

Changing the Way We Think About Science: The Connecticut Center for Science and Exploration

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The Mission

According to its president, Theodore Sergi, the future Connecticut Center for Science & Exploration (CTCSE), will carry a message far beyond its riverfront site at Adriaen's Landing in Hartford. The Center, currently under design by renowned architect Cesar Pelli, will communicate to teachers, scientists, business leaders and students *in all four corners of the state* that "science and technology have a much more important role in society than we've given them to date."

In fact, changing the way we think about science – bringing it into the mainstream, connecting it to the excitement of inventing, building and fixing *real* things so more kids will want to become scientists – is the Center's critical mission. Said Sergi, "Young people have a natural enthusiasm for exploring the unknown and solving the mystery. We have to find ways to heighten their sense of discovery and not turn them off." And he added, "there's an economic imperative that we do this." That's because tackling the difficult challenges ahead such as curing diseases, exploring outer space, eradicating poverty and saving the environment, will require more people in science and technology than ever before. Right now, there's some concern in the field because the United States is trailing behind other countries when it comes to the number of students they prepare for careers in science. These percentages tell the story:

- Only 13% of graduate degrees in the U.S. in 2001 were in science, technology, math and engineering – compared to Germany's 38.9%, Japan's 42.4%, Korea's 48.3% and Sweden and Switzerland's 41%. *
- In Connecticut, institutions of higher learning awarded 32,499 certificates and degrees in 2003 of which only 5,000 were in sciences, math, computer or health-related fields.

*Source: Organization for Economic Cooperation and Development. August 2001.

"We can't continue to recruit all of our science talent from Pakistan, China and India," said Sergi, "because the number of scientists coming to the United States from other countries is on the decline." He explained that foreign universities are catching up, so fewer students are coming here to study subjects like engineering and biochemistry. And those who do come are returning home sooner than before. In Connecticut, which is fast becoming one of the nation's leading biotechnology centers, the need for highly skilled employees in technical fields is expected to multiply.

A Lot Depends On Families And Teachers

The CTCSE will help secure Connecticut's future by involving families and teachers with the science that's all around them. Conceived as part education and part entertainment, the Center expects to attract 400,000 local visitors and tourists each year to its interactive exhibits and galleries. The Center will also feature classrooms and laboratories and two theatres — one showing large format films and another multi-use space for live presentations and shows. The spotlight will be on all the sciences, not just one or two, and their role in everyday life — how they relate to sports, arts, music and history.

The CTCSE will also showcase local inventors and industrialists, like Eli Whitney and Igor Sikorsky,



An artist's rendering of Cesar Pelli's proposed building on the Hartford waterfront.
(Illustration courtesy Connecticut Center for Science and Exploration)

who were highly creative thinkers. “At its core,” said Sergi, “science is about creativity and imagination.” Countries like Singapore, he explained, actually teach creativity in elementary school. They also have a tremendous interest in young women going into science. But in this country, women are often eased into the humanities. “We exclude half our population from science,” said Sergi, “and it’s just a waste.” The Center will encourage families to be open to *both* sons and daughters going into mathematics, science, and engineering and

will help elementary teachers get comfortable with science so they can give kids more experiences early on.

Starting this summer, as part of their pre-opening programs, the Center will launch an Institute for Inquiry. Funded by a grant from the GE Foundation, the program trains teachers to make science more exciting to kids by showing them how to conduct experiments and reach conclusions based on their own observations. The CTCSE team was introduced to inquiry-based methods of teaching at the Exploratorium, a progressive hands-on science center in San Francisco that has served as a helpful model for the CTCSE project. In addition, it will begin sponsoring distance-learning programs that support an additional 100,000 teachers throughout the state and offer training materials on their CTCSE website.

The CTCSE will focus on the most impressionable ages, from grades 3 to 8, said Sergi, although they want families to bring in kids of all ages — “those who have a passion for science and those who don’t” — on the theory that “one great science experience or one great science teacher” might be all it takes to inspire a kid.

