

## THE LEMELSON CENTER'S PLACES OF INVENTION PROJECT

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Founded in 1995 at the Smithsonian Institution's National Museum of American History, the Lemelson Center for the Study of Invention and Innovation is dedicated to exploring the history of invention and encouraging inventive creativity in young people. Through our presence in the museum, as well as exhibitions, conferences, educational programs, publications, and other research, documentation, and outreach activities, the center aspires to become the nation's leading resource for the history and understanding of invention and innovation. The Lemelson Center's newest exhibition, *Places of Invention*, opens at the National Museum of American History in 2015. The questions it asks are timely: What is it about a place that sparks invention and innovation? Is it simply being at the right place at the right time, or is it more than that? How does "place"—whether physical, social, or cultural—support, constrain, and shape innovation? Why does invention flourish in one spot but struggle in another, even a very similar location? In short: Why there? Why then? This article about *Places of Invention* 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 exhibition's six case studies are Silicon Valley, CA, 1970s–1980s; Bronx, NY, 1970s; Medical Alley, MN, 1950s; Hartford, CT, late 1800s; Hollywood, CA, 1930s; and Fort Collins, CO, 2010s. *Places of Invention's* central thesis is that invention hot spots are fueled by unique combinations of creative people, ready resources, and inspiring surroundings.

Key words: Place; Invention; Innovation; Creativity; Smithsonian; Lemelson Center

Now in its 20th year, the Smithsonian Institution's Lemelson Center for the Study of Invention and Innovation at the National Museum of American History (NMAH) is dedicated to exploring the history of invention and encouraging inventive creativity in young people. The center was founded in 1995 by Jerome Lemelson (1923–1997), one of the most prolific inventors in American history with more than 600 patents for a wide range of inventions from toys to robotics to medical technologies. Motivated by concern about America falling behind other advanced industrialized countries in technology and innovation, Jerry, as he was known to family and friends, and his wife Dorothy endowed

the Lemelson Center in part because they hoped to inspire youth to consider becoming scientists, engineers, and inventors. (Jerry Lemelson often remarked that American kids could name any number of sports and rock stars but could not summon the names of more than one or two inventors.)

The center shares stories, artifacts, and archives of historic figures using research and collections at the Smithsonian and NMAH, which has the nation's premier historic collection of inventions. The center also introduces youth and the general public to today's inventors and innovators, providing positive role models and making the world of invention more accessible to all. We bring together the public,

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scholars, educators, and inventors to foster a better understanding of the role of invention in American history through exhibitions and programs, such as our annual New Perspectives on Invention and Innovation symposium. We advance the field of invention scholarship through publications, including our book series with MIT Press, fellowships, internships, and documentation activities. We support a new generation of innovative Americans through educational initiatives such as Spark!Lab, where young visitors and their families experience the process of invention through hands-on activities. With the center's range of scholarly and educational outreach activities, we aspire to become the nation's leading resource for the history and understanding of invention and innovation.

### THE PLACES OF INVENTION PROJECT

The Lemelson Center's newest exhibition, *Places of Invention*, focuses on the phenomenon of innovation "hot spots," widely prized as forces for technological and economic, even national, regeneration (21). They come in various guises and names, such as technology regions, networks, clusters, or high-tech corridors. It seems everyone wants to replicate Silicon Valley. Can history offer us any clues about the secrets of such places' success? The fundamental question is deceptively simple: What is it about a place that sparks invention and innovation? Is it just being at the right place at the right time? How does place—and "place" must be construed in the broadest sense, not just physical, but also social and cultural—support, constrain, and shape innovation? Why does invention take off in one spot but struggle in another, even very similar, location? In short: Why there? Why then?

One of the most urgent questions today in the US as well as around the world is how we do create and sustain innovative environments, whether on the scale of individual work spaces, of corporate and governmental labs, or of regional networks of R&D labs and organizations (17). The answers to such questions are anything but simple; invention hot spots are hard to account for because they are moving targets, constantly evolving and appearing in unexpected locations. Nevertheless, it is possible to identify some common characteristics, which the

Lemelson Center has been documenting and interpreting since its inception, through the growing secondary literature on the subject and through primary research.

### A BRIEF LITERATURE SURVEY

Since the 1980s, the literature on innovative laboratories and regions has grown at an extraordinary rate, attracting the attention of a multidisciplinary range of scholars: historians, geographers, economists, urbanists, psychologists, sociologists, and business experts. Places of invention can be examined at various scales. At the scale of corporate labs, historians such as Margaret Graham, David Hounshell, and John K. Smith, Jr. have studied research and development in firms like Corning, Alcoa, and DuPont (5,6,8). Among government labs, a good example is a book about the Fermi National Accelerator Laboratory (Fermilab) by Lillian Hoddeson, Adrienne Kolb, and Catherine Westfall, which documents the emergence of what they call "megascience" (7). Stuart W. Leslie's interests range from laboratory architecture to the rise and fall of high-tech regions. As Leslie points out, for many years, geography and regional networks were not on the radar of business historians concerned with innovation; they focused instead on the firm, the individual entrepreneur, or the industry. The scholarly scene began to shift in the 1980s, however, with new attention paid to the relationship between companies within regions (9,11–13).

