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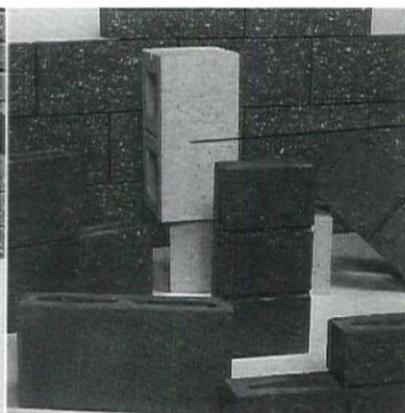
The Tradition of Innovation in Modern Architecture ■ Archivist Tony Wrenn ■ Seeking the Inward Garden ■ Williamsburg Competition Winners

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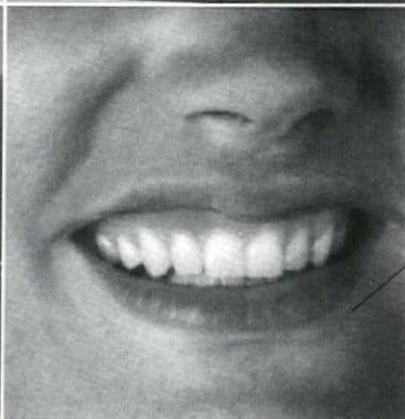
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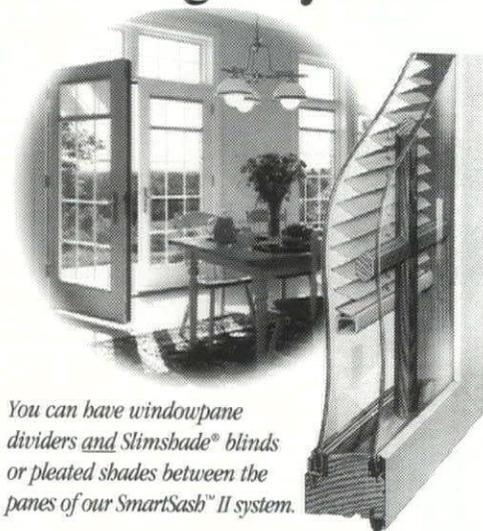
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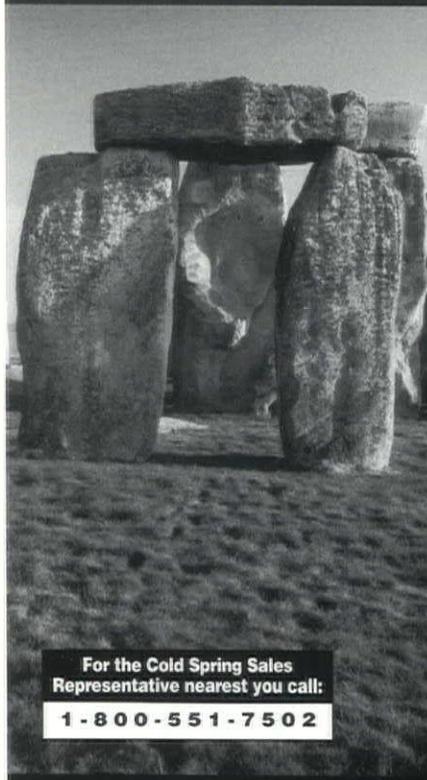
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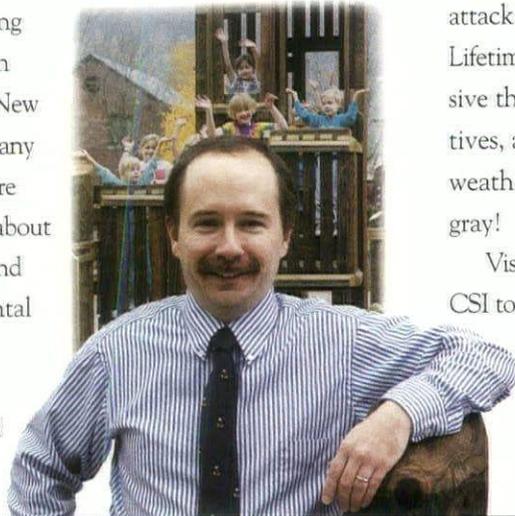
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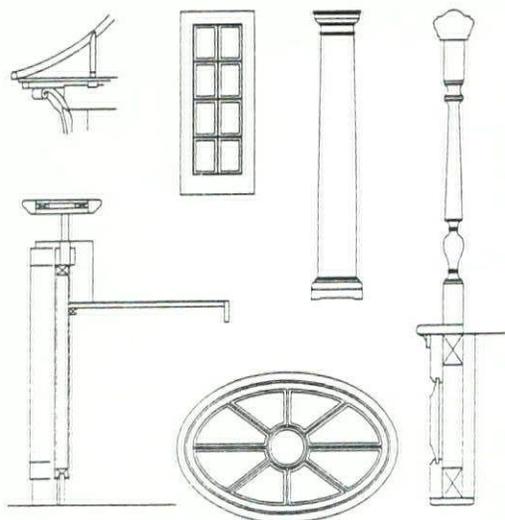
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12

The Tradition of Innovation

For decades, Modern architects held tight to the notion that in order to be stylistic innovators, they also had to push technology forward. That tradition of striving to innovate continues to inform and enrich the architecture of today. *By Edward R. Ford*

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Taking Notice

doing the small thing well

On the cover:

RPM Salon, by Robert M. Gurney.

Photo by Hoachlander Photography Associates.

In our next issue:

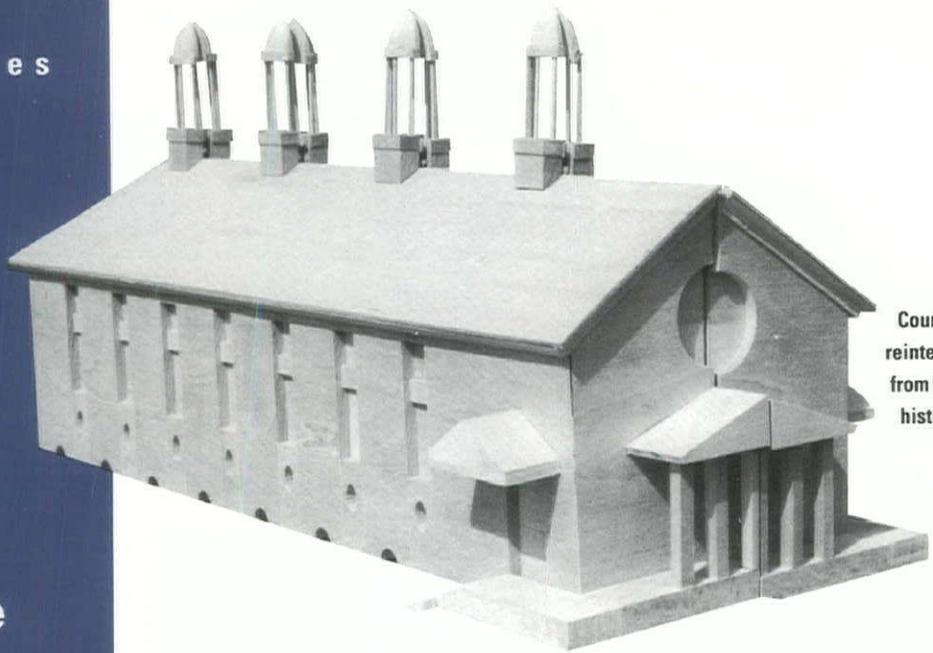
Historic Preservation

*Winners Announced
for Williamsburg*
Courthouse

After a national call for entries attracted nearly 200 responses from across the nation, winning designs in the competition for a new courthouse and town center in Williamsburg were unveiled in January. The dual competition, which was sponsored by James City County and C.C. Casey Company, was made all the more attractive to participants with an offer of \$154,000 in cash prizes and the promise of commissions to develop the winning proposals in greater detail. "I'm very happy with the results," said John Horne, the county official who coordinated the competition. "It produced a wide variety of ideas and concepts."

Winning in the category for a new county courthouse were Jorge Hernandez and Francis Lyn of Miami, who submitted a design with neoclassical flourishes that reinterpret architectural elements commonly seen in Colonial Williamsburg. "It's a beautiful reprise of the vernacular tradition in Virginia, without copying it. It's really an extraordinary building," said Benjamin Forgey, architecture critic of *The Washington Post* and one of the jurors who selected the winner. Forgey noted that Hernandez, a former student and faculty member at the University of Virginia, spent two years studying Williamsburg's architecture. "So he knew the place and responded sensitively to it."

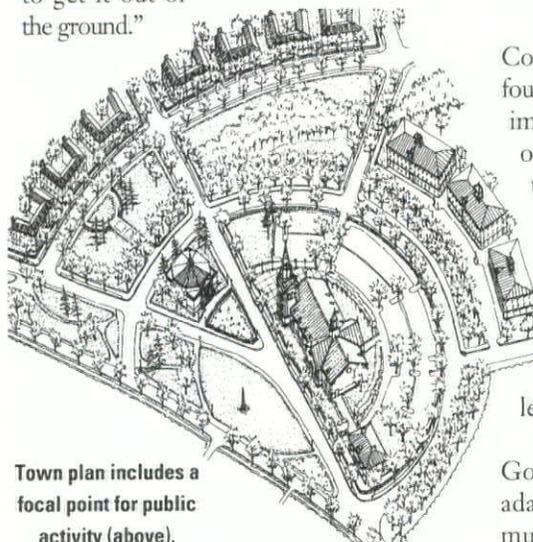
The winning town plan was submitted by Michel Dionne, Paul Milana, and Christopher Stienon of Cooper Robertson & Partners, a New York firm that had offices in Virginia until



Courthouse design reinterprets elements from Williamsburg's historic buildings.

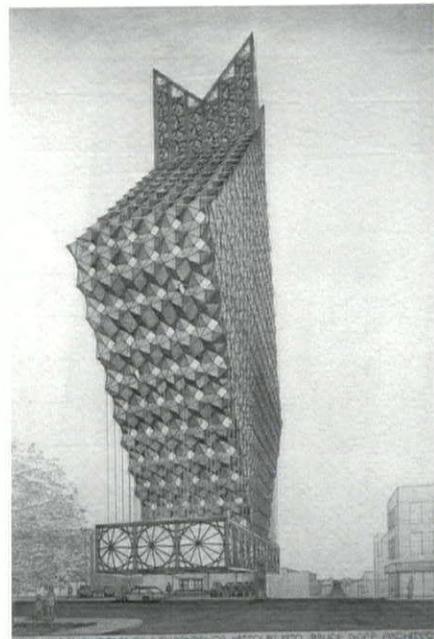
1994, when principal Jaquelin Robertson resigned his post as dean of architecture at the University of Virginia. Jurors praised the plan for its respect of the natural environment by linking residential and civic areas to wetlands, woods, and valleys. The proposal for the 600-acre site calls for a mix of commercial, industrial, residential, and industrial land uses and identifies suitable locations for a market square and civic center.

Discussions this spring have focused on evaluating the winning plan's proposed location for the courthouse, which differs from the site already acquired by the county. Horne indicated that a land swap with the Casey family, which owns the remainder of the site, is a likely solution. He also said Hernandez and Lyn have teamed up with The Moseley McClintock Group of Richmond to refine the courthouse design. "The competition was well worth the effort," says Horne. "Now we have to get it out of the ground."



Town plan includes a focal point for public activity (above).

