Reviving the Past:
The Heritage Designer as Storyteller
by Eliav Nahlieli

Eliav Nahlieli (studio@programa1.com) is a designer of experiences for museums, heritage centers and visitors centers, based in Israel. Projects include visitors centers at the historical sites of Mizpeh Ramon, Arad and Masada, and the "Journey of the Palmach," which received a Thea Award. He spent time as a guest designer at the Smithsonian Institute in Washington, D.C., and subsequently as a guest designer at Walt Disney Imagineering. This article is based on a lecture given by Nahlieli to a forum of the Israel Antiquities Authority

The task of the museum designer is to find the most suitable way in which to transmit the artifacts' underlying messages and translate them into a language that is comprehensible to the visitor. Throughout his or her work, the museum designer incorporates diverse disciplines such as architecture, interior design, graphics, cinematographic media, computerized media, lighting, etc.

In other words, my design work for heritage centers is intended to present to the tourists and visitors at historic locations the human stories that transpired throughout history behind the facades of houses, in the streets, and among the archaeological ruins of the actual sites.

This approach is expressed in projects I have created or planned in Israel and abroad, including the historic Turkish bath of Acco, Israel, recently opened to the public.

If Walls Could Talk —
The Last Bath Attendant

At the historic Turkish bath (hammam) of Acco, we enabled visitors to put their ears to the walls of the bath and hear what the walls themselves might have heard and seen in the Ottoman period, while the local residents of Acco bathed and socialized.

Telling the story of the Last Bath Attendant. Photo courtesy Programa1.

We created an imaginary story based on a dynasty of bath attendants, beginning with the days of Al-Gazar and until 1953, when the bath was closed and its activity ceased. "The Story of the Last Bath Attendant" implements the concept of animating historical spaces and casting human content within a monumental structure, while presenting a chapter in the city's history.

Instead of the conventional ethnographic or historical museum, and instead of presenting the traditional dress inside glass display cases, we chose to present this chapter of history through narrative in order to breathe life into the hammam and share with the visitors the stories "heard" by the walls of this institution.

We wished to create a dialog between the architecture and the building on the one hand, and the former bathers and the modern-day visitors on the other. We wanted to let the walls tell the story of the wealthy residents and other local inhabitants of the city who entered the hammam, removed their clothes, and talked amongst themselves without any social, political, or other barriers or inhibitions.

Since walls cannot really talk, we had to find a medium that would transmit the stories from the structure to the audience. We created a "radio-play" based on fictitious characters and on a dynasty of three fictitious bath attendants who supposedly operated the hammam from its inception until it was closed. A fictitious meeting between three generations of bath attendants is conducted in plain view of the visitors and is presented as a rare and singular opportunity for revealing the stories and gossip—or, if you wish, the history of Acco in the Ottoman period—as revealed through the eyes and ears of the 'Awad family. Within this fictitious family, the job of head bath attendant of the El-Basha bath was passed down from father to son. In addition to the script, we created an environment that would surround the visitor and take advantage of the magnificent architectural structure in order to afford a unique experience.

The experience is built of static and dynamic visual elements as well as a soundtrack that integrates the life in the hammam with the stories of Acco. Illustrations printed on semi-transparent cloths hover throughout the space, rendering depictions of Acco in the Ottoman period — the daily life, historic events, and life in the bath. Sculpted figures placed in the various rooms accompanied by typical accoutrements illustrate the activities taking place in the building — the bath attendants who fulfilled the various tasks and the bathers who frequented the establishment. The designing of the figures and the artistic setting,

as well as their casting in aluminum in monochromatic shades, prevents competition and clashing with the walls of the structure, which are emphasized by dramatic lighting, and thus become an integral part of the story and history.

The peak of the experience occurs in the caldarium (hot water room). Visitors enter the steam-filled room; dramatic rays of light flood the room as they filter through the structure's dome, and a movie that was filmed on-site is projected on a screen between the room's arches. To photograph this, we reconstructed the hammam and brought it to full operation for a number of days; the film is projected from the same vantage point from which it was shot.

