Inventor Ralph Baer, known as “The father of video games,” in his New Hampshire basement workshop in 2003. In 2014, the Museum collected Baer’s workshop; it will be the landmark object on the first floor of the west wing. Smithsonian photo by Jeff Tinsley.

Our mission is to document, interpret, and disseminate information about invention and innovation, to encourage inventive creativity in young people, and to foster an appreciation for the central role that invention and innovation play in the history of the United States.
From the Director

The Lemelson Center has proudly called the Smithsonian and the National Mall home since our founding in 1995. Over the past decade, the Center and our Smithsonian colleagues have undertaken to reach more of the American public than the roughly five million people who visit the National Museum of American History throughout the year. Our first significant foray outside of Washington, DC, came in 2011, when the Terry Los Wells Nevada Discovery Museum became the first member of the Spark!Lab National Network. In myriad ways, 2014 saw the Center taking our expertise and our programming out to people and communities across the nation and around the world.

The Center, with the help of Smithsonian Affiliations, has painstakingly constructed a vast network of museum partners representing diverse localities through the Spark!Lab National Network and the Places of Invention Affiliates Project. This past year, the National Network expanded to two new locations—Science City in Kansas City, MO, and the Berkshire Museum in Pittsfield, MA—as well as operating overseas in Gurgaon, India. Also in 2014, we continued to collaborate with our 12 Affiliate partners on Places of Invention: Stories from Massachusetts, Indiana, Washington, Louisiana, Illinois, Oregon, Pennsylvania, Colorado, Alabama, and Ohio will be captivating additions to the exhibition’s interactive map. Affiliate partners hosted our 2014 Innovskate programming, which took place at the Polk Museum of Art (FL) in June and at the Museum of History and Industry (WA) in August.

Our research initiatives took us outside of the Museum walls as well. Over the past year, we have sent our skilled staff out to document inventors: Ralph Baer in New Hampshire, Manny Villaña in Minnesota, green energy pioneers and brewers in Colorado, Cori Lathan in Maryland, and Robert E. Simon in Virginia. The knowledge and artifacts gained by these endeavors will help the Center and the Museum continue to tell the diverse and complex story of American invention.

The end of 2014 was marked with the quiet unveiling of a major milestone—the launch of our new website. Its inventive design, clear organization, and fun surprises will allow us to share great content with an even greater swath of the public.

As gratifying as it has been taking our activities out across the globe, we have remained dedicated to offering a vibrant presence at our home base on the National Mall. Much of our work over the past few years has been in readying the three new public spaces that will occupy the Jerome and Dorothy Lemelson Hall of Invention and Innovation when it opens July 1, 2015.

Innovation When it opens July 1, 2015:

- *Places of Invention* will use six fascinating case studies and a network of online stories to examine the people, places, and circumstances that came together in the pursuit of something new. By visiting the exhibition, and reading its accompanying volume to be published in June, visitors will come away with an understanding of how new cultures of innovation develop and that even in the modern world of innovation, place matters.

- *Spark!Lab*, our hands-on invention experience, will open in an enhanced and expanded gallery with the look and feel of an inventor’s work space. Activities developed by the Center encourage children between the ages of six and 12 to create, collaborate, explore, test, experiment, and invent.

- *Inventive Minds* will introduce visitors to the mission and work of the Lemelson Center, particularly our efforts to document invention. Brief video interviews, complemented by archival materials and artifacts, will put the focus on the inventors and their processes, telling their stories in their own words.

It is fitting that the Lemelson Hall of Invention and Innovation will be fully occupied for the first time in 2015—the year we celebrate our 20th anniversary. The exciting and original exhibitions and learning spaces that occupy the Hall physically represent the culmination of years of intense research into the creative process of invention and innovation and of the development of novel educational theory and content.

