Repair of Modern Structures: Stepping Back and Looking Forward

David N. Fixler

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DAVID N. FIXLER

EYP ARCHITECTURE & ENGINEERING P.C.

Figure 1. Le Corbusier and Pierre Jeanneret, Architects, 1929. Villa Savoye, Poissy-sur-Seine, France. Various repairs and renovations 1959–present. View at Roof Terrace following 1980s renovation, 1987. (David Fixler)

Architecture changed in the twentieth century. Long-held notions regarding permanence and the continuity of tradition were fractured by the trauma of World War I, and the calls for change that began in the nineteenth century eventually resulted in a fundamental, enduring shift in the way that buildings were conceived and executed. Building programs were increasingly closely designed to specific purposes that made adaptation and transformation difficult, and construction began to employ industrial, often experimental materials of uncertain quality or longevity.

In the 1980s, as modern structures themselves came increasingly to be viewed as part of history, architects and conservators began to confront firsthand the economic impracticality and, in some cases, the physically impossibility of their given task.

To address the increasingly dire, often insoluble problems of repairing or repurposing modern structures, a subdiscipline formed within the design and conservation communities to develop practical strategies and techniques within an evolving philosophical framework. With considerable hindsight this paper will speak, through case study and history, to the present, auspicious moment as one in which we may evaluate the wisdom and effectiveness of our efforts to date—and most intelligently plan for what the future might hold for the repair of yesterday's frontier.

Repair is a human constant and a timeless action; preservation is a modern construct.[1] Although the cycle of construction and repair has been and will always be with us, it is only in the course of the last two centuries—and especially since World War II—that preservation has emerged as a discipline that defines how we comprehensively address the care of the built environment. Ironically, or perhaps presciently, modernism, as a construct addressing both the design and protection of cultural resources, evolved along parallel trajectories to produce both historic preservation as a professional discipline and the modern movement in architecture—the *now* to which the *other* of preservation was a foil. This movement, if we can make conventional assumptions about something that was in fact far more complex and diverse than had been proposed by its early historians, produced a body of work that has posed unique conservation challenges.[2] For over fifty years, since Le Corbusier first called attention to the deterioration of his Villa Savoye of 1929, and the subsequent designation of his Marseilles Unité d'Habitation as the first modern building listed in 1964, the larger design community has both debated and struggled with a problem that at its philosophical core is paradoxical, which is the conservation of a heritage that was itself largely conceived as an expression of a culture that at its essence was dynamic, transient and ephemeral. This is not to say that the buildings were conceived as ephemera, but many were designed to adapt to the kind of change expressive of the transi-

tory qualities of modern life, and it can be argued that the urgency that underlay much of the architectural production in Europe of the 1920s and 1930s—and the world in the early years following World War II—generated a mindset that emphasized expediency over permanence in the choice of materials and means of construction. In defense of conservation, as Hilde Heynen has argued, the idea that transitoriness implied impermanence was only rarely expressed by the early modernists—notably in the Futurist Manifesto (more so perhaps by Marinetti, its theoretician, rather than by Sant' Elia, its architectural visionary) and in the writings of Marcel Breuer.[3] Nonetheless there is a significant body of work—including the early modular building systems proposed by Walter Gropius with Konrad Wachsmann and the experiments undertaken by Carl Koch with minimal stick framing and synthetic siding materials—that clearly foreground ease of production and economy over weatherability and permanence as primary concerns.[4]

Although anyone who deals with buildings at close range is fully aware that architecture is not static, modern architecture, like the world it reflects, changes at an accelerated pace. Repair cycles that might span fifty or more years in traditional building are compressed due to the relative thinness and light weight of much postwar construction and the often tenuous nature of modern architectural details. While these concerns may be welcomed by the conservation community as a means of keeping itself busy, they have also triggered a broad debate about what is worth conserving and what points we are seeking to make in the conservation of these works—hence whether changes in either material or detail to improve the performance and/or longevity of the resource should be encouraged, or whether the experimental and perhaps naïve fragility of the original work should instead remain evident as both testament and lesson to the future.

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As we begin the second decade of the twenty-first century, we have been through more than a generation's worth of debate, publication, and practice in the repair and conservation of the legacy of modernism. The literature on the subject has become voluminous, and there is evidence—especially in Europe but in the United States as well, that a broader consensus is beginning to emerge among professionals, regulatory agencies, and even with building owners and the general public—that there is value in retaining this heritage, and that the means are either present or in sight for us to address the rehabilitation of these resources with balance and intelligence. Thus it is appropriate here to step back, breathe deeply, and take very literally the charge of this inaugural issue of *Change Over Time* to address the issue of repair and reparation—for while the conservation community may perceive most clearly the needs and challenges of the former, there is a vast constituency of users of modern buildings and the general public for whom the issue of reparation, and everything that this word entails about transforming the quality of these environments, is of greatest concern. Through the examination of some of the key issues and a range of projects that have brought these issues to light, I will attempt to frame a case for what we have learned from our collective works to date, while starting to formulate a modest strategy to address the challenges of the foreseeable future.

Let us begin with the question that has faced the broader design community since it first began to really focus on this issue in the mid-1980s: is modernism different? The modern movement, as initially (and simplistically) codified by the first generation of historians such as Sigfried Giedion and Nikolas Pevsner, is grounded in a body of early-twentieth-century writings and projects that are posited as the inevitable outcome of a trajectory that begins with Claude Perrault, Francois Blondel, and the "Battle of Ancients and Moderns" at the beginning of the Enlightenment in the late seventeenth century. The definitive, conscious break with any outward forms of traditional architecture is first proposed by the Futurists in 1908—with their declaration that the machine, not the organic, as lionized by Ruskin and other nineteenth-century theorists, represents the authentic spirit of the age.[5] Despite the fact that the idea of a monolithic modern movement has long been discredited, there are nonetheless essential social, technical, and aesthetic parameters that identify an unambiguous body of modern architecture and urbanism. These emerge as a diverse body of "movements" following World War I that affirm the primacy of process, industry, abstraction, and a conscious break with history in defining new ways of designing buildings and cities. Even the more "organic" practitioners such as Alvar Aalto, who develops by the mid-1930s a critique of the cult of a machine-oriented aesthetic that focuses instead on the primacy of the user experience, accept the need to work within the parameters of industrial production, and to create works that foreground abstraction in both form and, in many cases, material as well.[6]

Bearing this in mind, if we then accept the premise of the Nara Convention that "Authenticity . . . appears as the essential qualifying factor concerning values" and that "it is not possible to base judgments of values and authenticity within fixed criteria," then the definition of authenticity and hence value must be constantly calibrated to meet the parameters of a given project.[7] This process of calibration and accommodation is in line with the notion of *"belonging,"* as defined by Vittorio Gregotti as characterizing a design culture of accommodation that emerged in the late twentieth century as a corrective, that "attracts and organizes the debris contained in the context," to the strategy of *"estrangement"* or difference, that was part of the ethos of the avant-garde.[8] Gregotti goes on to say that this shift happens within the broader framework of modernism; that the idea of *belonging* and its attendant process of reassemblage; of conservation, renewal, enhancement, and extension, that "constructs from those pieces asymmetry, varying density and the values of diversity . . . belongs to the modern tradition . . . to a history that criticizes and articulates the very idea of a modern movement, expanding its meaning and boundaries and transforming it from a position into a tradition."[9]

Gregotti's notion of building upon the modernist project without denying that it has indeed become tradition—a part of history—reveals a fine distinction that can inform how modernism is treated as heritage. As the thread of conservation is seized and expanded out of this thought, it may thus be argued that taking the notion of belonging into account as a guiding principle for modification, may and should in fact promote a more active engagement with the work than might occur in dealing with a traditional structure.

