

Planning for a Curatorial Center at The Franklin Institute

3. Narrative

Introduction

Founded in Philadelphia in 1824 as The Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanical Arts, the Institute is named to honor Benjamin Franklin's infectious curiosity and inventiveness. In the 19th century, the Institute was one of the nation's most influential organizations for promoting technological innovations and public awareness of their effects on society (Sinclair, 1974). The Institute still publishes the *Journal of the Franklin Institute*, established in 1826, making it the second oldest scientific journal in continuous publication in the US. The strengths of the Institute's collections are due in part to its direct participation in the rise of technology and science in the US.

In 1934, the Institute moved to its current building, which originally housed workshops and laboratories, a research and patent library, and one of the nation's first hands-on, interactive science museums. By 1938 the building also included the Benjamin Franklin Memorial (now a federally-designated National Memorial), a magnificent rotunda with a 20-foot statue of Franklin sculpted by James Earle Fraser. Today the Institute pursues its mission to "inspire a passion for learning about science and technology" through its museum and community outreach programs, which in 2012 served over 1.4 million people of all ages in Philadelphia and beyond. The Institute employs approximately 300 full- and part-time staff, and benefits from the talents of over 500 volunteers. The Institute's 2012 operating budget was \$33.9 million.

The Institute uses its collections to help visitors appreciate the widespread presence of science and technology in society and culture, and how the objects, concepts, and practices of science and technology affect us all every day. The scope of the collections, and the Institute's historical role in the rise of technology and science, make the collections an important source of artifacts for other museums, as well as for scholarship. However, the Institute's current collections facilities do not permit this nationally significant resource to be adequately conserved, studied, and integrated in the Institute's educational programs. This project will assemble an interdisciplinary planning team of outside experts and Institute staff to produce a curatorial center design that integrates sustainable preservation strategies, improves conditions for and access to the collections, and supports their increased use in the Institute's educational programs.

Significance of Collections

The collections include manuscripts; prints, photographs, and drawings; and three-dimensional objects related to technology and science in US culture. Technology and science are pervasive, embedded in commerce, communications, transportation, international relations and globalization, literature and the arts, education, and recreation. The Institute's collections shed light on these intersections, and how cultural norms and tensions around ethnicity, class, gender, and sexuality manifest in technology and science.

The many expressions of science and technology in culture are evident in the Institute's archives that document its early activities as one of the nation's leading mechanics institutes, the Benjamin Franklin and Wright brothers collections, and collections of visual and material culture.

Archives of The Franklin Institute. These holdings include more than 500 linear feet of institutional records of one of the nation's oldest organizations devoted to the development and promotion of science and technology. The case files of the Institute's Committee on Science and the Arts (CSA) are perhaps the most remarkable series in the archives. The CSA was established in 1834 to administer the Institute's

awards programs, which continue to this day, recognizing individuals who have made outstanding contributions in science, technology, and society. The nearly 4000 case files include the application materials and peer critiques for every nominee since the origin of the awards programs. Award recipients include Thomas Edison, Marie Curie, Neils Bohr, Max Planck, Albert Einstein, Stephen Hawking, Bill Gates, and Michael Dell. To date, 113 laureates of the Institute's awards program have subsequently received 115 Nobel prizes.

Selected case files are available online for students, teachers, and others to explore (<http://www.fi.edu/learn/case-files>). Browsing the primary source documents in Albert Einstein's 1935 file, online visitors can discover that the Institute's leaders were worried about whether he would show up as promised to the award ceremony and dinner (<http://www.fi.edu/learn/case-files/einstein/file.html>). The Institute asked one of Einstein's colleagues at Princeton University, Oswald Veblen, to "keep tabs on" Einstein to be sure he made it to the ceremony (CSA #2995: letter from McClenahan to Veblen, April 10, 1935). Veblen replied by suggesting that "the effective thing to do" would be to ask Mrs. Einstein to ensure her husband's attendance, since she was "aware of the need for punctuality" and "quite good at living up to it" (CSA #2995: Veblen to McClenahan, April 13, 1935). Here the case files offer a humorous but telling glimpse into the gendered relations of professional and personal life that don't usually make it into stories of scientific genius.

Another notable component of the archives is the records of the Committee on Instruction, 1824-1923. In 1824, the Institute organized a series of public lectures by Institute members in natural philosophy, architecture, natural history, and other topics. In response to a growing need for formal technical instruction, the lecture program was transformed into fourteen schools in the period up to 1917, including schools of mathematics, naval architecture, and wireless telegraphy. The files of the Committee on Instruction include administrative records, correspondence, annual reports, course catalogs and instructional materials, student records, and newspaper articles. The history of the Drawing School, established in 1824, offers another illustration of science and technology embedded in broader cultural. The Drawing School provided the Philadelphia industrial community with draftsmen and architects. Although a few women attended the Drawing School, the Institute did not actively educate women until it organized the School of Design for Women in 1850 to instruct young women in the preparation of engravings, lithographs, and patterns for carpets, textiles, and wallpaper. In 1853, the school separated from the Institute and subsequently became Moore College of Art and Design, which coincidentally is now located across the street from the Institute, reflecting the shared ancestry of a science museum and a college of art.

