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August 1987

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UWM School Of Architecture and Urban Planning Technical Issue

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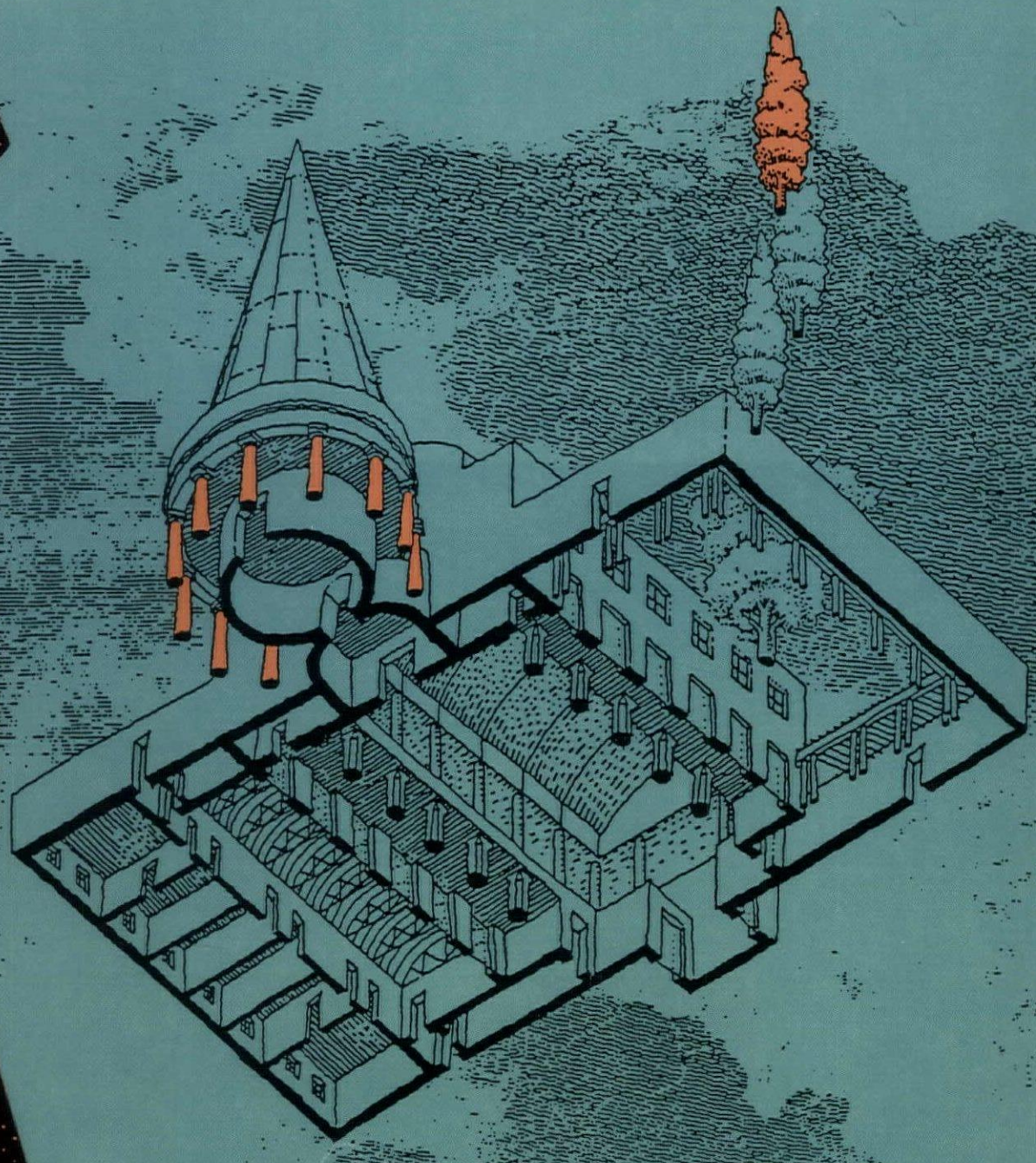