Returning to Nara, in order to optimize the retention of authenticity through the

course of a project, the *value* of accepting changes in material, assemblage, or even program to balance fidelity to original design intent with present functionality should invite change that best reveals the idea inherent in the original work, while initiating a dialogue that will both reinforce and broaden the meaning associated with the original. Depending upon the significance of the original, the intervention can either express difference where more physical transformation is demanded or accommodation and extension through careful blending and enhancement of the original design. It is primarily in this latter area of extension and accommodation, given the similarities between the language of modernism and that of contemporary design culture, and where existing standards and charters mandate the intervention be of its time, that we confront the potential for an ambiguity in the perception of the rehabilitation of a modern work that would not, under the same guidelines, occur when working with a traditional structure.

Much of the substance of this issue builds directly on the philosophy of the Eindhoven Statement, the manifesto set out by DOCOMOMO at the close of its inaugural conference in 1990 to mount a defense of both the principles and the fabric of the modern movement.[10] The essential idea behind DOCOMOMO's initiative is that architecture did fundamentally change in the twentieth century, and that the modern movement, however diverse it may have been in practice, was in fact a harbinger of a way of designing and building that is still evolving. While conservation was paramount among the concerns of DOCOMOMO in raising consciousness about the endangered status of the buildings and sites such as the Zonnestraal Sanitorium, upon which they focused much of their early attention, their larger mission was to reopen and sustain a dialogue about modernism that, along the lines of Gregotti's notion of belonging, would treat these resources in a manner consistent with the intentions of their original creators. In the context of the architectural discourse of the 1980s, DOCOMOMO was part of a movement that saw itself as a corrective to the perceived aberration of architectural postmodernism, asserting the hegemony of and providing a platform for the next generation of the greater modern project that was in the eyes of some only really hitting its mature stride.[11] While there is now general acceptance within DOCOMOMO of modernism as history, the call to broaden the authenticity dialogue toward design intent and process continues to impact how we address modern heritage.

What does this mean in practice? As more projects were undertaken and issues confronted, it became increasingly clear that despite the technical challenges of conserving works of the recent past, the application of most of the principles of conventional conservation practice as outlined in the international charters—the first of which was importantly drafted by many of the same individuals who also codified the principles of the modern movement, and who understood the place of modernism within the larger spectrum of history—remain sound and valid, with the understanding that each case presents particular and often unique criteria.[12] To me, there are two fundamental concepts that separate much of the legacy of modernism from what we have conveniently chosen to label traditional architecture. The first builds upon Riegl's concept of newness value and the notion that so much of the material fabric of modernism is the product of industry,

and mandates maintenance that is designed to resist the acquisition of patina.[13] While this is a condition that is neither universally nor solely applicable to modern architecture, it does have an overriding relevance when we are faced with formulating conservation strategies for materials such as aluminum, porcelain enameled steel, and polymers, and for the often technically suspect means by which these materials were integrated into the overall fabric of the work.

The second concept begins to be elucidated by Alan Powers when he speaks of the contrapuntal but ultimately "unstable balance" of *substance* and *essence* (through Mies van der Rohe's reading of Aquinas) as being the poles of understanding that might characterize any cultural resource; that is, the statement "a house is said to be true that expresses the form in the architect's mind" describes the *essence* of our understanding of the idea of the resource without regard to its material facts or *substance*.[14] The issue in developing a conservation strategy is where the line is drawn; which should take priority, and how much or what kind of substance must remain evident in order to retain the essence of a work. The balance that we seek to achieve in reconciling substance and essence is what Paul Byard has called the *appropriate*[15] or what Kenneth Frampton might refer to as the *normative pragmatic*,[16] both of which are just other ways of saying do what is necessary to achieve this balance while always endeavoring to maximize value and minimize negative impact. It is here that the Nara principles cited above begin to expand our definition of authenticity, as it may be argued that essence and value are inextricably linked. There is a tendency, particularly in addressing the systemic failures often found in modern buildings, to provide corrective measures that necessitate extensive reworking or even in a case such as the Lever House total façade replacement; in theory a drastic change but one that many would argue has little effect on one's experience of the essence of the work. Placed in the larger regulatory context, this work could be said to contravene Article 9 of the Venice Charter,[17] but could be argued to be in harmony with Article 6 of the Secretary of the Interior's (SOI) Standards for Restoration[18]—even though the entire visible face of the building is being replaced. On the other hand, a seemingly minor intervention such as the 1980s reframing of the entryway to Josep Lluis Sert's Holyoke Center arcade or changing a paint color can have a disruptive effect on the perception and consequently the understanding of the resource.

One of the characteristics of many modern buildings is that despite the considerable rhetoric about flexibility and universal space, the realities of construction economy and the growing complexity of many program briefs meant that many structures were designed with a very close programmatic fit. Thus a recurring rehabilitation theme is the fact that this typically close fit has inevitably led to numerous modifications as changes in use arise. Often these changes—which might involve the moving of interior partitions, blocking windows, and ad hoc adjustments to building systems are not undertaken with the idea or logic of the original building in mind. However, in accordance with the best preservation practice, as notably stated in Article 11 of the Venice Charter, alterations of all periods should be given equal weight in the evaluation of further change, and though removal of insensitive alterations is not precluded, the nature of many modern structures is such that

Figure 2. Henri van de Velde, Architect, 1938. Conversion by RITO and Formanova with George Baines, 1994–2000. Tweebronnen, Municipal Library and Archives of Leuven, Belgium. View at top of new stair inserted into renovated space. (David Fixler)

this change has often made discovering and restoring the essence of the original an unusually daunting task. Thus the simple act of conceptually returning to the original guiding principles of the building—which are inexorably tied to how the building systems, structure, and architecture interact—will often engender considerable debate about the value, both economic and cultural, in what must necessarily be discarded in order to return the resource to a state which will almost always immediately improve the appearance and performance of the work, while providing a sound touchstone and framework for future modifications. This is often cited as a hindrance in the repurposing of modern buildings that have outlived their original use, but with proper study it can result in unexpected and surprisingly exhilarating juxtapositions such as the 2000 insertion of the Municipal Library of Leuven, Belgium into an early modern (1935) Henri van de Velde school.[19]

With these observations in mind, the following are several implementation examples

from my own experience and that of my office that illustrate the diversity of issues we are confronting in dealing with sites and buildings of the modern movement and how aspects of their nature as modern resources have been instrumental in defining a particular project approach.

Touching the Unpopular—Boston City Hall

Brutalism—a misnomer taken out of context that has subsequently come to define the exposed concrete architecture of the 1960s and 1970s—has also become the epithet that many people hurl at these buildings as inhospitable despoilers of the environment. Although it would serve us all well to find a better word to describe this movement (the founders of the Pinkcomma gallery in Boston have dubbed it "heroic," and while this is a noble sentiment it is hard to make it stick across the spectrum of these works—and one must then ask: why are they more heroic than any number of other structures?),[20] it has become part of the lexicon both of the art historian and the general public, and shall for the time being be left alone. Boston City Hall has been a particularly effective lightning rod for negative sentiment almost since its completion in 1968. A monumental structure of reinforced concrete rising out of a brick base with a great following among the architectural cognoscenti, it has been almost universally reviled by the general public and—most poignantly—its users. Numerous repair, adaptation, and replacement projects have transpired over the course of the last twenty years, many of which have involved changes to the fabric necessitated by code and accessibility requirements, and the failure of components of the original construction. The most comprehensive upgrades were performed between 1992 and 1995, which involved the regrading and complete repaving of the vast brick plaza, the comprehensive replacement of the plaza handrail system, in order to conform to the Americans with Disabilities Act (ADA), and an extensive program of patching both the poured-in-place and precast concrete building facades. Although never conceived strictly as a conservation project, nonetheless at its inception, the Boston Landmarks Commission was engaged to begin what has become an ongoing dialogue as to what constitute appropriate interventions into something as hostile, difficult, and controversial as Boston's City Hall and its Plaza.