Regionalism as a deliberate corporate strategy is the subject of several studies by Harvard University's Michael E. Porter, who finds that "paradoxically, the enduring competitive advantages in a global economy lie increasingly in local things" (18). Geographer Maryann Feldman has shown how local industrial clusters allow for the free flow of knowledge, skills, people, and, not least, money between institutions—universities, governments, and corporations (1,2,16). Alfred Marshall's examination of English "industrial districts" in his magisterial *Principles of Economics* became the starting point for subsequent studies in economic geography and regional clusters (16). Members of the National Academy of Inventors would not be surprised by the catalytic role of academic institutions,

such as Stanford, the University of Minnesota, and MIT, in these regional clusters. But, while academe plays a crucial role in the larger ecosystem of invention and innovation, informal exchanges of knowledge and social gatherings among individual actors and institutions are also important. In a 1983 article in *Esquire* about Intel's Robert Noyce, writer Tom Wolfe describes meetings among engineers, startup founders, and venture capitalists at Silicon Valley watering holes like the Wagon Wheel and Chez Yvonne. Virtually every innovation hot spot has its own version of such social gathering places (22).

Highly relevant to our themes are the seminal studies of political scientist and information expert, AnnaLee Saxenian, who focuses on the interactions of firms within regions. In *Regional Advantage* and other books, Saxenian explores the cultural dynamics and the process of industrial adaption in high-tech regional networks. She points out that, while physical proximity is critical, just being neighbors is not enough: "Firms are embedded in a social and institutional setting that shapes, and is shaped by, their strategies and structures" (19). Another expert on regional industrial development, economist Ann Markusen, who previously studied the role of military funding in altering the industrial landscape, has turned her attention to culture and "creative place-making," focusing on the intersection between artistic culture and urban/regional development. Perhaps best known in the domain of creative spaces is urban studies expert Richard Florida, who links the new innovation economy to the rise of a "creative class" made up of people who create for a living—artists, scientists, inventors, engineers, architects, and entertainers, among others (3,14,15). Collectively, these scholars, working across a range of disciplines and time periods, have established the importance of understanding the role of geography and local culture in fostering innovative places.

There is one widespread notion that needs to be disposed of quickly: that, in the new world of innovation, cyberspace will soon displace person-to-person contact and spatial proximity. That prediction has simply not come true. Even as leading computer and Internet companies like Google and Apple generate ever new and surprising dimensions of digital space, they have invested heavily in company campuses clustered together in places

like Silicon Valley; Cambridge, MA; and the North Carolina Research Triangle. These shapers of our new digital landscape know that person-to-person contact still counts in the world of innovation. To be sure, digital communication has grown exponentially according to the predictions of Moore's law about the doubling of computing power about every 2 years. But the digital realm is not a world complete unto itself; rather, it is the extension of our physical selves and communities.

### RESEARCH ON INVENTIVE SPACES AND PLACES AT THE LEMELSON CENTER

Since its founding, the center has fostered the study and exploration of the role of place in invention and innovation. We visit inventors' work spaces; acquire sketches, models, and records; conduct oral histories; and document environments using photography and video. We also host relevant conferences, such as our inaugural New Perspectives on Invention and Innovation symposium about "The Inventor and the Innovative Society" and a 2005 conference about "Cultures of Innovation" (10,20). To enhance our understanding of the relationship between physical spaces and creativity, we convened an interdisciplinary group of scholars and practitioners in 2007 for the "Lemelson Institute on Places of Invention." The institute's findings offered insights into the qualities of physical space that are conducive to innovation, the ways that creative people shape the spaces in which they work, and the common features of creative places ranging from the garages and basements of independent inventors to academic or government laboratories to regions and cyberspace. The following findings informed the *Places of Invention* exhibition:

- Places of invention that "work" share some common features, including flexibility, understated leadership, good communication, and a balance between individual and collaborative work.
- Communities, whether large or small, play an important role in shaping places of invention. Even the quintessential "lone inventor" is part of one or more groups and communities. Conversely, most creative groups have a leader, that charismatic person around whom teams form.

- Inventors and the many communities of which they are a part are affected by their social and intellectual networks, by changing forms of communication, and by the patent system. But trying to create a new community of invention by replicating a successful model seldom succeeds.
- Creative spaces and places, from laboratories and institutions to cities and regions, go through life cycles of varying productivity (9).