In the caldarium, we meet the last active bath attendant. Haj Bashir scrubs, massages, pummels, and soaps his clients while constantly telling stories, gossiping, and explaining to his listeners (the present-day visitors) how the hammam operates and its role in the life of the community. This is done against the background of historic events that transpired in Acco in those days.

We invite the visitors to join us for a visit to the hammam as it operated in that period, to meet the people who shaped it — the bath attendants and the bathers—and to hear firsthand the history of Acco in the magnificent Ottoman period..

Editor's note: Following the success of the Acco project, Eliav Nahlieli's company, Programa1, was invited to design a similar historical experience in the famous public bath built by Sinan near the Hagia Sophia mosque in Istanbul. It is currently in planning stages.

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The Exhibit That Cares That You're There

by **John Beckman**

Story is a very important element in the interactive exhibits created for the Chicago Museum of Science and Industry (MSI). We want to shape how the guest approaches the subject matter and provide them with background, experiences, and a relational conclusion that allows them to see themselves.

In the realm of interactive exhibits and informal learning, we find that most people expect to do more than just read about a story or hear a story or watch a story. They have the Internet, movies and Discovery Channel for that.

So why bother going to a museum?

Real things that relate to human life

Whether it's World War Two submarines or Oscar® awards, people like to see real things that enhance their understanding of the world. MSI exhibited the actual statuettes for the Oscars® in 2004. Why? Our written mission statement is "to inspire the inventive genius in everyone." But museums also have an unwritten mission - one that obligates us to bring to the public things they might not otherwise experience.

Immersive out-of-home environments

People today put a lot of stock in things they experience. They will come to the museum for unique experiences. Because no matter how good a video game system is, you'll never feel quite the same as you do when you enter an immersive environment, such as MSI's Coal Mine or U-505 Submarine exhibits. It doesn't even have to be traditionally themed – our weekly Live From the Heart education program puts students virtually in the operating room via a state-of-the-art video conference suite.

Social catalyst

There's a special appeal in being a part of a live group and experiencing something together in real time. It creates instant community. One of the most interactive exhibits our museum has ever had was Gunther Von Hagens' Body Worlds. There were no buttons to push, no blinking lights and no handles to turn, but people were talking to each other in the exhibit and sharing their thoughts and experiences with each other.

The four questions

In creating effective experiences or stories, I find that it's most helpful to keep a few basic questions in mind. The design process is long and drawn out: Sometimes we cling to pet projects, and sometimes value engineering eliminates entire story beats, but if we can always give a good answer to each of the following four questions, then the project is still going to get the story and experience across to the guest.

What do I get to do? This is probably the easiest nut to crack, but think about it. If we don't facilitate activities that relate to the exhibits, in effect we are saying, "Here is a collection of models from an old genius — but don't touch them! Don't try it yourself!" Or, "Here's an exhibit about movies, but you can't make one yourself." Allowing a guest to be a participant in the experience gives them the opportunity to learn through action, and inspires the sense of self.

Where's the "Wow"? If our mission is to inspire, something big needs to grab the guest. It's the hook. When you come around that corner and see the U-505 for the first time (or even the 50th time), you have to say "Wow." And, you instantly want more. We try to instill a little of that in every exhibit and when possible, in every room of every exhibit.

How does this relate to me? If the "Wow" is the hook, then the connection to the visitor is the payoff. We can't just display stuff in a vacuum, no matter how amazing or rare or old it is. Somehow, the guests looking at it (in our case, through the very skeptical eyes of kids) need to understand why it matters. So Leonardo is some old genius, what does that get me? Well, his work was so influential that we gathered together 40 people who work in a similar way today on things that you would probably agree are pertinent to you.

