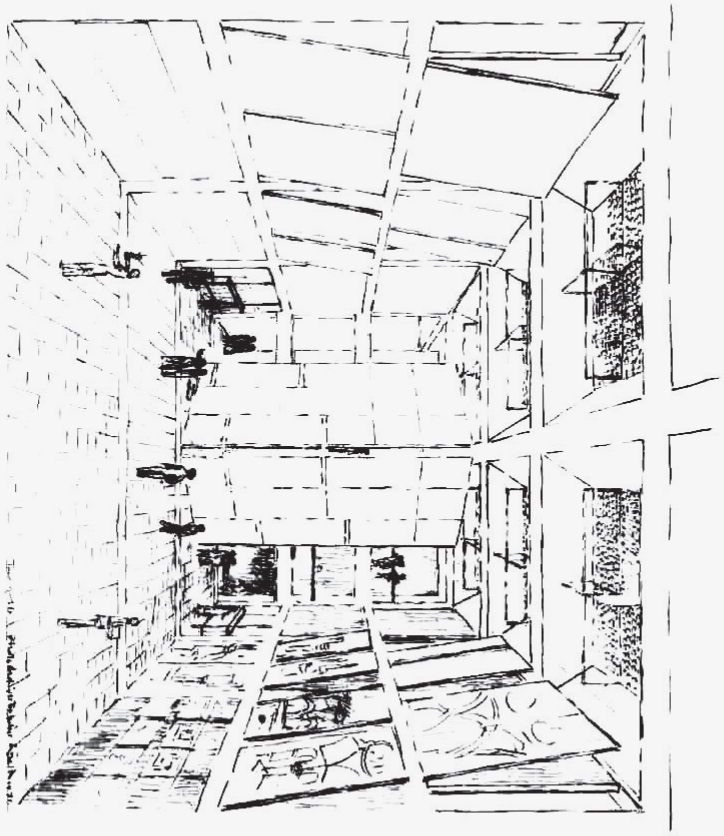


Louis Kahn, Yale Center for British Art, New Haven, USA, 1966–1977. © Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical and Museum Commission.

The Yale Center for British Art: a Building Conservation

BY GEORGE KNIGHT

The Yale Center for British Art was designed by acclaimed American architect Louis I. Kahn to house a collection of British art on the campus of Yale University. The Center, Kahn's third and final museum building, was designed between 1970 and 1974 and opened its doors to the public in 1977. By 2002 it was evident that the building was fast approaching a crossroads: finishes had reached the end of their lives, program space was in desperate demand, patron amenities and life safety measures no longer met contemporary standards and, worst of all, infrastructural systems strained to sustain the environments demanded to protect the collections. The integrity of Kahn's architecture was in jeopardy.
What follows is the story of what came next: how the building was painstakingly researched and analyzed, and how a series of projects ensued to re-equip the Center to present and protect its collection for decades to come.

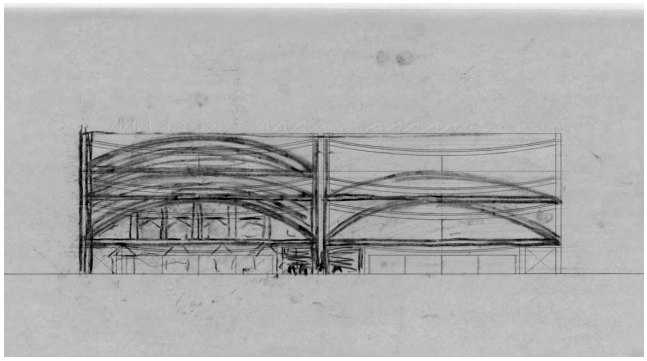
Conserving Louis I. Kahn: the Yale Center for British Art renewed

In 1966 Paul Mellon, son of an Englishwoman and lifelong anglophile, set forth a vision for a center for the study of British culture in America at his alma mater, Yale University. Mellon provided funds to acquire a property at the edge of the university's central campus in New Haven; to construct a building; to fill it with his extraordinary collection of paintings, drawings, prints, rare books, manuscripts, and sculpture; and to endow it with resources for maintenance and growth. The resulting Yale Center for British Art holds the foremost collection of British art outside of the United Kingdom and hosts visitors and scholars from around the world. It is also one of the most celebrated buildings of the 20th century and is forever associated with its acclaimed architect, Kahn.

An incontestably brilliant architect and artist, Kahn was nonetheless best known as an educator and theoretician for most of his early career which began in earnest when he was hired to teach at the Yale School of Architecture in 1947. It was not until 1951 when he won the commission to design the expansion of the Yale Art Gallery (completed in 1953) largely due to the endorsement of the Chair of the Architecture Department at Yale, George Howe, that Kahn's career as an architect was launched. He subsequently produced such noteworthy buildings as the Richards Medical Research Laboratories at the University of Pennsylvania, the National Assembly Building in Dhaka, the Phillips Exeter Academy Library, the Indian Institute of Management in Ahmedabad, and posthumously, Franklin Delano Roosevelt Four Freedoms Park in New York, constituting one of the most important architectural legacies of the 20th century.

