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## **New Parameters for the Preservation Movement**

Situations nouvelles dans la conservation du patrimoine architectural

Neue Verhaltensmuster bei der Denkmalpflege

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### **SUMMARY**

The preservation of the architectural heritage involves different bodies according to the country: voluntary organizations in USA, governmental agencies in Europe and elsewhere. Both approaches have advantages and shortcomings. The author reviews the evolutionary processes of the preservation movement in the USA and illustrates it with four case studies in New York.

### **RÉSUMÉ**

La conservation du patrimoine architectural est réglée de façon différente selon les pays; aux États-Unis ce sont plutôt des associations de bénévoles alors qu'en Europe et ailleurs, ce sont des organismes gouvernementaux. Les deux pratiques ont leurs avantages et leurs inconvénients. L'auteur passe en revue le développement des mouvements pour la conservation du patrimoine architectural et présente quatre études de cas à New York.

### **Zusammenfassung**

Die Denkmalpflege wird je nach Land durch unterschiedliche Körperschaften wahrgenommen; in den Vereinigten Staaten sind es eher Wohlfahrtsorganisationen, in Europa und anderen Regionen gibt es dafür staatliche Institutionen. Beide Vorgehensweisen haben ihre Vorzüge und Nachteile. Der Autor schildert die Entwicklungsgeschichte der amerikanischen Denkmalschutzorganisationen und stellt die praktischen Auswirkungen anhand von vier Fallstudien in New York dar.



### *New Parameters for the Preservation Movement*

The American preservation movement has always been fundamentally populist and decentralized, dominated by voluntary organizations of lay persons (preponderantly women) and lacking legislative support and governmental financing. On the other hand, preservation in Europe and elsewhere, has always been institutionalized, with centralized governmental agencies supported by strong legislation and funding like the French *Service des Monuments Historiques* and the Italian *Soprintendenza dei Monumenti*. There are advantages and shortcomings in both approaches; but one advantage unique to the American system has been that it has generated an authentic mass movement which is becoming increasingly decisive in the battle to save the environment, man-made and God-made alike.

Though it had been consistently ignored by the architectural profession until the post-World War II years, the American preservation movement had been steadily growing since Ann Pamela Cunningham had formed the Mount Vernon Ladies Association in 1859 to save and restore George Washington's homeplace. In fact, the history of the movement can be summarized in three of its most prestigious restorations -- Mount Vernon (begun 1865); Williamsburg (envisioned in 1926); and Independence Hall (begun 1966). Not only do they represent three key sites in American history -- "the homeplace of the father of our country"; the site of Patrick Henry's famous cry, "Give me liberty or give me death!"; and the room in which the Declaration of Independence proclaimed to the world, "We hold these rights to be inalienable -- life, liberty and the pursuit of happiness." They also represent quite well three stages in the philosophical and technical development of the field itself.

The American preservation movement has always been propelled into action to save what it could of the built world which was threatened, especially after the Civil War, by the rise of industrialism and the spread of urbanism. The Mount Vernon Ladies Association was to become the prototype of such citizens' organizations, which today number thousands. Initially, the movement was strongest along the East Coast and centered in those cities where the largest proportion of eighteenth and nineteenth century buildings survived -- Boston, New York, Philadelphia, Washington, Charleston, Savannah and New Orleans. And it was in these areas that the first regional preservation organizations were established: The American Scenic and Historic Preservation Society (1901); The Association for the Preservation of Virginia Antiquities (spring of 1888); The Society for the Preservation of New England Antiquities (1910); the Society for the Protection of Long Island Antiquities. The National Trust for Historic Preservation was founded by an act of Congress in 1949.

The years before World War II saw the final flowering of historical eclecticism in architecture and, simultaneously, the emergence of historic preservation. The two movements were parallel and esthetically related; but they were actually motivated by two quite different attitudes towards the architectural past. The one represented the architectural profession's reliance upon the routine use of historic styles in the day-to-day design of new buildings. The other represented the antiquarian's ambition to save actual old buildings for their artistic and/or historic merit. Although the end products of these two movements might often appear superficially similar, they were basically as different as originals and facsimiles always are. Thus eclectic architects were



Williamsburg, Virginia. Restoration begun circa 1935. Shown here, Duke of Gloucester Street in circa 1925.



Williamsburg, Virginia. Restoration begun circa 1935. Shown here, Duke of Gloucester Street in circa 1960.



producing such projects as the brand new "Colonial" campus for Duke University at Raleigh, North Carolina or Addison Mizner's "Spanish Colonial" villas and town center at Palm Beach, Florida; while simultaneously the preservationists were setting about the preservation of hundreds of authentically old buildings and old towns like Williamsburg and passing revolutionary new legislation to preserve the historic cores of Charleston and the old Franco-Spanish Vieux Carre of New Orleans.

Although there had been decades of essentially amateur preservation projects around the country, Williamsburg was our first fully professional one in which architects, landscape architects, archaeologists and historians had collaborated on a programmatic basis. Developments in the subsequent sixty years have been immense -- in both conceptual and quantitative terms -- so immense, in fact, as to make Williamsburg itself seem amateur and to suggest that the term historic preservation itself is no longer adequate to describe the field today. I, myself, have been forced to coin a modifying clause: curatorial management of the built world.<sup>\*</sup> Nothing less seems adequate to describe our broadened understanding of the tasks which confront us.