Does the exhibit care that I'm there? This is the hardest one, and the newest to our repertoire. This can take on a lot of meanings, and I think different exhibits can handle it in different ways. Arguably, a standard art exhibit doesn't care that you're there (assuming we don't get into an existential debate about whether if there's no one there to see the art, does it exist at all?) A room in our upcoming 2011 exhibit EXPLORE: Blue Planet • Red Planet helps define this point. We needed to find a way to make our historical space collection resonate in an exhibit about the present and future of space exploration. The objects are static and not compelling to a young person who believes the only thing to come out of the '60s is their parents. Also, most kids have seen photographs of these artifacts in books and on TV for years, and cannot connect them with anything real. If we just set the objects in cases, the exhibit wouldn't "care" if there were ever a visitor in the room. Instead, we focused the center of the room on the Apollo 8 spacecraft and its story. And as the guest explores the

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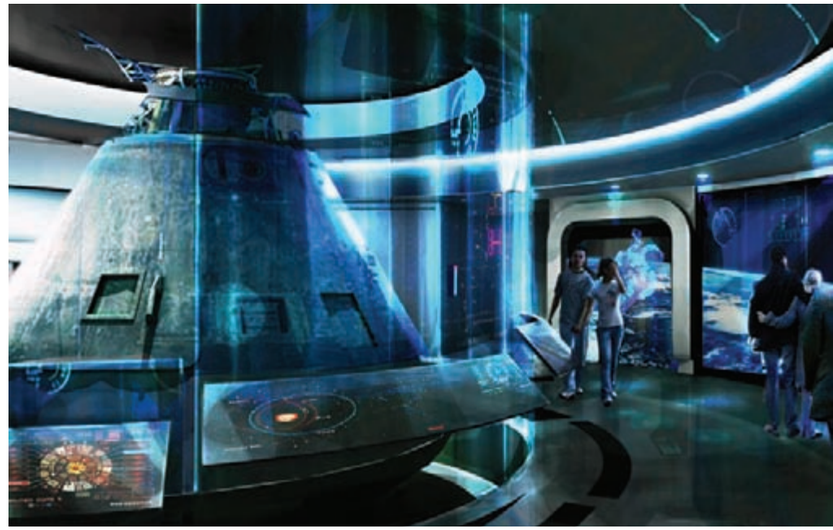

Photos courtesy MSI Chicago.

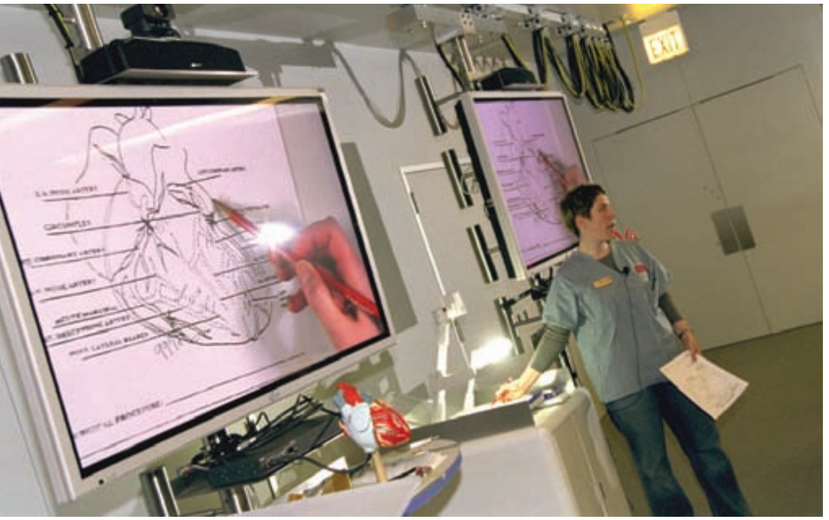

photo collage on the glass perimeter wall, and touches it, it responds: It prompts the scrim-through reveal of the artifacts beside iconic pictures of them operating in space. The visitor must touch the exhibit to initiate this function – in other words, the exhibit needs the guest to bring it to life and make the relevant correlations between distant history and real objects.