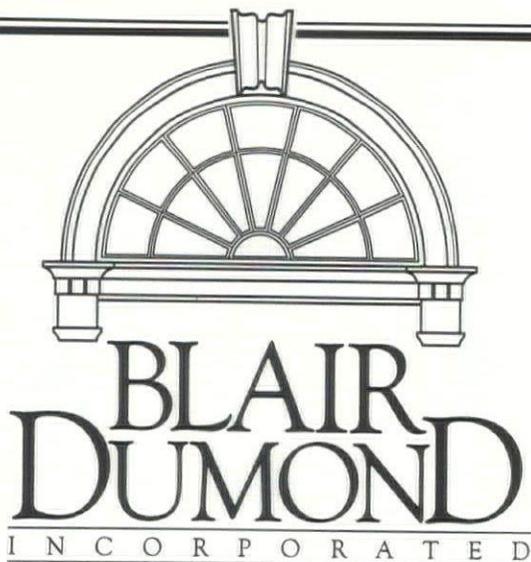
Bruce Goff:
An Extraordinary Life



Goff's First National Bank was never built.

Coal, feathers, chunks of glass, and other found objects often wove their way into the imaginative architecture of Bruce Goff, one of the richest architectural minds of the 20th century. In the largest exhibition of Goff's work to date, an extraordinary life is reflected in more than 100 drawings on display at The Octagon in Washington, D.C. Also exhibited are models of Goff's most important projects and photographs, letters, and objects that inspired him.

Goff avoided duplication in his work, adamantly maintaining that architecture must be about beginnings only. "Each



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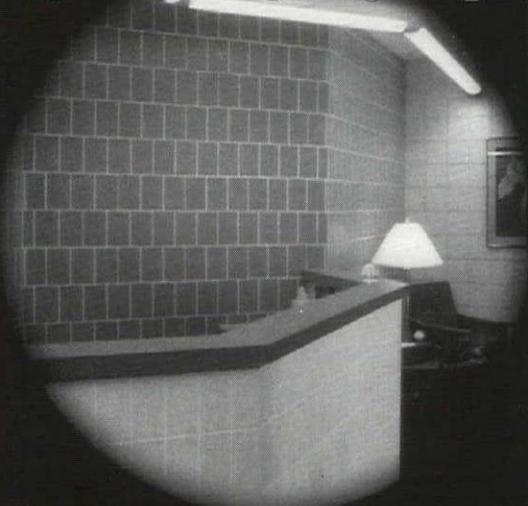
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time we do a building, it should be the first and the last," he said, noting that each project reflected a unique client. His idiosyncratic designs were one attempt to build within the "continuous present," an idea borrowed from Gertrude Stein.

Goff, who spent most of his life in Oklahoma, began his 66-year career at age 12 as an apprentice. Following the advice of Louis Sullivan and Frank Lloyd Wright, Goff developed his ideas through research and work – and no formal education. As a scholar he was well aware of the artistic movements of the 20th century and their antecedents. He also was keenly aware of the environment of the American plains. Together, those influences forged his unique idea of architecture. Perhaps the best of his 147 completed projects is his last, the Pavilion for Japanese Art at the Los Angeles County Museum of Art, built in 1988.

Goff was 30 when he ultimately chose between careers in musical composition and architecture. While architecture won out, Goff remained an accomplished musician and composer. In fact, he combined the two endeavors by punching architectural ideas onto player-piano rolls, providing simultaneous visual and aural stimulation. Some of this music is exhibited in "The Architecture of Bruce Goff, 1904-1982: Design for the Continuous Present," which continues through August 31.

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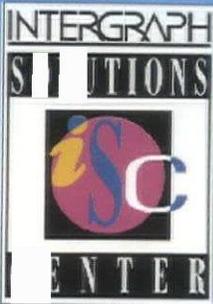
For the tidy sum of \$950,000, you could be the proud owner of a Frank Lloyd Wright house in Virginia Beach. The Cooke Residence, designed by Wright during the late 1950s, is for sale. Built by dentist Andrew Cooke and his spunky wife Maude, the house at 320 51st Street has

existed in relative obscurity since Maude sold it in 1983. But the latest owners, Dan and Jane Duhl, are moving on. And their desire to sell the house has compelled them to increase its exposure. Fortunately, for those who cherish Wright's work, the Duhls have been excellent stewards. "They made minor changes, but those were done with great sensitivity and do not compromise the design concept," says Bill George, a director of AIA Hampton Roads and one of the organizers of a March tour that shuttled more than 300 visitors through the house.

In many ways, the residence is a consummate Wright design. Low-slung and horizontal, it hugs the landscape. A massive fireplace anchors the living room, symbolizing the heart of domestic life. And materials are a characteristic blend of brick, wood, and glass. While eager to display the masterpiece in their own backyard, local architects also see the change in ownership as a potential threat to the building. "It's an opportunity, but it's also a warning signal," says George. Chapter leaders have solicited the interest of local organizations in taking over the property and explored other options for the building's long-term care. But, as of this writing, the house is still up for grabs.

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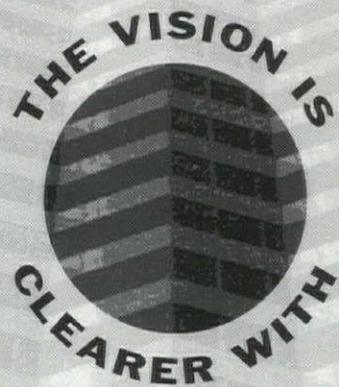
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■ **"Breathing in Irrespirable Atmospheres."** An exhibit of mixed media and photographic collages by Norinne Betjemann exploring architectural images. Through June 28 at The Barret House, Richmond. 804-644-3041.

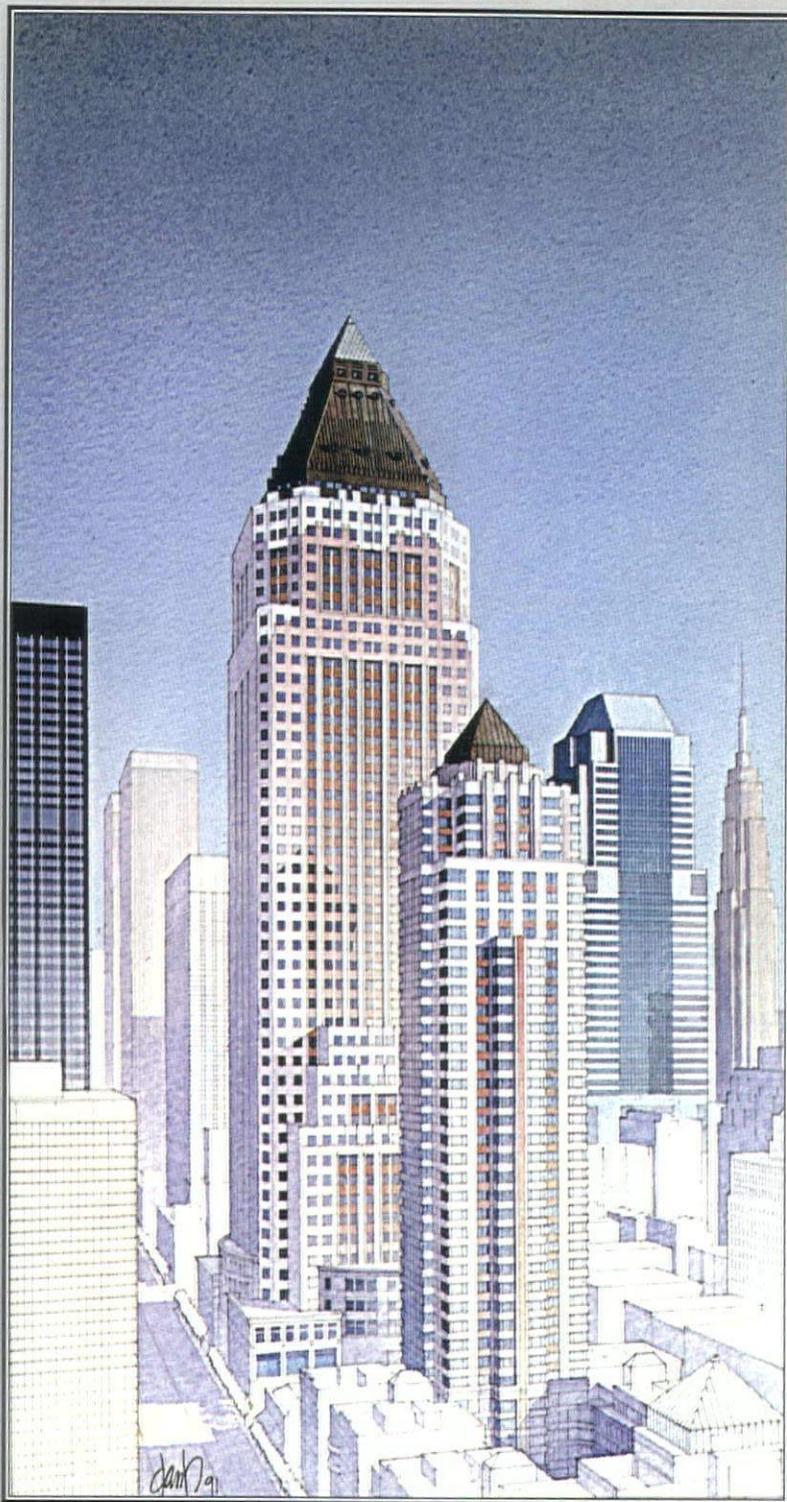
■ **"The Architecture of Bruce Goff."** Approximately 100 original drawings represent all phases of the long, diverse, and influential career of this remarkable architect. Through August 31 at the Octagon, Washington, D.C. 202-879-7766.

■ **"Building the Ballyhoo."** This exhibit of architectural photographs by the Wurts Brothers Company, one of the first firms to specialize in architectural subjects, explores how commercial architectural photography shaped popular expectations of the built environment. Through August 18 at the National Building Museum, Washington, D.C. 202-272-2448.

■ **"Between Fences."** From the barbed-wire controversy between farmers and cattle barons to the white picket fences of New England, this exhibit traces the history of fences as a defining element in American landscape and culture. Opens May 31 at the National Building Museum. 202-272-2448.

■ **"Shaping an American Landscape."** The first traveling exhibition to survey the remarkable contributions to the fields of etching, painting, landscape design, and architecture by American Renaissance artist Charles A. Platt (1861-1933). Opens June 20 at The Octagon. 202-638-3221.

■ **"Murder of the Century."** A PBS examination of the 1906 murder of flamboyant New York architect Stanford White and the conflicts of morality between the wealthy and the middle class. Scheduled for rebroadcast in June. Consult local listings.



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For decades, Modern architects held tight to the notion that new styles should grow from new technologies. That will to innovate continues today in ways that are sometimes problematic – but more often enriching.

The Tradition of Innovation

By Edward R. Ford

12

In a 1953 “Today” show interview with Hugh Downs, Frank Lloyd Wright implied, if not outright claimed, that he had invented indirect lighting and radiant heating. It was one of many instances in which Wright insisted he was no less of an inventor than an architect. In his much-quoted autobiography, Wright asserted that his Larkin Building in Buffalo, New York, included many firsts – all glass doors, double-glass windows, air conditioning, custom-designed steel filing systems, and steel desks and seating – and he called Unity Temple in Oak Park, Illinois, “the first

concrete monolith to come from the forms completely finished.” Even the most ardent Wright admirer would debunk these claims for what they are: hyperbole. The Larkin Building, although ventilated, had no humidity controls. Other innovations such as double glazing, exposed concrete finishes, and steel furniture all predated Wright. Although his buildings were more often than not experimental, they were rarely in the mainstream of the development of construction techniques. Most of Wright’s real technical innovations were unique to his work and a few followers. But it does not diminish Wright in the least to recognize the eccentricity of his construction techniques. His attitude, implicitly critical of the American mainstream, was typical of the Modern architect. He felt that in order to be a stylistic innovator, one must also be a technical innovator. And however eccentric Wright may have been in other regards, this was an attitude he shared with master architects such as Le Corbusier, Louis Kahn, and many others.