The Lemelson Center was founded in 1995 on the idea—shared by Jerome and Dorothy Lemelson, the Smithsonian, and myself—that the American creative and inventive spirit, now and in the past, is both a deeply cherished national characteristic and the energy source of a powerful economic engine. Over the past two decades, the Center has grown into a national resource on invention history with outposts across the United States and in various places around the globe. While we look forward to celebrating and reflecting on this great milestone with our friends and partners, particularly the Lemelson family and the Lemelson Foundation, the Center is already hard at work to ensure that its future is as inspiring and meaningful as the past 20 years. In addition to opening Places of Invention, Spark!Lab, and Inventive Minds, we look forward to 2015 to spearheading the Smithsonian’s relationship with the US Patent and Trademark Office, expanding the Spark!Lab National Network, and hosting probing and illuminating programs on invention and innovation with Virginia Tech, the National Inventors Hall of Fame, and Smithsonian magazine. For more of our upcoming activities, see page 20.

As we head into our 20th year, there is much to be proud of. I am particularly thankful for the inspired work the Center has produced in 2014 and the dedication shown by our peerless team. We are pleased to share our accomplishments in this report and look forward to igniting inventive creativity in the years to come.

Arthur Molella
Jerome and Dorothy Lemelson Director
our mission is to document, interpret, and disseminate information about invention and innovation

Our scholarship, exhibitions, documentation programs, and academic presentations are the heart of all Lemelson Center activities and reveal the critical role of invention and innovation in American history.

Places of Invention & Affiliates Project

Places of Invention, opening in the Jerome and Dorothy Lemelson Hall of Invention and Innovation in July 2015, will take visitors on a journey through time and place across America to discover the stories of people who lived, worked, played, collaborated, adapted, took risks, solved problems, and sometimes failed—all in the pursuit of something new.

The Places of Invention exhibition features six communities representing what can happen when the right mix of inventive people, untapped resources, and inspiring surroundings come together:

- Precision manufacturing in Hartford, CT, late 1800s: Factory town puts the pieces together in explosive new ways.
- Technicolor in Hollywood, CA, 1930s: Young town gives birth to the movies’ Golden Age.
- Cardiovascular innovations in Medical Alley, MN, 1950s: Tight-knit community of tinkerers keeps hearts ticking.
- The rise of the personal computer in Silicon Valley, CA, 1970s–80s: Suburban garage hackers + Lab researchers = Personal computing.
- Clean-energy innovations in Fort Collins, CO, 2010s: College town combines its energies for a greener planet.

Our Places of Invention exhibition is reaching around the country. The Places of Invention Affiliates Project brings together Smithsonian Affiliate organizations and their community partners to research and document their places of invention. Through public programs, oral histories, site visits, and archival research, teams learn how invention can be a lens for understanding local history and engaging others in new cultures of innovation.

As part of their work, Affiliate teams are producing short videos highlighting the resources, people, and geography that sparked local invention. These videos will become an integral part of the Places of Invention exhibition’s signature piece—a large, interactive map accessible from the exhibition and website. For a complete list of participating Affiliate museums and community partners, see page 21.

Affiliate teams produced the following Places of Invention–related public programs in 2014:

- “City of Smoke and Fire: The Evolution of Propulsion in Huntsville” panel, and 101 Rocket City Inventions exhibition, US Space & Rocket Center, Huntsville, AL
- Inventing Lowell exhibition and “Lowell: A Place of Invention” video screening and community discussion, American Textile History Museum, Lowell, MA
- “Pittsburgh Jazz Innovation”: a day-long series of museum events, including video screenings, presentations, student performances, and hands-on jazz innovation labs, Senator John Heinz History Center, Pittsburgh, PA
- “New Orleans: A Place of Invention,” a series of lectures and tours around the theme of New Orleans-based inventions, such as the Higgins boat, National World War II Museum, New Orleans, LA

Left: A birds-eye view of Places of Invention. Rendering by ROTO
**New Acquisitions**

In May, Art Molella traveled to Manchester, NH, with National Museum of American History staff to initiate acquisition of inventor Ralph Baer’s basement lab. The team met with Ralph, who died in December 2014 at the age of 92 and was known as “the father of video games,” interviewed him and his son, Mark, about how he used the lab; took measurements; and made initial selection of objects that will be included in the display, including video games and other toys. The lab will go on display as the “Landmark Object” for the innovation-themed first floor of the Museum’s west wing when it opens in July 2015.