While the Yale Art Gallery, the university's first modernist building and Kahn's first large scale commission, had been largely successful, it was not without some controversy and, as it came time to select an architect for Mellon's bequest, Kahn was among a group of architects that included Philip Johnson, Robert Venturi, and I. M. Pei. Pei had recently been commissioned to design both the Mellon-supported East Wing of the National Gallery of Art in Washington DC and the Paul Mellon Arts Center at nearby Choate Rosemary Hall and appeared to have a distinct advantage. However, despite this formidable competition, Kahn was selected on the strength of his recently completed Salk Institute for Biological Studies in La Jolla, California (completed in 1963) and the still under-construction Kimbell Art Museum in Fort Worth, Texas.

With the design process beginning in 1970, the building site itself was immediately controversial. Never before had Yale, still affected by the civil unrest that beset New Haven two years prior, built its core campus across Chapel Street, New Haven's historic boundary between town and gown. Ironically, this decision would foster some of the more deft and innovative measures in the design such as the inclusion of storefronts along the commercial street, the restrained massing which reinforces the street wall, and the inclusion of a public plaza at the building's western edge. By late 1971, the design of the current building was largely resolved and approved for development by the Yale Corporation at the end of that year. The design details were completed in Kahn's Philadelphia office and contract drawings were released in 1972 with construction beginning later that fall. Alas, Kahn would die in New York City in March of 1974 with the building structure reaching only the second floor. The firm of Pellecchia and Meyers, comprised of two



01 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966–1977.
© Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical and Museum Commission.

02 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966–1977.
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of Kahn's former staff, Anthony Pellecchia and Marshall Meyers, was hired by Yale to oversee the completion of the project. Construction was substantially concluded in 1975 and the Center opened its doors to the public in April of 1977 following the moving and installation of the collection and the staff.

…You see, we consider the building itself to be the largest and most complex work of art in the collection[1].

Crisis and conservation

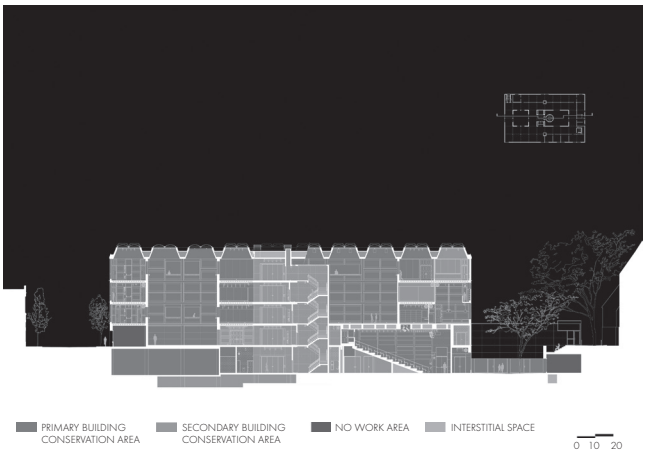
In a building as well-cared for, well-loved, and well-endowed as the Yale Center for British Art, a reasonable person might ask, why would one need to embark on a large-scale building conservation project? However, as she assumed directorship of the Yale Center for British Art in 2002, it was already clear to Amy Meyers that Kahn's building, approaching its fourth decade of uninterrupted use and enjoying an unimagined expansion of staff, collections, and scholarly research, had begun to drift from its original intentions. For example, the Center's Lower Court, an exterior space accessed from a monumental stair from Chapel Street and dubbed by Kahn as the building's "third court", had been disfigured by undisciplined accretions and fanciful alterations that disembodied the court from the Center itself. Incongruous trellises, latticework and small structures haphazardly colonized a space once precisely defined and conceived. Its association with the Center had been completely camouflaged and was largely imperceptible to passers-by on Chapel Street. Even more dire was the failing condition of the stairs themselves. Intended as a monumental public amenity, the steps and the Lower Court had become dangerous, unusable and unsightly and signaled the most visible symptom of a larger illness looming on the building's horizon. Similarly, many the building's infrastructural systems, so crucial to maintaining the proper environments within the museum, were showing signs of desperate fatigue. A pre-emptive strike was necessary.

Recognizing the inefficiency and potential damage of addressing such necessary repairs in a piecemeal fashion, Meyers instead directed her attention to a comprehensive assessment of the building so that larger priorities could be identified, policies regarding renewal and preservation established, and a deliberate process instated towards tactically addressing mounting needs in the building. Meyers commissioned the London-based conservation architects, Peter Inskip + Peter Jenkins Architects, to embark on a study of the building which ultimately resulted in the book *Louis I. Kahn and the Yale Center for British Art: A Conservation Plan* written by Peter Inskip, Stephen Gee and Constance Clement and formally published in 2011[2].