Why were so many 20th century architects dissatisfied with the technical status quo? And why did they feel that stylistic innovation relied upon technical innovation? In part history, or rather the study of history, was to blame. Nineteenth and early 20th century architects saw historical styles as being closely related to historical periods and were acutely aware of their own lack of a defining style. They fervently believed if Gothic architecture grew out of Medieval society and technology, and if Greek architecture grew out of ancient Greek society and technology, then Modern architecture must do likewise. They also knew that 19th century engineers were succeeding precisely where they were failing. The Brooklyn Bridge and Eiffel Tower were not only products of technology, but symbols of an age.

The tradition of innovation in Modern architecture also owes much to Modernism’s utopian impulse – the conviction that in order to change the form of building, one must change the form of construction; and in order to change the form of construction, one must change the form of society; and that to change any one part of this triad, the other two must change as well. Gothic Revival architects such as A.W. Pugin, 19th century architect of the British Houses of Parliament, sought not only to revive Medieval design, but Medieval customs and social institutions as well. Leaders of the Arts and Crafts movement such as William Morris wished to revive not only the vernacular forms of the English countryside, but non-industrial construction techniques as well.

But many turn-of-the-century architects accepted industrialization with great enthusiasm and felt strongly that new materials and processes should lead to sweeping changes. Most notable among them was Otto Wagner of Vienna. Many of Wagner's commissions for dams, railway stations, and bridges exuded the new technology. But, unlike many who came after him, Wagner saw a compatibility between modern technology and tradition. His leanings as a Classicist led him to seek an innovative architecture within that tradition. Using steel, concrete, exposed fasteners, and thin stone veneers, he created buildings that expressed not only the structural properties of new materials, but the unique nature of modern construction, its speed, and its use of independent subcontractors and assemblies.

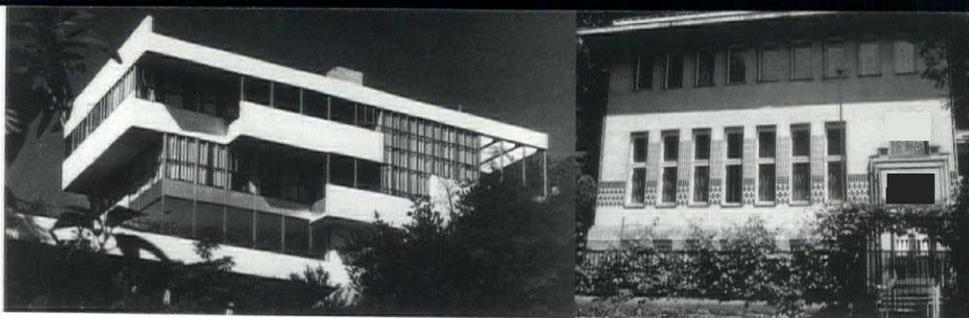
Mimicking Cars and Planes

Wagner's immediate followers, however, had no interest in reconciling traditional forms with modern construction methods. They were far more interested in architecture that addressed the emerging technologies of the airplane and automobile. Le Corbusier, in particular, claimed to adapt the principles of the fledgling automobile and aviation industries to the problems of Modern housing. And, in one sense, he did. Buildings such as his masterpiece Villa Savoye were geometrically simple, devoid of ornament, standardized, and mathematically determined – much like the machines they emulated. But closer analysis unravels the metaphor. Automobile construction utilizes minimum weight, dry construction, precision joinery, mass production, and repetitive factory labor. The Villa Savoye relied on building techniques that were heavy, wet, and imprecisely joined – plus it was constructed almost entirely on the site.

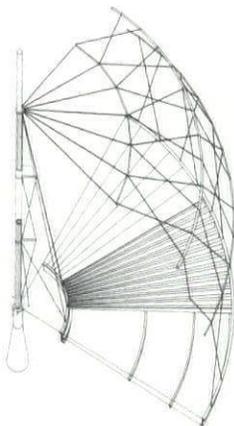
Nevertheless this technology-embracing philosophy produced many of the most experimental, if not the most influential, constructions in Modern architecture – the countless "prototypes for mass production." While Le Corbusier built houses whose similarities to cars or planes were mostly symbolic, many of his followers were more genuinely innovative. Just look at Richard Neutra's houses in California built with metal decking; Charles and Ray Eames's steel column-and-bar joist house in Los Angeles; and Jean Prouvé's prefabricated sheet-metal, aircraftlike houses and schools of the 1950s.

The most revolutionary and renowned of these proposals was Buckminster Fuller's 1946 Dymaxion House. As World War II drew to a close, the aviation industry sought to stave off massive layoffs and plant closings by investigating conversion to mass-produced metal housing. Working for the Beech Aircraft Company, Fuller produced a round, cable-suspended, stainless steel-and-aluminum house prototype. It weighed less than 6,000 pounds, could be assembled using "dry" construction from a single-point foundation, and could be packed in a 4-by-12-foot metal cylinder. Although there were 37,000 advance orders for Fuller's quirky two-bedroom house, the Dymaxion never went into production, largely because the high demand for commercial aircraft after the war made the shift to housing unnecessary.

The failures of these prototypes to achieve mass production is commonly ascribed to their unpopular styles. But equally innovative projects of a more conservative stylistic bent were only slightly more successful on the open market. For example, 2,500 units of the all-steel Lustron house were produced and sold, including 60 in the Geiger Ridge subdivision in Quantico and several more in the Virginia Heights area of Alexandria. But the manufacturer ceased production in 1950, having failed to make a dent in the conventional wood-based home building industry.



Richard Neutra's 1929 Lovell House (above left) made an innovative use of steel framing. The Villa Wagner in Vienna (above right) bridged the gap between modern technology and traditional forms. The Dymaxion House's framing system (drawing below) directed the structure's weight into a single point.



A Mistaken Assumption

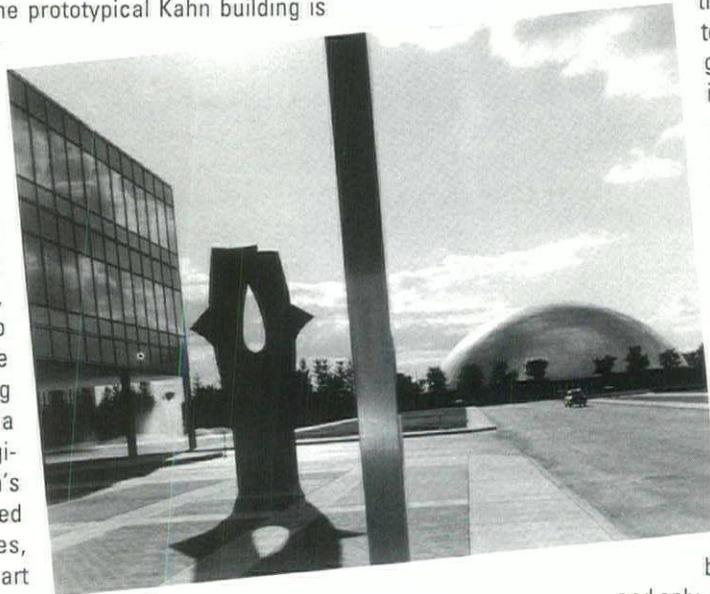
If innovation is a question of lasting influence, none of these examples can be said to be truly innovative. Architects clearly misinterpreted the impact of industrialization on building, mistakenly assuming that the industrialization of architecture would parallel goods such as the automobile. Often the opposite is true. Despite recent inroads in steel framing, for instance, 90 percent of the single-family houses in the U.S. are wood-framed. And most of the balance have masonry bearing walls. In this respect, home building has remained untouched by 20th century technology. From a distance, in its unfinished state, the 1996 wood-framed house looks quite similar to the 1896 model.

In other respects there have been notable changes: the use of processed rather than natural materials, the types of equipment used in construction, and the number of manufactured rather than made-to-order components. But none of these changes has precipitated a corresponding major change in the single-family house. Even the steel-stud house, when finished, is indistinguishable from its wood counterpart. As in other areas of architectural concern, the changes architects predicted, planned for, and advocated constitute a separate history from those that actually took place.

Eero Saarinen, creator of Dulles Airport, was as true an innovator as any 20th century architect, in part because he was offered more opportunities. Designing the General Motors Technical Center in the late 1940s, he worked with GM engineers to adapt automotive technology to building, resulting in the introduction of neoprene glazing gaskets (adapted from cars) and glazed bricks (using a technology supplied by a spark plug manufacturer). Other innovations came from varied sources: honeycomb metal sandwich panels spawned from the aircraft industry and GM's styling auditorium – essentially a thin-shelled steel vault – was built by a supplier of pressure vessels for refineries. Saarinen's intense interest in an architecture based on construction techniques waned, although his innovations continued, including the first use of weathering Corten steel at the John Deere Administration Building in Moline, Illinois.

Challenges to the Status Quo

Louis Kahn was not the first architect to question his profession's adherence to the industrial ideal as a source of innovation, nor was he the first to search for innovative techniques in vernacular or traditional methods. But he was perhaps the most recalcitrant and the most committed to replacing the status quo with something different – and not necessarily more progressive. The prototypical Kahn building is often a collage of seemingly incompatible technologies. Solid brick bearing walls, arches, and buttresses are used in combination with thin-shelled concrete vaults or intricate concrete assemblies. Yet Kahn's work had some technical influence. The double floor system of the Salk Institute in La Jolla, California, became a standard lab layout, and the precast trusses of the Richard's Medical Research Building at the University of Pennsylvania were as significant a work of engineering as of architecture. Kahn's style was far more widely imitated than his construction techniques, which remained fairly unique, in part because of not-entirely-accurate perceptions that they were more expensive, but primarily because architects were beginning to question the necessity of making every building responsible for thrusting technology forward.



Eero Saarinen's General Motors Technical Center (above), a massive complex completed in 1957, adapted automotive technologies to building construction.

Robert Venturi and Denise Scott Brown deserve much of the credit for making Modern architects face the dilemma in which they had placed themselves: that stylistic innovation was impossible without technical innovation. Was it impossible to design a good building without producing a structural *tour de force*? Could excellence be attained without distorting the building exterior and framework in response to some aspect of function? Couldn't there be an architecture of quality, even of innovation, that did not require a challenge to accepted construction practices?

The validity of Venturi and Scott Brown's critique of Modernism in the early 1980s caused many American architects to abandon their quest for technological innovation. Other countries, in contrast, continued the mission with zest. The decade saw the completion of Renzo Piano and Richard Rogers' Pompidou Center in Paris and the emergence of the English and French high-tech movements. Norman Foster's Hong Kong and Shanghai Bank was an affront to the standard office building – questioning, rethinking, and redesigning every aspect of the building. And architects such as Michael Hopkins have done much to reconcile the form and objectives of high tech with the need to build in more sensitive, particularly urban, contexts.

Leaders Who Don't Lead

But Americans find themselves in a paradox. On the one hand, the U.S. building industry is studied with great interest by outsiders, particularly Europeans and Asians, who are fascinated by the workings of our speculative office and housing industries. These are systems, however, which often relegate the architect to the role of stylist. In the meantime, much of the stylistic innovation based on technical innovation seems to be taking place outside the U.S. Take the case of one of the most conspicuous innovations of the past five years: suspended mullionless glazing. First developed by the British engineer Peter Rice for the La Villette Science Museum in Paris in 1981, the

technique is now commonplace in Europe but virtually nonexistent in America.