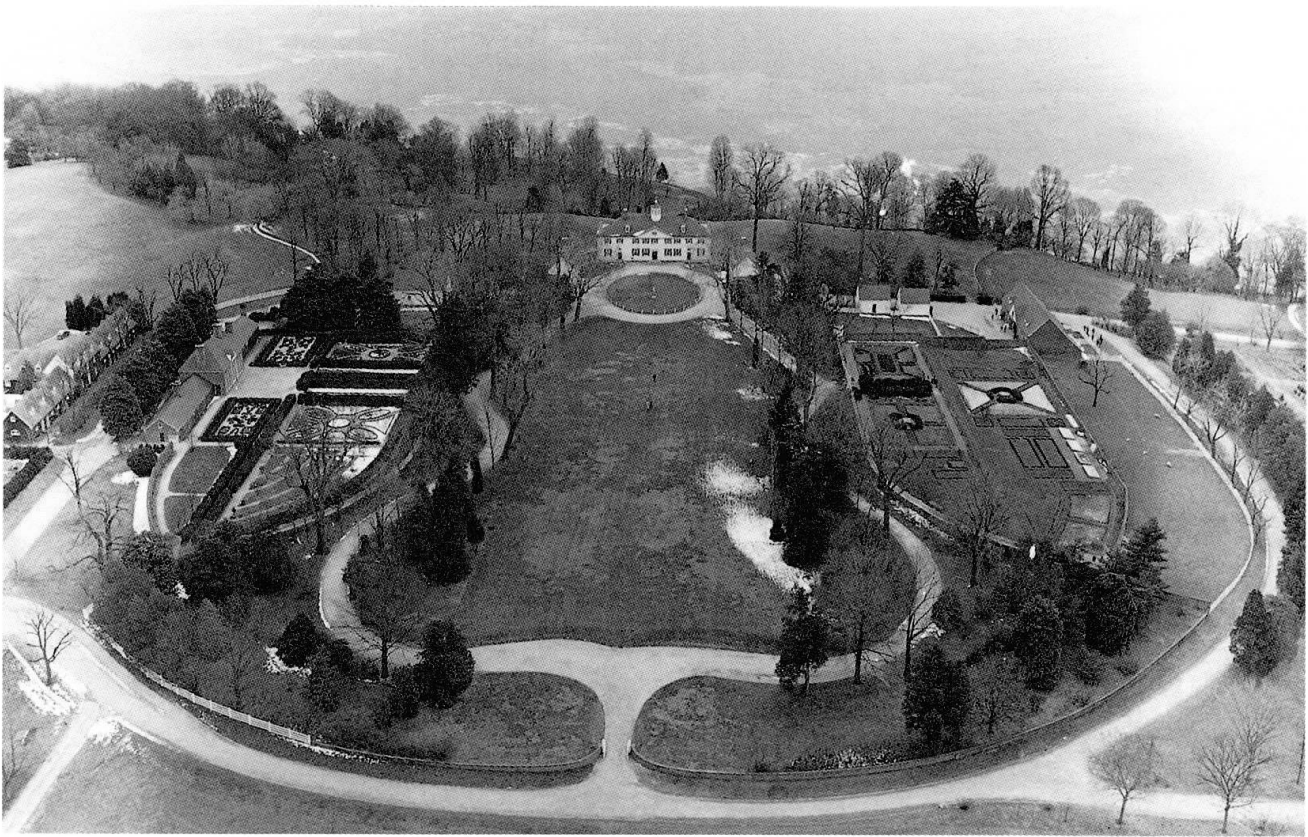
The scope of the preservationist's concerns has long ago progressed from the preservation of an isolated aristocratic house and garden to the conservation of whole districts and, indeed, to entire towns; and from wholly urban sites to suburban and even rural ones. We have come to understand the equal importance of all styles of building, folkloristic and vernacular, as well as monumental and high style. And by the same token, we have broadened our definitions of historicity as extending from pre-Columbian dwelling sites to significant skyscrapers as recent as New York's Lever House and Seagram Building. In other words, willy-nilly and without our willing it, the jurisdiction of historic preservationists has broadened to awesome dimensions: curatorship of the whole built world.

For an audience such as this, it will not be necessary to belabor the analogies between preservationist's efforts to save the man-made world and the struggles of the environmental conservancy movements to save the God-made. Here, too, the field of action has steadily broadened from local skirmishes to save Walden Pond or California redwoods, to international campaigns to conserve whole ecological systems like the tropical forests of the Amazon or northern Quebec from the giant Hydro-Quebec project which threatens to flood its northern half and wipe out the native Cree and Inuit peoples. Such fields of action, by historic preservationists and conservationists of Nature, are so far only parallel, symbiotic. But of course they are rapidly becoming fused in the much larger issues of the carbon dioxide mantle (which threatens the earth with the dreaded "green house effect") and the hole in the ozone layer (which protects all life on earth from solar radiation) -- both of which threaten the earth itself.

The growing interest of modern urban man in his past, in artifacts of antiquity, in old cities and gardens, seems to me an expression of his growing sense of alienation in his radically changing personal environment. Man had developed across millennia in environments which offered him a dynamic equilibrium between *stasis* and change.

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<sup>\*</sup> James Marston Fitch. Historic Preservation: Curatorial Management of the Built World. University of Virginia, Charlottesville, Va., 1982.



**Mount Vernon, Virginia, Home of George Washington.** Restoration begun 1859. Shown above, aerial view of mansion and grounds as restored to 1799, date of Washington's death.



**Independence Hall, Philadelphia, Pennsylvania.** Restoration completed 1976. Shown here, Assembly Room (where Constitution of the United States was signed) after structural consolidation.