Bringing People Together

Judging from the reaction of the state’s top scientists, educators, and corporate executives who are rallying around the Center and its mission, there’s no shortage of inspiration. The idea for a statewide science center has actually been around for 20 or 30 years; in fact, it had been tried before at other sites. But it took the right combination of people coming together at the governor’s residence in 2002 and the right riverfront site donated by the Phoenix Companies to make it take off. Key to that meeting were Henry McKinnell, CEO of Pfizer, who now chairs the CTCSE Board of Trustees and Richard Levin, President of Yale, who now serves as vice chair of the board and head of its program committee. Sergi joined the group in 2003, after retiring from his position as Connecticut Commissioner of Education. Jeffrey Immelt, CEO of General Electric, has come on the board more recently. Said Sergi, “I think there’s a feeling in the corporate world that this is the right thing to do, it’s no cure-all but it’s one part of the package that says as a society, we value science.”

McKinnell agrees. He refers to the Center as “a home for innovation” and said, “We are determined to encourage the next generation of scientific thinkers.”

Educators think so too. Liz Buttner, science education consultant for Connecticut’s Department of Education, sees the Center as “a new resource for science education in our state” that will “highlight the cutting edge research going on in Connecticut universities and corporations” and help educate future scientists for the next century.

The Center has already attracted considerable public attention. When the four finalist architects presented their models at the Bushnell in 2004, the auditorium was packed with spectators. In fact, the competition generated so much excitement, media coverage and emails that it “elevated the whole project,” said Sergi. Following the presentation, the board unanimously chose Cesar Pelli as the architect. Asked if the decision was difficult, Sergi said it really wasn’t “because in the end, although three out of the four designs had strong merit, the Pelli Group was the one we wanted to work with.”



Cesar Pelli's winning design entry was the unanimous choice of the Center's board.
(Illustration courtesy of Connecticut Center for Science and Exploration)

And the CTCSE continues to bring people together. When interested parties first started talking about the need to demonstrate alternative energy sources at the Center to make it the “greenest building in the state,” everyone expected the usual lengthy debate about global warming. Instead, they all agreed that the Center should exhibit green technology, citing other legitimate reasons, such as the better air quality that comes from renewable energy sources like wind and solar, as well as the need for energy independence from other countries.

Governor Jodi Rell, who has announced that she wants 20% of energy in state buildings from alternative sources by the year 2010, has come out very strongly in favor of green technology. In fact, she is enthusiastic about the Center as a whole and what it can do for kids and science. “I want children across Connecticut to come and experience ‘WOW!’ moments,” she said, “where they participate in something, understand how it works, and say ‘I did that!’”

Ahead of Schedule, Right On the Money

With all this support and encouragement, Sergi and his team have been able to advance the schedule considerably. “We’ve accomplished an awful lot in the last 15 months,” he said. “Originally, people were talking about opening in 2009 or 2010; now the Center is going to break ground this fall and open in winter 2007/2008.” He added that the Connecticut Convention Center and the Marriott Hotel, which are adjacent to the Center at Adriaen’s Landing, are opening this June. Even the nearby retail shop project on Front Street, which was derailed over disagreements with its developer, is close to getting a new development team and starting up again.

The toughest part so far, according to Sergi, has been finishing the master plan, on which the team worked, joined by professional museum planners. “It’s a road map,” he said, “of everything we have to do between now and opening day to be successful, everything from philosophy to operations to fundraising to exhibits.” With the plan finally done, the Center turned its attention to the selection of a construction manager and exhibit designer. The chosen design team of Thinc Design/Jeff Kennedy Associates will spend the next six months developing a “master plan” of their own, creating concepts, schematics and construction schedules and working in conjunction with the architect. Exhibits will cover 40,000 square feet of space, and will rotate in and out of the Center. “The whole field of dynamic exhibits is new and very expensive,” said Sergi. He added that their goal is for people to discover it takes *at least three visits* to see and absorb everything in the Center and then when they return two or three years later, to find that most of the exhibits have changed.