Frankliniana Collection. The Institute holds more than 250 objects associated with Benjamin Franklin, including household items, scientific instruments, manuscripts, and popular depictions of Franklin.



Franklin's belongings were scattered after his death, so this collection is a valued re-collection that tells the story of Franklin's life and times. For example, in 1826, Dr. J. Redman Coxe presented the Institute with an electrostatic generator that Franklin used in the mid-1700s to investigate static electricity. Franklin described these and other investigations in *Experiments and Observations on Electricity*, published in London in 1751. The Institute holds a first edition of this book, which helped make Franklin among the most well-known and admired American colonials in the world. Visitors can browse an electronic version of this book in the Institute's *Electricity* exhibit. The Institute's collections also represent Franklin the printer, inventor, and socialite. In 1836, Franklin's grandson presented the Institute with a type-dressing machine used in Franklin's

Philadelphia print shop. Franklin's knack for invention is exemplified by the beautiful glass armonica (left), an unusual musical instrument designed by Franklin and built in London in 1761 (<http://www.fi.edu/learn/sci-tech/armonica/armonica.php>). Franklin took his beloved instrument with him

when he traveled to play popular tunes and original compositions for his audiences. The American Philosophical Society, University of Pennsylvania Library, The Library Company of Philadelphia, and the Philadelphia History Museum at the Atwater Kent have other major holdings of Franklin materials.

Wright Aeronautical Engineering Collection. The Institute acquired this collection in 1948, bequeathed by Orville Wright (<http://www.fi.edu/wright/collection>). The collection consists of 50 original drawings of the airplanes the Wright brothers designed from 1903 to 1911; 98 aeronautical objects, such as metal airfoils, wooden models, and control panels; and 46 graphs, tables, charts, and notes, from their experimental research, circa 1900-1903. This is one of the few concentrations of Wright brothers' material in the world. Other significant collections are at The Library of Congress, the Smithsonian Institution, and the Special Collections and Archives at Wright State University Libraries. Orville Wright entrusted The Franklin Institute with this collection due in part to lingering resentment with the Smithsonian over whether an aircraft it sponsored, or the Wright brothers' machine, was the first to fly. The Smithsonian ultimately recognized the Wrights as the first in flight. On display in the Institute's continuing exhibition, *The Franklin Air Show* (<http://www.fi.edu/airshow>) is one of the Wright Brothers last airplanes—the 1911 Model-B Flyer—the first airplane to be mass-produced (<http://www.fi.edu/wright/1911>). The Wright brothers' invention itself became a system for further invention and social transformation (Hughes, 1989).

Visual images collection. This collection consists of approximately 40,000 visual images—drawings, prints, blueprints, photographs, and magic lantern slides. The collection includes major holdings of technical drawings in aviation, navigation, industrial manufacturing, and water distribution systems, including John C. Trautwine's architectural drawings, William Sellers' technical drawings, and Frederick Graff's hand-colored architectural drawings of Philadelphia buildings and the Philadelphia Water Works.

These holdings also include examples of pioneering work in still photography and moving images, including many of Eadweard Muybridge's earliest studies of animals using motion picture technology, circa 1887. Another highlight is the magic lantern slides, numbering over 10,000, which were used by Institute members for the edification and entertainment of the general public. In the slide collection we can see how a new technology was mobilized to advance social reform agendas. For example, lectures on temperance used the slides to offer cautionary tales of personal and social decline caused by saloons and alcohol (right).



Material culture collection. This is a collection of experimental and emerging technologies from the 19th and early 20th centuries. Strengths include scientific instruments for studying electricity; image making technologies, such as the magic lantern, photography, radiology, television, and video; transportation; communication; and manufacturing. The Institute's collection of late 19th- to early 20th-century bicycles and associated memorabilia demonstrates the confluence of cutting-edge technology (recall that the Wright brothers started out in the bicycle business), personal mechanized transportation, and increased access to recreational activities (<http://www.fi.edu/learn/sci-tech/bicycle-heroes>). Pioneering cyclists formed clubs to share their interests and organize competitions. Known then as "wheelmen," members proudly wore their clubs' badges, buttons, and pins at meets and races. Before baseball cards became a national pastime, some cigarette packs included racing cards featuring the most popular cyclists.