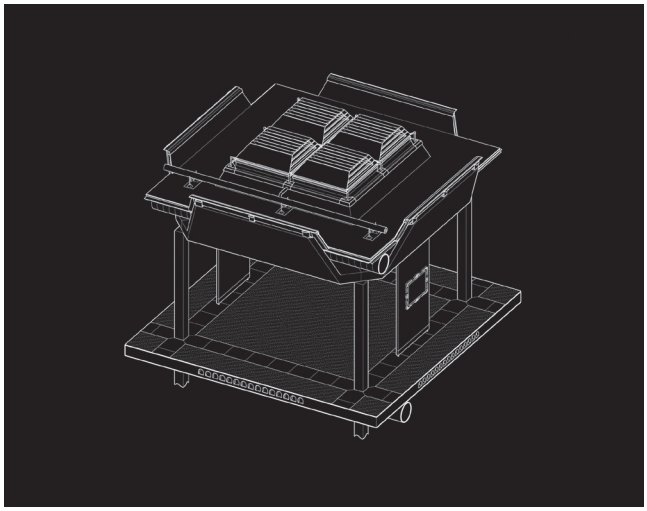
The book served as an instrumental guide to the subsequent research, design, and construction of a multi-phase Yale Center for British Art Building Conservation Project from 2008 through 2016 led by Knight Architecture LLC[3]. Spanning virtually the entire building at various levels of intensity, the work, particularly that executed from 2013–2016, addressed the following four interconnected categories: finishes, program spaces, systems, and patron amenities and life safety.

Kahn differentiated himself from other architects by saying that he was "premise-minded" rather than "solution-minded". His method was to eliminate peripheral or transitory considerations which he called, "circumstantial", in order to get back to first principles. Indeed, as Kahn put it, he wanted to get back not to the number one but to the number zero[4].

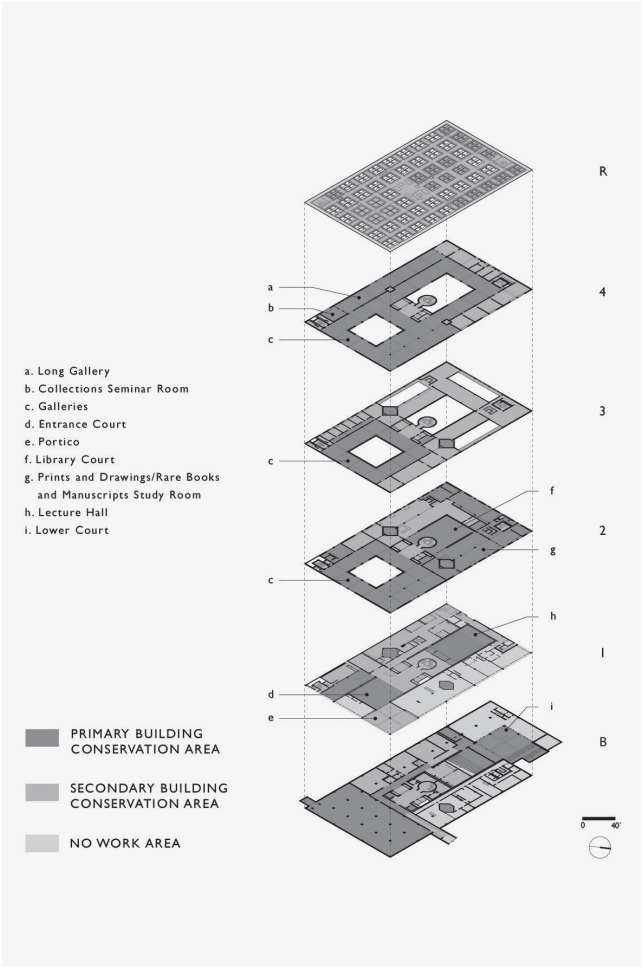
03 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966-1977.
© Knight Architecture LLC.



04 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966-1977. Longitudinal section. © Knight Architecture LLC.

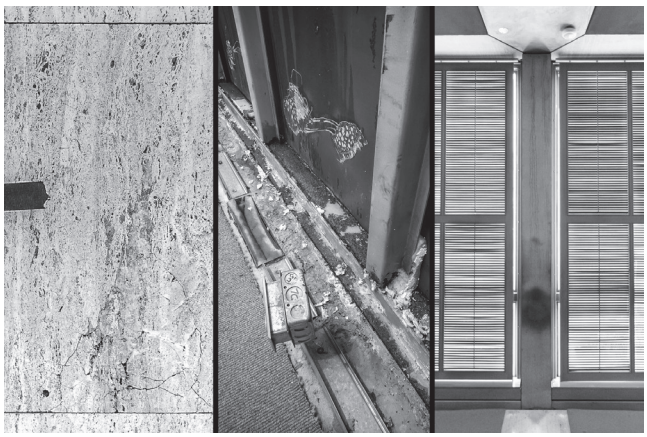


05 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966-1977. Fourth floor bay axon. © Knight Architecture LLC.