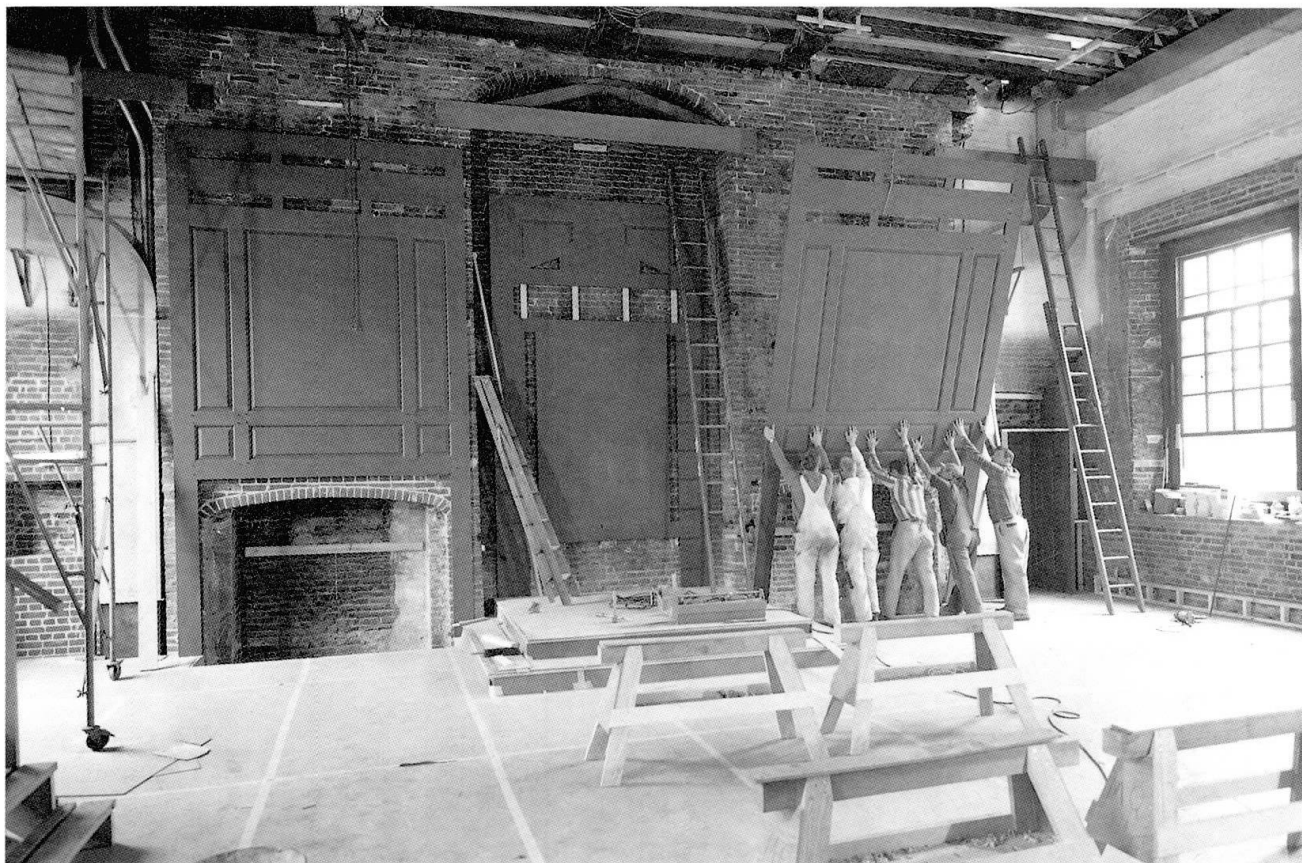


Archaeology shows us that there had always been change in human society; but the rate of that change had been too slow to have been perceptible to the individual. Environmental changes were seldom large or rapid enough to be stressful to the ancient societies which caused them -- e.g. the deforestation and desiccation of the Italian peninsula by the wood-burning brick and tile industries of Imperial Rome. But the rate of change, and hence of environmental degradation and habitat destruction, began to accelerate with the Industrial Revolution of the late eighteenth century. It has been accelerating ever since until today it effects the personal environment of every man on earth. And, ironically enough, the very instruments with which the brave new world was built -- steam engine, electric motor and internal combustion engine -- are now seen as the causes of the world's most profound environmental crisis; waste gases from the burning of fossil fuels, causing the greenhouse effect; waste gases from the compressors destroying the ozone.

The American preservation movement was to grow immensely in size and influence in the years after World War II. Though in the process it attracted increasing support from professionals -- architects, landscapists, planners, art and architectural historians -- its membership has remained overwhelmingly a party of lay persons. (And, it must be added, overwhelmingly feminine though for reasons which so far no one has undertaken to explain.) This lay membership has been cool if not actually hostile to its new allies from the professions; a distrust which undoubtedly sprang from the fact that the preservationists have all too often seen architects, engineers and planners as the principal spokesmen for the very forces of self-styled "progress" which threatened the historic structures in their communities, which they were fighting to preserve. This tension has tended to abate somewhat in recent years, largely because of change in the perception of the design professionals themselves. In any case, it is the preservationists who must be credited with a radical change in the climate of American opinion towards historic buildings and, indeed, towards the past itself.

If there is one point about which preservationists have always been united, it is on the absolute uniqueness of the original artifact. If they sometimes have mistaken the identity or provenience of the artifact they venerated, it was always due to faulty scholarship or flawed research, never to malice or mendacity. The local battles of the preservationist have always been to save the actual -- the bed in which Lincoln died, the tree beneath which Washington saw the battle of Stony Point, the pond beside which Thoreau wrote his essays. They have seldom accepted a facsimile as an acceptable surrogate for the real thing. Sometimes the only way to save the historic building has been to move it to a less perilous site, like the outdoor architectural museum. Or to move selected rooms of the historic house being threatened with demolition to the controlled climate of an art museum. But there are few instances indeed where preservationists have erected three-dimensional facsimiles on the site of vanished originals -- if for no other reason than that such replicas were beyond their means. Thus, the Williamsburg reconstruction of the long-vanished Capitol and Governor's Palace must be seen as the exception, not the rule, in preservation practice.

There is, of course, another way of quantifying the value of the built world; and that is in terms of the huge deposits of energy which it represents. Embodied energy is the term now used to describe all the activity, human and mechanical, required to produce any artifact, from a brick to a building. Thanks to computer technology, it is now quite



**Independence Hall, Philadelphia, Pennsylvania.** Restoration completed 1976. Shown here, Assembly Room: reinstallation of original paneling.



**Independence Hall, Philadelphia, Pennsylvania.** Restoration completed 1976. Shown here, Assembly Room: interior restored to 1776 condition.



practicable to quantify such energy deposits, not only for the man- and machine-hours expended on site in the construction of a building, but also for all energy expenditures back through transportation to factories, steel furnaces, brick kilns, saw mills, iron and coal mines, clay pits, etc. Such cost accounting expresses building costs in terms of BTUs rather than dollars-and-cents. And the results are often astonishing. Thus, in one study comparing energy costs of two new, similar office building structural systems -- one employing energy-intensive steel framing, the other using a low-energy concrete system -- the researcher found that though the dollar costs were roughly equal, energy costs in the steel system ran 32% higher than the concrete one.<sup>1</sup>

As we shall shortly see, in one of our case histories, there are great energy economies in the rehabilitation and adaptive reuse of old buildings. Since such projects are even now competitive with new construction, in conventional dollar terms, it is obvious that an accounting for the embodied energy conserved in preservation clearly makes them more advantageous; and even more so when we take into account the energy cost of the demolition of the old building and its carting away for nothing more productive than landfill. Such a new style cost-accounting would reveal an enormous waste of energy in the wholesale demolition of old buildings -- all the more appalling environmentally since it could only be accomplished by motorized equipment burning fossil fuels. American architects and planners have been guilty of two conceptual errors in handling the historic fabric of our country: they saw their task as being that of constructing an exclusively new built world; and -- flowing out of this misconception -- a frightening neglect of (if not, indeed, contempt for) the already-built world. The planners have been especially guilty of this conceptual posture, forgetting both the past and the present in their sponsorship of the "urban renewal" programs of the 1950s and 1960s, which came so near to destroying many American cities altogether. I am not suggesting that the crisis of the built world can be solved without the full participation of architects and planners; they will be essential members of any team which will be able to rescue us from environmental disaster. But they have to purge themselves of recent error: the planners must understand that they cannot handle the future until their feet are firmly planted in the present; the architects understand that they cannot meet the ineluctable demands of history with the historicizing eclecticism of Post Modernist pastiche.

The preservationists, whatever their shortcomings, have always been site specific almost by definition. It used to be popular to accuse them of parochialism -- "little old ladies with blue hair and tennis shoes" -- whose sole preoccupation was protection of George Washington's last sleeping place or Abe Lincoln's birthplace. But time has proved this estimate quite wrong. In those American cities whose centers have been saved from the evisceration of urban sprawl and returned to viability, it has been precisely the ethos of preservation which has proved to be the energizing force. In Portland, Maine; Boston's North End; Philadelphia's Society Hill; Baltimore's Harbor; in the conversion of the historic centers of Charleston and Savannah from slums into major touristic resources; in San Antonio with the conversion of a muddy little river into one of the beauty spots of the Southwest; in San Francisco, where the preservationist ethos has capped the height and number of skyscrapers and is now

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<sup>1</sup> The Stein Partnership, Handbook of Energy Use for Building Construction, U.S. Department of Energy, Washington, D.C., 1981. pp.83-85.