The project combines conservation and the design of new elements mandated by code, structural or waterproofing deficiencies that were meant to build upon the original elements. None of the above made an attempt to address the larger problems of functionality that spawned parallel efforts—that also began at about this time—to radically rethink aspects of the building and plaza designs. Concrete structures of this era—City Hall is a quintessential example—actually acquire a patina of sorts, as concrete weathers and its raw aspect is simultaneously heightened and softened (through subtle shifts that often warm the color). Therefore the maintenance of newness value is a secondary consideration provided the material remains intact. However the question of substance versus essence looms large over any future initiative as many of the architects of this period were adamant in arguing that in fact the substance and the essence of their work was one and the same—what you see is what it is—structurally, materially, and functionally.[21]

Figure 3. Kallmann, McKinnell and Knowles, Architects, 1962–1968. Plaza renovations 1992–95, Perry Dean Rogers & Partners, Architects. Boston City Hall, Boston, Massachusetts. View from plaza looking east, 2009. (Bruce T. Martin Photography)

This attitude and its physical manifestation pose a two-level challenge. On the one hand, the repair and maintenance of the concrete itself is a relatively straightforward if sometimes difficult procedure, and with proper care the fabric can be sustained for a long period if not indefinitely. The technology of concrete repair is constantly evolving; here probably more than in any aspect of the repair of modern buildings a true craft spirit and growing tradition exists, involving great sensitivity to the qualities of the mix, tooling, and the environmental conditions that must be considered when trying to match existing fabric. The initial round of concrete repairs at Boston City Hall, even as a public bid project, resulted in some thirty different varieties in the patching mixes to match the conditions found on the different concrete surfaces, depending on type (precast or board-formed), and exposure. While this work was successful, the patches will often weather differently from the host material, and after fifteen years the need for repairs continues and should be included as part of a routine program of ongoing cyclical maintenance.

The replacement of the handrail system—both within the building and on the plaza—also had a maintenance component as it had to be more structurally robust (due to problems with vandalism) than its predecessor. Design changes were therefore mandated to both the uprights and the handrail, and additional railings were mandated throughout the plaza for ADA compliance. The new design remains true to both the material and the concept of the original, but is—of necessity and perhaps befitting our more Baroque times—a more complex design that places it outside of but in sympathy (perhaps

more so than the original in the eyes of some critics) with the aesthetic of the original building. This is the kind of evolutionary change that is typical of many of the necessary modifications performed on many structures of this era that embodies a philosophy of extension in utilizing a sympathetic but appropriately contemporary aesthetic for interventions. The next steps can start small but will eventually become a leap, for in order to ensure the continued acceptance and viability of City Hall, the general public disaffection that attends this building, as it does many of the works of Brutalism, must be addressed with potentially more robust, transformative strategies. Success in this endeavor can only be achieved through broad consensus, and consequently education, both for the full complement of design professionals, owners, and regulators who will be engaging the particular challenges and opportunities of these resources, and education of the general public, should be a long-term goal that must be constantly practiced and honed. It is necessary to explain the value and the importance of the history that they represent to a broad constituency, and it is therefore incumbent on anyone working in this arena to be proactively aware of this need. In addition, the integration of design and conservation at the highest level is an opportunity to ensure the creative but sympathetic transformation necessary to address chronic shortcomings of the original works in order to better guarantee the long-term success and stability of these resources.

City Hall is also a particularly recent work, and one of the issues that attend rehabilitating resources of this vintage is how or whether to address the continued presence of the original architects, in this case a still very active Michael McKinnell, in formulating necessary changes. Experience in a variety of cases points to the fact that the agenda of the creator and the conservator are often very different—the designers wishing sometimes to update the work according to their current thinking as opposed to the conservation agenda of leaving the work intact in its original form to the greatest possible degree. Initially Mr. McKinnell pointed to those aspects of the project that he felt were never realized, and that he felt if implemented would go a long way to addressing and mitigating the less hospitable aspects of the building. As time passed and calls came for potentially more radical transformation of the building, he offered further insight that reinforced the thinking of many who have pondered this issue, that City Hall, like many buildings of this type, is in essence a structure in the raw; a robust armature that can easily accommodate difference, in the form of both potentially radical change and/or more subtle accommodation in an overlay of fine-grain, human-scale interventions.

The many schemes that have been advanced through a series of ideas competitions over the last fifteen years lay out the possibilities that these kinds of transformations might entail and suggest that the overpowering strength of this building can accommodate significant change without essential loss of character. However, by their necessary superficiality (these are all relatively quick sketch exercises) the schemes also highlight the need for further and rigorous study of what exists today. Future interventions, particularly on the scale these transformations demand, should only be undertaken following a period of thorough historic and technical background research. This ideally would also include the production of an Historic Structures Report, but at minimum there should emerge a set

Figure 4. Kallmann, McKinnell and Knowles, Architects, 1962–1968. Plaza renovations 1992–95, Perry Dean Rogers & Partners, Architects. Boston City Hall, Boston, Massachusetts. Detail of plaza handrail, 2002. (David Fixler)

of Design Guidelines, along the model of those that have recently been produced by Avanti Architects for the Barbican in London and those for the United Nations Headquarters in New York, that outline the history and significance of the work, rank spaces and fabric, and describe a process for the evaluation and approval of any future work. As of this writing, the City of Boston is taking the first steps toward addressing some of the fundamental design issues through commissioning a project to rethink the main building entrance with the kind of overlay discussed earlier—the first of what hopefully will be many steps toward a comprehensive solution to the building's problems.

This is an example of the level of intervention, which in the implicit subjectivity of its interpretation of the aesthetic principles of the original, is perhaps difficult to justify under any of the charters and standards governing preservation practice. Nonetheless this kind of action has achieved broad consensus among the design and preservation communi-

Figure 5. Kallmann, McKinnell and Knowles, architects, 1962–1968. Boston City Hall, Boston, Massachusetts. Competition study for opening up Plaza Level; Kuo and Chaouni, Architects, 2007. Computer rendering. (Jeanette Kuo and Aziza Chaouni)

ties, and serves notice that some selective reworking of the standards—perhaps even a separate charter for the works of modernism—would prove useful in ensuring that the inevitable change is of the highest and most sensitive quality.