Use of the collections

Items from the collections enrich the Institute's hands-on exhibitions, as well as educational programs on the exhibit floor, in the community, and online. For instance, Henry Mailladert's early 19th-century

automaton (<http://www.fi.edu/learn/sci-tech/automaton>), which draws four images and writes three poems, is a star attraction in the exhibition, *Amazing Machine*. Makers of automata merged art and technology to investigate how machines might approximate (or fail to approximate) life. As Professor Steven Conn notes in his letter of support (see Appendix), Brian Selznick visited the Institute's automaton while researching his acclaimed children's book, *The Invention of Hugo Cabret* (http://www.theinventionofhugocabret.com/about_hugo_auto.htm). In the exhibit *Electricity*, visitors can view Franklin's static electricity tube and a lightning rod he designed that was installed on a colonial house in Philadelphia. Additional items from the Frankliniana Collection are exhibited in locations across the museum, including busts, medallions, and other popular depictions of Franklin.



In addition to the artifacts on display in exhibits, the Institute's educators bring objects to the museum floor to share with visitors. Visitors might see a section of the first telegraph line run by Samuel F. B. Morse in 1844, a 1918 Westinghouse radio receiver, or a Titanic-era mariner's compass. Curatorial staff members also show collections at the Institute's monthly Community Night, when the museum is open free of charge. At Community Night visitors get up-close views of objects not normally on display, including drawings and notes by the Wright brothers, John Haviland's drawings of the Franklin Institute's original 1824 building, and a photo album from an astronomy excursion to observe the total eclipse of May 28, 1900 (left).

The collections are also popular at community events. In the early 20th century, Institute member Charles Rodman Pancoast produced hand-colored photographs of his travels in Japan (right) and Russia, which he presented in lantern slide lectures. The Institute's curators drew from Pancoast's images from 1900 to 1920 in a presentation to the Geographical Society of Philadelphia, the Photographic Society of Philadelphia, and the local chapter of the Japan Society. These remarkable images invite us to consider how user-friendly camera and film technology affected image-making about other peoples and places.



And recently, items from the bicycle collection were a hit at the 2013 Philadelphia Bicycle Expo. Bicycle club ribbons, badges, racing cards, and photographs from the 1880s to the 1930s attracted the attention of the publisher of *phillypedals.com*, an online news and meeting place for Philadelphia bike enthusiasts, who invited the Institute to post photos on the website. And the Chief of Reference at The Library Company of Philadelphia (which, incidentally, was founded by Benjamin Franklin in 1731) asked the Institute to submit photos to the blog for an exhibition opening in early 2014, *That's So Gay: Outing Early America* (<http://www.gayatlcp.org/blog/>). Emerging technologies can be hubs around which certain groups of people, and not others, gather in ways that may variously reinforce and contest social conventions. Bicycle clubs involved sex-segregated leisure activities with men living in all-male clubhouses (left), suggesting issues around gender and sexuality that are examined in the upcoming exhibition by The Library Company.

Selections from the Institute's collections can also be viewed online through the *History of Science and Technology* exhibit at <http://www.fi.edu/learn/sci-tech/>. Every month approximately 8000 online visitors see artifacts related to Franklin, space exploration, computers, recreation, photography, weather, and more. Several objects from the Wright Brothers collection can be interactively explored in virtual 3D (<http://www.fi.edu/learn/sci-tech/airfoil-collection>), and visitors can also browse a selection of CSA case files (<http://www.fi.edu/learn/case-files>).

There are currently more than 4000 artifacts from the Institute are on loan to 15 institutions, including the Philadelphia Museum of Art, the American Philosophical Society, and the University of Pennsylvania Museum of Archaeology and Anthropology. The most traveled artifacts are in the Frankliniana Collection. More than 700,000 people saw the Franklin Tercentenary exhibit, *Franklin: In Search of a Better World*, when it toured internationally from 2005-2008, with stops including Denver, Atlanta, and Paris (<http://www.benfranklin300.org/exhibit.htm>; see the letter of support from Rosalind Remer in the Appendix). Several Frankliniana items—Franklin's glass armonica, odometer, tankard, printer's inkpads, and a bowl from the illegal China trade—are now on display at Benjamin Franklin Museum at the Independence National Historical Park in Philadelphia (<http://www.nps.gov/inde/planyourvisit/benjaminfranklinmuseum.htm>). The Institute has also loaned an early Franklin lightning rod to the Deutches Hygiene-Museum, in Dresden.