If American architects wish to recapture the spirit of technical innovation from the early 20th century, they should study the relationship between style and technical innovation. The two rarely go hand in hand. A case in point is Washington, D.C., a city that has never claimed to be a center of the architectural avant garde, yet one that abounds with technically innovative buildings – the tallest complete wrought iron frame of the 19th century (the elevator structure of the Washington Monument), one of the longest and most daring cast iron spans (the Capitol dome), and one of the first museums to use modern environmental controls (the National Gallery of Art). In pure architectural terms, these buildings are at best conservative, and only John Russell Pope's art gallery can be said to be stylistically innovative. But they illustrate a common phenomenon in Modern architecture: Buildings that often are "firsts" in technical terms often break no new stylistic ground.

Developments such as the air-conditioned office building in the 1930s; aluminum curtain walls in the 1940s; completely artificially lighted and ventilated buildings in the 1950s; and higher standards of thermal efficiency in the 1970s all parallel but do not necessarily coincide with stylistic trends in office construction. A look at these technologies points out the curious gap between the invention of a product or process and its general acceptance by the construction industry. Modern steel originates with the invention of the Bessemer converter in 1854, but the completely steel-framed office building did not appear until 1885 with the Home Insurance Building in Chicago. And the steel frame was not universal elsewhere until well into the 1900s. The development of the Hall-Héroult process in 1886 changed aluminum from a luxury material into a readily available one, but the full-fledged aluminum curtain wall did not appear until the Equitable Building in Portland, Oregon, in 1948. Likewise, acoustic tile was invented in the 1890s and the fluorescent light dates in its modern form from 1927, but the integrated office ceiling did not become commonplace until after 1950. In these cases, widespread adoption had to await social and economic change. In the case of the Home Insurance Building, poor soil conditions and a consumer demand for office space

paved the way. In the case of the Equitable Building, the catalyst was an office building boom coupled with the fact that aluminum companies were pursuing new markets. The integrated ceiling was the inevitable economic result of the demand for a large quantity of artificially ventilated, flexible office space.

By contrast, most of the real innovations proposed by the heroes of the Modern era more often than not failed to become standard building practice. But that doesn't mean Modernism's technical shortcomings are synonymous with failure. It does not diminish Fallingwater that it has no duplicates. And it does not lessen the reputations of the Villa Savoye and the Eames House that copies of them never rolled off the assembly line like so many Volkswagens. In fact, the opposite is probably true. Perhaps we should appraise these examples as critiques of the status quo, while noting how architectural history would suffer without their example.

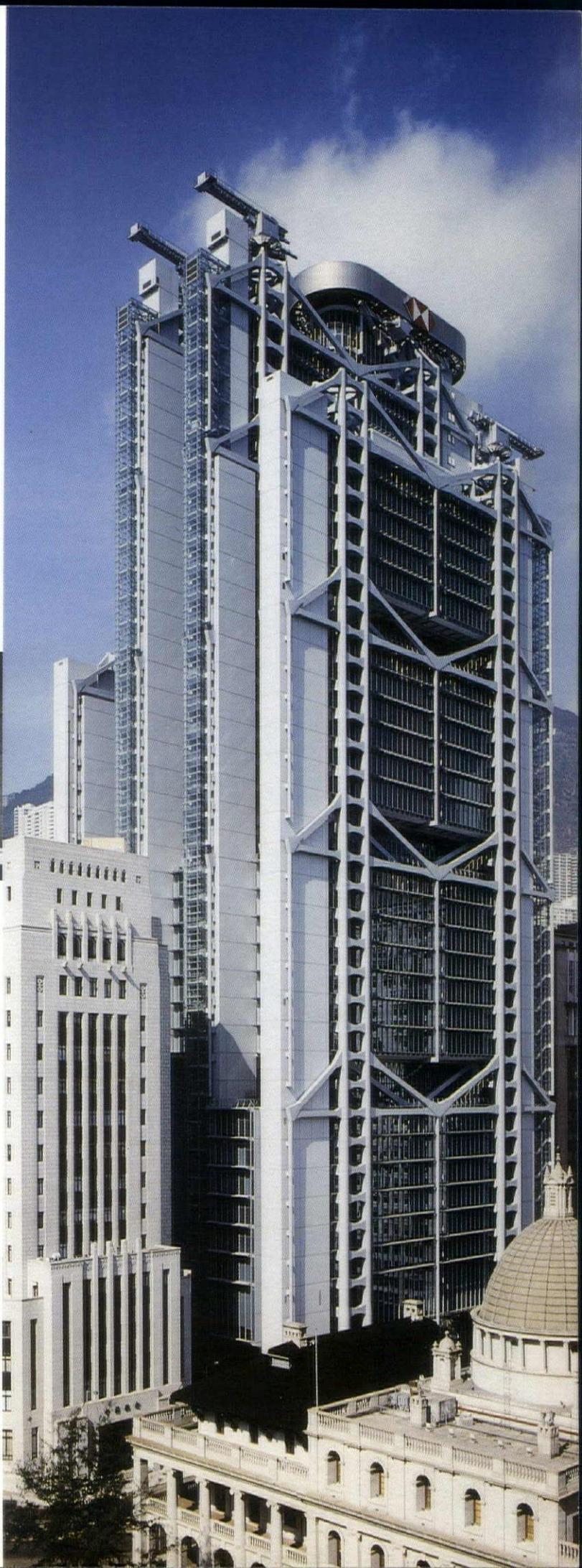
The Utopian Impulse

Admittedly, the gloss has long ago worn off the Modernist's dream of a technological utopia. But the Modern architect's utopian impulse and, with it, the demand for innovation continues to have a life of its own. To today's architects of sustainability, this expectation has evolved into a low-tech utopia. The sustainable house has replaced the factory-made house as the prototype to be followed, but it produces countless paradigms and few, if any, duplicates. To the Postmodernists and New Urbanists, this utopian vision has prompted a return to the past. And to the architects of high tech, the search for innovation has simply evolved into a more sophisticated form of the ideas of Fuller and others like him. This remains the richest of the avenues of innovation, at least in terms of imagery, but as the cost and sophistication of high-tech techniques surge ahead of standard practices, the real connections become increasingly tenuous. Nevertheless, the tradition of innovation – despite its problems – is something without which architecture would be infinitely poorer. Buckminster Fuller was correct in his assertion that the role of the architect "is not to devise a better society so as to arrive at finer architecture; it is to provide a better architecture in order to arrive at a more desirable society."

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The 1965 Salk Institute (above) by Louis Kahn revealed its tectonic fundamentals while Gordon Wu Hall at Princeton (left) by Venturi and Scott Brown was more about surface decoration. The Hong Kong and Shanghai Bank (right) is an icon of the high-tech movement of the 1980s.





Twin Stairs *for* Two Brothers

The simple desire to add more space for two energetic boys provided the germ of an idea for this addition to an old frame house in Blacksburg. The owners, Virginia Tech architecture professors Robert and Donna Dunay, wanted two bedrooms and a bath for their sons and an additional room that could double as a playroom or sitting area.

A mere construction, however, was not enough to satisfy the Dunays, who saw the project as an opportunity to create a special kind of place. Their idea was for the architecture to tell a story. The narrative begins with two columns – one symbolic of each boy – that divide the 12-by-31-foot space into three parts. The base of each

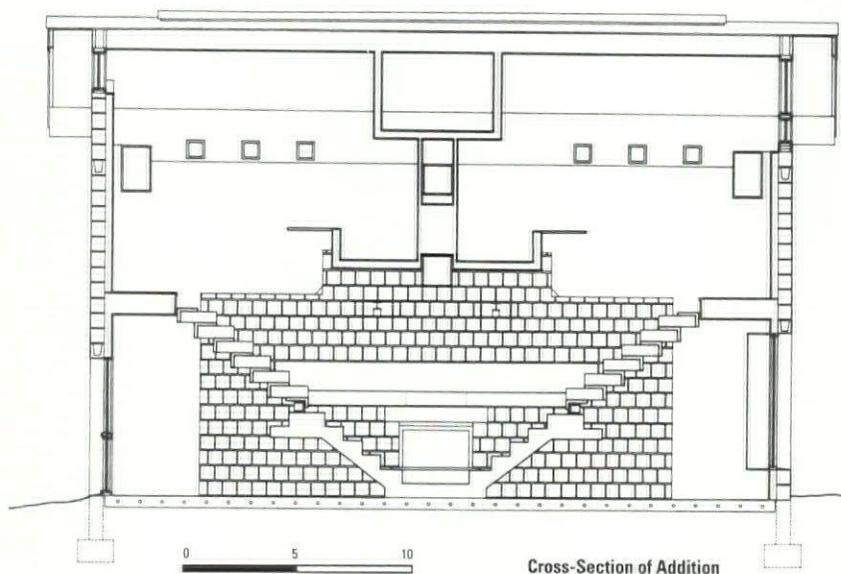
A concrete-and-wood stair (above) dominates the new playroom built for the Dunays' sons.

column, a five-foot-tall concrete cylinder, gives the room a scale that's fitting for a child. Slender steel sections rise from the cylinders and intersect with beams recessed in a ceiling channel that outlines the sitting area. Opposite the columns, a curved concrete pedestal forms the threshold to a pair of stairs leading to the bedrooms. A slit window across the rear wall divides the stair into halves, with the lower concrete portion mirrored by a wood assembly of treads and risers on top of it. The second-floor bedrooms are similar in size but differ according to their orientation to the sun. The room fronting the street is private but slightly darker. The rear bedroom has a glazed gable end, which opens the room to bright sunlight.

With the aid of paid helpers, the Dunays built the symmetrical stair themselves by making concrete forms out of two-by-fours and a paper-coated plywood to give a smooth finish. The entire piece was cast in one pour. The red-stained concrete floor also functions as a radiant slab, which the boys tend to sprawl out on in winter.



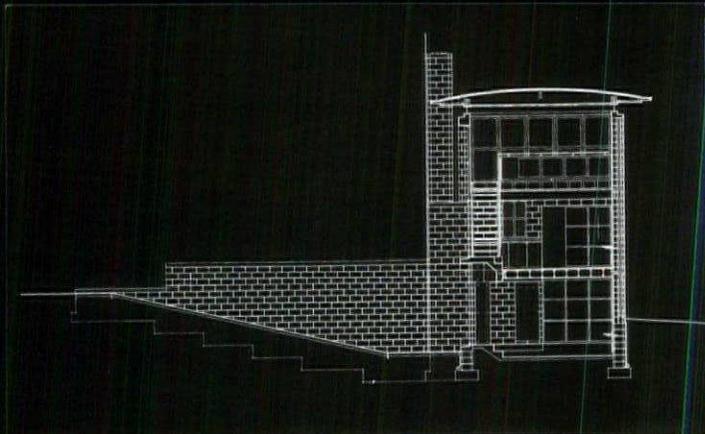
Photos: Robert Dunay



The cross-section (above) reveals how the addition's symmetry is broken by the windows on the end walls. The addition fits snugly into a hillside behind the early 20th century frame house (left).



In preparation for an exhibit of artist- and architect-designed chairs last fall at Richmond's Astra Design gallery, Robert and Donna Dunay designed a settee (left) they call "Elevation." The idea was to create a piece whose frontal view was a perfect ellipse. That one restriction governed most of the design decisions that followed. Using a 3-D modeling program to calculate the geometries by computer, the Dunays fashioned a prototype made of painted plywood on a steel tube carriage. Several adjustments are to come, including redesign of the back cushions into a single section and reduction of the length to be more fitting for two people. The finished piece will occupy an enclosed porch shaped like a flattened octagon. In that context, the settee mates naturally with the faceted walls.



Nature defied Clark & Menefee to build a house as rugged as the North Carolina mountaintop on which it stands. But the Charlottesville architects met the challenge with a concrete block cabin designed to hold its own against anything from hurricane-force winds to sudden wildfires. “This office has always taken a great many cues from the site,” says partner Charles Menefee. “So we hope this house responds by being as tough as the place.”