This new interpretation of innovative places emerged alongside 21st Century Skills, a complementary educational reform movement launched by the Partnership for 21st Century Skills (<http://www.p21.org/>). Incorporating such cognitive and social skills as collaboration, adaptability, risk taking, problem solving, communication, and creativity, the 21st Century Skills movement resonates with the findings of the Lemelson Institute and is incorporated into what we call “skill spots” in the *Places of Invention* exhibition, highlighting particular skills exemplified by inventors in each of its case studies.

We began to test ideas for the exhibition during 2009 in a small “showcase” exhibition at NMAH and in our New Perspectives symposium on “Hot Spots of Invention: People, Places, and Spaces.” This gathering of historians, practitioners, and a broad range of audiences explored at least a dozen different places that illustrated the interplay of people, places, resources, and ideas in shaping inventors’ work. Four of these eventually became *Places of Invention* exhibition case studies—Medical Alley, MN; Hollywood, CA; Silicon Valley, CA; and Fort Collins, CO.

In 2010, our *Places of Invention* exhibition project received a generous grant from the National Science Foundation, allowing us to move ahead with content development, evaluation, and design for an interactive and highly engaging exhibition for the public. We knew that *Places of Invention* was not standard exhibition fare, even for science and technology centers and museums. Indeed our initial evaluations indicated that the public could not always understand how place connected to invention or to their own lives and personal inventiveness. “Place” is a complex concept with multiple meanings; we finally decided to focus on place at the city and regional levels, which incorporate a range of inventive work spaces, such as labs, workshops, kitchens, garages, basements, and the like.

## THE PLACES OF INVENTION EXHIBITION AND ITS CASE STUDIES

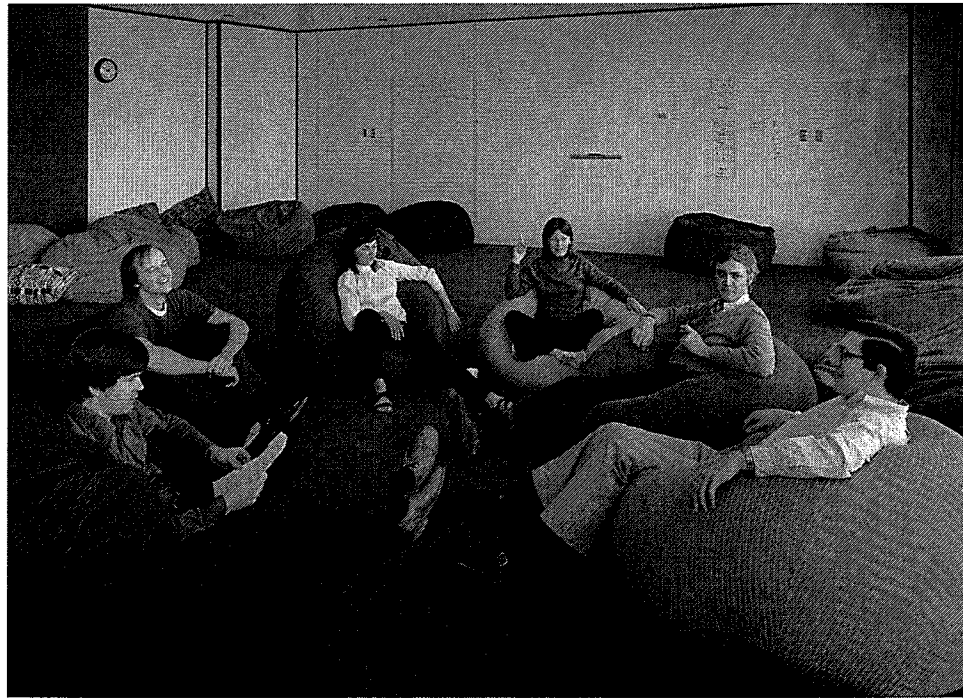
Opening in the Lemelson Hall of Invention at NMAH in summer 2015, the *Places of Invention* exhibition features stories selected from various historical periods and focused on particular inventions. The exhibition’s six case studies are Silicon Valley, CA, 1970s–1980s; Bronx, NY, 1970s; Medical Alley, MN, 1950s; Hartford, CT, late 1800s; Hollywood, CA, 1930s; and Fort Collins, CO, 2010s. Collectively, they take visitors on a journey through time and place to discover the stories of people who lived, worked, played, collaborated, adapted, took risks, solved problems, and sometimes failed—all in the pursuit of creating something new.