Beyond Frankliniana, the Institute's collections are an important resource for other museums. The Philadelphia Museum of Art Mount Pleasant House borrowed the Institute's Varley Patent Graphic Telescope (1811, right) for an installation of a countryseat held by Captain John Macpherson. The same telescope is currently on view at the American Philosophical Society, where it is the centerpiece of the exhibition, *Through the Looking Lens: Cornelius Varley's Wondrous Images of Art and Science, 1800-1860* (<http://www.apsmuseum.org/varley-exhibition/>). Varley the artist, inventor, and natural philosopher developed optical instruments that helped him produce drawings and watercolors of natural wonders, from landscapes to algal cells. And The Library Company of Philadelphia borrowed a Goddard Daguerreotype Camera and 1839 daguerreotypes for its 2009-2010 exhibition, *Catching A Shadow: Daguerreotypes in Philadelphia, 1839-1860* (<http://www.librarycompany.org/catchingashadow/>). Another exhibit at The Library Company of Philadelphia, *From Lining Rags Good Paper Doth Derive*, drew from the Institute's material objects collection to explore early papermaking industries in Philadelphia.



The Institute's collections also support research and will hold even greater value when more easily accessible to scholars. In his letter of support in the Appendix, Dr. Steven Conn, Professor and Director of the Public History Program at The Ohio State University, describes the value of the Institute's archives for his research on the history of American museums. He suggests that the "extraordinary breadth, depth and scholarly importance" of the collections for the humanities would be more fully realized if they were housed in a new curatorial center. The proposed plan is a step toward that vision. The Institute's loans to the Independence Seaport Museum—including over 200 drawings by John Lenthall (1807-1882), a leading US naval architect in the mid-19th century—support research on Philadelphia's shipbuilding industry. And on long-term loan to the University of Pennsylvania Museum of Archaeology and Anthropology is a large collection of indigenous musical instruments, gifted to the Institute by Mary Childs Drexel from her travels to Africa and Asia.

Current Conditions and Preservation Challenges

The Institute's collections are stored in nine locations onsite, none of which were originally intended to house collections. Two offsite locations also contain collections. Based on environmental monitoring that began in 1996, several of the onsite locations experience undesirable fluctuations in temperature and relative humidity (see Assessments and Specialized Studies in the Appendix for a summary table of the collections sites and environmental conditions, and for photographs of each site). The scattered locations make it challenging to access and work with the collections. This project will detail a plan for a sustainably designed, centralized facility that will improve conditions for and access to the collections by reducing the number of onsite locations from nine to two or three. (We anticipate that under the plan the Institute would also eliminate one of the two offsite locations.)

The Institute's 330,000-sf building consists of a 1930s-era structure and an addition from the 1980s. The 1930s building has a concrete and steel frame, with limestone exterior, and concrete, plaster, and terra cotta interior walls. A new addition, the 53,000-sf Nicholas and Athena Karabots Pavilion, will open in June 2014 to house a new continuing exhibition, a traveling exhibition gallery, and an education and conference center. The addition, designed by SaylorGregg Architects, is expected to qualify for LEED Silver designation. David Searles, an Associate at SaylorGregg, who is architect/project manager for the new addition and produced a preliminary curatorial center sketch in 2008 (see Institutional Plans and Policies in the Appendix to see the 2008 design sketch), will serve on the proposed planning team. This now dated 2008 design sketch will serve as a starting point for the team's planning (discussed further below).

The nine onsite locations are carved out of multipurpose areas spread across three floors of the 1930s building. With the exception of the P-Stacks (described below), these sites rely on the general HVAC systems of the building, the effectiveness of which varies markedly in different areas. Curatorial functions like research, photographing, packing, and supply storage also occur in repurposed sites. In addition to complicating access and transportation, there are added challenges to monitoring and maintaining nine sites. The collections sites are in or directly adjacent to multiuse areas that are not controlled by curatorial staff. Curatorial staff members do their best to maintain consistent conditions by monitoring temperature, humidity, and light in most locations, and by attending to pest management and security. Paper traps are in every collections area, water emergency supplies are in stock, a Nilfisk with a HEPA filter is used for vacuum cleaning, UV-blocking film coats windows and lights, and collections use policies are enforced with all research visitors. These procedures are described in the Institute's Collections Policy (for a summary see Institutional Plans and Policies in the Appendix).

The basement contains four collections areas. The **Curatorial Workroom, Cage, and Vault** occupy a curatorial area that is immediately adjacent to a larger space with non-curatorial workstations. This combined space is the site for the planned curatorial center. The Curatorial Workroom is a multiuse space for curatorial administration, temporary open storage, and work on objects by staff and visiting researchers. This mixed use poses logistical, security, and safety concerns related to transporting objects to and from distant storage areas. The Cage contains oversized three-dimensional objects from the material culture collection. The Vault safeguards three-dimensional objects in the Frankliniana Collection and other very high-value and/or fragile artifacts. Maneuvering items on carts and dollies in and out of the Cage and Vault requires special care in these cramped spaces. Also located in the basement, the **Engineering Room** is shared space primarily taken over by non-curatorial cleaning equipment and building systems ductwork. A cage for oversized items sits in one corner. Due to traffic in and out of the room, lights are often left on and maintenance supplies sometimes must be moved to reach the cage.