We have found that not all exhibits can answer all four questions 100 percent of the time, but our asking them always leads us to a better conclusion. With our exhibits, we try to go a little bit beyond storytelling – in order that our guests leave having learned something, or having been inspired by something – because we and the exhibit cared that they were there.

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Digital Dome-ocracy:

Fulldome Systems are Good News for Science Education

by **Bayley Silleck**

The fulldome theater inside the Gates Planetarium at the Denver Museum of Nature and Science

I found myself sprawled out on the floor in the pitch-dark. A tall, gangly figure loomed in my field of view. I had a brief flashback to the years I lived in London - could this be Dr. Who, the British television wizard, come to re-ignite my energy field, rescue me from shape-shifting aliens, or transport me to other worlds?

Despite the flowing mane of Sixties-style hair, the multiple strands of African glass-bead necklaces, and the long silk scarf, this was a new, very modern breed of wizard, whose wand is a mouse and whose lab is a digital dome - a fulldome theater. It was Carter Emmart, director of astrovisualization for the Hayden Planetarium at the American Museum of Natural History in New York City. In his arms was a rolled-up carpet.

Carter was indeed there to transport me to other worlds. He unrolled the carpet and bade me climb aboard.

All at once, I was floating in space, looking upon the Earth as it was just a couple of hours before, recorded by the MODIS sensor on the Terra satellite, downlinked to NASA/Goddard, fed to JPL's World Wind interactive global viewing software and compiled at JPL into an evolving, high resolution, color global mosaic called the Daily Planet, then sent out over the Internet to be downloaded and projected on the Hayden's 69-foot-diameter fulldome digital video presentation system. I glanced over to see Carter, dimly visible in the glow of a computer monitor, with what might have been a maniacal grin on his face.

"OK," he yelled out, "this is what I call 'the Powers of Ten with a steering wheel.' Here we go!"

Earth dropped away and the moon sped past. We rose up out of the solar system, zoomed past Alpha Centauri, then left the Orion Arm of the Milky Way and flew past the Andromeda Galaxy. Now every point of light was an entire galaxy. Soon they coalesced into ineffably gigantic clusters and super-clusters of galaxies. Then we stopped, with the visible universe spread out before us.

"Yeah," Carter exulted, "that was 25 orders of magnitude on steroids!"

I knew Carter was playing with my head. In 1996, I directed Cosmic Voyage, a giant-screen 70mm film documentary that features a cosmic zoom through the universe. Like the classic Eames/Morrison film Powers of Ten, it was based on the wonderful 1957 Dutch schoolbook "Cosmic View," by Kees Boeke. "Cosmic View" created a powerful new paradigm for understanding our place in the Universe by first widening, then narrowing our view of a simple scene - a girl in a chair in the schoolyard - by orders of magnitude.

But Boeke would have been simply blown away by what Carter and his colleagues at the Hayden — as well as increasing numbers of their peers at other companies and institutions —

The fulldome show Sonic Vision combines music with creative imagery.

can now do with this concept. They can "drive" their domes and audiences almost anywhere in the universe, at any speed, and do it differently each time. What they are actually doing is real-time navigation of a three-dimensional, digital database. A given trip through the dbase can be recorded via real-time scripting software, and played back at will. Creating a show in this way costs a fraction of what it costs to produce a giant-screen film. Both dbase and show can be ceaselessly updated as astronomers continue to unlock the secrets of space.

In addition to what's possible with the real-time, database fly-throughs, all fulldome theater packages have playback systems for exhibiting pre-rendered shows. There's a growing library of these shows, created on a common Domemaster format so that any pre-rendered fulldome show can be played back on any fulldome system. The leading fulldome system providers are Evans & Sutherland, Spitz, and Sky-Skan; however, there are numerous others including Global Immersion, RSA Cosmos, Zeiss, GOTO, Barco, Konica Minolta, Elumenati, Digitalis, e-Planetarium, Swinburne and Learning Technologies.