In a certain sense, our choice of case studies is arbitrary. We could have easily told another set of six equally compelling stories. Since the exhibition is staged at NMAH, we have focused on examples within the US, yet hot spots are hardly restricted to the US; they are emerging around the globe and, in some countries such as India, at a rapid pace. Rather than a scientific sample, our selections reflect the needs and approach of the exhibition: all of our examples are anchored in the center’s research and in NMAH’s archival and artifact collections; we looked for diversity of people and communities; we wanted variety in time and geographical location; we focused on familiar, accessible inventions; and, not least, we wanted to share good stories—the necessary ingredient of all successful exhibitions.

What follows is a brief tour of our case studies with their exhibition taglines.

### Silicon Valley, California, 1970s–1980s

*Suburban Garage Hackers + Lab Researchers = Personal Computing (Fig. 1).* Since Silicon Valley is perhaps today’s most recognizable place of invention, we decided to feature it near the entrance of the exhibition gallery. Collaboration was essential to the technological advances behind the birth of the personal computer and the Valley’s enduring success. This cluster of towns south of San Francisco—including Palo Alto, Menlo Park, Cupertino, Sunnyvale, Mountain View, Santa Clara, and San Jose—has been the epicenter for innovations in solid state electronics, personal computing, networking, software, social media, and the venture capital sector that funds them.



**Figure 1.** Informal meeting on beanbags in the Computer Science Laboratory's Commons at Xerox's Palo Alto Research Center (PARC), Palo Alto, CA, about 1980. The atmosphere at Xerox PARC reflected the West Coast's casual culture, much different from the Xerox corporate headquarters in CT. Courtesy of PARC, a Xerox company.

But California's Santa Clara Valley was not always known for high tech. This "Valley of Heart's Delight" had once been an agricultural paradise, teeming with fruit orchards and canneries. Over time, its sunny weather, attractive suburbs, proximity to Stanford University, and casual but fiercely entrepreneurial business culture attracted talented people and new businesses to the region. A booming electronics industry emerged in the 1960s and inspired the new nickname, "Silicon Valley," after the main element in integrated circuits. Then, in the 1970s and 1980s, the region nurtured the invention of the personal computer. This period is the focus of our exhibition story, although Silicon Valley continues to dominate the invention headlines even today.

### **Bronx, New York, 1970s**

*Neighborhood Streets Create Brand New Beats* (Fig. 2). In the exhibition gallery, the Bronx is strategically placed next to Silicon Valley. We thought this surprising juxtaposition would spark the curiosity of our visitors. What do hip-hop music and personal computers have in common? They were both

children of the turbulent 1970s, born to innovative people who, building on inventive skills and prior technological innovations, nurtured them through creativity, collaboration, risk taking, problem solving, adaptability, and hard work. The Bronx in the 1970s was a paradox. Culturally rich with communities of African Americans and immigrants from Puerto Rico, Jamaica, and the Dominican Republic, it was also economically devastated. But it provided the right environment for the invention of hip-hop. The residents' diverse heritage influenced the sound of hip-hop, while the urban landscape provided the raw materials for its technical innovations. DJs mined the Bronx's abandoned buildings, cars, and streets for the components they needed to craft the "best" sound system. Inexpensive turntables, speakers, and components and scavenged materials were reworked, reimagined, and rewired in ways never seen before. The transformed equipment was paired with newly created techniques for manipulating records. The result was a system that made—not just played—a new kind of music. Today, the sound systems, techniques, and genre they invented are global in scale and diversity.

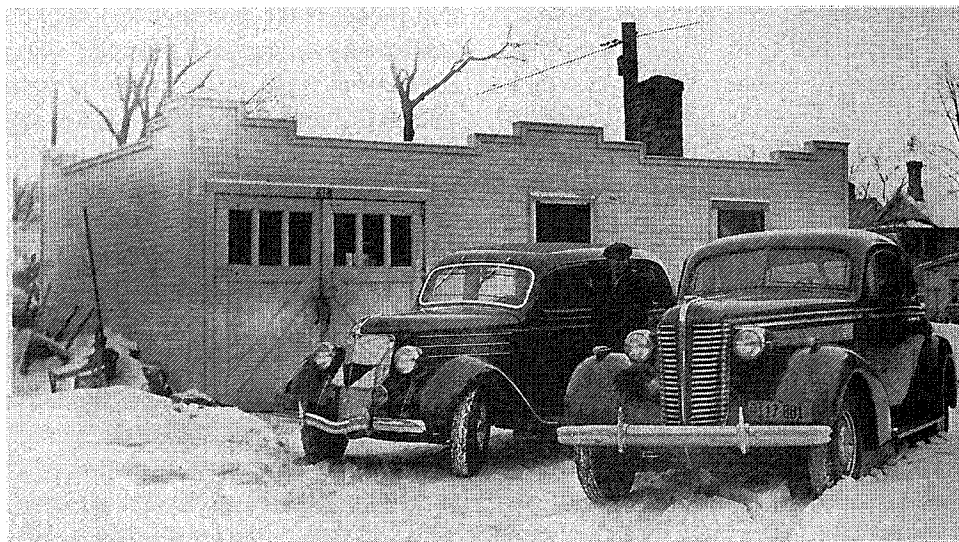


**Figure 2.** G. Man and his crew DJ-ing at a park in New York City, 1985. Beginning in the 1970s, hip-hop DJs in the Bronx used every corner of their borough as venues to showcase and test their innovations: parks, schoolyards, abandoned buildings, community centers, rec rooms in housing projects, and more. Photo by Henry Chalfant, courtesy of Henry Chalfant.

