

CARNEGIE
SCIENCE
CENTER



LBEE
STUDIO

THE RAILROAD PROJECT

Because there's something of Gulliver in all of us . . .

The Miniature Railroad and Village has been a Pittsburgh institution for over fifty years. The exhibit, arguably the most popular at the Carnegie Science Center, is exemplary of the oral tradition of Pittsburgh. Upon visiting the railroad, you can observe this storytelling in the flesh: parents and grandparents passing down the legacy of the Pittsburgh experience to their children and grandchildren. More than any other type of exhibit, a model railroad has the ability to immediately bridge the gap between generations of visitors, making the history of the region accessible to people of all ages.

As Pittsburgh progresses further and further from the days of the industrial giants of steel and railroad, the people who live here are further and further removed from the formative history that established this region. As we are cata-



pulted into a new era of technology and innovation, the old stories are fading away. How will we capture these first-person narratives, record them for posterity, and keep them within the public's easy reach?

In this day and age, where audiences have the ability and the desire to have complete control over an entertainment experience, how do we fulfill guest

expectations of having some agency over the stories that we see presented in the layout? How do we give people the ability to have a meaningful interaction with the resonant stories contained therein?

In this book, we will present solutions to these formidable challenges. With the addition of new interactive exhibitry to the existing layout, and the possibility of a future expansion that would establish Pittsburgh as the center of America's vivid and dramatic industrial heritage, we hope to achieve the ultimate success in an entertainment experience: to educate the visitor without he or she even realizing it, and to provide connections between human beings in spite of the barriers of time and space.



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WEATHER

We are walking around the layout, enjoying the summer view of the village, when suddenly, lightning flashes and thunder booms ominously. Then it starts raining, slowly at first, and then in a familiar summer deluge. The view in rain is quite different from when it's clear, and you can hear the music that rain drops on the roof and the river. After the rain, it becomes clear again and the sun emerges, just as though nothing has happened. On the winter side of the layout, the snow occasionally comes down and makes the view dreamier.

The illusion of weather effects can be achieved with special lighting instead of using actual water or ice. Additionally, it can be controlled by the staff instead of occurring regularly.



REALISM

It's just like the real world, but smaller! With the addition of localized sounds and animations triggered by the guests, the realism of the miniatures is immediately heightened. During the day, people are at work or on the streets. When the school bell rings, kids go out from the school building and play in the playground. In the afternoon, workers walk out from the steel mill drinking beer. An ice cream car makes its rounds with children running after. In the evening, people start going home and the lights of the houses start lighting up. The smell of the dinner and the singing of the family come out from the window of a typical brownstone Pittsburgh home in tiny scale. At night, all the trains go back to the station and the village becomes silent. One more day has passed.



JOURNEY VIA CAMERAS

As we enter the display, we are greeted by the train engineer in the cab of his engine on a screen near the display. He explains that he's just getting ready to get going with his train for a journey. He'll be guiding the train through the process of getting the supplies needed to build a new skyscraper! His train is sitting right in front of us, awaiting word from us, his supervisors, telling him to set out on his journey. We press a button declaring it departure time. The engineer adjusts some levers and knobs, causing the train in front of us to move, both on screen and in real life. "Follow my train along the track to see more!" he calls to us.

At the next screen further along the track, we can still see what the train sees from its point of view and in real time, with the engineer pointing out interesting sites along the way from his cab. The train stops at the coal mine. The engineer explains why they need coal to help make steel. A coal miner joins the engineer on screen to sign off on the delivery. The engineer asks how it's all going, and the miner talks briefly about the process of getting the coal from the mine to the train. The engineer needs us to push the button at the screen to help load the cars. We push the button, and it appears as if one of the train cars fills up with coal.