Lying there on Carter's magic carpet, I was impressed by what it is now possible to capture and at how much less expense. Cosmic Voyage had certainly broken new ground in presenting digital visualizations of outer space on giant-screen film, but it had taken a long time and a lot of money to achieve. And, as a film, it may be immortalized but it is definitely not easy to update. But in 1995 I had had a glimpse of this near-future. On our Cosmic Voyage CG team were Donna Cox and Bob Patterson of the National Center for Supercomputing Applications in Champaign, IL. They had begun experimenting with an immersive system called Virtual Director, a kind of space-flight simulator. Their work, along with that of Hayden scientists, Swedish grad students, and many others, presaged the visualization technologies being used to create today's fulldome fly-throughs.

While planetariums are currently the chief market, fulldome can take an audience to other places besides space. As Paul Tetu, sales & systems specialist, Sky-Skan, points out, "There is an expanding amount of non-astronomy content available. Sky-Skan has been demonstrating molecular models in real-time for several years. Some of our clients have been using their systems to visualize physics and biology concepts." In fact, these planetarium geeks are creating shows depicting weather, ancient Greece and Egypt, the human body, molecules, the sinking of the Titanic, pop music and just plain art.

Production of these shows is still overwhelmingly in the digital realm. Fulldome producers aren't (yet) sending cameras up in the Space Shuttle, to the top of Everest, or across the Gobi Desert. Budgets for pre-rendered shows range from about $200,000 up to the seven-figure stratosphere of the Hayden Planetarium's three productions to date. According to Tetu, most pre-rendered shows land in the $400,000-$500,000 range, whereas real-time shows can be produced at much lower cost, often just the cost of the time required to program them.

Fulldome systems are facilitating a kind of democracy for educational institutions in terms of presentation and affordability. Systems come in all sizes and all budgets. They can all make use of the same library of pre-rendered content. Relatively low costs enable many venues to produce their own shows. Most existing fulldome systems are in domes 40-feet in diameter and smaller, with a significant number in the

Carter Emmart on the magic carpet.

Bayley Silleck has been directing, writing, and producing documentary films since 1973. His seven giant-screen documentaries include Cosmic Voyage, which received an Academy Award nomination in 1997. He is a voting member of the Academy of Motion Picture Arts and Sciences and serves as a screening committee member of the Documentary Branch. His most recent giant-screen films are Wired to Win: Surviving the Tour de France (2005) and Dinosaurs Alive 3D (2007).

50-foot range and a few at the 70-foot rank. On the grand scale are such venues as the Samuel Oschin Planetarium at Griffith Observatory in Los Angeles (76-foot dome with E&S Digistar 3), and the Albert Einstein Planetarium at the National Air and Space Museum in Washington, DC (70-foot dome with Sky-Skan definiti). The Hayden likes to stay on the cutting edge and its current custom configuration includes a Nvidia PC cluster for real-time interactivity, a playback system from Global Immersion and an array of Projection Design f-30 DLP projectors. The many smaller planetariums and theaters with fulldome systems installed include the 31-foot dome of the Neil Armstrong Planetarium at Altoona Area High School in Altoona, PA and 40-foot Travelers Science Dome at the Gengras Planetarium of the Children's Museum in West Hartford, CT (both Spitz SciDome systems). In addition, schools and educational institutions are purchasing portable domes that use fulldome systems. The total number of installed fulldome systems could reach 600-800 within a few years.

"This is an exciting time for the fulldome industry," says Jeri Panek, director of sales for Evans & Sutherland. "With the wide variety and number of shows being created for this medium, it is sure to become a major player in the educational, entertainment, and film markets for many years to come."

I believe the democracy of the dome will become even more widespread than we can now imagine. However it unfolds, it's going to be good news for the future of science education.

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