In December, the Lemelson Center traveled with National Museum of American History staff to acquire the papers of and heart valves developed by medical device inventor and entrepreneur Manny Villafaña. Manny visited the Center in late March and Monica Smith interviewed him about his inventive career as well as his background and connections with key players in Medical Alley, MN.

The following invention-related collections were newly acquired by the Museum’s Archives Center in 2014:


- **Mr. Wizard Papers, 1906–2008**: document the professional career of science educator Don Herbert, who created and hosted child-oriented television programs on science subjects under the persona of “Mr. Wizard.”


- **Gerber Scientific Instrument Company Records, 1911–1998 (addenda)**, documents Gerber Scientific, a company that specialized in the application of numerical control technology to various industries, particularly the apparel industry. The collection documents the manner in which the invention process develops in an industrial setting, from conception through development to production and marketing.

**Joseph Underwood Hall Papers, 1881–1998**: document the work and writing of Dr. Hall, who was among one of the first doctors in the United States to use the X-ray technology and to build his own X-ray machine. The papers include his notes on his X-ray experiments.

In 2014, the Center’s staff also visited the offices and workshop of Washington, DC-area inventor and entrepreneur Cori Lathan for a Places of Invention-related interview. Art Molella and Monica Smith’s article “The Lemelson Center’s Places of Invention Project” in *Technology and Innovation* frames current and historic conversation on the relationship among place, invention, and creativity, citing extensive scholarship in the area and two decades of Lemelson Center investigation and study.

The Lemelson Center is publishing a book to coincide with the opening of the Places of Invention exhibition. The volume, published through the Smithsonian Institution Scholarly Press in June 2015, expands upon central exhibition themes and includes “dispatches” about Smithsonian Affiliate museums’ work to “re-see” local collections and invention history. Lemelson Center scholarship and public outreach converge to show how invention and innovation can be a transformative lens for understanding local history, cultivating creativity, and engaging communities on scales of place ranging from the personal to the national and beyond. Edited by Arthur P. Molella and Anna Karvellas, the volume is built around curatorial essays by Lemelson Center staff. It includes a foreword by the founder of Reston, VA, Robert E. Simon Jr., which is based on an oral history the Lemelson Center made with him on the occasion of the fiftieth anniversary of Reston. A provocative closing essay by public historian Dr. Lorraine McConaghy suggests how public institutions might connect past and present to create a road map for transforming local regions into vibrant places of invention.

In 2014, the Center’s staff also visited the offices and workshop of Washington, DC-area inventor and entrepreneur Cori Lathan for a Places of Invention related interview. Art Molella and Monica Smith’s article “The Lemelson Center’s Places of Invention Project” in *Technology and Innovation* frames current and historic conversation on the relationship among place, invention, and creativity, citing extensive scholarship in the area and two decades of Lemelson Center investigation and study.


Left: The cover of Places of Invention, the companion book to the exhibition. Cover design by Smithsonian Institution Scholarly Press. Right: Inventor Cori Lathan during an interview at her office. Smithsonian photo by Chris Gauthier.
encourage inventive creativity in young people

Spark!Lab and other Lemelson Center programs geared at young people immerse them in the process of invention, inviting them to see themselves as inventive and inspiring a new generation of American inventors and innovators.

Spark!Lab

Spark!Lab reveals the stories behind inventors’ work through hands-on activities that help kids and families learn about the history and process of invention. Enriched with historical content, Spark!Lab’s interdisciplinary invention challenges appeal to varied learning styles, ages, and abilities. The initial installation at the National Museum of American History, open between November 21, 2008, and October 6, 2011, welcomed more than 600,000 visitors.

An enhanced and expanded Spark!Lab will open July 2015 in the Museum’s west exhibition wing, thanks in part to a generous $2 million gift from Draper Laboratory. Spark!Lab will be an open and flexible 2,000-square-foot gallery with the look and feel of an inventor’s work space. Items from the Museum’s collections, images, and inventions created by visitors will clearly signal that Spark!Lab is where invention happens.
The appeal of the Spark!Lab philosophy is clear in the increasing interest in replicating it in other parts of the United States and abroad. The first satellite Spark!Lab off the National Mall opened at the Terry Lee Wells Nevada Discovery Museum in Reno in 2011, and the first international Spark!Lab—a temporary installation—ran in Kyiv, Ukraine, in September 2012. The National Network was highlighted in the 2014 American Alliance of Museums’ TrendsWatch report as an example of social entrepreneurship in museums.