**Ellis Island, New York Harbor.** Aerial view of the with Manhattan Island in the background. Restored Registry Building is at lower center of photo.



**Ellis Island, New York Harbor.** 1922 view of Registry Room with immigrants awaiting physical examinations prior to admission.



forcing the demolition of the elevated highway which cut the city off from its harbor front; even in those Midwestern cities where urban attrition was most ferocious -- St. Louis, Cincinnati, Kansas City -- preservation is helping to knit together the damaged urban fabric. And, far from having preserved only those historic buildings which have survived, district preservation has always generated impressive amounts of brand new buildings. I do not mean to suggest, of course, that we should never demolish an old building or never construct a new one. But rather that, as curators of the built world, preservationists should insist on a new type of environmental bookkeeping, in which the true costs of energy expenditure is calculated in all projects involving extant buildings, historic or simply old.

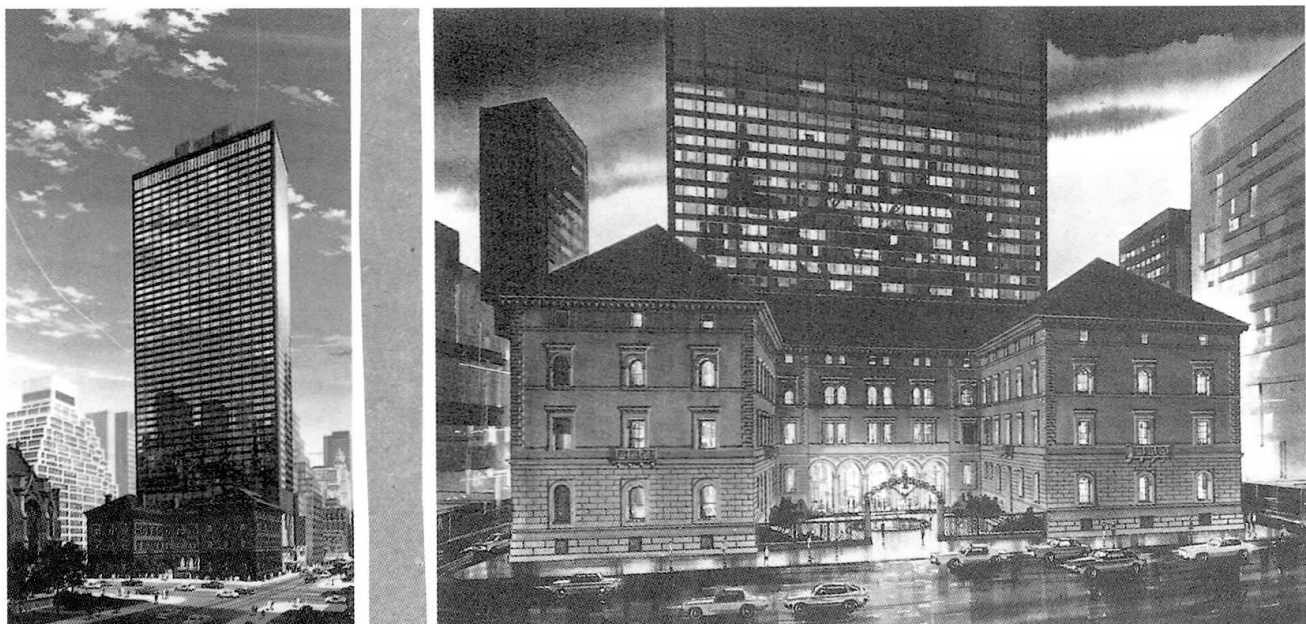
The recent history of the preservation movement has been marked by the steady increase in its professional expertise, including closer contacts with the adjacent fields of historical archaeology, art history and art conservation. It has also been characterized by such institutional developments as The National Trust for Historic Preservation, with its large national staff and mass membership. Most significantly, some ninety colleges and universities have introduced courses in the subject, 29 of them offering graduate degrees. These schools have by now produced some 2,500 alumni and established their own professional body, the National Council for Preservation Education. The 25-year old Association for Preservation Technology boasts some 2,500 members in chapters in the USA and Canada and publishes the authoritative *APT Review*. Both the Society of Architectural Historians and the American Institute of Architects have national and local preservation committees. In addition, there is the independent academic publication, *Technology and Conservation* of Cambridge, Massachusetts.

American experience in preservation has led to the conclusion that we must think of the artifacts with which we deal -- cities, districts, individual buildings -- as living organisms. Then it becomes apparent that they display all the pathological processes of life, including that of simple aging, and that therapeutic interventions will necessarily cover a wide spectrum of treatments, from the conservative to the radical. The medical analogies are not at all farfetched. Specialized problem areas are already being described as "stone disease," "glass disease," and effect which must be understood before a successful therapy can be undertaken. And again, as in medicine, the most conservative treatment possible in any given case is usually the wisest, if for no other reason than that it is most easily reversed: least done, soonest mended. Reversability is a criterion which has developed from a century's experience in archaeology and art conservation, where radical interventions employing the "latest thing" in science and technology have often led to the irreversible degradation of the artifact in question. We can therefore classify levels of intervention according to a scale of increasing radicality: 1) preservation; 2) restoration; 3) conservation and consolidation; 4) reconstitution; 5) adaptive reuse; 6) reconstruction; and 7) replication.

**Preservation** implies the maintenance of the artifact in the same physical condition as when it was received by the curatorial agency. Nothing is added to or subtracted from the aesthetic corpus of the artifact. Any interventions necessary to preserve its physical integrity (e.g., protection against fire, theft, or intrusion; heating, cooling, lighting) are to be cosmetically unobtrusive. Examples: Franklin Delano Roosevelt Home, Hyde Park, New York; Wavel Palace, Warsaw, Poland.



Ellis Island, New York Harbor. Registry Room after restoration, as part of newly opened Museum of American Immigration.



Two views of Palace Hotel with Restored Villard Mansions, New York, N.Y., in foreground.



**Restoration** describes the process of returning the artifact to the physical condition in which it would have been at some previous stage of its morphological development. The precise stage is determined either by historical association (the way it was when Washington slept there) or aesthetic integrity (the portico at Mount Vernon must have *all* its columns). Intervention at this level is more radical than simple preservation. Examples: Mount Vernon; Monticello.