### Medical Alley, Minnesota, 1950s

*Tight-Knit Community of Tinkerers Keeps Hearts Ticking (Fig. 3).* Starting in the 1950s, risk taking and collaboration between heart surgeons and engineers helped the Twin Cities of Minneapolis

and Saint Paul earn their reputation as part of an important medical device industry region, later dubbed “Medical Alley.” New medical research, technologies, materials, and procedures developed during World War II, combined with major Federal



**Figure 3.** Like more famous garages in Silicon Valley, the Hermundslie family’s 800-square-foot garage (made out of two railway boxcars) in Minneapolis, MN, shown here around 1930, served as a convenient location for Earl Bakken and Palmer Hermundslie to found Medtronic in 1949. Bakken invented the first wearable, transistorized cardiac pacemaker in collaboration with Dr. C. Walton Lillehei at the University of Minnesota in 1957. Courtesy of Medtronic, Inc.

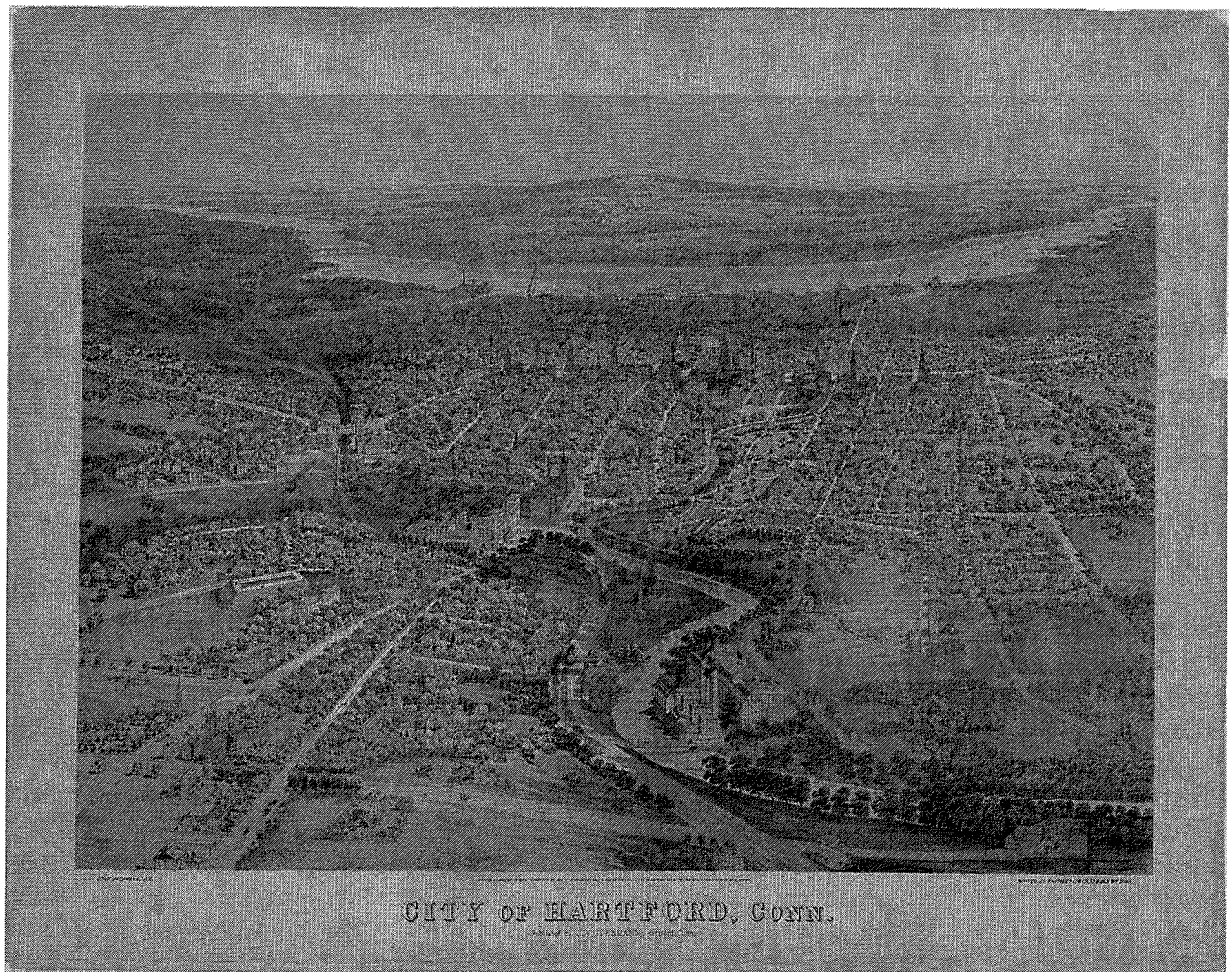


government funding for medical research during and after the war, led to rapid and innovative research and experimentation. The University of Minnesota, particularly its Variety Club Heart Hospital, was a key hub early on for medical invention and innovation, thanks to charismatic leadership and a culture of collaboration, problem solving, and risk taking. Surgeons, medical residents, and engineers—most of whom were born and educated in Minnesota—worked together to develop inventions and innovative techniques related to cardiac surgery that transformed the medical field. As part of a community of health care organizations such as the Mayo Clinic, medical device companies like Medtronic,

and bold investors and skilled workers, Medical Alley may not be as famous as Silicon Valley, but it is a leading medical device industry center today.

### Hartford, Connecticut, Late 1800s

*Factory Town Puts the Pieces Together in Explosive New Ways (Fig. 4).* Next, we chose to go back in time and focus on Hartford in the late 1800s because at the time it was indeed one of America's leading industrial cities and a major place of invention. Founded in 1636, the state capital had long been a trading post, as merchants shipped goods along the Connecticut River to New York City and on to the