Touching the Ordinary—The International Union of Operating Engineers

One of the chronic and most widely discussed issues in modern building conservation is coming to terms with how to address the metal and glass curtain wall, which is in most cases a signature character defining feature of buildings that utilize this type of construction. The replacement of the curtain wall of the Bauhaus in Dessau was one of the earliest acts of major repair on a modern building, and the insensitive replacement of the original glazing in the main pavilion of the Zonnestraal Sanitorium was arguably an important factor in galvanizing the original purpose of DOCOMOMO.[22]

There are many compelling stories on the subject of curtain wall restoration and/or replacement on iconic buildings, and in their range they both highlight the possibilities and circumscribe the limits of what is possible in working with these systems. The type of construction and visual quality of the glass in the classic works of Ludwig Mies van der Rohe such as Crown hall at IIT and the early houses of Philip Johnson, including the Glass House, necessitate a strategy that retains the uninsulated glazing system—although for safety reasons the original plate glass must often be replaced with tempered or laminated units, which diminishes, however subtly, the crystalline purity of these structures. This is an obvious issue in terms of limiting the degree to which the sustainability quotient of these buildings can be increased—something that is of relatively little consequence perhaps for the Glass or Farnsworth Houses but is a major factor when applied to a complex as large as Mies van der Rohe's Dirkson Courthouse and Federal Building in Chicago.

However, it has in turn led to innovative strategies about the reconfiguration of the building systems and the way that office floors are planned in order to optimize patron comfort, inhibit condensation, and still optimize energy performance.

A more radical consequence of the retention of original fabric occurred with the restoration of the original glass and steel window wall assembly at the Van Nelle Factory in Rotterdam, an act of conservation that in turn triggered the construction of a completely new, fully tempered building within the minimally conditioned shell of the old in order to repurpose the structure for contemporary use.[23] At the other extreme is the complete replacement of the curtain wall, which in the aforementioned case of Lever House was undertaken with the intent of providing an exact visual replica of the original curtain wall, incorporating the technical refinements and insulating capabilities of a contemporary curtain wall.[24]

Figure 6. Brinkmann and Van der Vlught, Architects, 1926–1931. Van Nelle Factory, Rotterdam, Netherlands. View of exterior, 2003. (David Fixler)

In between these extremes are certainly hundreds, perhaps thousands of examples of ordinary everyday modernism (OEM[25]); curtain wall buildings from the 1960s through the early 1970s that are in need of help but are not necessarily of interest by either the building owner or local regulatory agencies as being structures worthy of protection. This is the chronicle of a project undertaken by the EYP Washington office in the late 1990s for one of these ubiquitous examples; in this case the renovation and upgrading of a Washington, D.C., office building for the International Union of Operating Engineers (IUOE). Designed by Holabird, Root, and Burgee and built in 1956, the IUOE was a straightforward, relatively anonymous structure whose original owners approached EYP with a desire to upgrade and "refresh" the building. The original brief included the replacement of the stainless-steel-framed curtain wall, which held two varieties of green glass for the vision and spandrel lights, with something that would give the building a more contemporary look. However, given the quality and condition of the original fabric, which incorporates a section robust enough to accommodate insulating glass, the owners agreed to explore options that would retain the framework for the curtain wall. Glass, however, was an entirely different issue. No one in the client group liked either the appearance or the performance of the original two-tone green lights, and saving it, or even replacing it

Figure 7. Brinkmann and Van der Vlught, Architects, 1926–1931. Conversion Master Plan by Wessel de Jonge Architects, 1996–2000, renovations by various architects 1998–2003. Van Nelle Factory, Rotterdam, Netherlands. View of interior of mezzanine level of factory floor showing insertion of new "building within the building," 2003. (David Fixler)

Figure 8. Holabird, Root and Burgee, Architects, 1956. International Union of Operating Engineers Headquarters, Washington, D.C. Original exterior, circa 1958. (Courtesy of EYP/ Architects & Engineers)

with glass designed to match the appearance of the original, was swiftly eliminated as an option.

As the building was under fifty years old, and not on anyone's radar for potential listing, there were no regulatory issues in changing the glass, and no amount of argument about the preservation of the original look of the building would hold sway, as a fundamental reason for undertaking the project was to change the appearance of the building in order to make it more attractive for their own employees and potential future tenants. In the end, however, the solution represented the best possible outcome given the circumstances in that the unique and technically well designed original curtain wall structure was retained and improved with the addition of thermal breaks and weeps, with the possibility that, if the present fashion for midcentury modern buildings—which has largely arisen since the completion of this work—holds sway long enough, or if the building ownership comes to be concerned with recapturing the original appearance of the structure, the owner would have the option to replace the present insulating glass lights when they reach the end of their service life (likely another ten to twenty years) with units to match the appearance of the originals.

Figure 9. Holabird, Root and Burgee, Architects, 1956. Renovation by Einhorn Yaffee Prescott, Architects & Engineers, 1999. International Union of Operating Engineers Headquarters, Washington, D.C. Exterior detail showing curtain wall fasteners, 2005. (David Fixler)

Capturing or reinvigorating the newness value of the building was a key driver for this project in the mind of the client, but has the change in the substance of the curtain wall glass changed its essence? There is no question that in the cases of the repair or restoration of the single glazed curtain wall examples noted above the essence of the building remains, even if a large part of the substance—the glass—is replaced. At Lever House, the wider philosophical door of authenticity is opened, with the case (that I have personally argued) that industrial products should perhaps be viewed through a different lens than bespoke, craft-built elements; and that although some might argue that we are viewing a simulacrum, it is hard to dispute that the essence of the work has remained intact despite considerable loss of substance.[26] The IUOE presents a difficult case. To a remarkable degree the building appears new (the syncopation in the pattern of the framing elements—more typical of our era than of the 1950s—in conjunction with the clearly

Figure 10. Holabird, Root and Burgee, Architects, 1956. Renovation by Einhorn Yaffee Prescott, Architects & Engineers, 1999. International Union of Operating Engineers Headquarters, Washington, D.C. Renovated exterior. (Courtesy of EYP/ Architects & Engineers)

newer glass that helps to give it a more contemporary appearance) until close scrutiny reveals the 1950s stick-built quality of the curtain wall framing. Whether this is a desirable outcome depends entirely on point of view, but it also has bearing on whether the essence of the building has in fact been changed—which arguably in this case it has, even though there is no more substance of the building removed than was the case at Crown Hall at IIT, and certainly less than what was removed at Lever House. However, the building is undeniably transformed. The fact that the comfort, performance, and image problems were addressed, thereby accomplishing what most of the people entrusted with the care and maintenance of the work saw as the major project objectives, means that the building is more likely to be sustained as an efficient, useful facility farther into the future. In the end, this is perhaps the best—or at least most sustainable—result that could be expected.

One of the charges most frequently leveled at modern buildings is that they are very inefficient from an energy standpoint, and consequently the driving force behind many, if not most modern building rehabilitations, is improving the building's sustainability quotient. The IUOE was no exception, and in addition to improving the thermal capabilities of the envelope, the mechanical systems were completely overhauled to enhance performance. In the end, however, the lesson to be gained from the successful adaptation of the

curtain wall assembly at IUOE, and what is being proposed for the more architecturally significant Inland Steel Building in Chicago (SOM, 1959), is that the difference in performance between a renovated midcentury curtain wall and a new structure with a contemporary curtain wall is negligible, and that therefore the savings in retaining the embodied energy of the existing fabric, as well as the avoided impacts of not using those resources required for the fabrication and erection of new framing far outweigh the marginal operational savings that would be gained from the use of a new system, and therefore make rehabilitation the more sustainable solution.