The Spark!Lab National Network expanded to two additional sites in 2014—Science City at Union Station, Kansas City, MO (the first of three sites funded through a 2013 donation by the Ford Motor Company Fund), and the Berkshire Museum, Pittsfield, MA. An additional three sites have been identified and will open in 2015.

Spark!Lab's international appeal continues as well. Spark!Lab opened in Gurgaon, India, in May and in September, the Center conducted a series of training workshops in Kyiv, Ukraine. Workshops and talks focused on techniques for developing and prototyping open-ended, creative activities for children and families and on how to integrate hands-on learning in a traditional museum environment. The Ukraine project was funded through a grant from the US Department of State.
Innoskate

The Lemelson Center celebrated invention and innovation in skate culture, history, and art throughout the summer in a bi-coastal collaboration with two Smithsonian Affiliate museums, the Polk Museum of Art in Lakeland, FL, and the Museum of History & Industry in Seattle, WA, as well as the International Association of Skateboard Companies.

Innoskate at the Polk Museum of Art took place on June 20 and 21 to coincide with Go Skateboarding Day. The event, an exploration of the intersection of art and innovation through the lens of skateboarding culture, included panel discussions, exhibitions, skate sessions, and more.

Innoskate at the Museum of History & Industry in August illuminated the history of skateboarding and innovation in Seattle through discussion sessions, skate deck decorating, a skate history demo, and other hands-on events.

The Innoskate program continues to provide a model to both the museum and skate communities. The Innoskate planning team presented a session at the American Alliance of Museums annual conference; it was featured as an article—“Dude, I’m in a Museum!”—in the September/October issue of AAM’s Museum magazine. The Center is maintaining its relationships within the skateboarding community and discussing opportunities for collaboration in 2015.

Public Programs

- Third Annual Spark!Lab Invent It! Challenge in Collaboration with ePals
- K-12 Teaching Science through Art Workshop with the National Portrait Gallery
- Origins of the Cell Phone: An Interview with Martin Cooper, Inventor of the Cell Phone
- Space Night at Wood Acres Elementary School
- STEM Night at Patrick Henry Elementary School
- Places of Invention presentation at the Congress of Scholars Tent
- Spark!Lab programs at the Byrd Library
- USPTO Trademark Festival
- Inaugural Smithsonian Innovation Festival with USPTO
foster an appreciation for the central role that invention and innovation play in the history of the United States

Lemelson Center programs and publications connect people to invention in unexpected ways by examining interdisciplinary themes.

Future is Here

With support from the Lemelson Foundation, the Center partnered with Smithsonian magazine and the Arthur C. Clarke Center for Human Imagination on “The Future Is Here” festival, held May 16–18, 2014. Participants explored the theme “Science Meets Science Fiction: Imagination, Inspiration, and Innovation” through talks, demonstrations, hands-on family activities, films, and vibrant conversations.

The interdisciplinary roster of speakers included futurist Stewart Brand, inventor Cori Lathan, Smithsonian Astrophysical Observatory black hole hunter Daniel Evans, NASA engineer Adam Steltzer, astronaut Mae Jemison, science fiction author Kim Stanley Robinson, and Star Trek actor George Takei. A special highlight of the festival was the screening of X-Men: Days of Future Past, followed by a discussion with actor Patrick Stewart.

“The Future Is Here” festival brought the Lemelson Center’s mission to a new and larger audience, piquing their curiosity about invention and innovation and enhancing their understanding of inventors.

Top: A Jetpack demo wows the crowd at the festival. Middle: Adam Steltzer, an Engineering Fellow at Jet Propulsion Laboratory, recently led the team that developed the Curiosity Rover’s landing system. Bottom: Robotics expert Christopher Vo has taught hundreds of everyday users how to build and fly a drone of their own. All photos by Sharon Farmer, courtesy of Smithsonian magazine.