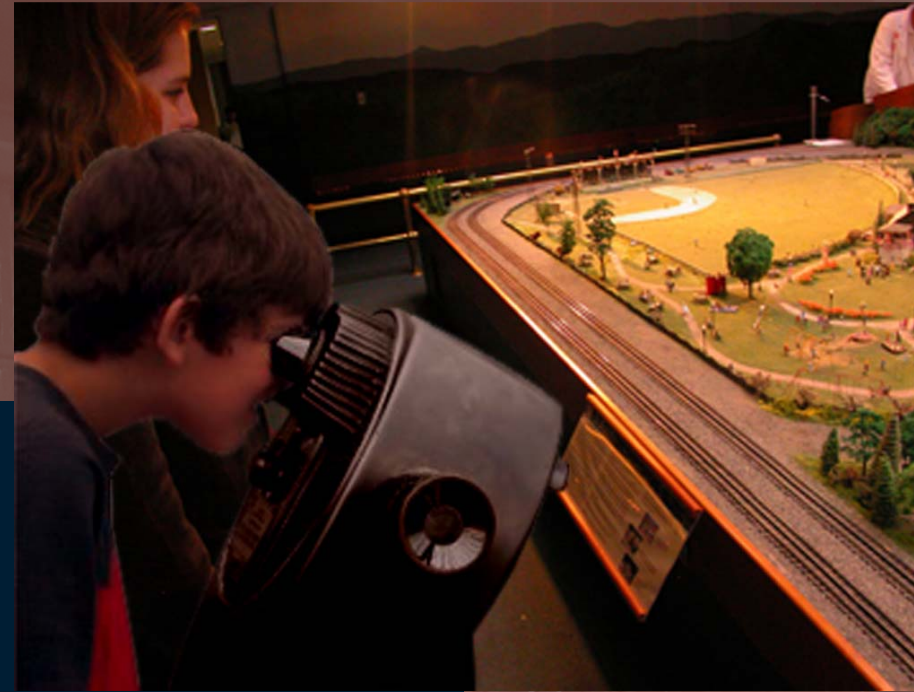


The train takes off again, this time stopping at the steel mill. The steel worker joins the engineer in much the same way that the coal miner did. One of the cars now fills up with steel as we push this button. As the train continues on, it makes similar stops at various other places along the way such as the brick-making factory, the quarry, the lumber mill, and the town.

Finally, the train stops at the construction site. The cars magically unload as the men continue their work on the new building. The engineer thanks us for helping out. "You're a darn fine supervisor!" he declares. "Best I've had in years!"

BINOCULARS

At various places around the layout there are binoculars similar to those found at scenic overlooks that we would put a quarter into to gain a better view. Using these binoculars, we can focus in on a distinct portion of the layout. As we look at the back porch where a woman is hanging out her laundry, we can not only see her story more clearly, but you also can hear what is taking place! She sings along with the radio to the latest sounds from Tin Pan Alley as she does her work. Eventually she calls inside to see if her kids have finished setting the table for dinner. We shift our focus to some bystanders at the parade, we can hear their opinions on Women's Suffrage. Turns out some of them were a little worried! Looking at the coal mine, we hear men discussing the hard shift they just finished. It's like we're right there with these people, and it's an exciting way to see and hear their stories.





GHOST

The lights change from day to night as you approach the graveyard. Here are tombstones of various shapes and sizes, complete with humorous and spooky epitaphs. As twilight fades into night we begin to hear some spooky noises, an owl hooting, the rustle of leaves - is that a moaning voice? Suddenly, from behind one of the tombstones comes a holographic scale-sized person - a ghost! He walks about with a forlorn look upon his face, moving as though he is searching for something he lost. From another grave appears a woman dressed in her wedding gown, waiting patiently for her groom to arrive. Not all of

the ghosts are sad, however. Some of them are playing a poker game over in the large crypt. The dawn begins to break, and the ghosts fade from view, but they'll be back each night to continue their quests.



ENVIRONMENTAL PLACEMAKING

Upon entering the layout, we encounter an amazing juxtaposition of scale. In the center is the tiny, intricate layout, while surrounding the edge of the walls are strong environmental elements. Tree branches creep out over the layout, with light pouring through, and the rich autumn scent of decaying leaves hangs in the air. There is a grimy window of a steel mill surrounded by blackened brick and smoggy air. If we peer through the window, we can see the red-orange glow of hot steel, and workers moving the pieces around with giant calipers. The smell of the burning and the smoke is heavy here, and as the whistle outside blows, we hear a soundscape of bustling as the workers end their shifts. Circling the layout, the landscape transitions with a pungent farm smell. Our footsteps resonate as we tread on a layer of hay on top of wooden floorboards. Inside the barn, we see people doing their daily chores-pitching hay into the horse's stable, milking a cow. Leaning against the window to strain to see inside, we feel a startling kick against the wall of the barn and hear the subsequent swearing of the farmer. Bessie doesn't want to be milked today!

Next, moving towards the ball field, the vendors bark, "Peanuts! Programs! Candy! Cigarettes!" We hear the crack of the bat and cheers of the crowd, and smell the popcorn and the fresh-cut grass. Sit on the bleachers, and hear fans behind us heckle and cheer the players. In fact, when we turn around, we can hear Grays and Crawfords fans argue about the skills of the players (drawing on ETC technology created for the Legacy Wall of Fame at PNC Park). A little further on, a radio broadcast blares, and a voice describes a recent airplane battle in the Ardennes. From the outside of the air field workshop, we receive a brief glimpse into the ramifications of the Great War. We overhear the pilot and the mechanic talking about the war, and discussing how it's going to affect the life here in Pittsburgh.

