is full of train buffs. We put an ad in La Vie du Rail, a train enthusiasts' magazine, looking for anyone with information about the old Orient Express. Three weeks later a call came from two retired Wagons-Lits employees, a trainmaster and a lineman. Their old voices whispered over the phone. "The train company only thinks those archives were destroyed," one of them said. "We have them."

The modern Orient Express still departs from the Gare de l'Est station in Paris. Through a door marked NO ADMITTANCE, we plunged into the rabbit warren of offices under the station. In a grimy room at the end of a long corridor, two very old men were sitting at a table. Around them were stacks of boxes.

They had no idea what a computer game was, but as soon as they realized we were seriously interested in their train, they began to talk furiously. For hours they bombarded us with information, from the exact date when electricity was introduced on the Express to the social structure among train employees of the time. They joked about the frosted glass in the washrooms—not thick enough to completely conceal the occupants. They sorted through the boxes, pulling out irreplaceable original materials. Passenger lists, menus from July 1914, detailed floor plans, conductor's rule books—a thousand features of the train were documented. As the old men talked, the Orient Express seemed to rise in ghostly form. "Use it all," they said a little sadly. "No one else ever will."

A few weeks later we got another lucky break. In the mail, lying amid the utility bills and junk brochures, was a postcard from an Italian train buff who said he knew the whereabouts of two 1914 Express train cars. The prewar Orient Express cars were made of teak and mahogany, and exquisitely detailed in art nouveau style. Most were destroyed or burned in the two world wars. The odds of a 1914 Orient Express car's surviving to the present day are infinitesimal; yet we followed the Italian's tip to a train yard in Athens, then to one in Budapest. There they were, perhaps the last remaining 1914 Express cars, rotting away.

We photographed, measured and filmed both cars in great detail. The colors in the painted ceilings, the mechanism of opening the bed bunks, the tooled leather in the walls, the pattern in the carpet: we studied it all. We then recruited the best 3-D graphic artist in the business, Donald Grahame. He built a "wireframe" computer model, based on these photos, research and the original floor plans, to the exact specifications of the train. Each part of the wireframe was then "wrapped" with textures scanned from the abandoned railway cars: green velvet upholstered benches, stamped-leather wall panels, flowered ceilings and brass railings. The train that appears on screen in The Last Express hasn't been seen in 80 years.

From the beginning, we knew the heart of the game would be in its gameplay and in its characters. The train had to come alive, had to be full of passengers and crew bustling about, crowding the corridors and the dining room, talking among themselves in a Babel of languages. This posed our biggest technical challenge: how to create vivid human characters in a computer, a medium often seen as sterile and inorganic. Here we took advantage of some of the

REALITY BYTES Getting realistic characters on your PC screen is a complex process. First an artist makes a storyboard based on the game's script. Actors are filmed against a blue background; the color is removed and the black-and-white images digitalized. Finally, the image is recolored by computer and the 3-D background dropped in.

DIGITAL ARCHEOLOGY
Director Mechner (standing, below, with co-writer Pierce) found an original 1914 Orient Express sleeping car (near right) abandoned in a train yard in Athens. Next a graphic artist draws a wireframe model (center) that replicates on a computer the exact dimensions of every element of the corridor. Finally, colors, textures and details based on observations and photographs of the actual train are wrapped over the wireframe to create a 3-D virtual restoration of the Orient Express.

freedoms of the interactive game form. In real life, people on a train tend to pursue separate paths; each of them sees himself as the hero of his own story. To some extent, this can also be done in a computer game. The programmers designed software called "character logic" that controls the activities of each of the 30 characters. In The Last Express, characters don't evaporate when they go out of sight. If you follow them, character logic ensures that you will find them pursuing their own activities and talking with each other. The lives of all the characters can be braided together in different ways, according to the actions the player decides to take.
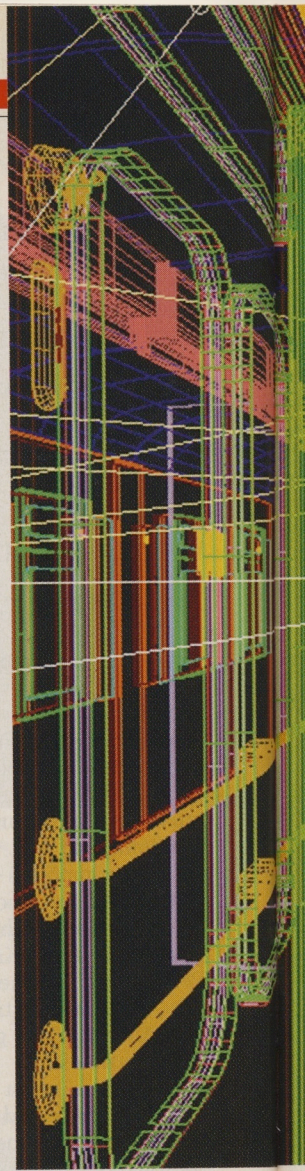
This makes the game very different from a book or movie, in which the audience is led down the path of a single series of events. Like a movie, a computer game has a story and a destination—but the player gets to drive.

We also invented a new kind of animation, a "liquid comic book" movement, based on European comic-book style and art nouveau line art. Essentially this is a computer process in which live actors are filmed, and then the footage is digitally transformed into flat, two-dimensional cartoons. The resulting animation preserves the subtle movements and expressions that create the illusion of life. All the animation was based on one live film shoot, scheduled for September 1994.

Meanwhile, we had not yet closed a deal with any publisher. That meant we were still spending our own money. All the royalties from Jordan's previous games were now sunk into this production, as were personal loans and deferred salaries. The only way out was to move forward. If we did the cautious thing—and postponed the shoot until we signed a deal—we'd have lost momentum and extended the schedule by months. So we went ahead, and borrowed from friends and enemies alike. It's bad when you have to borrow from enemies.