The Lemelson Center supports the work of scholars through fellowship and travel-to-collections award programs. Lemelson Center fellows in residence in 2014:

Rachel Gross, Doctoral Candidate in History at the University of Wisconsin, Madison, performed research on the technologies of hiking and camping for a project titled “From Buckskin to Gore-Tex: Consumption as a Path to Mastery in Twentieth-Century American Wilderness Recreation.”

Ai Hisano, Doctoral Candidate in History at the University of Delaware, researched historic cookbooks and the records of food companies like Campbell’s Soup for a project titled “A History of Food Color in the United States, 1880s–1970s.”

Dr. Emanuela Scarpellini, Professor of Modern History at the University of Milan, considered developments such as Du Pont’s synthetic fibers, Gerber’s automated fabric cutting machines, and designers’ innovations in style for a project titled “The World of Tomorrow: Innovation and Technology in the American Fashion System.”

Research and Training Opportunities

Left: Lemelson Center Fellow Rachel Gross presents her research at the Museum. Smithsonian photo by Chris Gauthier.
Kirsty Smith, Lecturer in Fashion Photography at Falmouth University, utilized oral histories made at Innoskate to consider innovations in skateboarding equipment and apparel for a research project titled “The Promise of the Experience.”

Dr. Matt Wisnioski, Associate Professor of Science and Technology in Society at Virginia Tech, conducted research, specifically the history and present activities of the Lemelson Center, for his new book project, tentatively titled Everyone an Innovator: Cultivating Innovation Expertise in All Americans.

The travel-to-collections award provides travel funds for research on the history of invention and innovation using the extensive holdings of the Museum’s Archives Center and curatorial divisions. In 2014, award winners in residence included:

- Martha Gardner, Massachusetts College of Pharmacy and Health Sciences, examined the Cover Girl Make-Up Advertising Oral History and Documentation Project and the Sterling Drug, Inc. Records for a forthcoming book proposal on Germicidal Gold Rush: The Use of Hexachlorophene in Hospital and Home Products.
- Emily Orr, Royal College of Art and the Victoria and Albert Museum, used the Messmore & Damon Company Records, the Landy Hales Papers, the William Bird Holidays on Display Collection, and Smithsonian Libraries Trade Literature Collection for her forthcoming dissertation on “Dressing a New Interior: The Development of Department Store Display, 1880–1920.”

The Lemelson Center offers the staff projects initiative, which provides small grants to staff at the Museum and across the Smithsonian in support of projects that broaden public understanding of invention and innovation, while fostering enhanced collaboration between the Center and our Museum colleagues.

Past grants have supported research and collecting trips, exhibition development, educational and public programs, and web projects. In 2014, grants were awarded to:

- Drew Robarge, Collections Manager in the Division of Medicine and Science. Project title: Acquisition of Books Pertaining to the History of Video Games.
- James Zimmerman, Senior Producer in the Office of Programs and Strategic Initiatives. Project title: Oral History with Jon Hendricks, Vocalise Jazz Messenger.

The Lemelson Center launched a completely redesigned and renovated website in December: invention.si.edu. The new site, designed in collaboration with C&G Partners, serves as a hub for sharing content on invention and innovation and discussing the role invention plays in our history, present, and future.
Looking Ahead

In 2015, the Lemelson Center will celebrate its 20th anniversary by unveiling the new, permanent Jerome and Dorothy Lemelson Hall of Invention and Innovation. This space—envisioned by the Lemelsons and the Smithsonian in 1995—will be a vibrant and engaging place for the public to learn about the role invention and innovation play in our daily lives and to participate in the invention process. The 20th anniversary of the Center will be marked through the following activities:

- Unveiling innovative experiences for Museum visitors in the Lemelson Hall of Invention and Innovation as part of the first floor of the west wing. Places of Invention, Spark!Lab, and Inventive Minds
- Publishing a companion book to Places of Invention
- Culminating the Places of Inventor Affiliates Project with the publication of the interactive map
- Expanding the Spark!Lab National Network by spawning three new Spark!Lab sites
- Collaborating with Virginia Tech on exploring “Can Innovators Be Made?” during a two-day academic workshop
- Challenging students to explore their inventive creativity in the Fourth Annual Spark!Lab Invent It! Challenge in collaboration with ePals
- Hosting innovative events with partners VentureWell and the National Inventors Hall of Fame
- Participating in the Museum’s signature public program “Raise it Up: America Innovates” as well as other public programs
- Collaborating with Smithsonian magazine on the 2015 Future Is Here conference
- Spaceheading planning for the second annual Smithsonian Innovation Festival in partnership with the US Patent and Trademark Office
- Celebrating the shared history and future of the Center and the Lemelson Foundation, along with other Foundation grantees

Collaborations

Collaboration, sharing ideas and viewpoints, flexibility, and risk-taking are essential components of any innovative endeavor. The Center has an extensive track record of working with an array of partners across a broad spectrum of disciplines to create successful programs.

Art Arsenale (Kyiv, Ukraine)
Arthur C. Clarke Center for Human Imagination
Association of Children’s Museums
Berkshire Museum
Bryd Library
C&G Partners
Doolittle Institute
ePals and Cricket Media
Innoskate
Planning Team: Ryan Clements, Betsy Gordon, Josh Friedberg, and Miki Vuckovich
International Association of Skateboard Companies (IASC)
Lemelson Foundation
Lemelson-MIT Program
The MIT Press
Museum of History and Industry
National Academy of Inventors
National Museum of American History
National Museum of the American Indian
National Science Foundation
Nike, Inc.

Polk Museum of Art
Randi Korn & Associates, Inc.
Reston Museum
Rote Group LLC
R/P Marketing Public Relations
Science City at Union Station
Smithsonian Grand Challenges Consortia
Smithsonian Institution Scholarly Press
Smithsonian Jazz Masterworks Orchestra and Oral History Project
Smithsonian magazine
Smithsonian Office of Contracting
Smithsonian Office of General Counsel
Smithsonian Women’s Committee
Society for the History of Technology
Terry Lee Wells Nevada Discovery Museum
US Department of State
US Patent and Trademark Office
VentureWell
Virginia Polytechnic Institute and State University
WCPN/WVIZ ideastream
The Works: Ohio Center for History, Art, and Technology

Smithsonian Affiliates
American Textile History Museum
Lowell Telecommunications Corporation
Lowell National Historical Park
Berkshire Museum
The Berkshire Historical Society
Conner Prairie Interactive History Park
Howard County Historical Society
Indiana Gas Boom Heritage Development Area
Museum of History and Industry
National Inventors Hall of Fame
People's Riverfront Museum
Pittsburgh History & Landmarks Foundation
USDA-NCAUR
ScienceWorks Hands-On Museum
Southern Oregon Historical Society
Senator John Heinz History Center
US Space & Rocket Center
University of Alabama at Huntsville
Western Reserve Historical Society
WPI/AVC ideastream
The Works: Ohio Center for History, Art, and Technology
Dwens Comings
The Lemelson Center for the Study of Invention and Innovation is supported by the Lemelson Foundation, a private philanthropy established by one of the country’s most prolific inventors, Jerome Lemelson, and his family. Founded in 1992, the Lemelson Foundation works to inspire and enable the next generation of inventors and invention-based enterprises in order to build a stronger US economy and create social and economic change for the poor in developing countries. For more information, visit lememelson.org.

The Lemelson Center is grateful for the volunteers and Smithsonian staff members who assisted with special events and other public programs.

Lemelson Center 2014 Advisory Committee

BP Agrawal, Founder and President, Sustainable Innovations
Dwight Blocker Bowers, Curator, Culture and the Arts, National Museum of American History
Judy Brown, Senior Vice President of Education, Education and the Arts
Nancy Davis, Curator, Home and Community Life, National Museum of American History
Roger Horowitz, Director, Center for the History of Business, Technology, and Society, Hagley Museum and Library
Cheryl McCallum, Director of Education, Children’s Museum of Houston
James Schreiber, Professor of Education, Duquesne University
Dorothy, Eric, and Robert Lemelson, ex officio members

Lemelson Center 2014 Visiting Committee

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Jeffrey L. Sturchio, President and CEO, Global Health Council
Martin Levitt, American Philosophical Society