Touching an Icon (but "this is not a restoration")—MIT Baker House

Much has been written about the renovation of Alvar Aalto's Baker House at MIT, a project undertaken by Perry Dean Rogers and Partners beginning in 1996, and I will only raise here some of the salient points that a project of this nature brings to the larger picture of working with modern movement heritage.[27] Two key issues are managing the watchful eyes of the international architectural and conservation communities while negotiating a project that a very sympathetic client nonetheless refused to call a restoration, and establishing the process for evaluating the potential use of unexecuted aspects of the architect's original project in the service of providing necessary enhancements to the building fabric. These issues are in fact closely linked. The project began with a detailed feasibility study that chronicled the history of the original design and construction, and the subsequent changes that brought the building to its 1996 condition. Part of this initial phase was also the establishment of an Advisory Committee of architects, architectural historians, and preservationists culled from MIT, the preservation community, and the world of Aalto scholarship, to monitor and critique the progress of the work. Baker House required remarkably few program changes, but upgrades were mandated for systems, code and accessibility requirements, and the addition of minor new program elements at the lower level.

It is important to note that unlike many modern works, Aalto's building is built of materials and with an ethos that is far more receptive to weathering and the acquisition of patina; Aalto himself stated that any work of architecture can only really be evaluated after thirty years, so capturing or retaining newness value was only an issue to a limited extent. This speaks to Hilde Heynen's observation that the strain of modernism that may be called the programmatic (also called the "Other Tradition" by Colin St. John Wilson and others) is motivated to establish a new tradition—with works designed to acquire age and historic value, rather than the more transitory movements of the modern project that in constantly seeking innovation and reinvention mandated the appearance of newness to be effective.[28]

With this in mind, the idea of essence and the perception of any proposed interventions over time, loomed large in this project. This is the only work under discussion in which there was universal desire to reveal and reinforce the essential architectural (and programmatic) idea of the building to the greatest degree possible. It was found that one series of required modifications in the Dining Commons, the accommodation of new building systems above the ceiling, and code upgrades to the balcony and stair railings could be

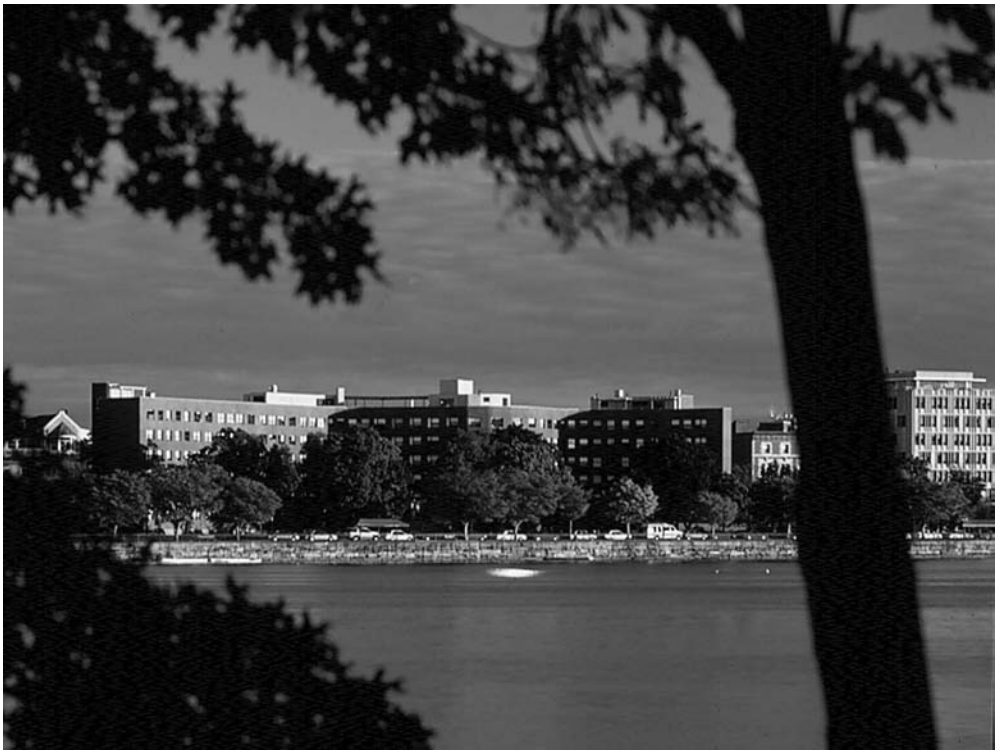

Figure 11. Alvar Aalto with Perry Shaw and Hepburn, Architects, 1946–49. Renovation by Perry Dean Rogers & Partners, 1996–2003. Baker House Residence Hall, MIT, Cambridge, Massachusetts. Exterior view from across the Charles River, 1999. (Jeff Goldberg/ESTO)

accommodated using designs based upon unexecuted original concepts and details found in Aalto's sketches and the construction documents. This was one of a series of discoveries that focused the dialogue on how the interventions should in general be perceived; that is, whether to try to extend Aalto's vocabulary (and how) or to develop a language that was deliberately contemporary and meant specifically to contrast with the original work thereby dispelling any potential ambiguity concerning authorship. There is no purely objective way to make such a determination, and the nature of the debate that ensued around this issue demonstrated each case must be addressed on its own merits. In the end it was determined that a deliberately contemporary intervention would be potentially awkward and soon appear dated against the subtle elegance of the original work. Aalto's work has a relaxed, intuitive quality that is particularly focused on accommodating immediate human need, and that is realized in a highly personal language that is sufficiently quiet and timeless to be as comfortable today as it was when generated sixty years ago.

This suggested a general decision to extend the spirit and language of the original vocabulary with subtle alterations to distinguish it from the original work. In the specific case noted here (factoring in the living memory of Aalto's assistant in charge of this work in construction) the unexecuted concepts were partially incorporated, resulting in a blended collage of new, existing, and originally proposed but unexecuted architectural ele-

ments that in turn incorporated strategic modifications to the original design and details to both elucidate its contemporary provenance and function and to optimize the retention of original fabric. This is modification as synthesis, using Gregotti's principle of belonging to extend a modern work according to the intent of its creator while making the necessary accommodation for contemporary systems and function.

The emphasis here is that there is both opportunity and risk in working with the extensive documentation and living memories that often attend iconic modern structures. There were many on the Advisory Committee who ardently took the side of the creator in evaluating project design decisions, seeing this as a unique opportunity to "complete" the master's work—maximizing conceptual essence over historic substance. In the end, most of these strategies were rejected in respect both for the natural history and cultural associations of the work as it was completed, but also in recognition of Aalto's own, often unspoken example when faced with a difficult design problem to err on the side of maximum restraint. Another original intent issue prompted a particularly interesting debate, in which the discussion of repair loomed large. The great cascading north stair wall went through successive design iterations in aluminum, copper, and ultimately terra-cotta tile before being changed—as an expedient during the course of construction—to stucco. Initially many assumed that the stucco was failing, and took this as an opportunity to advocate for the replacement of this material with the tile system originally proposed by Aalto. Investigation, however, revealed that the stucco was in fact in very good condition, needing only minor patching and hairline crack repairs to retain full serviceability. Following considerable aesthetic study and technical evaluation, it was agreed that conserving the stucco was the preferred course but that as a nod to protection for the future and the general displeasure with its appearance a topcoat, closely matching the color of the specified terra-cotta tile (also close to but more vibrant than the original stucco color), would be used to coat the stair wall. While a pleasant and compatible material, it is surprisingly notable as a recent intervention into the otherwise cleaned up but clearly graciously aging building envelope.