06 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966–1977. Axonometric floor plans indicating areas of conservation during building conservation project. © Knight Architecture LLC, Daphne Kalomiris, 2016.

07 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966-1977. Existing condition of original materials prior to building conservation project. © Knight Architecture LLC, Daphne Kalomiris, 2014–2015.



08 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966–1977. Prints & Drawings and Rare Books & Manuscripts Reading Room. Left: pre-conservation. Right: post-conservation. © Left: Knight Architecture LLC, Dylan Hayn, 2011. Right: Esto, Elizabeth Felicella, 2016.

Finishes

The Yale Center for British Art features a restrained palate of interior finish materials that confer a serene sense of order and continuity throughout the building. Kahn selected each material used in the building as a means of coding program and uses, of delineating hierarchies of served and service spaces, and of establishing an aptly stable backdrop for the exhibition of the collection. He favored the use of natural materials to synthetic one due to the former's inherently more animated, and thereby humane, qualities. For example, gallery and office floors are covered in warm-toned carpeting set within margins of Roman travertine that demarcate the building's twenty-foot planning module; stretched Belgian linen ennoble wall surfaces presenting art; unstained white oak trim and paneling frame and focus wall surfaces; and an unusually refined cast-in-place concrete forms the building's gridded structure, ceilings, shear walls and iconic stair tower. As is frequently the case, worn finishes were among the first and most evident signs that the Yale Center for British Art needed revitalization and refreshment.

The Center was originally carpeted with a woven, undyed natural wool carpet as specified by Kahn. Following two decades of wear and tear this carpet was removed in 1998 and was replaced with one of similar color and tone but made of synthetic fibers instead of natural wool. As it came time to renew, once again, this worn second-generation carpet, its material specification was again taken up by architects, conservators and material scientists. Over the course of several months, a suitable substitute was identified. Tufted rather than woven, the new carpet was made entirely of natural, undyed wool and, following a series of mock-up installations within the Center to confirm seaming and performance, a final specification was confirmed.

Roman travertine tiles are installed extensively as flooring in the Center. The stone is used as a margin defining the bay module throughout the galleries, as treads within the central stair tower, and throughout the entrance court as a field material. The naturally brittle and porous travertine had not been specified with any filling slurry and consequently exhibited voids large enough to cause one to catch a heel or otherwise trip. A well-intended but poorly executed campaign of fills years prior had left the stones spotted with darkened patches which proved to be too numerous and too hardened to excavate. Nonetheless, numerous remaining voids were filled with color-matched mortar. Additionally, cracked tiles throughout the galleries were lifted, mended, and reset on new setting bed. In a handful of cases, new tiles were either fully or partially installed. In these instances, new materials were obtained from the same geological source as the original. Finally, to avoid future cracking of the tiles, each stone was sounded for any voids in the setting bed. Where found, a small hole was drilled in the stone and a filling mortar injected.

Linen wall covering, trimmed in white oak, is used throughout the Center on those walls which are intended to present paintings. As was the case with the carpet, the original linen within much of the gallery space was replaced in 1998. Due to the wear of frequent mounting and demounting of paintings using threaded fasteners and the material's propensity for staining when handled, the material had grown unsightly and in need of replacement. After trialing various weaves and supplemental applications of flame retardants and stain inhibitors, a suitable natural-flax linen produced by the Belgian mill, Libeco, was approved. The linen reinstallation precipitated a reconsideration of the substrate beneath and, following a series of trials to confirm screw-holding properties, fire-retardant plywood was selected to replace the sorely degraded and non-retardant particle board from the original installation.

The Center's interior concrete finishes, entirely cast-in-place except the pre-cast "V-beams" forming the ceiling of the fourth floor, remain in remarkably good condition. While investigations and trials were conducted to determine if long-existing calcium scaling on ceilings in the galleries could be removed, it was determined that these features were inherent to the material and as such a welcome presence. The prevalence of staining from human-derived oils was another matter. A dark, oily stain demarcated human head and hand levels across concrete surfaces throughout the galleries. A poultice treatment was devised

09 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966-1977. Fourth floor "Turner Bay" displaying the exterior wall sequence that was typical throughout the project spaces. Top to bottom, left to right: 1) pre-conservation, 2) exterior panels, 3) insulation, 4) air barrier, 5) substrate, 6) finishes, 7) post-conservation. © 1) Yale Center for British Art, Richard Caspole, 2007, 2-4) 2015, 7) 2016, 5-6) Knight Architecture LLC, Daphne Kalomiris, 2015.