All of these elements seamlessly blend from one to the next, and it feels as though we're walking on a path of compressed time and space as we circle the layout.





RADIO BROADCASTS AND EAVESDROPPING

Around the edges of the layout, there are various sonic devices interspersed. Here's an old crank telephone, and there's a phonograph. There is an old cathedral-shaped radio, or maybe even a tin-can on a string placed there by some precocious children! When you crank the telephone, you can listen in on the party line. Once you may here the foreman of the steel mill calling the fire department, or two housewives gossiping. On the phonograph, you might hear Teddy Roosevelt's recent speech or Stephen Foster's traditional tunes. When you turn the switch on the radio, you may hear KDKA's first broadcast, or the Slovak Music Hour, or a news broadcast. In the tin can, you can hear playmates communicating between houses. When you listen in, the two parties are accentuated with light on the layout, and the stories of the people inside the buildings unfold through sound.



"Ladies and gentlemen, you are about to experience the Miniature Railroad and Village in a way that you've never seen it before . . . Due to lower light levels during the presentation, please remain in one location until the lighting returns to normal. Thank you, and enjoy your trip . . ."

The lighting dims and the sound of a steam locomotive can be heard approaching in the distance. The whistle sounds and then fades quickly away as the "train" passes as quickly as it came. A deep voice invites us to step back in time to the long-forgotten era of Steam. An era of steel mills and baseball, of steam locomotives and learning to fly: an era of progress. The air is now alive with a collage of sounds from life at the turn of the century. As if on cue, a train emerges from a tunnel and another whistle sounds.

Transparent projection surfaces ease in slowly from above the layout. During the presentation, the ghost-like figures of Andrew Carnegie, Robert Pitcairn, railroad workers, and townspeople come to life to share their stories about life at the turn of the century and how Pittsburgh, and the railroad, impacted not only our region, but the rest of the world. These are personal stories told by the people who lived them. As these figures captivate our imaginations with tales from a long-past era, theatrical lighting highlights individual elements in the layout, unveiling their miniature presence. Surround-sound brings these stories to life aurally. Smells waft through the air. This is a multi-sensory experience, led primarily through audio and lighting.



THEATRICAL SHOW

The show reaches its finale as the individual characters begin to layer their stories on top of one another, resulting in a symphony of history. Music builds behind this orchestra of voices. Lighting grows brighter, the layout is becoming more animated, trains are running faster. As all of this reaches its climax, a train whistle sounds followed by silence and darkness. Our narrator's voice returns to us: "The turn of the century was an celebrated period in Pittsburgh's history. Now, more than a century later, these people are no longer with us, but their stories live on, here, in the Miniature Railroad and Village. For more than fifty years, visitors have been making connections with the things they never knew about Pittsburgh, about our region, and about the people who have played such a vital role in shaping the stories we're writing today."

With that, lighting levels return to normal and the model railroad returns to the way we found it: living day to day, at the turn of the century.

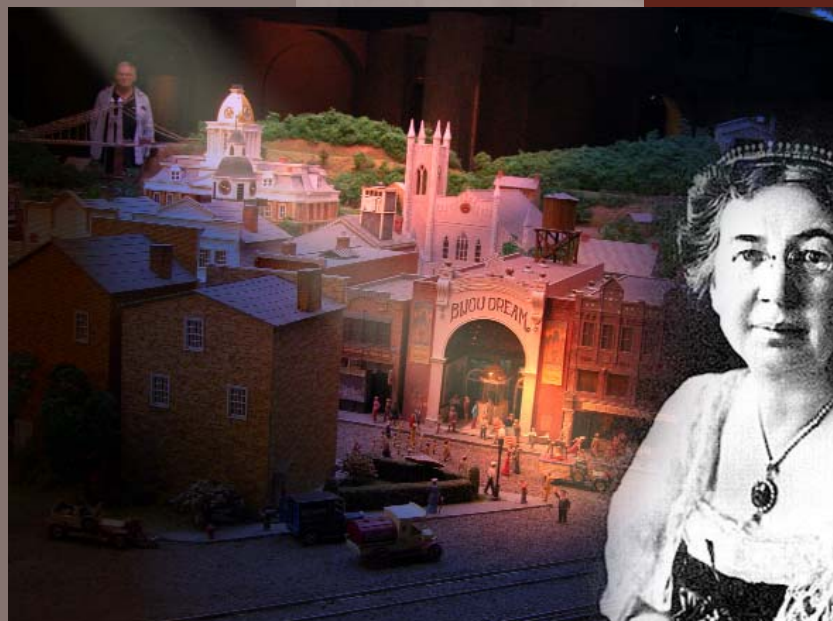
INTERACTIVE LIGHTING

Using the same intelligent lighting fixtures employed by the theatrical presentation, this experience allows us to interactively discover the stories hidden within the Miniature Railroad and Village.