The process of coming to a decision on the retention of the stucco revealed the depth to which the pull of an unfinished (or in this case underfinished) masterwork can prompt calls for its completion even among the most erudite and well-informed members of the design and scholarly communities. What impact do these interventions have upon the authenticity of Baker House? The building is arguably a more lucid and essential expression of Aalto's original intent than it has been since the 1950s, but the process of change—particularly with regard to systems, which have become more extensive, refined, and concealed than they were originally—has revealed, especially in the dining commons and the student rooms, a sense of refinement that mitigates some of the rough and tumble appearance of Aalto's original (as he indicated was appropriate for American builders and as a residence for college students). The building in these areas now more closely recalls the character of his contemporaneous work in Finland, with the somewhat ambiguous result that the building appears both more finished and Finnish than it did upon its opening in 1949. While generally understood and accepted by the project stakeholders, this

resultant ambiguity nonetheless points up the potential pitfalls inherent in this approach, as in some areas it takes a close look and a trained eye to distinguish between the original and the intervention. This in turn reinforces the dictum of Antero Markelin—regarding not only this project but the preservation of any significant work of architecture that "it doesn't matter what you do, it will be wrong."[29] The successful reception of the project points up the value of a transparent process with close engagement and dialogue that enabled the full range of project stakeholders to debate, understand, and buy into the decisions that were ultimately chosen.

Conclusion

The examples cited above touch on many, if not most, of the prevailing concerns that have confronted the design community in addressing the heritage of the modern movement over the course of the last twenty years. To summarize, I would like to offer six points as observations and recommendations—some brief, others that will require further illustration—as a modest agenda for moving forward.

1. Philosophy

Twenty years of vigorous debate about whether the conceptual foundation of the modern movement should dictate a change in philosophy has produced no definitive conclusions. Every conservation problem, like every design problem, is unique and requires custom

Figure 12. Alvar Aalto with Perry Shaw and Hepburn, Architects, 1946–49. Renovation by Perry Dean Rogers & Partners, 1996–2003. Baker House Residence Hall, MIT, Cambridge, Massachusetts. View of original Dining Commons from below, 1949. (Ezra Stoller/ ESTO)

tailoring for an optimal solution. In most instances, the charters that have governed conservation since the mid-twentieth century remain applicable, and they have exhibited enough flexibility in addressing intervention that they can be used as a guideline for most projects. However, exceptions will arise, particularly where we are dealing with large, complex, but sometimes hopelessly outdated industrial artifacts like the original curtain walls at Lever House and the United Nations Secretariat, and we should retain the flexibility to deal with these exceptions in a technically sound, aesthetically appropriate manner. How far this dialogue might venture into the issue of how contemporary and modernist design philosophy might be separate or intertwined is also an issue that cannot be ignored as it might affect the nature of future interventions. Susan Macdonald and others including myself have suggested that, building upon the resources and experience of the last twenty years, a simple, tightly worded, and well-focused parallel charter or declaration specifically addressing practices that have proven unique to twentieth-century resources may be appropriate as a document that could help clarify the burgeoning efforts in this arena around the world.[30]

Figure 13. Alvar Aalto with Perry Shaw and Hepburn, Architects, 1946–49. Renovation by Perry Dean Rogers & Partners, 1996–2003. Baker House Residence Hall, MIT, Cambridge, Massachusetts. View of renovated Dining Commons from below, showing insertion of wood slat ceiling, new lighting and raised handrail on balcony balustrade, 1999. (Jeff Goldberg/ESTO)

Figure 14. Alvar Aalto with Perry Shaw and Hepburn, Architects, 1946–49. Renovation by Perry Dean Rogers & Partners, 1996–2003. Baker House Residence Hall, MIT, Cambridge, Massachusetts. View of original North Stair and Entry, 1949 (Ezra Stoller/ESTO)

2. Typology

There are buildings, particularly K–12 schools and hospitals that, due to changes in educational pedagogy, codes, and medical practice, present serious typological challenges to rehabilitation. In these instances, the degree of variation between contemporary space standards and systems requirements and what is provided in these resources render most of the original buildings functionally useless without drastic (and often inefficient) modification. Only one example is briefly touched upon here (the repurposing of the Henri van de Velde school in Leuven to a municipal library, and that is a prewar example), but these are building types *in extremis*, that require vigilance and creativity if we are going to be able to keep a good representative sample—in any form—for future generations.

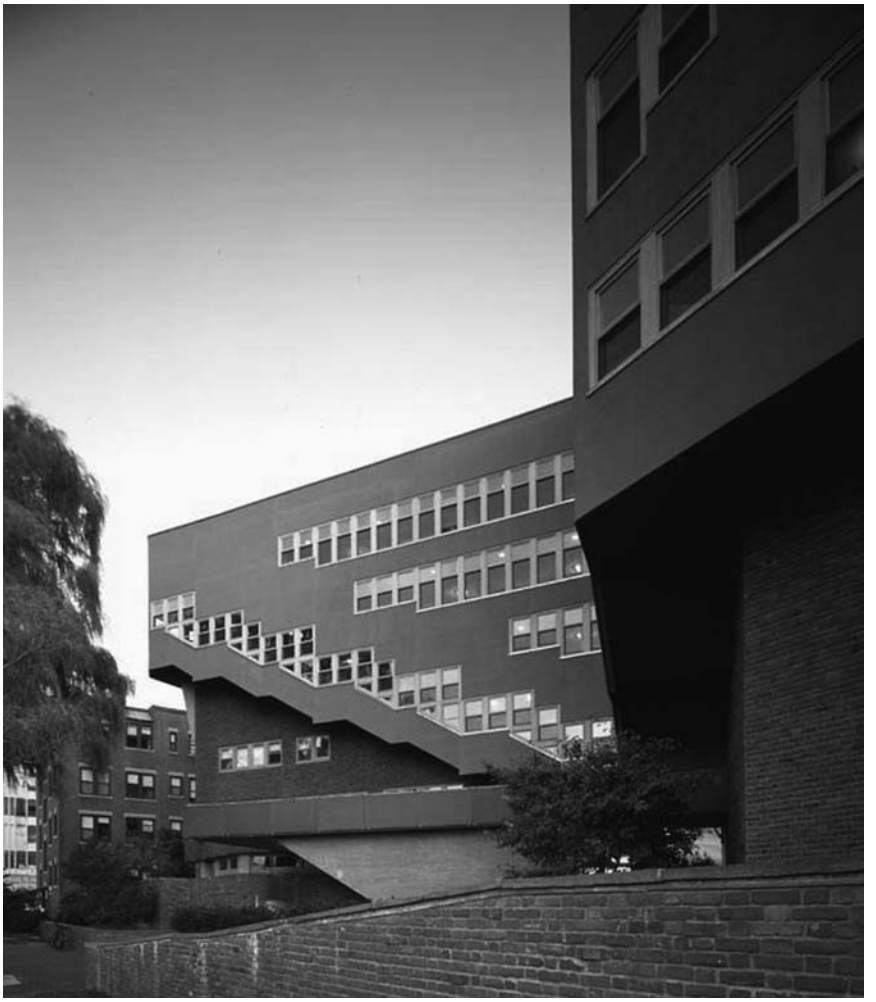

Figure 15. Alvar Aalto with Perry Shaw and Hepburn, Architects, 1946–49. Renovation by Perry Dean Rogers & Partners, 1996–2003. Baker House Residence Hall, MIT, Cambridge, Massachusetts. View of restored and recoated North Stair and new Entry Ramp, 2003. (Paul Vercerka/ESTO)

3. Language-Style

Early-twenty-first-century culture is infatuated with midcentury modernism, and while this is hopefully helping the general cause of the preservation of modern buildings, it has also created some blurring of distinction between what constitutes *modernism*—as an historic period with distinctive stylistic traits—and the contemporary *late* or *neomodernism* as an extension of the modernist aesthetic without the accompanying sociopolitical ethos (although a newly socially purposed "Second Modernism," focused around environmental issues has been identified as both a cultural and specifically an architectural phenomenon).[31] This raises issues of language and the notion that the style of most contemporary interventions is both recognizable of being of its (our) time, and as being a logical extension of the vocabulary of midcentury modernism—they are compatible, but subtly yet

distinctly different. This will not always be the case, and as fashion and architecture move on it is incumbent on the design community to be attentive both to the continued survival of these works, and to ensure that future interventions remain sympathetic.