10 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966–1977. Long Gallery. Top: pre-conservation; center: construction; bottom: post-conservation. © Top: Yale Center for British Art, Richard Caspole, 2014. Center: 2015. Bottom: Yale University, Michael Marsland, 2016.

11 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966–1977. Lecture Hall. Top: pre-conservation. Center: construction. Bottom: post-conservation. © Top: Knight Architecture LLC Daphne Kalomiris, 2013. Center: Yale Center for British Art, Richard Caspole, 2015. Bottom: 2016.

to remove the soiling while assuring that the concrete "fines", the microscale particulate which confers the unusual smoothness to the Center's concrete, were not removed.

One of the Center's signature materials is unstained American white oak millwork which is used as running-trim framing linen exhibition walls, as doors and window shutters, and as expansive paneling in numerous locations throughout the building. A warm counterpoint to the comparatively cooler and harder finishes in the building, Kahn uses wood throughout the building to invite human contact and confer nobility to spaces. With modest maintenance over the years, wood surfaces had lost their original lustrous finish particularly in those areas where they received direct sunlight. Additionally, hardwood sills in various locations suffering from the effects of imperfect condensation management exhibited signs of discoloration, mold and even rot. Throughout the Center, putties and filling materials used to conceal the fasteners in the trim had become conspicuous and unsightly. The far-reaching extent of the building conservation project presented the opportunity to comprehensively restore, and only in a handful of instances replace, the millwork throughout the galleries and the two atria – the entrance court and the library court. Particularly in the case of these multi-story spaces, the wood responded beautifully to cleaning and refinishing, regaining its honey-toned sheen. Even the parquet flooring of the Library Court, restored with a soy-based finish, gained greater depth and complexity.

An early phase of the building conservation project, focused on the renovation of the Center's Study Room and Rare Books and Manuscripts Reading Room, double-height spaces surrounding the Library Court. In each space, existing linen panels lining the room's upper levels were replaced with wood ones. The decision to do so was based on drawings discovered in Kahn's archive which had called for such a finish treatment but which had never been executed – presumably due to cost-control measures at the time of construction. In this circumstance, the adoption of Kahn's premise that wood not be stained required accepting a discernable difference between the new material and the existing.

In addition to the restoration, renewal and replacement of existing finish materials, the work of the building conservation project called for the installation of materials

intended to seamlessly extend the existing finishes. In each case, care was taken to study the physical properties of the original materials, their sources, and the construction techniques used in their assembly. All new materials were sampled, compared to their precursors, and mocked up prior to being accepted into the work. These materials included concrete masonry blocks and mortar, anodized aluminum ductwork, 2D finish stainless steel, painted steel, and brick flooring. Most challenging among these was the demand for a small quantity of "pewter stainless steel", the grey, metal cladding used on the exterior of the Center. Despite extensive research into the creation of this material and numerous replication experiments, it has proven to be virtually inimitable. Nonetheless, as part of the restoration of the Lecture Hall Lobby, small sections of the material were successfully created by a local metal fabricator, Engineered Building Products.

Program spaces and elements

Though most commonly understood as a museum building, the Yale Center for British Art was designed for a diverse program including exhibitions, lectures, seminars, individual study, research, administration, security and invigilation, photography and imaging, staff lounges, workshops, retail spaces, and extensive mechanical spaces. Kahn considered each of these uses and carefully distributed them within the building to achieve the greatest aesthetic effect and most logical arrangement of functions. However, as it approaches its fortieth anniversary, the Yale Center for British Art, a thriving component of a larger thriving academic institution, has grown beyond many of its originally foreseen needs. For example, its ever-expanding and diversifying collection has demanded increased space for storage, curation and conservation. The increasingly vigorous exhibition schedule, frequently featuring borrowed work from global partners, has required that the Center expand its staffing in all categories. The demands for teaching spaces which can access the collection has grown dramatically. These factors, along with the integration of familiar digital technologies, made it clear that the Center's original program was under stress and with it, the integrity of Kahn's architecture. Several projects affecting the building's programming ensued from this deliberation including the following.

Set within beautifully mottled cast-in-place concrete walls, the Center's raked, two hundred seat Lecture Hall is one of the building's most beloved spaces. While the hall was initially envisioned for the presentation of slides and lectures, its elegance has made it a favorite venue for diverse uses such as films, dramatic performances, music, and even dance. The space was comprehensively renovated including the replacement of all seats, carpeting and stage flooring – all of which had exceeded their reasonable lifetime; new step lights and power outlets were installed to conform with contemporary demands; the seating arrangement was slightly altered to allow for the inclusion of handrails; accessible seating was distributed throughout the space; original theatrical lighting, long since obsolete, was replaced with highly versatile LED fixtures; and the antiquated equipment within the projection booth was completely replaced to expand capabilities for lighting control, amplification, recording, and broadcasting.