The three-story building, a summer retreat for Menefee’s parents, draws inspiration from the sheer verticality of the 3,000-foot crest nearby. Its simple rectangular shell balances the impenetrability of reinforced masonry walls with the openness of large windows. Menefee envisioned the building blocks as stone and calculated the

Make Way *for the Sky*

Overhanging roof protects house in storms (above right). View in bedroom loft shows band of light beneath ceiling (above left). Living area occupies middle level between sleeping loft and basement (drawing).

walls’ dimensions precisely to avoid having to cut blocks. “I think you would intrinsically feel the house is solid and well-built,” he says.

Clark & Menefee in this case departed from their habit of building flat roofs, opting instead for an overhanging sloped roof to protect the house from falling branches and bear up under heavy snow. Aesthetically, they wanted the ceiling plane to hover overhead, separated from the walls by a narrow band of glass. Technically, the roof had to be anchored firmly to resist uplifting winds. The two conflicting desires were resolved through innovation by concealing the two main beams inside the roof “sandwich” consisting of the plywood ceiling, laminated joists, insulation, plywood roof decking, and stainless steel roof. The beams were then tied to the house through eight concrete boots that project from the building shell.

From Factory to Site

As part of a study sponsored in the late 1980s by Nationwide Homes, a Martinsville manufacturer of modular houses, Virginia Tech architecture professor Michael J. O'Brien and then-graduate students Marie Wall, Steve Tenace, and Tom Kostecky designed three 1,250-square-foot prototypes which sought to preserve the intrinsic aspects of "house" while meeting tough requirements for low cost, mass production, and over-land shipping.

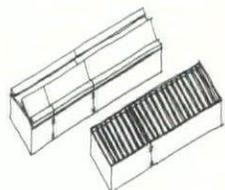
To distance the prefab buildings from their negative association with house trailers, the designers reconfigured the modular sections while paying close attention to natural light, interior space, entry, and privacy. To control labor costs, Nationwide insisted that up to 90 percent of the work be completed in its plant. The factory-built approach offered two clear advantages. First, it shortened construction time to 30-to-45 days, allowing for excavation, foundation, and utility work to occur while the modules were being built. (Houses typically take 90-to-180 days to build.) Second, the process yielded a better quality house because most of the work was done indoors, which produced narrower margins of error and eliminated weather damage.



Using 14-foot-wide modules as the basic building blocks, each house was designed with at least two sleeping zones. This separation allows for two families to live together; it also works well if elderly parents or grown children reenter the household. Other strategies – such as directing circulation patterns through the corners of rooms – opened the houses spatially. Decks or porches placed beside the main rooms also increase the perceived interior space.

Nationwide put three models into production and O'Brien showed his belief in the project by building the two-story model in Blacksburg for his family of four (see photos). In the end, by questioning assumptions that had evolved over decades, the team showed how a few key modifications could produce buildings that meet the definition of both "affordable" and "house."

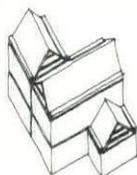
Prefabricated sections are placed by crane (top). Finished house bears little resemblance to typical modular houses (inset).



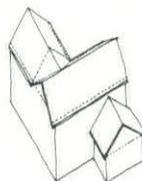
1. Modules arrive on site.



2. Sections are cut apart and placed with crane.



3. Roofs are unfolded and spliced together.



4. Overhangs are unfolded, gable ends put in place.



5. Porches and decks are constructed.

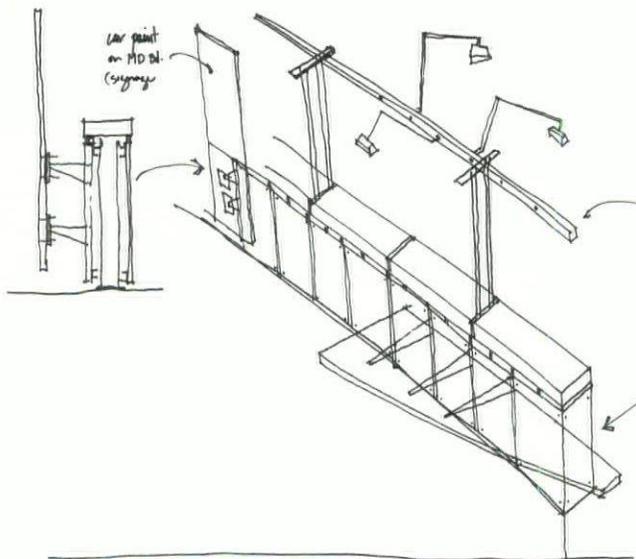
Stable table

Catholic University architecture professor Robert Cole observes that coffee tables perform many functions: as a "bartering plane" for conversation, a display surface for objects of social status and – almost incidentally – a place to serve coffee. Thus Cole, of the firm Cole + Prevost in Washington, D.C., transformed the design of a table for client Matthew Chelap into a study in geometry and meaning.

A 9-by-9-inch drawer unit was the genesis of the piece, which evolved through a methodical application of the square and golden section. Cole mapped each geometric step in the table top with an inlaid cross of 1-by-1-inch black zinc-plated steel. It, in turn, binds the disparate materials: a 1½-inch-thick slab of honed English slate, a polished steel spline, and an anodized aluminum drawer box – all set in a field of figured cherry.

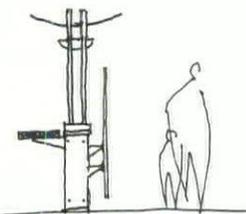
Semantically, the table deals with the idea of support. Cole started with the premise that every object rests on no fewer than three points. Then, he asked, if the goal is to create a more stable object, why not make the foundation more sure-footed by squaring this absolute truth? Surely, nine legs would be better than three. And so they are.





A Changeable *workbench*

It only seemed fitting that the exhibition design for Inventure Place, the new museum of invention in Akron, Ohio, should live up to the museum's billing as a place that would constantly reinvent itself. So architect Edwin Pease of AP2 Architects in Newport News sought to create an interactive workbench that could transform as the need arose. He calls it "the spline" — a modular cabinet of lacquered fiberboard and steel that has an adjustable light tree made of off-the-shelf steel parts with integral low-voltage lighting that adjusts to many positions. "The spline is analogous to a Mr. Potato Head in that exhibits can be



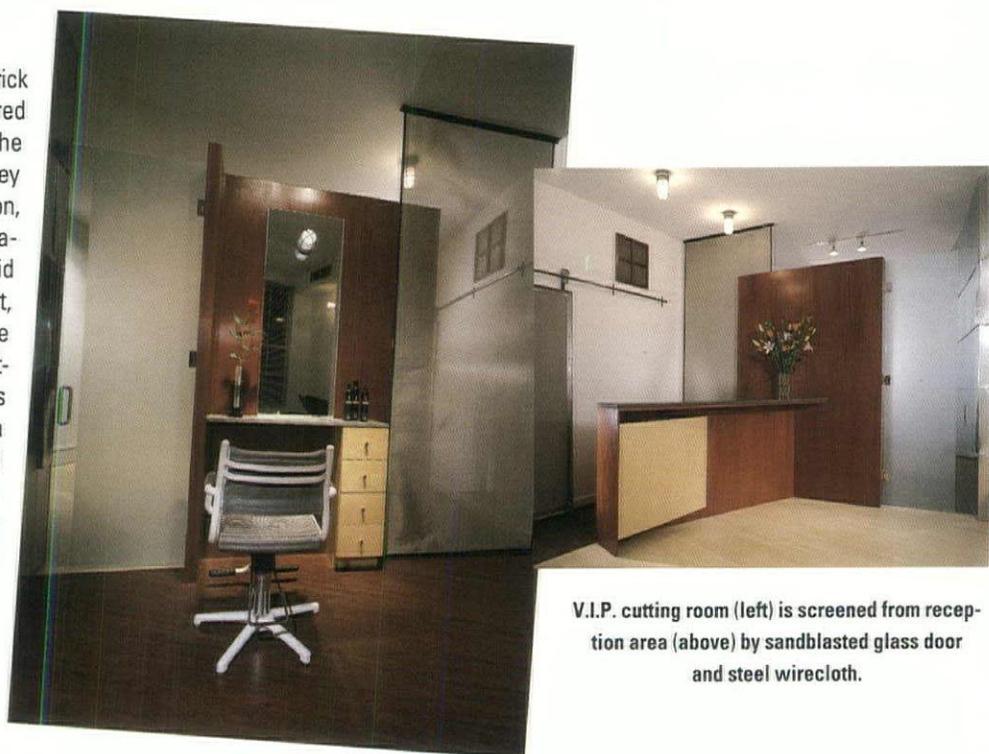
attached, modified, and reattached," says Pease. Water and electrical connections inside the body of the cabinet are easily accessed for frequent modifications. Another key design decision involved the use of commonplace materials such as masonite, fiberboard, and steel. "The attitude of doing much with little was a persistent theme in the lives of the inventors," Pease explains.

Early sketches reveal a concern with human scale (left) and menu of interchangeable parts (above left). Finished display can be reworked in infinite ways.

20

Clean *cut*

The conversion of a turn-of-the-century brick building into a full-service hair salon offered Alexandria architect Robert M. Gurney the chance to experiment with materials. Gurney distinguished the RPM Salon in Washington, D.C., with a curved wall covered in galvanized steel to unite the two floors and aid people flow. In two aspects of the project, he used modern materials in innovative ways. Glass is the key element in an 8-foot-tall pivoting wall that rotates 360 degrees to control light, views, and privacy in a small consultation area. Gurney found new uses for stainless steel wirecloth to accomplish other tasks. Traditionally used for farm filtration equipment and conveyor belts, the wirecloth has new life in the salon as a translucent floor-to-ceiling screen beside the reception desk. The same material covers a sliding door and two return air vents.



V.I.P. cutting room (left) is screened from reception area (above) by sandblasted glass door and steel wirecloth.

Jeff Goldberger/Esto



The 21st century House



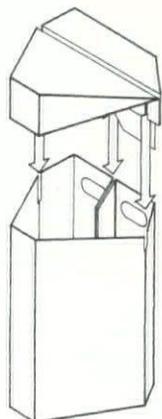
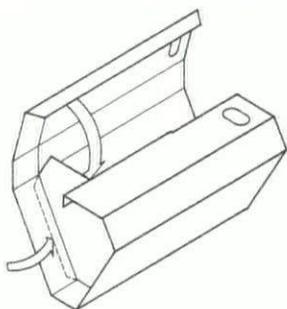
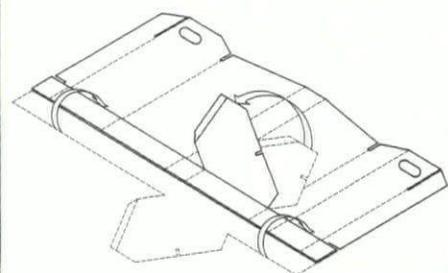
House includes a separate battery barn (left) and multipurpose "plinth" (above).

What new production methods could benefit house construction? And what technological innovations are suited to the task? These questions and others are being explored at Catholic University by professors Ann Cederna and Douglas Frederick and their students. Through the school's Design/Build Studio, they have created an experimental house meant to show how technology can lead to simple solutions.

Designed for two people, the compact 576-square-foot unit is clad in metal panels and floor-to-ceiling insulated glass. A closet, bathroom, washer/dryer, computer cabinet, and kitchen are clustered

in a solid core. Working, dining, and entertaining needs are met by a transformable table that doubles as a computer docking station.

The design rethinks structure and systems, employing a 4-by-4-inch tubular steel frame and a 14-inch plenum that contains heating and cooling systems, plumbing, and computer cables. Energy efficiency is increased through the use of photovoltaic panels, wind generators, natural ventilation, and sun screening. Calling their creation the Nomadic Transport Module, the students plan for the prototype to go on a national tour of museums and universities.