4. Partner with Industry

The conservation community has done an admirable job in developing alliances with the traditional crafts to enable high-quality restoration work in their areas of specialization. We need to foster these same kinds of alliances with industry to be able to creatively tackle many of the particular challenges presented by modern materials and assemblies.

An example of this kind of teaming is in evidence in the pilot project currently underway for the restoration of the steel window wall assemblies of the MIT Main Group. This is not strictly speaking a modern building, but the issues confronting the design team in dealing with the monumental steel windows are absolutely germane to many modern structures. MIT has assembled a multidisciplinary team including an architect, a local restoration contractor and window/curtain wall installer, a masonry conservator in Chicago, a steel window manufacturer in California, and a steel fabricator in Switzerland to design, fabricate, and install three degrees of intervention—the first maximizing the conservation of existing fabric in the purest possible restoration scenario, the second a hybrid of existing and new elements replicating the original pieces but incorporating subtle performance enhancing features, and the third a full replacement in kind with the same performance enhancements. The project is currently in fabrication, but the salient point here is that it would not be possible at all without the early and close engagement of the steel window manufacturer and the relationship that he was able in turn to develop with the Swiss fabricator to be able to roll the custom sections necessary to accomplish this work.

These kinds of initiatives are to some degree dependent upon the availability of either small, independent fabricators or divisions within larger industries that are specifically geared to this kind of flexibility. But as these situations continue to arise—as technology enables faster customization of production, and closer detail exchanges are made easier between designer and fabricator, better opportunities for this kind of synergy will become possible.

5. Address Failure

Modern architecture at its height was ubiquitous and relentless, and its legacy includes as many spectacular failures as it does wonderful successes. We must be prepared to address these failures through managed change, both on the detail level, where it might seem most obvious, and at the larger scale through interventions designed to increase the sustainability and mitigate the inhospitable nature of many of these buildings. It is with the latter mandate that we move into the area of reparation, for the aspect of healing that attends the notion of reparation is at the core of what these design interventions must accomplish. This is not an area that is necessarily of primary concern to the conservator but many of these resources will not survive at all unless the design community as a whole is proactive

about addressing their more egregious inadequacies, and the conservation community can play an important role in ensuring that change is managed in the most sound and technically compatible way possible.

Ironically, the two constituencies whose support must be enlisted to enable this kind of change occupy very different positions with regard to the ultimate fate of these resources. At one pole is public opinion that is generally in favor of having the buildings removed. Occupying the opposite pole are many of the regulatory authorities charged with their protection who, having recently become enlightened as to their value, naturally want to provide them the same protection against change that they would any historic resource. The former we must educate and convince, and to the latter we must be responsible—and achieving success will require all of our talents as educators, artists, technicians, conservators, and politicians.

6. Sustainability—A Final Word

"Sustainability has taken the moral high ground from preservation."[32] This simple phrase—oft quoted—by Henry Moss, reminds us that all movements are cyclical and that preservation, while more deeply entrenched at the regulatory level than ever before, has lost much of its luster both within the design community and with the general public in recent years. Sustainability, however, is hot, and though often not fully understood, has fostered the high-profile development of the green building movement and its attendant Leadership in Energy and Environmental Design (LEED) rating system. Despite ongoing efforts to reform the LEED system, and to generally enlighten the United States Green Building Council (USGBC) about the value of preservation, it remains biased toward new buildings, and relatively unsophisticated in communicating a message regarding the full sustainable potential of our existing building stock. Building owners look at the LEED system and immediately perceive that it is far easier for them to achieve a high LEED rating (and its attendant positive publicity) by demolishing what they have—especially if it is an inefficient and unloved modern building—and building new.

It is therefore incumbent upon everyone who works with existing structures to be cognizant that sustainability must be a constant and a priority in every endeavor, and that, once the resources in question fall below the level of the iconic structure, sustainability will become an overriding priority in any rehabilitation project. Flexibility and creativity will be necessary—particularly when dealing with the close tolerances and often technically questionable assemblies associated with many modern buildings—to make this work.

The sustainable preservation movement, particularly as it has galvanized along the parallel fronts of the Association for Preservation Technology and the National Trust for Historic Preservation, is becoming an increasingly powerful force in bringing attention to the synergies possible in working with existing buildings. Recognizing that modern heritage is this movement's greatest challenge, there are also specific initiatives underway in both organizations, alongside DOCOMOMO and ICOMOS, and among others to ensure that both philosophy and technique are constantly monitored and adjusted to reflect both the aspirations and the realities of greening these resources. Philosophically this is in keeping

with the ethos both of modernism and of preservation. As Jan Birksted has recently demonstrated, modernism at its core embraced the relationship of building and nature, and throughout the history of modernism there have been projects that specifically address and incorporate many of the sustainable design principles advocated today.[33] This is particularly evident in the works of Aalto and Le Corbusier, and in a number of projects by American architects—primarily residential—from the early post–World War II era.[34]

Coda

Modern heritage is facing a critical crossroads. While there is more awareness of its quality and plight than ever before, much of it continues to deteriorate at an accelerated pace and/or remains misunderstood. It is my hope that this paper, as part of a larger dialogue on this subject, can help to clarify how we can best manage to enable and enhance further success in addressing modern heritage. Preservation is about managing change, an ethos that the modern movement understood and embraced as one of the few constants in the modern world. Thus in stepping back to look forward, it is increasingly important to embrace this kind of change as a core value, and to use it henceforth to ensure the sustainable renewal of the legacy of modernism.

References

1. For the purposes of this article I use preservation to refer to the larger discipline that encompasses the full panoply of the research, design, and regulatory aspects of working with historic structures. Conservation, which I use more frequently, refers to the specific design and technical aspects of dealing with stabilization and restoration of existing building fabric.
2. The idea of a monolithic "modern movement" that was the inevitable product of a Hegelian zeitgeist began to be questioned as early as the 1950s by authors such as Reyner Banham and Bruno Zevi, and is now almost universally recognized as much for its diversity as for its commonalities. It is, however, a useful shorthand to describe the general design tendency that espoused a particular set of social, technical, and aesthetic principles that set it apart from what we (also for the purposes of shorthand) define as traditional architecture. Charles Jencks's *Modern Movements in Architecture* (Pelican, Harmondsworth, 1973), is an early and particularly clear (if somewhat polemical) outline of the diversity of approaches to modernism.
3. Hilde Heynen, "The Transitoriness of Modern Architecture" in *Modern Movement Heritage,* ed. Alan Cunningham (London: Routledge, E&F N Spon, 1998), 33–35.
4. Gropius and Wachsmann designed a number of lightweight, partially or fully prefabricated structures in the early 1940s, few of which were realized outside of the General Panel system modular house. Carl Koch at the same time was beginning to experiment with various synthetic siding materials, notably a cement board dubbed "Cemesto" in his houses at Snake Hill in Belmont, Massachusetts.
5. Marinetti, *The Futurist Manifesto*, quoted in Lionel Trilling, "Society and Authenticity," in *Sincerity and Authenticity* (Cambridge: Harvard University Press, 1972), 129.
6. Sarah Williams Goldhagen, "Coda, Reconceptualizing the Modern," in *Anxious Modernisms,* eds. Goldhagen and Legault (Canadian Center for Architecture and MIT Press, 2000), 306.
7. The Nara Document on Authenticity, Nara, Japan, 1994 Articles 10 and 11.
8. Vittorio Gregotti, *Inside Architecture*, part 2.4, "On Modification" (Cambridge and London: MIT Press, 1996), 69.
9. Ibid.
10. Founding Statement issued at the close of the first (1990) DOCOMOMO International Conference http://www.docomomo.com/eindhoven_statement.htm.