The **4th floor** contains two storage areas, **Library Stacks-4** and **P-Stacks**. Library Stacks-4 is a padlocked cage with three-dimensional and some two-dimensional artifacts of mixed materials (e.g., metal, leather,

wax cylinders, paper). Powder-coated, industrial storage shelves are 4" from sprinklers, padded with Ethafoam, and covered in Mylar sheets to reduce dirt and dust. These shelves were previously used for books and are not ideal to safely house objects in the collections. The P-Stacks is a locked, electronically-monitored room with a dedicated HVAC system and lights coated with a UV-blocking film. It houses the Institute's archives, manuscripts, photographs, paintings, posters, books, and lantern slides. The artifacts in this room exceed its functional capacity. Larger two-dimensional objects are stored on tables and cabinet tops, and there is little workspace. Access is complicated by steep stairs with a 4" run.

The 5th floor contains three storage areas, **Library Stacks-5**, **Outside Room**, and **Small Room**. Library Stacks-5 is a locked room with open shelves. The room has no windows but its location in the stacks makes it vulnerable to outside temperature and humidity. Shelves are padded with Ethafoam, but there is an overflow of artifacts on the floor and in stacked boxes. The **Outside Room** and **Small Room** have not been monitored for temperature and humidity because they are considered temporary areas with a limited number of collections. The Outside Room contains blueprints in Paige boxes & paper in stacked boxes. The Small Room is a locked room with open shelves for temporary storage of objects and supply storage.

Library Stacks-4 and 5 (described above) are in repurposed closed library stacks from the 1930s. Bounded on one side by an exterior masonry wall that on some levels has the original windows, the temperature and humidity in these areas are influenced by Philadelphia's weather. The collections in these areas are of mixed materials including metal, leather, wax cylinders, and paper that respond differently to environmental fluctuations. Repeated changes in temperature and humidity could accelerate deterioration of the artifacts. Further, these areas are accessed by narrow staircases that were designed for lone librarians carrying books, and by a small elevator. The 1930s-era elevator is helpful, but its size means several trips can be required, and some artifacts are simply too difficult to move in and out of these areas.

We expect the proposed plan will allow relocating most artifacts to the new facility that utilizes compact shelving, freeing space in the P-Stacks for the most sensitive objects (e.g., certain paper and leather artifacts and wax cylinders) that are currently in unfavorable conditions in Library Stacks-4 and 5. This would **reduce the nine onsite locations to two**, or perhaps three, if there is need for an additional temporary storage space).

The two, privately run offsite locations offer temperature, humidity, and light-controlled storage for very large objects. Access must be arranged in advance and monthly fees are a significant burden on the curatorial budget. The proposed plan should eliminate the need for one of these spaces.

History of the Project

Expected Outcomes

The planning team of outside experts and Institute staff will build on a foundation of prior studies and planning. The team will update and detail a 2008 design sketch (see Institutional Plans and Policies in the Appendix) and preliminary budget for a 5000-sf curatorial center in a basement area of the Institute's building that currently houses the Curatorial Workroom, Cage, and Vault, and other staff workspaces. (The anticipated renovations will not affect the building exterior or historically significant elements of the interior.) Incorporating sustainable collections preservation strategies, the team will update the 2008 sketch to detail the floor plan and specifications for HVAC, lighting, security, storage units, and work and learning areas. The now outdated design sketch from 2008 did not benefit from the extended collaborations of Institute staff and outside experts that this planning process will allow. The team will produce an updated budget that includes higher- and lower-cost alternatives to give the Institute's leadership flexibility in a future implementation phase. The team's planning will proceed in alignment with the Institute's new 2013-2018 Strategic Plan, briefly described below and summarized in the

Appendix (under Institutional Plans and Policies). The planning team's charge is to address the design of the curatorial center, not the logistics of relocating non-curatorial staff from the proposed space prior to an implementation of the plan. The Institute's senior leadership will address these broader logistical issues outside the scope of this project but in coordination with and informed by it.

Four core design objectives will guide the work of the planning team: 1) emphasize sustainable design and collections conservation strategies, 2) upgrade collections storage and maintain environmental conditions suitable for the collections, 3) improve access to the collections by reducing the number of storage sites, and 4) support enhanced integration of the collections in the Institute's educational programs.

History

The American Association of Museums (now the American Alliance of Museums, AAM) first accredited the Institute in 1973. Subsequent AAM reviews expressed concern about temperature and relative humidity control, and about collection areas in "nooks and crannies" of the building. The 2008 review strongly endorsed the Institute's preliminary vision for a centralized collections facility.