We filmed 30 characters of numerous nationalities, choosing distinctive facial types that would turn effectively into cartoons. A stage set, painted bright blue, was built to the exact measurements of the Express. Every action on that set had to match the train perfectly when, later, the blue background was dropped out and replaced with the 3-D train environment.

After three weeks of 17-hour days, we finished and said goodbye to the actors and crew who by then seemed like a large, dysfunctional family. Their work was done. For us, it was only the beginning.

By February 1995, the prototype looked great, and publishers began to get excited. Secretly we were completely broke. Negotiations had been going on for months, and finally, at the eleventh hour, we signed deals with two major software publishers, Brøderbund and Softbank. Advances flowed into our account. It was time to
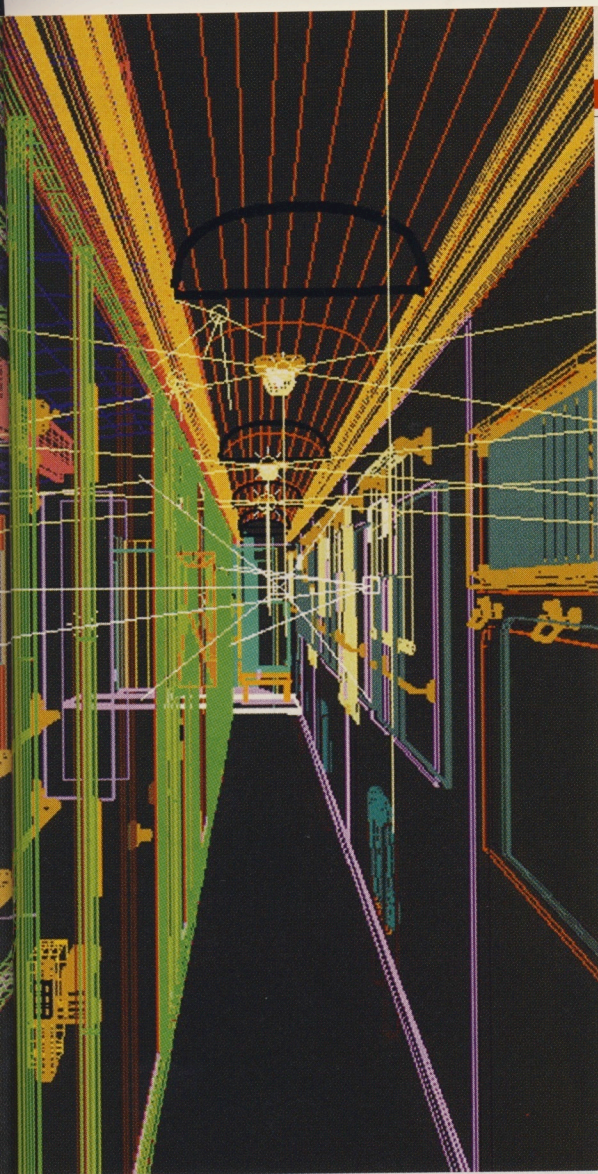
start assembling the many elements that would make the final game.

In October 1994 we were 15 people; by December we were 28; by July 1995, 50 leather-jacketed nerds, spread over four offices, were working 70-hour weeks. Smoking Car had become a bustling thought factory. The 3-D department created thousands of train interiors. The art department created and processed 40,000 frames of animation. The programmers built animation tools as well as the game structure. We worked on sound and film editing. Additional dialogue recordings in French, Russian, Serbo-Croatian and German created a rich sonic tapestry. A Czech film-music composer wrote and scored a beautiful soundtrack for the game. By 1996 we were running 24 hours a day; people were sharing computers in shifts. We became a major patron of delivery pizza; everyone was either losing or gaining quite a bit of weight.

We missed our first, second and third product deadlines. Since our cash advances were tied to achieving these milestones, we stretched payables and everyone went on half salary; the tension and stress increased.

Now a year behind schedule, we finally assembled a fully playable version of the game. This is called beta: the point when, like Frankenstein's monster, all the parts of the body have been hooked up, and it begins to breathe and open its eyes. Play testing began at Brøderbund. Its testers played the game over and over for months, attempting to break it by finding flaws in the design. Every time it crashed, our programmers fixed the weak point ... and the process began again. In three months more than 5,000 bugs were logged. All of them got fixed.

February 1997: we were done.

The calm was deafening. One night we all sat down and played the game together for the first time. It seemed to have a life of its own. We were thrilled and humbled to see the strange, living drama we had made—this odd new marriage of story and technology. It may seem counterintuitive, but computer software is in many ways a handicraft business.

Like the original builders of the Orient Express, we applied every skill we had to create a visually intense, interactive drama riding on a high-tech spine: the fastest, most opulent thing on virtual wheels.

It had been four years since we spoke to the old men in the Paris train station. At the end of that interview, they asked if we would like to see their train set. Directly under the central platform was a room the size of a basketball court filled with the largest train set I had ever seen. Every period of train history was represented. All the train-car and engine types, wide- and narrow-gauge rails, signals and tracks were hand built. The model-train network has been under continuous construction by the employees at the Gare de l'Est for the last 40 years. Our guide shrugged. "It's just to amuse ourselves," he said. "It is ... for our pleasure."

The Last Express is a kind of electronic archeology. We re-created that train and the drama of its time using every high-tech trick we knew; we made a virtual archive of a piece of history on the brink of vanishing forever. We did it for our pleasure—and profit (we hope)—and, in some small part, we did it for those old men. ∎