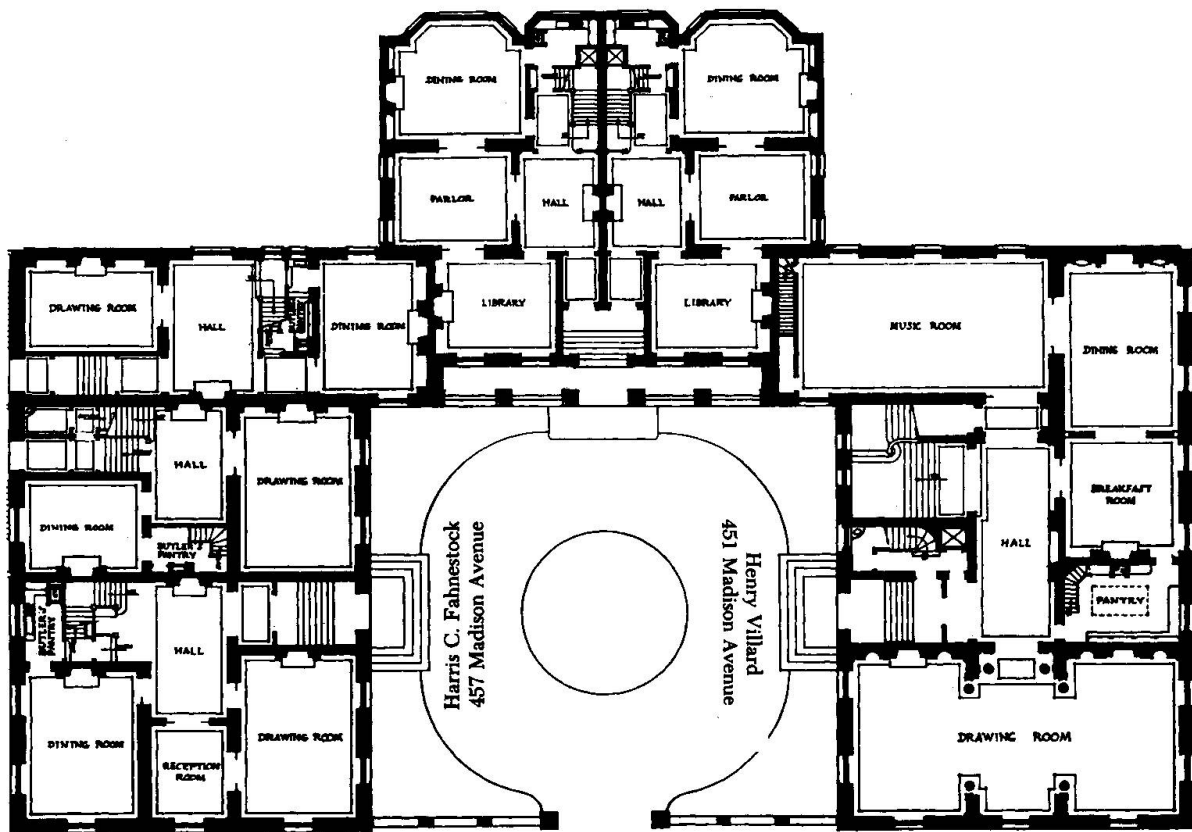
**Conservation and Consolidation** describes physical intervention in the actual fabric of the building to ensure its continued structural integrity. Such measures can range from relatively minor therapies (fumigation against termites, Royal Palace, Honolulu; stone cleaning, Notre Dame, Paris) to very radical ones (consolidation of desiccated wood, *Vasa* warship, Stockholm; insertion of new foundation, York Minster, England).

**Reconstitution** is a more radical version of the above, in which the building can be saved only by piece-by-piece re-assembly, either *in situ* or on a new site. Reconstitution *in situ* is ordinarily the consequence of disasters such as war or earthquakes, where most of the original constituent parts remain in being but *disjecta*, or scattered (Cathedral of Antigua, Guatemala; Bridge of Santa Trinita, Florence). On occasion, it may be necessary to dismantle a building and reassemble it on the same site (Old State Capitol, Springfield, Illinois.) Reconstitution on new sites is now familiar, usually the consequence of the transplanted structure being too big or bulky to have been moved intact. Examples: Old Bethpage Village, New York; St. Mary Aldermanbury, Fulton, Missouri.

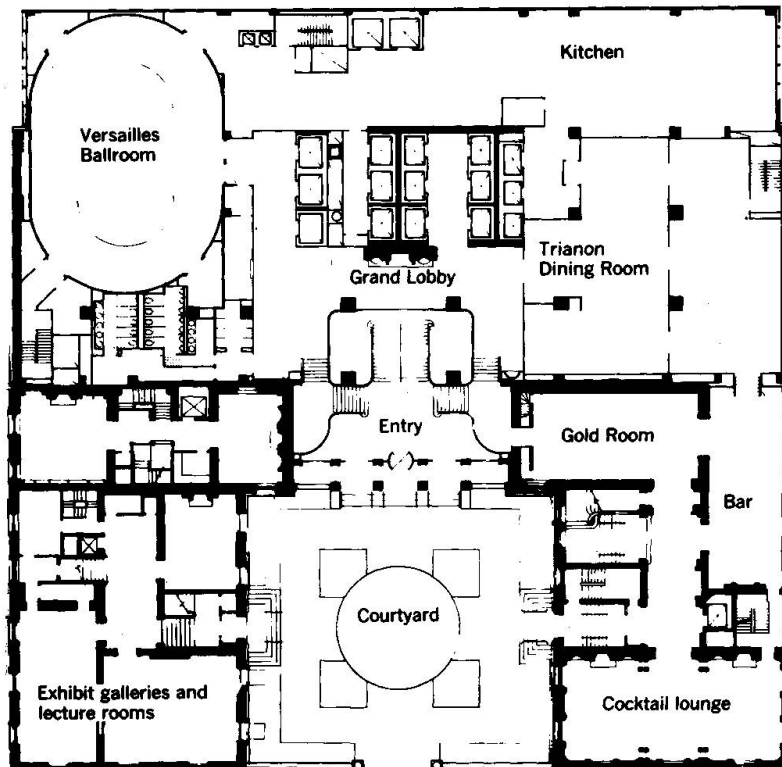
**Adaptive Use** is often the only economic way in which old buildings can be saved, by adapting them to the requirements of new tenants. This can sometimes involve fairly radical interventions, especially in the internal organization of space, in which any or all of the above levels of intervention may be called for. Examples: Castello Sforzesco, Milan; Old City Hall, Boston; "Chattanooga Choo-Choo," Chattanooga.