Several studies and environmental monitoring have also led to this planning project. Ongoing monitoring of temperature and relative humidity in most of the collections areas began in 1996. In response to a 2000 General Conservation Assessment Report, the Institute added a position in collections care, installed dust covers, and formalized housekeeping protocols. Responding to a 2004 AAM Museum Assessment Program study, the Institute expanded the interpretive use of its collections, especially online through the *History of Science & Technology* exhibit and CSA case files. In 2010, a CCAHA Preservation Planning Stewardship Program refined the Institute's goals for collections storage and security.

The studies and environmental monitoring demonstrate the need to improve the Institute's collections storage areas. In 2008 the Institute commissioned SaylorGregg Architects to produce a curatorial center design sketch, intending to wrap a new collections facility into a capital campaign for a major building expansion. When the economic downturn hit in the midst of the capital campaign, the collections renovation was temporarily set aside. This stewardship allowed the Institute to complete the capital campaign and to begin construction of a 53,000-sf addition, the Nicholas and Athena Karabots Pavilion, which will open in June 2014. The addition, designed by SaylorGregg, is expected to qualify for LEED Silver designation. The Institute can now return to planning for a new curatorial center. See the letter of commitment from Dr. Dennis Wint, President and CEO of the Institute, in the Appendix.

The Institute's new 2013-2018 Strategic Plan also drives this planning project. The Strategic Plan calls for reaching broader audiences with enhanced learning opportunities by coordinating educational programming across onsite, community, and online paths (see Institutional Plans and Policies in the Appendix for a summary of the Strategic Plan). The planning team will update and detail the 2008 design sketch so the planned facility supports increased integration of collections in educational programming. Especially promising is supporting enriched learning opportunities onsite through the thoughtful design of work and learning spaces that are distinct from but adjacent to collections storage. Improved coordination of storage and work areas will improve the care of the collections, and permit curators and educational staff to facilitate hands-on learning for visitors in the curatorial center. Such a design will also improve work areas for visiting researchers.

Methods and Standards

This planning project will occur during a time of change and some uncertainty around conservation standards for collections. As an organization devoted to inquiry, the Institute views this as an opportunity

to learn and to contribute to the ongoing conversation about caring for collections while reducing environmental impacts. It is clear that the conventional standard of 50% RH and 70°F is not well justified based on the diverse nature of risks to collections, nor is it realistic or sustainable for many institutions (Hatchfield, 2011). Emerging sustainable practices focus on the need to balance a variety of concerns, adjusting parameters based on likely risks to specific types of objects rather than using a one-standard-fits-all approach, and controlling fluctuations within a broader range of acceptable average conditions. Both technical know-how and wisdom come into play here, and resources such as the AIC Environmental Working Group Wikipedia page (http://www.conservation-wiki.com/wiki/Environmental_Guidelines) will allow the planning team to connect with a broader community of peers addressing similar issues. Recommendations in the 2011 ASHRAE Handbook reflect this more flexible approach based on risks to particular collections in particular settings (<https://www.ashrae.org/resources--publications/Description-of-the-2011-ASHRAE-Handbook-HVAC-Applications>). The Canadian Conservation Institute also maintains a helpful site that embraces new thinking about sustainable collections care (<http://www.cci-icc.gc.ca/caringfor-prendresoindes/articles/10agents/chap09-eng.aspx#env3>). Resources that do not necessarily have sustainability at top of mind also continue to provide important guidance in many areas (e.g., Pacific & Wilsted, 2009).

The planning team will take a total risk-reduction approach to infusing sustainability in all considerations, while addressing the need to improve conditions for and access to the collections, and to supporting the increased use of the collections in the Institute's educational programs. This planning framework begins with a *hypothetical* design that eliminates all risk by, for example, not allowing people to enter the space, which is so insulated and buffered that it requires no mechanical systems to work. Planning for a *real* and *sustainable* facility then proceeds by addressing risks and their interactions in light of the actual needs the facility must serve. For instance, loads on HVAC are reduced through super-insulation, LED zone lighting with occupancy sensors to keep lights off when not needed, and locating workspaces conveniently adjacent to but outside the controlled-entry storage envelope. Minimizing electrical switches, outlets, and fixtures inside the collections envelope, and installing a perimeter that exceeds fire codes, simplifies the fire protection systems required within the storage envelope. A secure envelop also reduces risks from particulates and pests. Microclimates within the envelope allow diverse collections to be held without maintaining the most stringent conditions throughout. In addition, the basement site offers the affordances of the building's thermal mass, a below-grade location, and some natural light from ground-level windows.