Pugh (above right) envisions wide possibilities for The Takeout Chair. Drawings (above) show how cardboard folds to form base of chair. Top fits snugly into place.

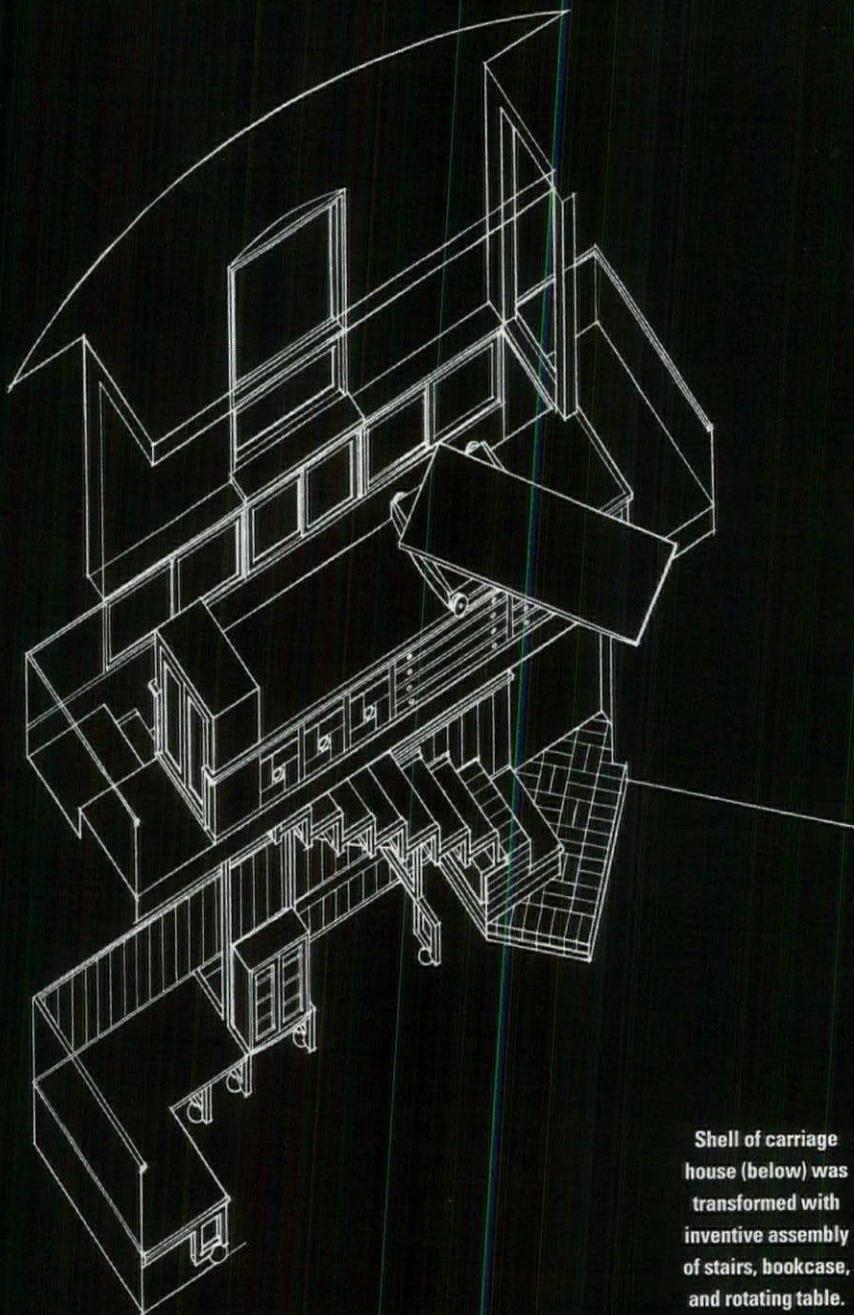


Eric Brady

Chair on the Go

As an architecture student in 1983, David Pugh designed "an all-purpose chair for the masses." A decade later, he revived his patented invention and is hot on the trail of a commercial niche for his lightweight, compact, stable, and easy-to-construct "Take Out Chair." Pugh, now an architect at Hughes Associates Architects in Roanoke, chose to make the chair of corrugated cardboard because it provided an outlet for recycled products—and is recyclable again. Cardboard is light and strong. And, because it's a paper

product, it can be printed readily with advertising, a company logo, or other personalized message. Pugh envisions its use at rock concerts, parades, golf tournaments, or reunions—any event where inexpensive chairs are needed for large crowds. And with oblong carrying holes and a flip-top that provides access to a storage bin, the chair is widely adaptable. One model already available in stores is printed with a tree bark pattern and sold to hunters for use as a portable stool. Ask for it by name: "The Stump."



Shell of carriage house (below) was transformed with inventive assembly of stairs, bookcase, and rotating table.



Take a Break

Innovation sometimes appears in the guise of re-interpretation. Asked to convert the undesirable location of a trash dumpster into a smoking area for AT&T workers, Alexandria architect James William Ritter redirected the focus to a more inviting spot. He replaced an existing sidewalk with brick paving and concrete benches, then designed an elegant tubular steel frame that supports a transparent canopy. Stainless steel rails were integrated after Ritter observed that smokers preferred to lean rather than sit during their breaks. Basic shelter it's not.

A Tight-Knit *solution*

Remnants of horse stalls were still in place when Camden Whitehead purchased a dilapidated brick carriage house in Richmond that he converted into a home and studio. Given the limited space – two floors of roughly 600 square feet each – it was important that each area serve multiple functions and that the separation between living areas be kept to a minimum. Whitehead, a professor of interior design at Virginia Commonwealth University and principal of the firm Fairlamb, Sadler & Whitehead,



innovated a system of built-in furniture that made the most of the tight quarters. He created a stair at one end of the building that knits together circulation, storage, seating, and work spaces. At the top of the stair, a rotating desk rolls the full length of a platform of drawers. The stair shelters an L-shaped sofa and adjacent bookcase – and shares structural supports with them – embodying the concept of structural and functional interdependence that pervades this small dwelling.



Sustainable

by Nature

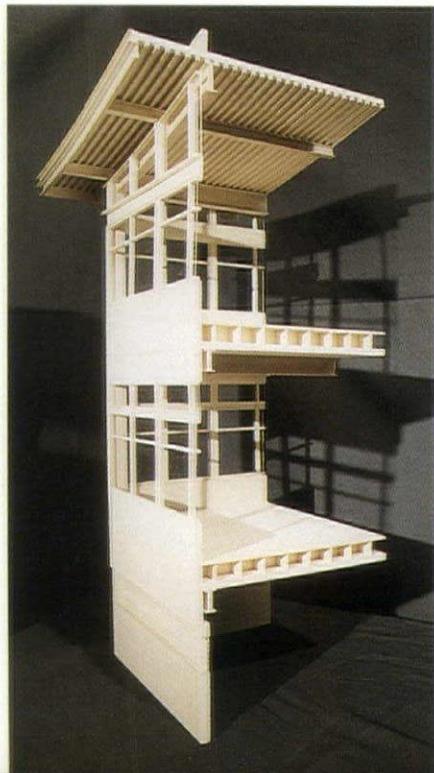


In keeping with his campaign to ensure a sustainable future, William McDonough, dean of the University of Virginia's School of Architecture, designed new fabrics for office furniture that minimize toxic byproducts in their manufacture and are healthy to use. But creating environmentally safe textiles required a rethinking of the entire manufacturing process. Made by DesignTex from a combination of ramie and wool, two user-friendly natural fibers, the absorptive woven fabric transports moisture away from the skin, fostering greater comfort for extended periods of time. Of equal importance to McDonough was the detailed chemistry used to create the fabric dyes. He sought out a chemical company willing to reveal its formulas, and then commissioned a chemical analysis of the dyes to ensure that they release no carcinogens, persistent toxic chemicals, or heavy metals. Better yet, the fabric is fully compostable after its useful life is over, so it returns to the natural ecosystem. But it was not enough simply to make the fabric environmentally safe. "It had to be produced on a commercial scale, conform to applicable industry standards, and be priced competitively," says McDonough, who in March received the President's Sustainable Development Award for his eco-sensitive design approach.

McDonough developed new fabrics that are healthy to use and make (top).

Detail model of offices for The Gap shows air channels in floors (right) that cool building at night.

In 1994, William McDonough + Partners won a competition to design a corporate campus for The Gap in San Bruno, California. The 340,000-square-foot complex features a series of buildings with an undulating sod-covered roof that provides thermal insulation and absorbs rain water, minimizing the need for a complicated storm water drainage system. Inside, the use of raised flooring provides an air space beneath the floors, which allows for the building to be cooled at low cost by flushing it with night air.



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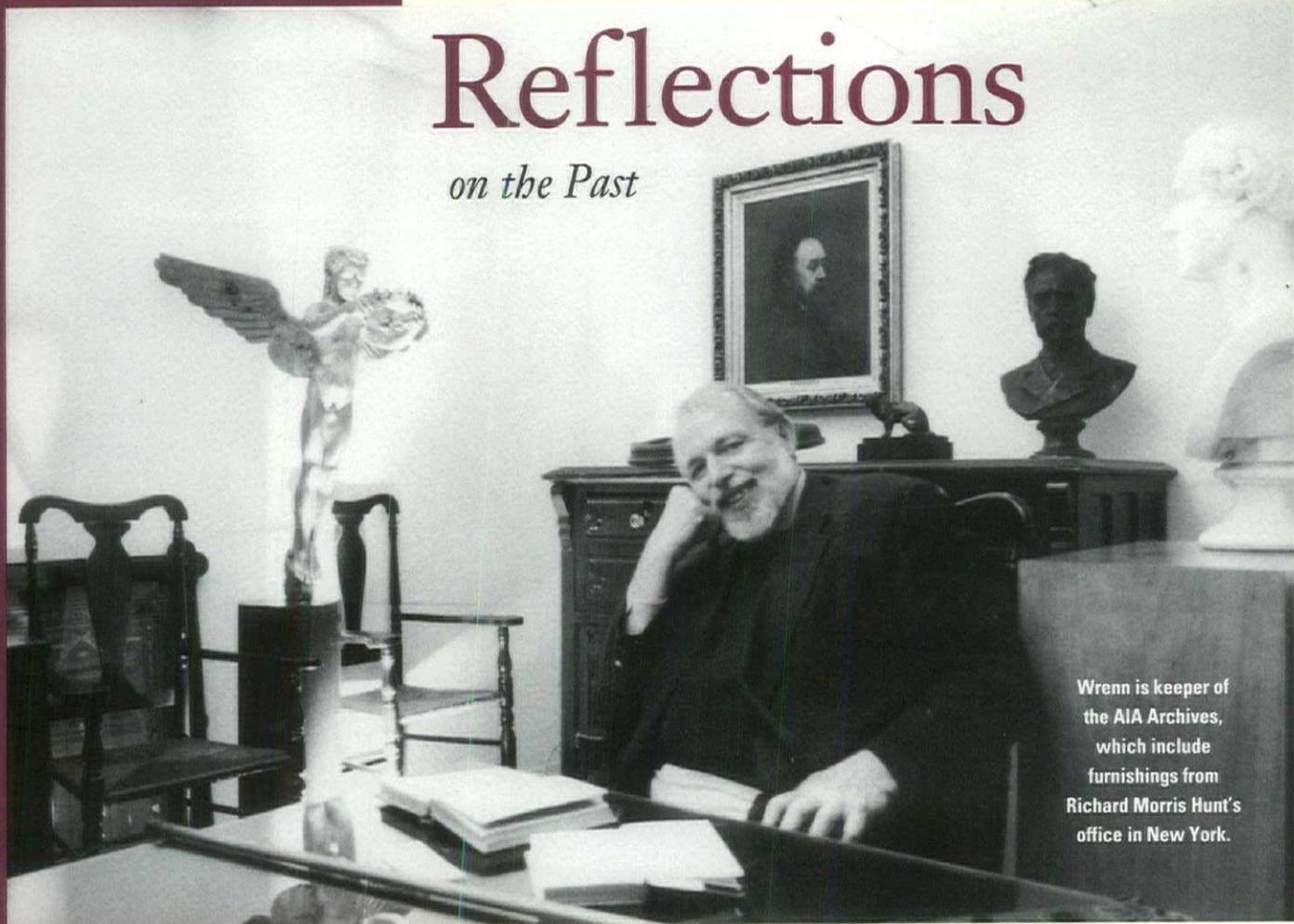
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Reflections

on the Past



Wrenn is keeper of the AIA Archives, which include furnishings from Richard Morris Hunt's office in New York.