**Reconstruction** describes the re-creation of vanished buildings on their original site. The reconstructed building acts as the tangible, three-dimensional surrogate of the original structure, its physical form being established by archaeological, archival, and literary evidence. This is one of the most radical levels of intervention. It is also one of the most hazardous culturally. All attempts to reconstruct the past, no matter what academic and scientific resources are available to the preservationist, necessarily involve speculative hypotheses. In historiography, such hypotheses can be (and indeed are) constantly revised; in architecture, the hypothesis is obdurate, intractable and not easily modified. Examples: Royal Palace, Warsaw, Poland; Governor's Palace and House of Burgesses, Williamsburg; Stoa of Attalos, Athens; Iwo Treasure House, Japan.

**Replication** in the art field implies the creation of a mirror image of an extant artifact. In the case of architecture, it implies the construction of an exact copy of a still-standing building on a site removed from the prototype. In other words, the replica coexists with the original. Physically the replica can be more accurate than the reconstruction, since the prototype is available as a control for proportion, polychromy, texture. It is at once the most radical and the most hazardous of all forms of intervention; nevertheless, it has specific utility in certain situations, e.g., to stand in the open air as



Plan of old Villard Mansions before erection of new Palace Hotel.



Plan of Palace Hotel with new lobby across top and converted Mansion rooms around court, at bottom.



a surrogate for an original which must be moved to the controlled environment of a museum. Examples: the Caryatids, Erechtheon, the Acropolis, Athens, Greece; Plimoth Plantation, Massachusetts; Getty Museum, Malibu, California.

Since the private sector has played such a prominent role in American preservation, economic feasibility has been an important factor in many projects. Thus it is not surprising that many of our projects involve adaptive re-use. I have been asked to deal with this in today's lecture: because of limitations of time and space I shall confine myself to four outstanding examples.

### **The Palace Hotel, New York, New York**

The preservation of the Villard Mansions -- a group of late-nineteenth century townhouses designed as a unit in the years 1884-1886 -- has been adapted for use as the lobby and reception rooms of the new 40-story Palace Hotel which was erected immediately behind them. An interesting architectural accomplishment in itself, the project is even more significant urbanistically, however, since it consolidates and extends the spatial envelope created by St. Patrick's Cathedral opposite it across Madison Avenue. This huge aerial bubble of space extends, in turn, to Rockefeller Center Plaza a block away to the west; and to Mies van der Rohe's splendid Seagram Tower with its be-fountained plaza to the east; and finally to the great United Nation's complex further east on the East River, thus creating a huge window to the open sky in one of the most dense concentrations of skyscrapers anywhere on earth. The monumental parlors, libraries and dining rooms of the Villard's former mansions have been skillfully restored and adapted for use by the hotel and for other cultural institutions and specialized shops. The courtyard has been elegantly landscaped to serve as a pedestrian entrance to the entire complex. An historic complex of great significance to mid-town Manhattan has thereby been given a viable new economic basis for its otherwise jeopardized position. The architects were Emory Roth & Sons of New York City.

### **Combined Police/Fire Engine Stations, New York, N.Y.**

Two late-nineteenth century buildings, with ornate Victorian facades and load-bearing masonry walls, a century later still housed the police and fire stations for which they had been originally built. Located on the Upper East Side of Manhattan and long obsolete, their demolition had been prevented by the neighborhood's affection and then by Landmark designation; and their modernization had been stalled for decades by building and fire codes, foundation problems, etc. This imbroglio was finally broken when, in 1982, the decision was made 1) to preserve and restore the designated historic facades, 2) to completely reconstruct the complex facilities behind them in modern fireproof construction, and 3) to re-establish the police and fire-fighting services which had continuously occupied them. The immaculately conserved facades along with their flanking neighbors (an 1890s Dispensary and a circa 1886 Jewish synagogue) constitute a unique block-long collection of exuberant Victoriana much cherished by New Yorkers. The architects were The Stein Partnership of New York.

### **Museum of American Immigration, Ellis Island**

Museum of American Immigration, Ellis Island, New York, New York. Ellis Island, standing in New York City's harbor almost in the shadow of the Statue of Liberty, was the main port of entry for the millions of immigrants who poured into the country in the first third of this century. While it grew from small and almost accidental



Restored Historic Facades of Fire Station and Police Station, New York, N.Y. Brick and limestone trimmed facade carefully returned to their original 1885 condition.



Restored Historic Facades of Fire Station and Police Station, New York, N.Y. Partial plan.