This suggests only a few of the interesting and complex issues the planning team will tackle. To meet these challenges, the team (see Project Team) has members with unexcelled knowledge of the collections and their current conditions (i.e., Alviti and Carroll), and with clear lines of communication to senior leadership, knowledge of strategic priorities, and project management expertise (i.e., Elinich). Others bring LEED certified architectural and engineering expertise, knowledge of the building's existing systems, and experience completing major renovations and construction (i.e., Searles, Crimm, Mancini). The team includes conservators specializing in two and three-dimensional objects (i.e., Bogel, Froehlich, Jenkins, Wendelin, Eskind), expertise in collections management and access (i.e., Lydon, Desmond, Moss), and experience using the Institute's collections in educational programs (i.e., Elinich, Alviti, Carroll, Bruno). This breadth of expertise will allow the team to successfully address the four design objectives of integrating sustainability, improving the conditions for and access to the collections, and supporting increased use of the collections in educational programming.

Work Plan

This project will bring together an expert team for focused discussions and problem solving that draw on and synthesize diverse disciplinary perspectives and experiences to produce a design for an innovative curatorial center.

The proposed yearlong project is divided into four phases, each anchored by a face-to-face team meeting at the Institute. Karen Elinich (project director, see Project Team below) and John Alviti will co-chair the meetings, facilitating and directing discussions to keep the team on task and aligned with the project design objectives. Susannah Carroll will assist the co-chairs and support the planning process both as a team member with curatorial expertise, and as the administrative assistant for the team, responsible for the logistics of research and information sharing. Elinich, Alviti, and Carroll comprise the Institute's project administrative group, responsible for effective project management, communication, and deliverables.

Phase 1—Foundational resources and orientation to the collections (October – December, 2014). The Institute's administrative group (i.e., Elinich, Alviti, and Carroll) will assemble and distribute to all team members essential background information, including the project timeline, scope of work, design objectives, and deliverables; a detailed description of the collections; floor plans and descriptions of existing collections locations; results of environmental monitoring; the 2008 preliminary design sketch and budget; the Institute's Strategic Plan and Collections Policy; and resources on sustainable collections preservation strategies. The team will gather at the Institute in November to tour the nine existing onsite collections locations and the basement site for the planned facility. The team will discuss the proposed timeline, making revisions as needed, and suggest additional resources concerning research, standards, and practices for sustainable preservation strategies that should inform the planning process. **Deliverable:** Interim report from the administrative group to the team and the Institute's senior leadership, including a comprehensive list of resources for sustainable practices, emerging insights from the team discussion, and any additional information requested by the planning team.

Phase 2—Core infrastructure (January – April, 2015). The team will meet in February to discuss core infrastructure elements, including the existing basement space and systems, a proposed floor plan, and HVAC, lighting, fire protection, and security. This re-visioning of the core elements of the facility will begin with, update, and detail the 2008 schematic design. The basement site and footprint are predetermined, but the team will be free to consider all other aspects as needed to meet the design objectives. This planning will establish target environmental parameters (potentially including different microclimates in the facility) based on needs of and risks to the collections to be located in the facility, rather than on unnecessarily stringent guidelines that require energy-intensive mechanical systems. Team members Crimm, Searles, and Mancini bring particular expertise to dealing with the affordances and constraints of the basement space and existing building systems as they relate to emphasizing passive systems to meet the needs of and reduce risks to the collections. Integral to this planning will be assignment of particular collections to either the new facility or the P-Stacks. Collections care and management experts on the team will be of great assistance to the Institute's staff in making these determinations. In the weeks following the meeting the project administrative group will work with the architecture and engineering experts on the team (Searles and Crimm) to further specify lower-cost and higher-cost options for major design elements. During these work periods between team meetings, the Institute administrative group will maintain contact as needed with individuals and the team as whole by email, Skype, and phone. **Deliverable:** Interim report from the administrative group to the team and the Institute's senior leadership, including an updated schematic design that identifies key passive environmental control and other sustainable strategies, initial specifications for high-efficiency HVAC and lighting, fire protection and security, and a budget reflecting higher and lower cost options.

Phase 3—Detailed floor plan, storage systems and furnishings, and work/learning spaces (May – July, 2015). Building on the Phase 2 interim report, the team will meet in May to refine the preliminary floor plan, consider the integration of the storage and work/learning spaces, and begin to specify the storage systems and other furnishings. This detailing will be informed by and further refine the distribution of collections between the new facility and the P-Stacks. Outside team members who are experts in the care and management of two- and three-dimensional artifacts will help the Institute staff weigh options for

storage systems and the layout of curatorial work areas. With the team's assistance, Elinich, Alviti, Carroll, and Alexander Bruno, Science Interpreter at the Institute, will address flexible work/learning spaces to accommodate facilitated, hands-on learning for visitors. These complex considerations will take shape in the May meeting, and continue through the summer as the administrative group researches and refines options suggested by the team, contacting team members as needed for their input. **Deliverable:** Interim report from the administrative group to the team and the Institute's senior leadership with a design that builds on Phase 2 to include a detailed floor plan, specifications for storage systems aligned with the needs of collections, and innovative work/learning spaces.