On the financial side, the original budget of \$150 million, of which about \$100 million is just for the building, is still holding. The other \$50 million is for exhibits and programming, staff salaries between 2003 and 2007, post-opening needs when revenues are just starting to build and an endowment fund. And of the \$150 million, they've raised approximately \$128 million (\$107 million from the state and \$21 million from private sources) and are confident about the rest. That's because they have yet to solicit funds from the federal government, some quasi-government agencies and some major private donors, and still have close to three years until opening day. Although money will definitely not keep them from opening on time, the greater question, according to Sergi, is what financial condition they will be in when they do open. "We're trying to open with no debt and a \$15 million dollar endowment," said Sergi, who believes an endowment big enough to "provide significant operating revenue" will allow the Center to "stay focused on its mission."

Next steps will be refining the architecture, beginning construction and stepping up fundraising efforts. Sergi calls it "the hard work stage," a lot less glamorous than the architect competition but every bit as important. As they meet with the architectural team, the design is gradually changing as they knew it would. "The roof is a little more like a wave," said Sergi, and the parallelogram is a little bit shorter. The architect Pelli believes these changes are making the design "even more handsome."

Outreach to Partners and Organizations

In the meantime, Sergi and staff are not waiting for the building to be built before getting out in front of people. They've visited all the science museums and institutions in the state — including the Discovery Museum in Bridgeport, the Norwalk and Mystic Aquariums, New England Air Museum in Windsor Locks, the Peabody Museum at Yale, DNA Epicenter in New London, Eli Whitney Museum in Hamden and the Science Center of Connecticut in West Hartford — and enlisted them as partners. Far from being overshadowed by the Center, Sergi said these partners see the Center as a way to raise the interest in science and technology and possibly get funding that they couldn't have gotten on their own.

The Center also has a close working relationship with the Connecticut Academy of Science and Engineering. Together they collaborated on a very successful pilot program this spring in the Hartford Public Schools that presents live science shows to small clusters of first graders as a way to stimulate interest in science. The Center is also relying on the Academy for continued identification of the state's premier scientists, so they can serve as role models for kids and kids can learn about the many different paths people take to reach success in science. Some, said Sergi, are in the private sector, some are doing research at universities, some start their own business, many go back and forth and "some struggle for years before inventing one really big thing."

A number of well-known Academy members will also serve as advisers to the exhibit areas. One such adviser is Robert Ballard, "America's underwater frontiersman" who is now at the Mystic Aquarium and the Institute for Exploration at the University of Rhode Island. Ballard has been involved in the past with the Titanic, PT 109, the rainforest in Panama, and the search for the Lost Continent of Atlantis. Currently he runs the Jason Project, which provides middle school curriculums based on his explorations. Another adviser is Henry C. Lee, who was the state's chief forensic scientist and later its police commissioner. Lee has testified as the forensics expert in numerous high-profile trials, still works out of the forensics office in Meriden, and leads the University of New Haven's forensics program for policemen and firemen. "He's brilliant and funny around the whole field of science and how it's helping to solve crimes," said Sergi. According to Lee, "kids love forensic science" because "it's science with a purpose."

This spring the Center helped support three statewide organizations that cater especially to kids and emphasize the use of science to solve real-life problems. They are the Connecticut Science Fair, held in March at Quinnipiac College for students in grades 7-12 (now an affiliate fair of the Intel International Science and Engineering Fair); the Connecticut Invention Convention, held at the University of Connecticut in Storrs in April for kids from kindergarten through grade 8; and the CPTV Family Science Expo, also held in April at the Connecticut Expo Center in Hartford.

Sergi hopes together, the CTCSE and all its partners can convince kids that being a scientist would be the most exciting career of all, that it's "not too hard" for them to do, and that it's "one of the best ways to improve our

quality of life.” — *Barbara Standke is a freelance writer based in Chester, CT.*

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