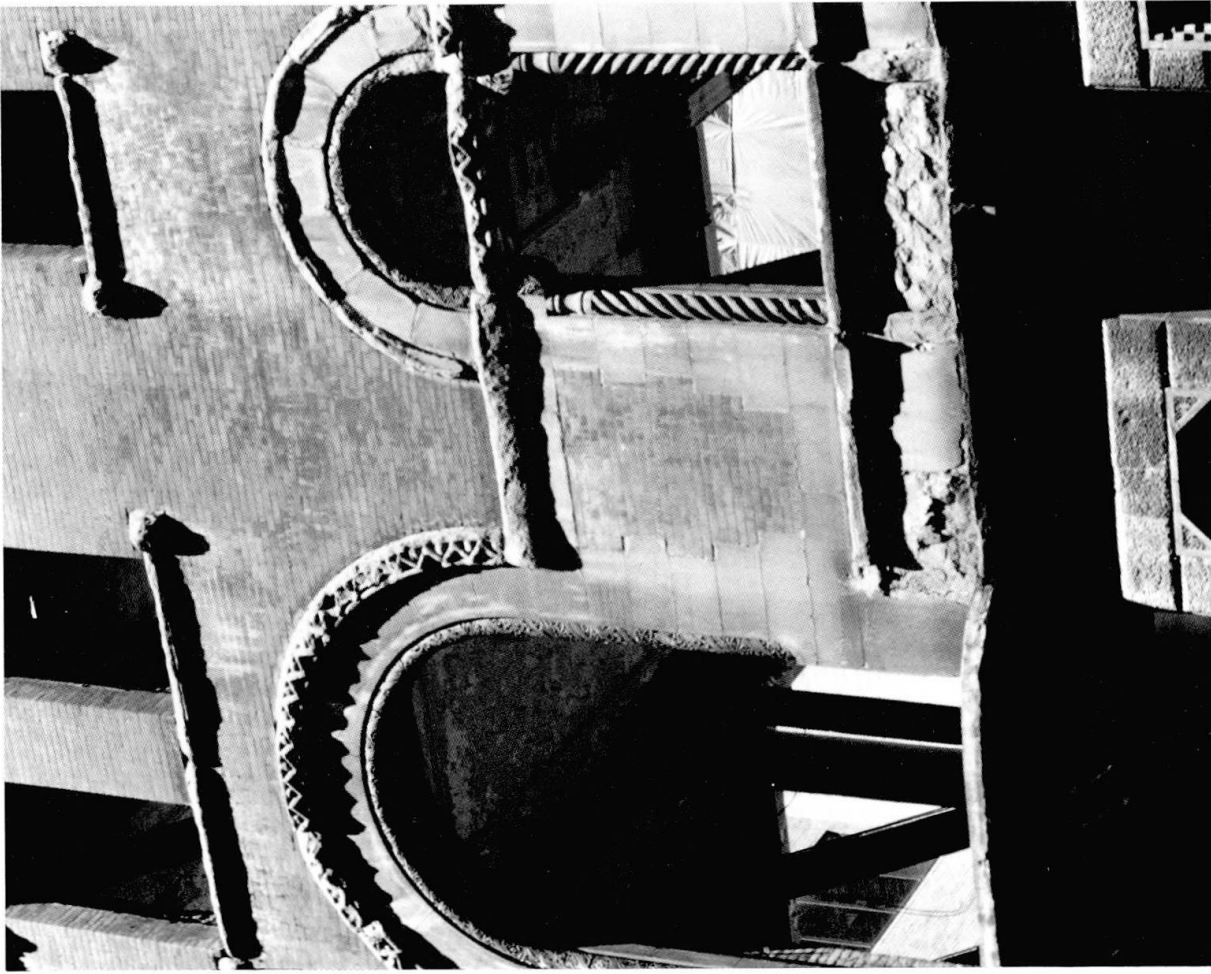
beginnings, the institution and indeed the little island on which it stood steadily expanded until 1923, when the U.S. government switched to the visa system of screening immigrants at the ports of their departure. This robbed Ellis Island of its screening function and there began a long steady slide into decline. From 1950 until 1980, it was largely unoccupied when the decision was made by the U.S. National Parks Service to make it into the Museum of American Immigration. The great Beaux Arts Reception Center was selected not only to house the new museum, but to become, itself, the Museum's greatest exhibit. Thus, while new amenities have been incorporated (two new theaters, a restaurant, escalators, a bookstore, etc.) most of the building has been meticulously restored to its circa 1918 condition including furnishings and equipment in such areas as dental clinics, mess halls, baggage rooms, ticket booths. Even the original morgue has been preserved along with some of the thousands of poignant *scraffiti*, scratched in the plaster by despondent immigrants. These have been preserved *in situ* or moved into appropriate displays. Although only the Reception Center complex has so far been restored, the entire 28 acre island is scheduled for ultimate development. The architects were the firms of Beyer Blinder Belle of New York and Notter Finegold & Alexander of Boston.

#### **The Audubon Society Headquarters, New York, N.Y.**

The most sophisticated of recent American restoration projects is the new home office of the National Audubon Society in New York City. As one of the nation's oldest agencies dedicated to the conservation of Nature, the Audubon Society decided to make its new headquarters an exemplar of energy conservation. Instead of building *de novo*, they decided to buy a century-old office building in an historic district and retrofit it to the high levels of environmental effectiveness. They would be conserving energy at three different levels: (1) the billions of BTUs of energy embodied in the fabric itself and the additional BTUs of energy required to demolish it and cart it away; (2) the added billions of BTUs of energy required to construct a brand new building; and (3) the savings in operational costs to be obtained from the high level, user-friendly retrofitting.

To avoid the "sick building syndrome" so common in many of today's sealed-window, air conditioned skyscrapers, the retrofitted Audubon Society Headquarters employs many energy-saving and health-protecting features. The large mass and huge volumes of the century-old building are employed by the heating, ventilating and air conditioning engineers as a "thermal balance wheel" against the New York climate, with its wide diurnal and thermal oscillations. As a thermal shell, the efficiency of the load-bearing masonry walls has been raised to a coefficient of R-14 by a mix of magnesium and sea water and its roof raised to R-36 by a more orthodox mattress of fiberglass. The year-round air conditioning itself is gas-powered, draws fresh air from the 9th floor penthouse, provides 6.3 air changes per hour (as against 4 changes per hour required by code), and filters 80% of airborne particulates (as against 30% called for by the American Society of Heating, Refrigeration, and Air Conditioning Engineers' standards). The new windows have insulating glass and a heat-rejecting inter-layment which admits solar heat in winter and excludes it in summer. Most notably, the sash are all easily opened from the offices.

Externally, the red sandstone and terra cotta building has been handsomely restored to its original state. The interiors -- which had long ago been stripped of their



Restored Historic Facades of Fire Station and Police Station, New York, N.Y. Brick and limestone trimmed facade, heavily damaged by a century of exposure.



Restored Historic Facades of Fire Station and Police Station, New York, N.Y. Partial section.