**Figure 4.** A bird's-eye view of Hartford, CT, looking east to the Connecticut River, 1864. In the late 1800s, Hartford was one of America's key places of invention and a leading industrial city. Notice the various smokestacks and factories near the railroad and waterways. Lithograph by John Bachmann, printed by F. Heppenheim, published by J. Weidemann. Courtesy of The Connecticut Historical Society.

Atlantic. In the 1850s and 1860s, firms like Aetna and Travelers emerged to underwrite the valley's robust maritime trade, making Hartford the "insurance capital of the world." Meanwhile, the Colt Armory and its neighboring firms perfected the techniques of interchangeable parts manufacturing, establishing Hartford as one of the birthplaces of American mass production. Thus, all kinds of products—including firearms, sewing machines, typewriters, bicycles, and automobiles—were manufactured in Hartford, making this New England city a hotbed of "Yankee ingenuity" from the late 1800s through the early 20th century. Unfortunately, Hartford's fortunes changed abruptly after World War II, as deindustrialization turned the city into one of the poorest in the nation. However, Hartford's leaders have drawn inspiration from the city's innovative past to revitalize the economy and muster a comeback.

### Hollywood, California, 1930s

*Young Town Gives Birth to the Movies' Golden Age* (Fig. 5). NMAH is well known for its Hollywood-related collections, but heretofore the museum has focused on its social and cultural aspects rather than the technology. So we decided we had a great opportunity to feature the Technicolor camera from *Wizard of Oz* and highlight the stories of innovators who worked behind the scenes. Long before our present age of CGI animation, Hollywood movies had entered the modern era of technology. Initiative and creativity drove Hollywood in its "Golden Age" with inventions in color technologies for motion pictures. Oil strikes, a real estate boom, jobs in manufacturing and agriculture, and publicity touting the varied scenery, mild climate, and reliable sunlight of California enticed all kinds of people to head west in the early 1900s. The completion of the transcontinental railroad linking the East and West Coasts made that journey easier. Los Angeles County's population exploded, growing more than 1,500% between 1900 and 1940. The new immigrants included most of the people behind the budding American film industry. Just as the electronics industry migrated westward across the continent, motion picture technologies invented in East Coast labs—including methods of making movies in color, such as Technicolor—also made their way