Phase 4—Synthesis, revision, and final design (August – September, 2015). The team will meet for the last time in August to synthesize the interim reports into a final design plan. The team will look across the interim reports for gaps and misalignments that need to be addressed so that the final plan is fully responsive to the four design objectives. After months of detailed work, this phase will be an opportunity to step back for a big-picture view of the plan. Based on the team's review, the administrative group will produce a draft final design plan and budget in early September. The draft plan will be distributed to team members and the Institute's senior leadership for review, with feedback incorporated into the final design plan, to be completed by September 30, 2015. **Deliverable:** Final design plan and budget, to be included in the final project report to NEH.

Project Team

Internal Team Members

The Appendix contains the CVs of these Institute staff members. **Dr. Karen Elinich**, the Institute's Director of Science Content & Learning Technologies, will serve as project director. She has supervisory responsibility for the curatorial staff and represents collections and curatorial functions to the Institute's senior leadership. She will co-chair the planning team, taking responsibility for overall coordination, ensuring alignment with the Institute's Strategic Plan, and facilitating communication with the Institute's senior leadership throughout the project. **John Alviti** is Senior Curator for Collections, with direct responsibility for all curatorial functions. He will co-chair the planning team with Elinich, serving as the point of contact for the external team members and contributing his expert knowledge of the Institute's collections and curatorial needs. **Susannah Carroll**, Curatorial Coordinator, is the primary liaison between the curatorial department and museums, researchers, and other users of the collections. She will serve as the planning team administrative assistant, under the supervision of Elinich and Alviti. **Eugene Mancini** is the Institute's Assistant Director of Capital Projects. He brings unmatched knowledge of the Institute's existing building systems and operations, and experience in major renovation and construction projects. **Alexander Bruno**, Science Interpreter, designs and delivers interpretive experiences for visitors of all ages on the exhibit floor and in outreach programs, including programs that incorporate artifacts from the collections. His experience will inform designs that support the integration of collections in educational programming.

External Team Members

The outside experts on the planning team bring expertise in architecture and engineering, the care of two- and three-dimensional artifacts, facility renovations and relocating artifacts, and collections management. The Appendix contains their letters of commitment and CVs. **Ingrid Bogel** is the Executive Director of the Conservation Center for Art and Historic Artifacts. She brings a keen understanding of the Institute's collections and preservation challenges through her participation in CCAHA studies in 2010 and 1995. **Walt Crimm** is principal of Walt Crimm Associates, design consultants for museums and other cultural institutions, including the Hirshhorn Museum, Tacoma Art Museum, and The Franklin Institute. Crimm will offer architectural and engineering expertise. **Cheryl Desmond** is a collections consultant and

Executive Director of In Company with Angels, Inc. She has worked as a registrar at The Franklin Institute and the Independence Seaport Museum, and has extensive experience with developing collections plans and physically relocating collections. **Robert Eskind** is the former Senior Curator of Collections at the Philadelphia History Museum who has worked with the Institute on its photography and lantern slide collection. **Kristen Froehlich** is the Director of Collections at The Philadelphia History Museum at the Atwater Kent, with expertise in collections management, including the relocation of large collections. **Adam Jenkins** is an independent conservator specializing in three-dimensional objects, from small objects to monumental sculptures. **Jessica Lydon** is Associate Archivist in the Temple University Special Collections Research Center. She has consulted with the Institute on collections surveys and brings expertise on collections processing and preservation. **James Moss** is Collections Assistant at the University of Pennsylvania Museum of Archaeology and Anthropology, focusing on how to make collections accessible to diverse users. **David Searles** is an Associate at SaylorGregg Architects. He produced the 2008 sketch that the planning team will update and elaborate, and is the architect/project manager for the Institute's 53,000-sf addition that is expected to qualify for LEED Silver. **Elizabeth Wendelin** is conservator in private practice specializing in the preservation of paper and parchment artifacts.

Project Results and Dissemination

This project will produce a design plan for a curatorial center, including higher and lower-cost options in key areas, that applies and advances sustainable collections conservation strategies, improves conditions for and access to the Institute's collections, and supports enhanced integration of the collections in the Institute's educational programs. The final plan will be presented to the Institute's senior leadership and Board of Trustees. When the Board of Trustees approves an implementation phase, the Institute's Development Department will draw on the plan to prepare solicitations to private and public funders. Once in an implementation phase, the Institute would likely seek support from individuals, foundations, and the federal government, including NEH. When the senior leadership and the Board of Trustees determines that sufficient funding has been secured to enter a construction phase, the plan will inform the solicitation of bids for final architectural design and construction services. The proposed plan is therefore a crucial step toward the realization of a new curatorial center that properly stewards the value of the collections while putting sustainable collections preservation into practice.

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