At various locations around the layout, we encounter stations that can be used to interact with the miniature world. These stations could consist of anything from an old-fashioned radio to a flat-panel touch screen. In the radio example, by tuning in to various "stations," we cause the lights to move into position and highlight the subject of the radio program. We could be listening to a ballgame, a radio commercial, or even a newscast on the progress of the first transcontinental flight.

Perhaps we encounter a digital "call board" near the steel mill. By touching on each employee's timecard, the lighting move into place and highlights that individual in the steel mill. Through directional audio, that worker gives us a glimpse into their life at the mill. Each time we return to that worker, we hear another story from his unique perspective.

The stories that can be highlighted in the layout are literally endless. The lights are capable of moving to any position in the world. They quickly and quietly move into place and then gently illuminate the hidden gems that could otherwise go unnoticed. The effect is similar to that of a volunteer pointing something out with a flashlight, only now the guest is discovering it for themselves and learning something in the process.



As we peer into the plexi-glass windows along the eastern wall of the gallery, each is home to a different turn of the century setting: a well-furnished office, a modest home, a railyard, etc. These are dimensional settings, a frozen place in time. All that's missing are the people, but not for long. Stepping up to the window, a figure begins to take shape. History is literally coming to life before us.

At the base of the window, we find a book with various questions. By choosing a question, we can "ask" the figure various questions to learn more about life at the turn of the century.

For example, as we approach the Office window, the ghost of Andrew Carnegie takes shape before us. He's sitting comfortably behind his desk, but we can see right through him. We can ask him about his involvement with the railroads, his views on business, and his life in general.



If we approach the window featuring the railroad worker's home, a railroader's spouse or child takes shape in the space and talks about what it's like to live at the turn of the century and rely on the railroad for both employment and transportation.

This experience draws inspiration from previous ETC endeavors which bring historic figures to life. Examples for reference include the Ben Franklin's Ghost exhibit currently on display at the Lights of Liberty visitors center in Philadelphia..

PEPPER'S GHOST WINDOWS

A LEGACY OF STEAM



This theatrical presentation takes place in the auditorium of the new Locomotive Building. Three or four shows happen per day, depending on visitor demand and capacity. The final show happens after sundown. During the day, the glass wall at the back of the stage is completed transparent, with a mural scrim upstage. Through the glass, the locomotive will be visible to the whole city as a symbol of Pittsburgh's prosperity. From inside the gallery, the train's shadowy outline can be vaguely seen behind the mural, enticing visitors to stay to see the show.

The first thing that strikes the guests as they enter the theater is the three large panels. A scrim mural depicts a triptych of Pittsburgh's rich industrial history. Three prosceniums surround the audience, and as the house light goes down, and the music begins, the scrims raise, and we are introduced to the Engineer. The Engineer reveals the story sometimes as a live actor and sometimes as a shadowy projected figure. This man has made his living on the Railroad, starting out as a lowly yardworker before moving up to Fireman and finally the Engineer of this astounding locomotive.



The Engineer introduces us to the story of the train through montage and flashback. The prosceniums on the left and right of the mainstage serve to portray multiple settings, whether it's the railyard, the roundhouse, a steel mill, or a coal mine. Oftentimes, images and video are projected on multiple layered surfaces to emphasize the dimension and depth of the Railroad's contribution.

The story is twofold. For one, we use the Railroad to tell the story of Pittsburgh's rise to fame as a locus of industry. The Railroad is the lifeblood of Western

Pennsylvania, and the infrastructure it provides makes it possible for all of the other industries to thrive. We examine the local industries such as steel and coal, and gradually wheel out to the shipyards and factories that are able to do their work because of Pittsburgh's industries.

The other part of the story is that of the individuals who lived and worked with the trains. Throughout the whole experience, the audience sees the story of the train as told through the lens of someone who lived it, whether as the Engineer, or the Steelworker, or the wife of railroader who gave his life to the dangerous work of keeping the locomotive running.

The end of the show is most spectacular at night. The backdrop upstage flies out to reveal the beautiful nighttime cityscape full of light. Here we see the breathtaking beauty of the confluence and the city that steel and railroads built. The engine releases a huge cloud of steam, and slowly begins to chug out of view as the lights fade.