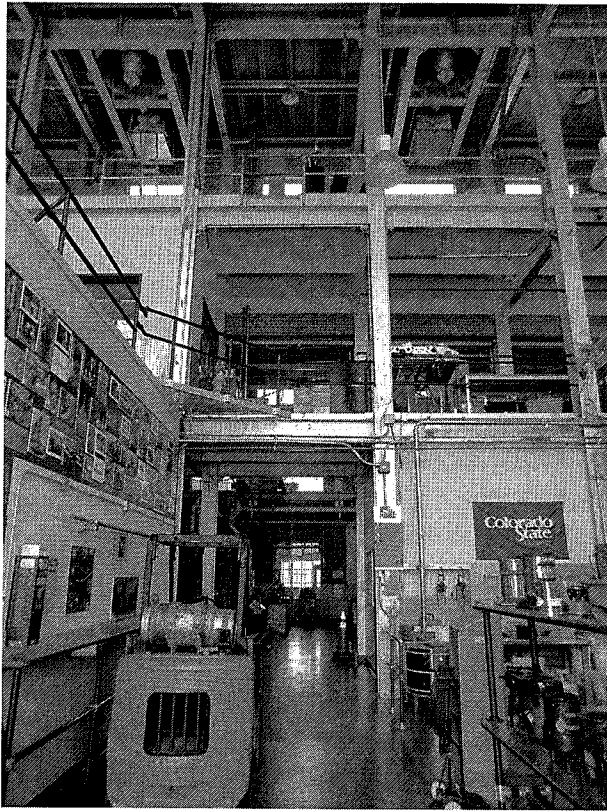
**Figure 5.** Natalie Kalmus in Hollywood, CA, around 1935. Kalmus was Technicolor's chief color consultant throughout the 1940s. As head of the Technicolor Color Advisory Service, she and her fellow consultants were the color authority on the set, making decisions about makeup, costumes, sets, and lighting. Courtesy of Mark Wanamaker/Bison Archives.

west to the soundstages of Hollywood, leading to its "Golden Age" in the 1930s.

### Fort Collins, Colorado, 2010s

*College Town Combines Its Energies for a Greener Planet* (Fig. 6). We felt it was important to research and document a place of invention as it is developing, before historians like us have dissected its long-term successes and impacts. In Fort Collins, CO, today, critical thinking and problem-solving skills are being applied to sustainable clean energy innovations. Situated where the Great Plains meets the Rockies, Fort Collins is known for its abundant natural resources, fertile agricultural land, and outdoor lifestyle. The city is also gaining a reputation for breakthrough inventions in clean energy and socially responsible innovation. Colorado State University, the city, and community businesses





**Figure 6.** Inside Colorado State University's Engines and Energy Conversion Lab (EECL) in Fort Collins, CO, 2011. Founded in 1992, EECL research focuses on fuels, energy conversion, and energy distribution. The lab is housed in the former Fort Collins municipal power plant, an Art Deco-style building from 1936, with a new addition of approximately 10,000 square feet. Photo by author Monica M. Smith.

actively pursue collaborations that result in local innovations with global impact. We feel very fortunate to be able to interview the city's inventors and innovators about their first-person experiences. Seen as a place where a person can make a difference while enjoying life, Fort Collins is one of America's newest places of invention.

We chose this case study framework out of our conviction that history offers valuable lessons for understanding how new cultures of innovation develop, from the personal to the local, regional, national, and beyond. Though they may feel very recent to us, modern places of special scientific, technological, and cultural ferment have many far-reaching historical precedents, going back to Renaissance Florence, 10th- and 11th-century Baghdad, and earlier. What

do modern places of invention have to learn from history? As historian of technology Jennifer Light has observed, "Scholars have identified changes in the inventive process from the late 19th through the 20th centuries, suggesting the value of taking a historical approach to assess even contemporary innovation practices" (9). Our case studies, then, help us understand a complex historical phenomenon that continues to evolve today. There may not be a recipe to follow to create the next Silicon Valley, but we believe we have shed some new light on key ingredients for communities of invention.

To increase the range and scope of these stories, we also conceived of an interactive map at the center of the exhibition that would allow us to share additional curated case studies, present crowd-sourced visitor stories, and feature video case studies created by 12 Smithsonian affiliate museums participating in the *Places of Invention* project. Smithsonian affiliates are nonprofit or publicly operated museums, arts/culture/science centers, or educational organizations that formally partner with the Smithsonian affiliations program. This national outreach program develops long-term, collaborative partnerships to enrich communities with Smithsonian resources (<https://affiliations.si.edu/>). The interactive map—accessible both in the gallery at NMAH and online via the Lemelson Center website—will continue to grow organically as stories about innovative communities around the world are added by the public, including, we hope, members of the National Academy of Inventors.