24

By Allen Freeman

Tony Wrenn, founding archivist of the American Institute of Architects, believes that archival materials are more than just objects to be preserved. He sees them as groundwork for the future. "How can you know where you are going unless you know where you have been?" Wrenn asked more than once during an interview at the AIA headquarters in Washington, D.C.

Wrenn's strong opinions, conviviality, lack of pretense, loquaciousness, and his gray beard and heavyset frame suggest an Anglican parish priest in some remote English hamlet. But he is, in fact, a North Carolinian by birth and a Virginian by choice, a lifelong Baptist, a champion of the rights of women and minorities, an inveterate collector of a wide range of objects, an avid gardener, the co-owner of an 1843 house in Fredericksburg, and something of an

architectural egalitarian who believes that "the chances are good that even the simplest of buildings has been associated with worthwhile and interesting people.

"This may have something to do with growing up in a poor county and on a farm," he continues, "but it has always seemed to me that wherever you are and whatever you've got, it is a mistake to be ashamed of it, and it is *really* a mistake to apologize for it." The responsible citizen in Wrenn's idealized community finds out why something is the way it is and improves it, if possible. If one's predecessors took wrong turns, one learns from their mistakes. "People frequently seem to think that there is something in the next town or the next state that is better than what they've got. But the cruel, hard fact is that what they've got they should be able to relate to. And if they can't, then they jolly well ought to try harder. Tearing something down is hardly ever the answer."

That philosophy guided Wrenn's involvement in protecting Robert Russa Moton High School in Farmville as a historic building. The architecturally unexceptional eight-room brick schoolhouse, built for black students in 1939, was the site of a 1951 student walkout that led to a civil rights lawsuit. Lost and then combined in an appeal with four others from around the country, the suit ended as part of the landmark Supreme Court desegregation case, *Brown v. The Board of Education of Topeka, Kansas*. As the current chair of the Virginia State Review Board, which oversees federal historic preservation programs in the state, Wrenn advanced the ultimately successful listing of Moton School in the National Register of Historic Places, despite stiff political opposition in Farmville and Richmond. "We are still a segregated society," he says pointedly. "What that means is not that the *Brown* decision was wrong but that we haven't learned from it what we ought to."

The Moton School, except for a few minor modifications, stands as a time capsule of the student assembly in 1951 that precipitated the walkout, and it could, he suggests, become a national source of cultural understanding – a place to hold seminars, collect papers and tapes, produce oral histories, or host visiting scholars. As such, he says, it would provide an economic boost for Farmville and Prince Edward County.

Wrenn was born not far from Farmville on a tobacco farm in Caswell County, North Carolina, just across the state line from Danville. He grew up in an 1868 house that was situated in front of an older house built circa 1810 and a mile from the site of an even earlier house that was destroyed by fire. It was a community in which people valued the evidence of their roots. After graduation in 1955 from Wake Forest University and service in the Army, he worked for two years for the National Archives and Records Service and then moved in 1962 to the National Trust for Historic Preservation to establish the organization's archives. Six years later, he struck out on his own as a consultant specializing in the discovery and use of archival materials to document historic preservation projects. Since 1980, when he joined the national staff of the American Institute of Architects, Wrenn has, with the continuing support of the Institute's directors, built the AIA Archives into a resource that, along with the AIA Library, forms one of the nation's major architectural research centers.

The AIA made Wrenn an honorary member in 1991, recognizing his more than 30 years of "making the history of architectural practice permanently accessible." Currently he is working to promote the goals of the national Committee for the Preservation of Architectural Records through publication of its quarterly COPAR Newsletter, a national clearinghouse of data on architectural records. He is working with others in a COPAR effort to identify groups of architectural records in Virginia and to establish a statewide repository, preferably within an existing institution, that would hold, maintain, and service architectural documents.

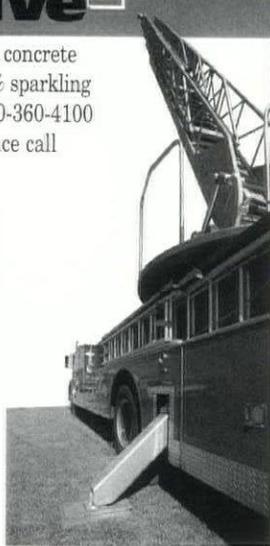
By virtue of its special collections, the AIA Archives is a major source of professional information about important figures such as Richard Morris Hunt, Louis Sullivan, and Thomas U. Walter. But it also contains 300,000 photographs of buildings, an archive of women in architecture, unpublished manuscripts and privately published books of architects, and biographical data on more than 100,000 architects. Wrenn routinely answers inquiries from genealogists, historians of towns and churches, realtors with historic properties to sell, city planners, and, of course, architects.

In the largest sense, Wrenn believes that the data housed in the AIA Archives is most valuable for what it says about its original context. A corporate building, a house, a church, a store – each is a record of how a client viewed himself and how the architect viewed the client and the client's community. The data can give insight into the psyche of the community at the time the building was constructed. And why should we care? Because, Wrenn believes, the old informs the new. "We aren't inventing new wheels, almost ever."

Allen Freeman is a senior editor of Historic Preservation magazine.

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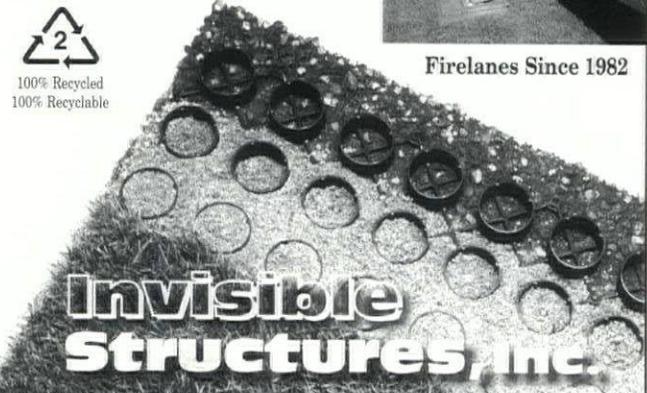
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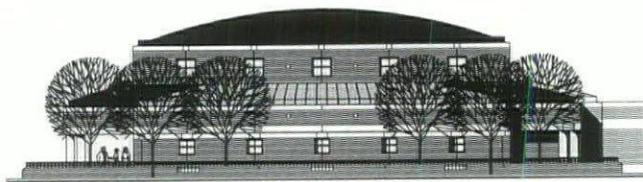
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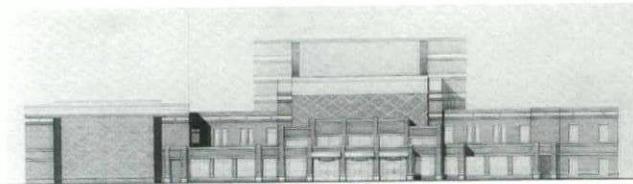
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Architect: Morgan Gick & Associates, Falls Church
Project: St. James Gymnasium

This 10,000-square-foot masonry and steel structure is the first addition to the school in 30 years. Two sides of the building will feature a canopied arcade, while the interior will include a full-court basketball gymnasium and multipurpose educational suite. 703-876-5600.



Architect: The Weihe Partnership, Washington, D.C.
Project: Shenandoah University Performing Arts Center

The center will provide an 85,000-square-foot performing arts theater and music building when completed. The project is sited to create a new campus gateway and includes a 600-seat performance theater, a 125-seat studio theater, rehearsal halls, classrooms, studios, and administrative offices. 202-857-8300.

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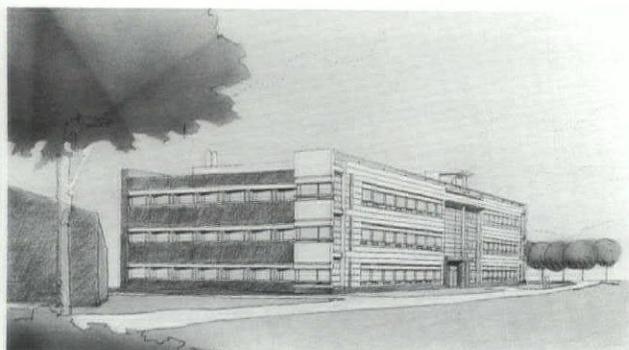
Architect: Bond Comet Westmoreland + Hiner Architects, Richmond
Project: Toons Restaurant

Renovation to an existing 2,000-square-foot storefront in Richmond's West End will lend an amusing atmosphere to a deli-style restaurant. The design integrates a wide variety of materials and lighting that energizes the plan, creating an interior consistent with "Toon Town." 804-788-4774.



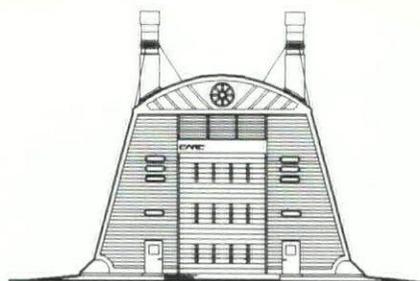
Architect: Scribner Messer Brady & Wade, P.C., Richmond
Project: Wheat Innsbrook Center II

Incorporated in this Richmond office building: A light-filled hypostyle link; stairwells as lanterns; the building core as an expressed bar; rose-grey precast skin; projecting glass bays; articulated metallic construction. 804-782-2115.



Architect: Rancorn Wildman Krause Brezinski, Newport News
Project: Marine Chemistry & Toxicology Research Center

This new \$10 million toxicology/pathology research center at the Virginia Institute of Marine Sciences will provide 65,000 square feet of laboratories, offices, and support space. Designed in association with Perkins & Will of Chicago, the building will function as the new campus gateway. 804-873-6606.



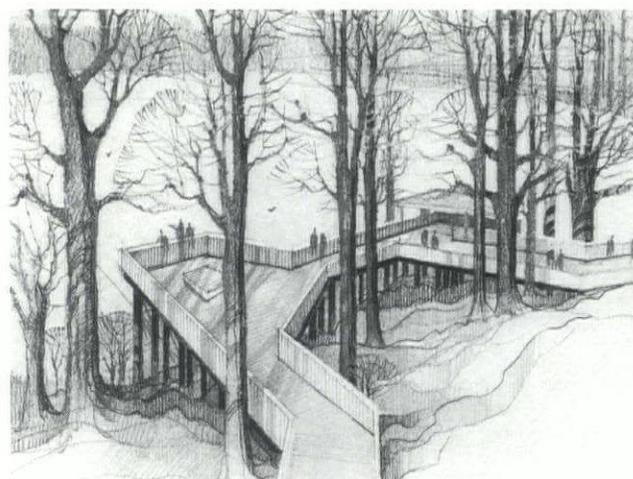
Architect: Chou & Associates, P.C., Virginia Beach
Project: CARC Vehicle Paint Building

The new Chemical Agent Resistant Coating building at Fort Eustis is designed to meet all state and federal environmental requirements for the discharge of pollutants. The building represents the futurism of space design in its form and function. 804-499-3667.