The building conservation project offered the chance to rescue a number of spaces adjacent to the lecture hall that had been colonized for use as storage. For example, an underused and long abandoned set of basement bathrooms near the Lecture Hall's lower egress were converted into an imaging room offering x-ray, infra-red, and photography facilities to better study the collection; a small transitional space was reconceived as a "green room" to support the expanded performance repertoire of the Lecture Hall; and the Lecture Hall Lobby, an elegant, glazed space opening onto the Lower Court, was reclaimed from use as a back-of-house storage.

To supplement the exhibition walls found throughout the building and atria perimeters, Kahn had planned demountable exhibition panels, dubbed "pogo panels" or more simply "pogos" referring to their compression-pole structure, which could be deployed throughout the galleries according to the design of a given exhibition and the predilections of a given curator. Kahn's incomplete design for the pogos was significantly altered by Pellechia and Meyers following his death in 1974. Consequently, the pogo panels installed in the building at the time of completion and altered over the course of a replacement campaign in 1998 had significantly drifted from the original vision. Additionally, the panels had proved problematic for the increasingly frequent mounting and taking down of exhibitions at the Center. The Building Conservation Project afforded the chance to reconsider both the aesthetics of the pogos and their engineering. Along with numerous technical improvements which bolstered the resiliency, strength, handling, and mount-ability of the pogos, the new pogos feature notable aesthetic alterations. The latter raise the base of the pogos approximately three inches above the floor to allow light and air to pass beneath and alter the edge detail where white oak blocking is inserted into, rather than applied atop, the sides of the panels. Each of these modest measures was included in Kahn's sketches and has dramatically reinforced the impression of continuity of space within the galleries.

12 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966-1977. Fourth floor gallery following building conservation project featuring redesigned "pogo" walls. © Yale Center for British Art, Richard Caspole, 2016.

13 Louis Kahn, Yale Center for British Art, New Haven, USA, 1966-1977. Library Court following building conservation project. © Yale Center for British Art, Richard Caspole, 2016.

The Long Gallery is a linear exhibition space on the south side of the sky-lit fourth floor which was originally envisioned by Kahn and Jules Prown, the Center's founding director, as a teaching space within the galleries. However, with large pogo panels dividing the space, sparsely hung paintings, and ill-coordinated doorways, the aspiration for the longitudinal study gallery had never been fulfilled. The building conservation project restored this vision by removing the partitions, altering the configuration of the doorways to promote more logical circulation, and reinstating the dense, "salon-style" hanging of pictures. In addition, an office space at the end of the long gallery was transformed into the Collections Seminar Room, a newly wood-paneled space where works in various media can be presented in an intimate setting.

With a growing collection and increased staff in the Rare Books and Manuscripts and Prints and Drawings curatorial departments, there was a dire need for expanded art storage and office space. Taking advantage of space formerly dedicated to filing and typing rooms, the building conservation project refashioned both private offices as well as group workspaces in these rooms, original metal desks specified by Benjamin Baldwin were reinstated and complemented by the addition of refabricated furnishings such as wall-hung bookshelves, coat closets, and bulletin boards. To accommodate an ever-growing collection of works on paper, numerous newly-made white oak art storage cabinets, designed to match those designed by Kahn, were added throughout. Similar improvements to the administrative offices on the fourth-floor relieved desperate overcrowding and regained the generous order of the original arrangement.

Systems

Kahn is noteworthy among modern architects for the care with which he considered the design of a building's support infrastructure or what he termed its "systems". For Kahn, these elements merited comparable architectural design and authority as those spaces hosting a building's primary functions. His oft-cited distinction of "served" spaces and "servant" spaces frames the strategy and is vividly exemplified throughout the Center. As a building dedicated to the exhibition and preservation of art, the Center has especially demanding criteria for such services as air-quality, air-pressure, temperature, humidity, lighting control, security, smoke detection and management, and back-up power among others. Most of these critical systems had reached the end of their serviceable lives and required significant repair or outright replacement. In addition, numerous new systems, unimagined at the time of the original design, had already begun to invade the building and jeopardize its carefully conceived architectural order.

The building conservation project began by addressing obsolete and under-performing existing systems. Unearthing an existing area-way in the parking lot, otherwise concealed beneath asphalt, gave access to the Center's vast mechanical room. A large bank of electrical switchgear, referred to by Kahn with his frequently used anatomical analogs as the building's "heart", was replaced by a version smaller, more resilient and more efficient; wiring, or the

building's "nervous system", was largely replaced to conform to contemporary standards; and provisions were made to better integrate with the University's centralized back-up power source. Similarly, the building's two air handling units, or "lungs," were substantially rebuilt in place. In both cases, new fans, controls, humidification, filtration, and coils were introduced to offer higher performance while ensuring greater resilience.