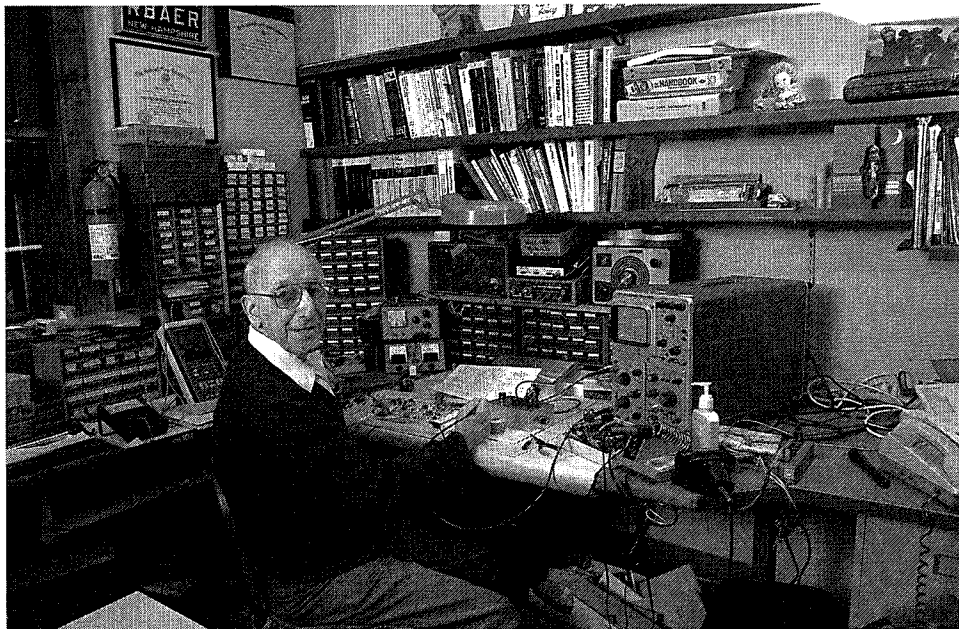
## ECOSYSTEMS OF INVENTION AND INNOVATION

Places of invention are more than statistical data, spatial processes, and maps. Connecting personal narratives with institutional and local histories, *Places of Invention* aims to close the gap between the territory of individual inventors, their personal and professional networks, and the geography of the technology region. Though working mostly outside of institutional contexts, independent inventors are invariably plugged into local and regional networks.

A good illustration of this relationship is Ralph Baer, known as the "father of video games," which

he introduced in the 1960s. A German immigrant who fled Hitler just before Kristallnacht in 1938, Baer went to work for US Army intelligence in World War II, then attended technical school on the GI Bill to study electronics, and ended up running a major electronics lab at Sanders Associates (now BAE Systems), a defense contractor in Nashua, NH. He started inventing video games on the side at Sanders, which made huge profits thanks to the video game patents Baer assigned to them. He also set up a basement lab in his home, which eventually became his base of operations for successful toy inventions, such as Simon and Odyssey (Fig. 7). Even as an “independent” inventor, Baer maintained close ties with Sanders and Sanders employees, collaborating with some in business ventures and with the military, which applied his video game technology to battle simulations. Ralph Baer thus created not one, but two, significant places of invention within the Manchester–Nashua, NH, nexus: his corporate lab at Sanders and his basement lab at home. (NMAH is in the process of collecting Baer’s basement lab in order to exhibit it in conjunction with our *Places of Invention* exhibition.)

This dynamic interaction between individuals and the surrounding innovation ecosystem may be the most important ingredient in the making of places of invention. Sociologists find that charismatic leaders like Google founders Larry Page and Sergey Brin play a crucial role in developing such places of invention. They set the tone and attract talent and funding. More importantly, they connect individual practitioners with the larger scene of social and collaborative networks that define technology regions. Businessman Samuel Colt played such a shaping role for Hartford; surgeon C. Walton Lillehei for Medical Alley; professor Bryan Willson for Fort Collins. A symbiosis develops between the individual and the city or region: community brings a wealth of resources to the innovator, whether independent or institutionally based. Individual innovators in turn contribute their skills, knowledge, and creativity to the larger ecosystem of invention. If a tipping point is reached, a node can blossom into a full-blown technology region. The concept of the “tipping point,” the threshold moment when an idea or social process takes off, is explored by Malcolm Gladwell (4). This exchange and sense of



**Figure 7.** Inventor Ralph Baer, known as “the father of video games,” in his home lab in Manchester, NH, 2003. The Smithsonian’s National Museum of American History is in the process of collecting Baer’s basement lab in order to exhibit it in conjunction with our *Places of Invention* exhibition. © Smithsonian Institution; photo by Jeff Tinsley. Courtesy of the National Museum of American History.

community (though not always “comity,” because disagreement often results in profound change) are necessary ingredients in a rich culture of innovation, as appreciated by scholars like Markusen and Florida. Such a culture potentially produces not only breakthroughs in technology but also new forms of art, architecture, music, or film with the power to shake up the status quo.

The Lemelson Center’s *Places of Invention* project explores the key role that place plays in the dynamic interaction among inventive people, institutions, and resources that leads to innovations across diverse fields and time periods. Many individuals, organizations, and governments around the world have a stake in this process. We hope the historical case studies presented in this exhibition will stimulate an informed dialog among these stakeholders and the general public that will inspire the next generation of inventors and inventive place makers.

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