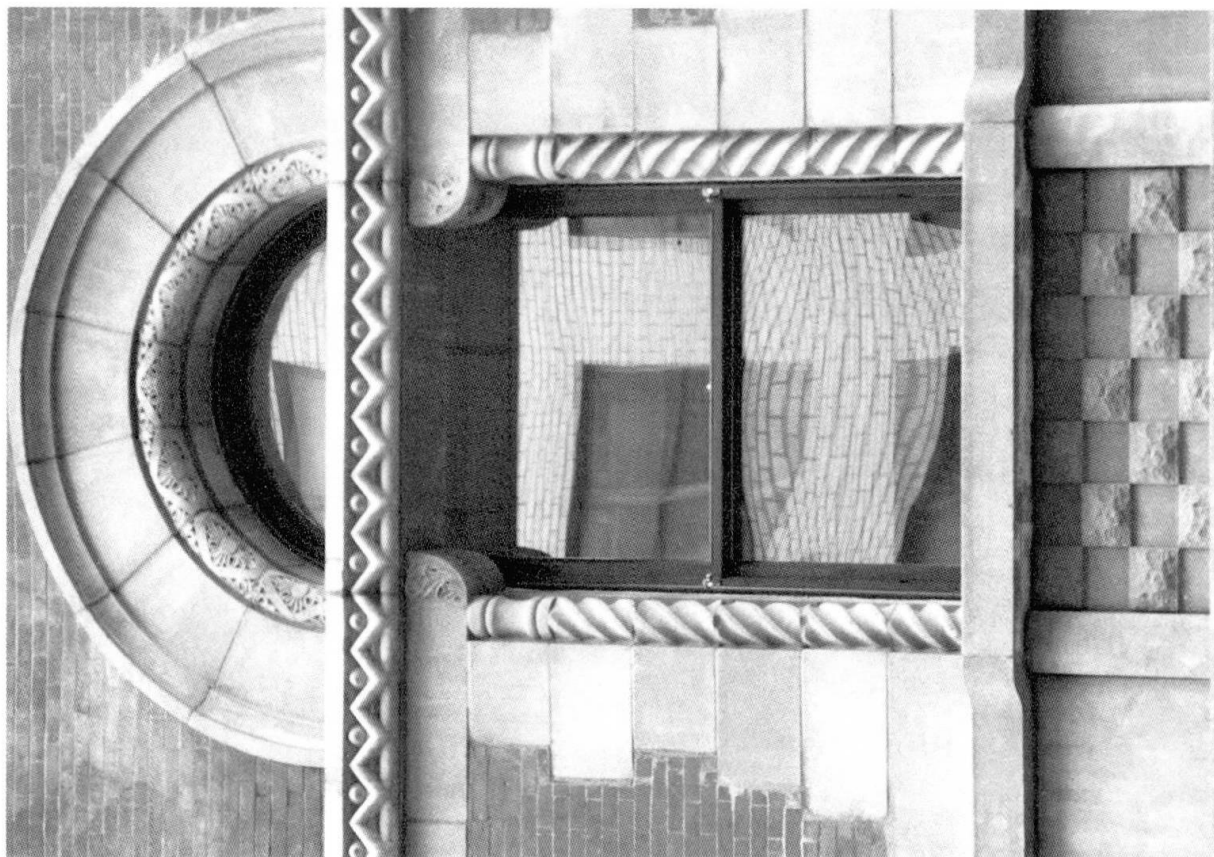
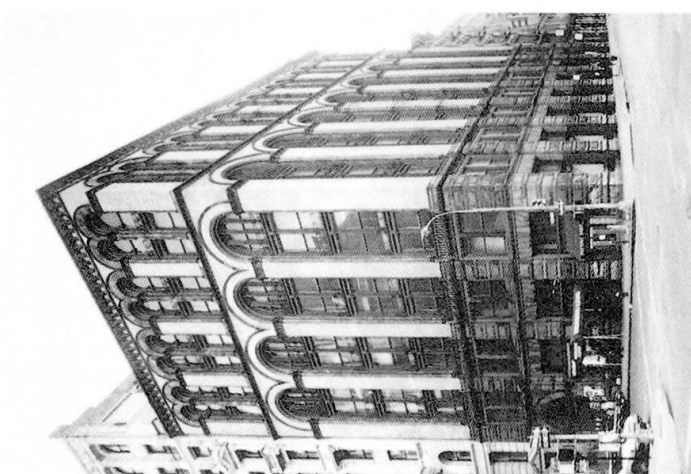
Headquarters of the Audubon Society, New York, N.Y.



Interior after restoration.



Interior before restoration.

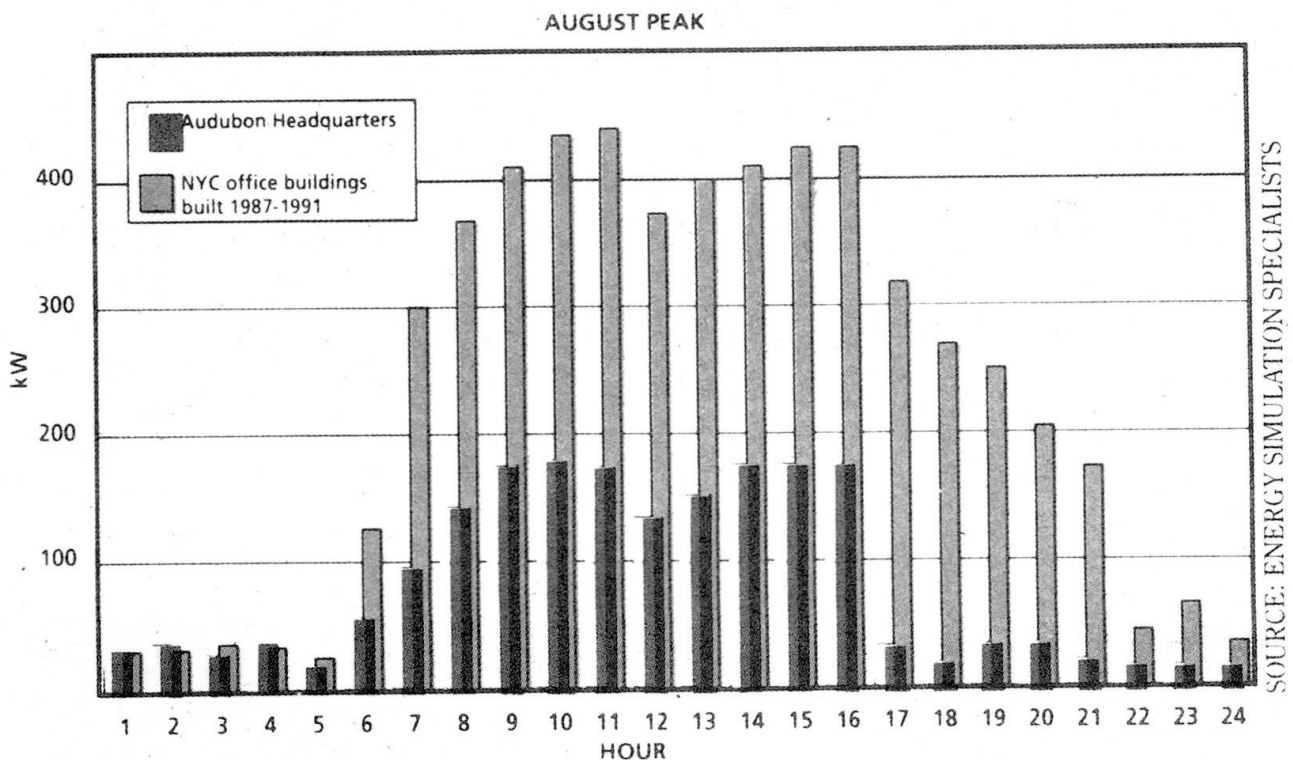


Restored Historic Facades of Fire Station and Police Station, New York, N.Y. Brick and limestone trimmed facade carefully returned to their original 1885 condition.

department-store fittings -- have been completely redesigned as modern offices, with integral new furniture and high efficiency lighting. To minimize air pollution by toxic chemicals from plywood, plastic tiles, synthetic carpets and underlayments (e.g., formaldehyde, benzene, carbon monoxide, etc.), all natural materials, such as undyed cottons, wool carpeting, and natural jute underlayment, have been employed.

The results have proven highly satisfactory. The purchase of the old building ran to \$10 million. Complete restoration and recycling ran to \$14 million more -- this for a building which would have cost about \$33 million at current rates. The Society counts on \$100,000 per annum savings in energy costs as well as other savings in insurance and taxes, and leasing of newly renovated commercial spaces. Finally, the restored building acts as an important anchor to the historic district of which it is a part.

### PEAK ENERGY USE: AUDUBON'S HEADQUARTERS VS. TYPICAL NEW NYC OFFICE BUILDING



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