Not surprisingly, fire and smoke suppression were issues of enormous concern to the Center – both for the safety of patrons and for the preservation of the collection. While large metal fire shutters had been installed in the numerous openings surrounding the building's atria when the Center opened to the public, they were soon after deemed non-functional. Similarly, smoke detectors were not positioned to perform effectively and were near-impossible to maintain; and stairway doors were not designed to close in case of emergency. Each of these deficiencies was corrected over the course of the Building Conservation project by reworking existing building components and employing technologically advanced devises such as air sampling systems and magnetic door hold-opens. More challenging was introducing sprinklers, required by fire codes, throughout the Center's office spaces, classrooms, laboratories, atria, lounges, storage spaces and most of its gallery space. Recognizing that this fire suppression system was essential – though one not planned with the original building – the design objective was to ensure not that the sprinklers were invisible (a physical impossibility) but that they harmonized with the spatial and material disposition of the building.

The building had suffered several campaigns of well-intended technological upgrades that included security cameras, sensors, Wi-Fi access points, alarms, strobes, exit signage, proximity readers, and key management devices. Each of these efforts had left a predictable residue of exposed conduit, mismatched components and discrepant positioning. The comprehensive extent of the Building Conservation project allowed for the consolidation, simplification and coordination of these elements. Kahn had dubbed these conspicuous devices "fraternity pins" such as those he must have noticed on the lapels of students at Yale and the University of Pennsylvania. His original design included several strategically located wood and metal stiles, lapels, on which such devices could be positioned in an orderly and inoffensive way. These stiles were used extensively and even added in several critical locations to host new devices required by contemporary systems.

A building's exterior envelope is a critical component to the performance and resiliency of a given structure, particularly one enclosing irreplaceable works of art. While the Center's exterior envelope had successfully prevented rainwater from entering the building, its thermally-bridged wall construction and insulation assembly were not sufficiently designed to account for the condensation that, on the coldest New England evenings, would propagate due to the temperature and humidity requirements of an art collection environment. The building conservation project addressed the persistent and ultimately corrosive condensation by stripping off all finish and substrate materials to the inboard face of the exterior metal cladding; de-scaling corroded steel framing and recoating it with a resilient primer; re-insulating the walls with non-gas-emitting rock-wool insulation packed tightly into the wall assembly; and installing a galvanized metal air-barrier and providing concealed stainless steel reservoirs set on the warm side of the wall into which the unavoidable condensation is diverted and from which it ultimately evaporates into the gallery environment.

Kahn worked closely with lighting designer Richard Kelly and manufacturer Edison Price in designing the artificial lighting for the Center. Comprised entirely of aluminum tracks suspended from the concrete ceilings and fitted with metal fixtures coordinating with the cylindrical ductwork and handrails, the lighting emits a warm glow throughout the gallery. At the outset of the building conservation project, the most precarious of all the systems was arguably the lighting controls which relied on dimmer panels for which replacement parts were long since unavailable. The building conservation project replaced this outdated control system completely and, ever interested in opportunities to reduce energy consumption, undertook an analysis of LED lighting as an alternative to the halogen lamps which had been used from the outset. Working through numerous mock-ups and trials, such criteria as color, temperature and color-rendition were evaluated. Ultimately the Center determined that, though LED technology continues to improve dramatically, the warm quality of the lighting could not yet be properly replicated. The anticipated transition to the LED was therefore deferred until such time as new lighting could be more certainly matched to that from the original lighting.

Patron amenities

From the outset, the Yale Center for British Art has always endeavored to offer an inviting and serene setting to visitors. Kahn was cognizant of "museum fatigue" and ensured the galleries included comfortable seating where patrons can re-energize themselves; large windows offer refreshing views of the city and the Yale campus from within the galleries; and the Center even boasts national recognition for its accessible design. Seeking ways to make visitors more welcome and comfortable the building conservation project introduced numerous improvements to the suite of patron amenities and life-safety provisions already in place.

These upgrades included new white oak storage lockers, evoking the millwork details found throughout the building, for backpacks and book bags; two new gender-neutral accessible restrooms and an accessible drinking fountain; the replacement of original gallery furnishings designed by Don Chadwick with fire-resistant versions of the original, also by Chadwick; a new egress door from the Entrance Court to the service hallway; miscellaneous improvements to the control and operation of the elevators; installation of fire-retardant materials throughout; abatement of hazardous materials in a number of locations; and increasing the safety and resiliency of stairs, glazing, and rainwater systems throughout the Lower Court.
In all cases, the work was designed to coordinate with

existing, original features within the building and intended to extend the sense of welcome, security and gracefulness so characteristic of Kahn's architecture.