Architect: Marcellus Wright Cox & Smith Architects, Richmond
Project: Housing and Assembly Building, Missionary Learning Center

This two-story, 7,000-square-foot building will accommodate up to 32 people for short- or long-term housing at the Missionary Learning Center in Rockville, Virginia. The building also includes a large multipurpose meeting hall. Project completion is scheduled for February 1997. 804-780-9067.



Architect: Carlton Abbott & Partners, Williamsburg
Project: Trails and Overlook, Brookgreen Garden

Depicted here is a historic rice field overlook along an interpretive trail system that is part of the firm's master planning for Brookgreen Garden in Murrell's Inlet, South Carolina. Now a wetland, the site is home to an abundance of freshwater species, waterfowl, and alligators. 804-220-1095.



The Inward Garden: Creating a Place of Beauty and Meaning. By Julie Moir Messervy. Photographs by Sam Abell. 256 pp. Illustrated. New York: Little, Brown and Company. \$40.00 cloth.

Review by Judith Haynes

People can garden for decades, enjoying the hard work and becoming more knowledgeable each year about their beloved hobby, but all the while living with a nagging insecurity. It's the design dilemma. You can be a great collector, planter, weeder – but when some section of your garden looks right, you're pretty sure the success occurred just as a matter of dumb luck.

Julie Moir Messervy's *The Inward Garden* dissects the design monster and makes it seem not only conquerable, but quite tame. Her main point, which is not as simple as it sounds, is: It's *your* garden. Thus, the first task is to find out who you are, garden-wise.

The garden she wishes for each of us is "an intensely personal place." To find it, we must do a considerable amount of homework, soul-searching, and day-dreaming. Step by step, she encourages us to wander back to our childhoods for pleasant memories, to recall places we have traveled and pictures we have seen and books we have read. The object is to draw out of our psyches the scenes where we have found beauty and serenity.

Early on, Messervy says that "no matter what your background, no matter what size or shape your piece of land, you have the creativity within to make a work of garden art." This may seem foolish to a mere digger-plodder, but after 200 pages of her gentle inspiration and everyday examples, it's likely you'll become a believer in yourself.

Her contribution is not just a laying-on of hands, however. Just as gardening is physical labor, the assignments she



a personal retreat



gives are emotional challenges. "You must begin by examining your life," Messervy says softly. Keep a journal, she advises, and let your mind drift as she discusses feelings associated with the sea, caves, harbors, islands, cliffs, mountains, and endless skies. Each of these, depending on whether the mood it evokes satisfies your desires, can symbolically appear as part of a garden.

"To make a space for yourself in this world," Messervy says, "you must start by understanding the importance of archetypal dreaming places in your life, and then reinterpreting them in your own backyard." Keep a "sun diary" of the light on your land at different times of the day and at different seasons. Make a list of your favorite plants and use them in your garden so they will have special meaning to you. Save postcards of artwork you admire. Or reread your favorite children's books.

The Inward Garden is for laypeople, and not necessarily those with a lot of money or time. The bulk of the design work, because it is highly individualized, must be done by you and the people in your life

who will share the garden. Professional designers and contractors may be hired, and rapidly fired if they try to construct their dream rather than your own. No fad gardens. No instant gardens. This is a project that draws on a life and may take a lifetime to fulfill.

The spectacular photographs by Sam Abell, a photographer for *National Geographic* who lives near Charlottesville, are not typical garden-book pictures. Chosen for their power to evoke feelings rather than to show plants in a landscape, they are perfect companions for Messervy's message.

Messervy, who lives in the Boston area, first studied art history and then went to graduate school at MIT, where she received degrees in architecture and city planning. She apprenticed with Japanese master gardener Kinsaku Nakane while on two traveling fellowships in Japan. Despite this lofty educational background, she has the ability to describe things simply.

This trellis in Sussex, England, (top) is both enclosure and threshold, two of the main garden elements Messervy stresses. The Japanese chozubachi (above) is for ritual cleansing of hands and mouth.

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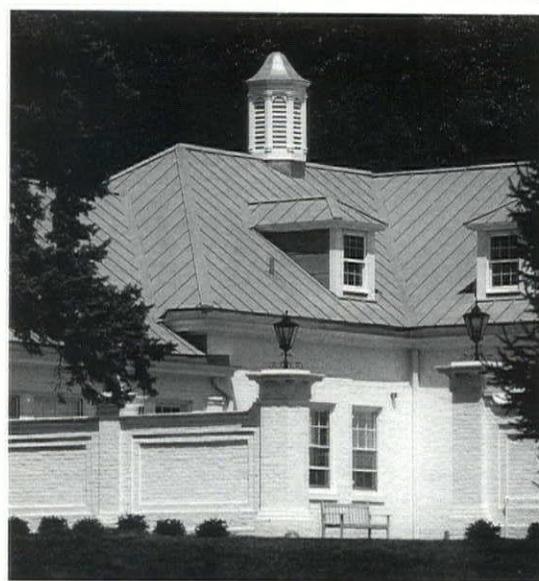
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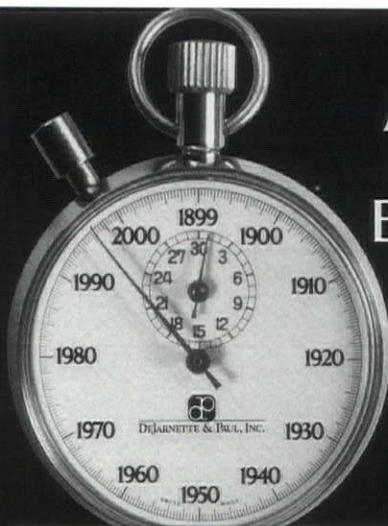
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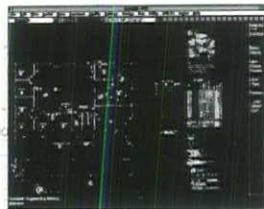
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Discussing plant choices for a meadow, she uses the analogy of a neutral wall-to-wall carpet in a room versus an Oriental rug. Either choice produces radically different results. The monotone carpetlike meadow will make other features of the landscape stand out. The colorful meadow resembling an Oriental rug is appreciated for its own beauty.

Messervy recommends a simple exercise to help readers generate confidence in their design ability. Start by choosing seven items from the kitchen such as a ketchup bottle, a bowl, a potted plant, place mat, those sorts of things. Using the dining room table as a hypothetical site, try to arrange the objects in an aesthetically pleasing manner. Add another object and rearrange the composition. Change your viewing position. Then have your friends critique the arrangement.

"Everyone who has tried it quickly learns that they possess a finely tuned ability to arrange objects so that they bear an aesthetic relationship to each other that most everyone can agree upon," Messervy says. So skillful a teacher is she that it sounds like the truth when she says, "Setting ketchup bottles on a place mat with proficiency is really one step away from placing trees on our lawn without trepidation."

She has great affection for Japanese gardens. "After all my travels," Messervy says, an ancient garden at Saiho-ji in Kyoto "remains my favorite garden in the world." Elements of Japanese design can be modified for other gardens, she explains. For example, a "pausing stone," a large rock for both feet set in a path of single-foot-size flat rocks, doesn't have to lead to a teahouse.

Owners of modest lots might feel Messervy is speaking directly to them. She and her family own half an acre, and on that parcel she has made - or plans to make - at least 13 viewing positions, which Messervy describes as "a place that protects and enfolds you so that you can contemplate the view without strain."

Among the vantage points on her property are a hammock between two pines, a small slate terrace made by her daughters, and a sequence of forts constructed by her son and his friends. In other words, an inward garden is very personal, but it is not antisocial.

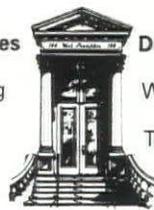
Judith Haynes, a longtime gardener, is a reporter in Gloucester for The Daily Press.

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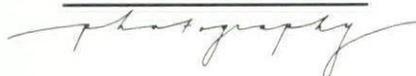
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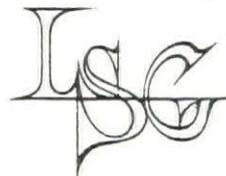
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After years of chatting about design with their dentist after routine appointments, Douglas Palladino and Susan Piedmont-Palladino finally got the chance to do more than talk. When Dr. Michelle Loewinger signed a lease for new office space in a downtown Washington medical building, she asked the architect-couple to handle the interior design. At first blush, the unadorned 650-square-foot shell was "really raw," says Piedmont-Palladino, a professor at Virginia Tech's architecture center in Alexandria. Worse yet, it had an awkward L-shaped plan, intrusive mechanical runs in the ceiling, and a large structural column that protruded from one wall.

To lessen the feeling of chaos, the architects created a single strong element to unify the space. The focal point is a sculptural reception desk with a curved brow that penetrates into the treatment area and turns sharply to meet an angled wall. "The attempt was to introduce an element that weaves through the space to unify it," says Palladino, the other half of Palladino & Piedmont Architects. He designed the desk by computer in a 3-D modeling program, searching for ways to disguise the beefy column as part of a larger object.

Great pains were taken to share sunlight among spaces and create ease of movement without sacrificing privacy. It was clear from the start that the examining rooms would get the windows, because generous natural light was important for a practice that entails a lot of cosmetic dentistry and critical color matching. Palladino & Piedmont designed the examining rooms without doors, separating the cubicles from the corridor by 6-foot-high walls topped with glass to allow light to pass through.

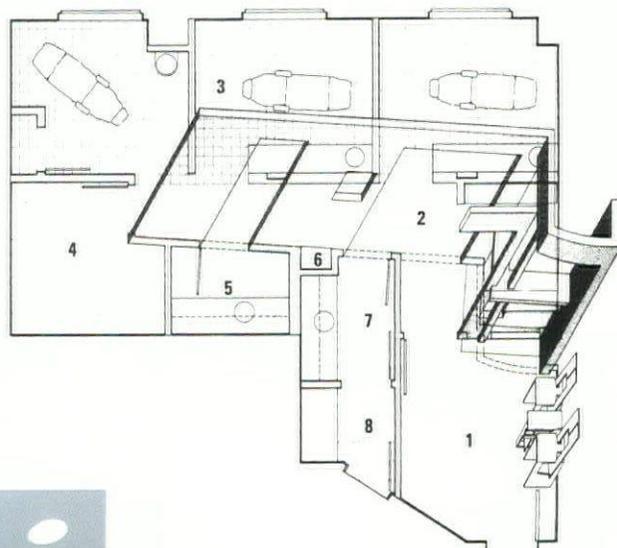
A change of finishes distinguishes the existing shell, which is coated in a spray-applied speckled paint, from the new elements, which are white. Dr. Loewinger even suggested the use of corrugated metal as a wall covering in the waiting room. "She wanted something lively and zippy – more like a restaurant than a dentist office," says Piedmont-Palladino.

– Vernon Mays



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- 1 Waiting Room
- 2 Reception Desk
- 3 Examining Room
- 4 Doctor's Office
- 5 Sterilization
- 6 X-Ray Control
- 7 Laboratory
- 8 Mechanical Room



Office is unified by a reception desk (top) that turns into angled corridor wall (drawing). Waiting room has indirect lighting behind stainless steel baffle in ceiling (left).



by Roger K. Lewis, FAIA

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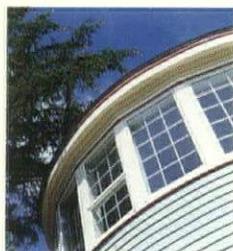
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