11. Peter Smithson, from a lecture delivered at the Harvard Graduate School of Design, 1976. Smithson argued, in defense of the onslaught of postmodernism, that modernism was merely pausing to collect its thoughts and energy, and that, at less than sixty years of age at the time of his talk, the state of the modern movement at that time was analogous to the development of Renaissance architecture in the time of Bramante and Raphael, with Michelangelo, Mannerism, and the Baroque yet to come. In many ways, his words have proven prescient.
12. Many of the founders of CIAM, the Congrès International d'Architecture Moderne (1928–59), were also the drafters of the Athens Charter (1931), the first of the international charters codifying the principles of conservation.
13. Alois Riegl, *The Modern Cult of Monuments: Its Character and Origins* (1902), reprinted in *Oppositions No. 25: Monument/Memory* (New York: Rizzoli, 1982), 49.
14. Alan Powers, "Style or Substance? What are We Trying to Conserve?," in *Preserving Post-War Heritage—the Care and Conservation of Mid-Twentieth Century Architecture,* ed. Susan Macdonald (Shaftesbury, Donhead—English Heritage, 2001), 3–10.
15. Paul Byard in conversation with the author on balancing style and substance at the Symposium convened at the reopening of Baker House (Cambridge—MIT) 1999.
16. Kenneth Frampton in conversation with the author on balancing structural necessity with conceptual essence in Columbia University Graduate Design Studio (New York) 1978.
17. International Charter for the Conservation and Restoration of Monuments and Sites (Venice Charter of 1964. Accessible through ICOMOS at http://www.international.icomos.org/charters/venice_e.htm.
18. United States Secretary of the Interior's Standards for the Treatment of Historic Properties, 1995 Revisions; Standards for Restoration Accessible at http://www.nps.gov/history/local-law/arch_stnds_8_2.htm.
19. Steven Jacobs, Yves Schoonjans, Jan van Vaerenbergh, and Luc Verpoest, *Tweebronnen: De Reconversie van de Technische School van Henri van de Velde to Open bare Bibiloteheek en Archief van Leuven,* English translation by Gregory Ball (Leuven: Openbare Biblioteheek, 2000). See also David Fixler, "Material, Idea and Authenticity," 16–21.
20. Mark Pasnik, Chris Grimley, and Michael Kubo, The curators of the Pinkcomma Gallery in Boston have undertaken a project to document and promote the legacy of the "Heroic" concrete architecture of the 1960s and 1970s in Boston. This is part of a larger project that has prompted similar dialogue in cities such as Toronto, and underscores the growing appreciation of a younger generation of designers for the architecture of this era. See www.pinkcomma.com for further information.
21. This information is gleaned from interviews with architects Frederick Stahl and Michael McKinnell about their work conducted by the Pinkcomma Gallery in preparation for their exhibit "Heroic, Concrete Boston, 1957–1976." .
22. The history and rescue of the Zonnestraal Sanitorium is well chronicled in the book by Paul Meurs and Marie-Thérèse van Toor, *Zonnestraal Sanitorium; the History and Restoration of a Modern Monument* (Rotterdam; NAi Publishers, 2010).
23. There are many written works on the Van Nelle Factory and its renovation; a good primer is Wessel De Jonge, "The Technology of Change: The Van Nelle Factory in Transition," in *Back From Utopia—The Challenge of the Modern Movement,* eds. Hubert-Jan Henket and Hilde Heynen (Rotterdam, 010, 2002), 58.
24. A good discussion of the issues surrounding the replacement of the Lever House curtain wall can be found in Theo Prudon, *Preservation of Modern Architecture* (Hoboken, N.J.: John Wiley and Sons, 2008), 486–91.
25. Ordinary Everyday Modernism is a term that came into use in the late 1990s to refer to the vast quantity of workmanlike but otherwise not architecturally significant modern structures that were built between the late 1940s and early 1970s. The author is not sure of its provenance, but it was in active usage by DOCOMOMO at least as early as 1997. The term "Everyday Modernism" was used in a different context in 1999 as the title of a book by Marc Trieb, *An Everyday Modernism, the Houses of William Wurster* (University of California Press, 1999).
26. David Fixler, "Appropriate Means to an Appropriate End—Industry Modernism and Preservation," *APT Bulletin* XXXIX, no. 4 (2008): 31–36.

27. David Fixler, "The Renovation of Baker House at MIT: Modernism, Materiality and the Factor of Intent in Preservation," *APT Bulletin* XXXII, no. 2–3 (2001):1–3.
28. Hilde Heynen, "Coda, Engaging Modernism," in *Back From Utopia,* 380.
29. Professor Antero Markelin to the author on the occasion of the visit of the Bavarian Alvar Aalto Gesellschaft to Baker House in March of 1998. The group reviewed numerous mock-up options for the interventions in the dining commons and student rooms, and while there was general agreement that the project was on the right course, it was also agreed that there is no way that can be considered absolutely "right" in intervening in a work of this stature.
30. Susan Macdonald, "Materiality, Monumentality and Modernism: Continuing Challenges in Conserving Twentieth Century Places," from an address given at the Unloved Moderns conference in Sydney, Australia, July 2009
31. Robert Cowherd, "Notes on Post-Criticality: Towards an Architecture of Reflexive Modernisation," *Footprint 4: Agency in Architecture: Retrieving Criticality in Theory and Practice* (Spring 2009): 65–76. Cowherd frames the idea of a second modernism against the backdrop of Charles Jencks's pronouncement of the death of modernism with the destruction of Pruitt-Igoe, and the rise and subsequent decline of critical theory as an instrument for architects.
32. Henry Moss, from an address given at the "Campus Heritage" symposium put on by the Boston Preservation Alliance, organized by Sarah Kelly, Charles Craig, and David Fixler, Boston, October 2007.
33. Jan Birksted, "Wilderness, Time Space and Architecture," in *Back from Utopia*, 72 ff.
34. Nature is a constant reference in the writings of Le Corbusier, notably *The Radiant City* of 1933 (reprint Orion Press, Netherlands, 1967), where the cover proclaims his affirmation of "Soleil, Espace, Verdure," and wherein he seeks to bring order to nature through development and relief through the introduction of nature into the city (pp. 68–70). His Petit Maison de Week-end of the same period interacts in a very direct way with its natural surroundings, interjects a new rusticity into his work and features an early use of a green roof. In the early postwar era, architects as diverse as O'Neill Ford, Carl Koch, and Eleanor Raymond were proposing passive and active solar houses designed to take maximum advantage of their siting to promote comfort and energy conservation.