Conclusion

As his buildings pass into their second half-century of use, Kahn's architecture faces an inevitable point of reckoning. Fatigued materials need to be refreshed, repaired, or replaced wholesale; functional elements need to be reconsidered for contemporary uses; ingeniously integrated systems, even ones entombed within the fabric of a given building, need to be assessed and re-engineered; and ubiquitous alterations are required to ensure that the buildings conform to current standards of safety, comfort, and usefulness. These factors, if not addressed with care and consideration, imperil the integrity and enduring appeal of Kahn's architecture. The Yale Center for British Art building conservation project profoundly benefited from the following steps orchestrated as a preemptive strike against such threats.

The Center's prescient commissioning of Peter Inskip + Peter Jenkins Architects to undertake an exhaustive study of the Center's history and material substance proved invaluable. The publication *Louis I. Kahn and the Yale Center for British Art: A Conservation Plan* was used extensively, even in manuscript form, to guide the conceptualization, design and execution of numerous ensuing projects. Equally importantly the book, with its authoritative research, lavish illustrations, and professional presentation, cultivated due appreciation of the building's value amongst staff, users, affiliates, patrons, and university leadership. Without this institutional recognition, the building conservation project could never have summoned the necessary clarity and authority to proceed.

In 2009 the Center implemented a simple but vitally important step to relieve the mounting strain on Kahn's building. Taking control of an underutilized building recently procured by the University two blocks to the east, 270 Crown Street, the Center relocated several space-starved administrative departments which did not require occupancy in the Kahn building. While not satisfying all the programmatic demands threatening the arrangement of spaces in the building, the expansion did relieve the most immediate pressures and, in doing so, allowed for sufficient time to comprehensively consider the alterations and improvements required to serve their contemporary mission.

Throughout the work, the team profited from the use of mock-ups and field samples that allowed for the deliberate evaluation of various building elements. Inevitably time-consuming and frequently incurring additional cost, the opportunity to sample aspects of the work in place was essential to the success of the project.

The constraints of schedule and funding on any project are inescapable and always influence the outcome of the work. One of the most productive and liberating criteria of the Yale Center for British Art Building conservation project was to allow the work to occur over a series of projects rather than within one comprehensive campaign. For example, most of the work described above occurred over the course of eight years and within three broadly defined projects. By pursuing such a deliberate and incremental approach, the Center managed the cost and impact on its operations, staffing, and special projects. Underlying this approach is the acceptance that the work of conservation is never complete. Indeed, at the time of writing additional work is being identified and is certain to persist into the foreseeable future[5].

I know of no other architect as cognizant and inspired by the effect of time on a building's design and construction as Kahn. His lifelong fascination with architectural ruins, memorialized by his poignant sketches of antique sites, is evident in the design of the Center which, like so many of his buildings, is comprised of materials encoded with a sense of their relative permanence. Given Kahn's predisposition, each generation of his building's conservators, despite the struggles and consternations ever associated with such work, can be encouraged to know that the building itself is ever-moving towards an inevitable future beyond all pragmatic concerns — one that was envisioned by Kahn at its outset.

Notes

1 Amy Meyers, YCBA Director. Oral, not written, statement.

2 Peter Inskip, Stephen Gee and Constance Clement, *Louis I. Kahn and the Yale Center for British Art: A Conservation Plan*, New Haven, Yale Center for British Art, 2011.

3 Credits: Knight Architecture LLC: George Knight, AIA; Daphne Kalomiris; Niko Tombras; Megan Milawski; Jeffrey Pollack, AIA; Kyle Dugdale, AIA; Dylan Hayn; Thomas Day; Dan Shea; Amrita Raja; Britton Rogers. Yale Center for British Art; Yale University Office of Facilities; Turner Construction Company; Peter Inskip + Peter Jenkins Architects; BVH Integrated Services, PC; Wiss, Janney, Elstner Associates, Inc.; Cavanaugh Tocci Associates; Hefferan Partnership Lighting Design; Staples & Charles Ltd; Philip R. Sherman, P.E.; Michael Morris Strong Cohen LLC.

4 Jules David Prown, *The Architecture of the Yale Center for British Art*, New Haven, London, Yale University Press, 1977, 18.

5 The Yale Center for British Art Building Conservation Project has been recognized with the following awards: AIA Institute Honor Award for Architecture (2017), AIA New England Honor Award for Historic Preservation and Adaptive Reuse (2016); AIA New England People's Choice Award (2016); AIA Connecticut Honor Award (2016); Connecticut Trust for Historic Preservation Award (2017), Society for College and University Planning Excellence in Architecture Honor Award for Building Additions, Renovation or Adaptive Reuse (2017), **docomomo** Modernism in America Design Award of Excellence | Civic (2017).

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