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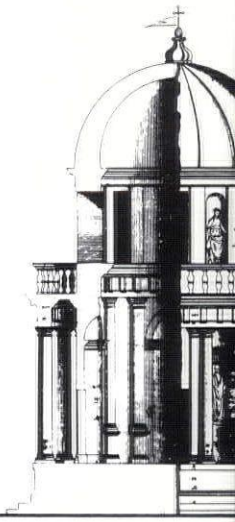

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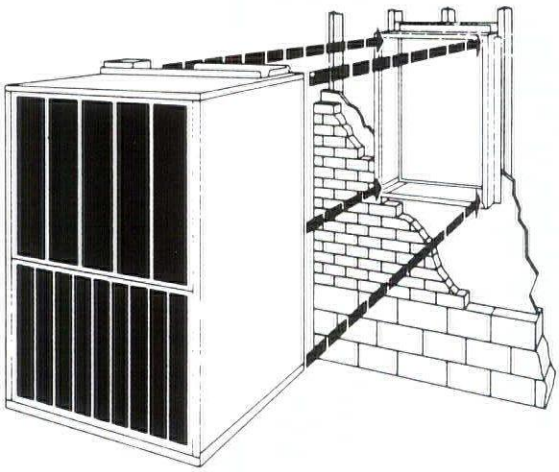

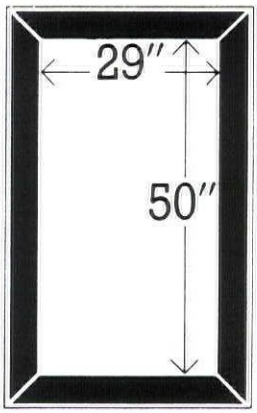

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This issue features articles and projects by faculty of the School of Architecture at the University of Wisconsin-Milwaukee. They reflect an increasingly active role in professional and community service efforts. Areas of community and public service include projects such as the Milwaukee Lake Terrace, the Whitefish Bay Schools post occupancy evaluation study, and several small town projects undertaken by the School.

During the course of the past year, the School also has become involved in the Milwaukee Public Schools through Riverside University High School's cooperative "strand" program which introduces high school students to planning and design early in their education. A summer course in photography, model building, computer applications, and some exposure to the problems and excitement of 'design', launched this effort.

The School's international activities also continue to develop. This past year 130 students from more than 40 overseas countries were enrolled in degree programs at SARUP, and the School has ongoing programs in three of these countries — France, Indonesia and the People's Republic of China.

The articles and projects included in this issue represent a small fraction of this year's efforts.

David Reed
Guest Editor

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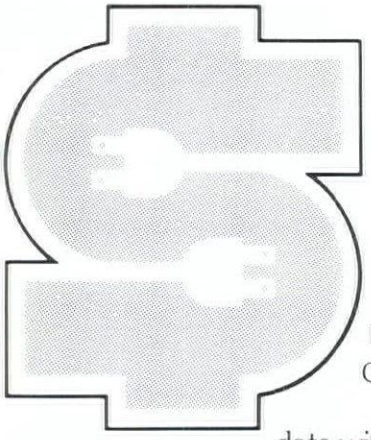

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David Reed

Timber Holdings Housing Design Competition

In November 1987, The Timber Holdings Housing Design Competition Jury announced the winners of a competition for an innovative housing project to be built in Milwaukee.

The competition was conducted and administered by the School of Architecture and Urban Planning, University of Wisconsin-Milwaukee with participation limited to faculty-student teams from the School.

The competition developed out of an interest by the sponsor in developing relatively inexpensive, inner-city housing using the Jarrah wood products imported from Western Australia by Timber Holdings Ltd. Many years of experience have shown Jarrah to be a very flexible species of construction timber. A naturally beautiful appearance, superior strength properties, resistance to the effects of rot, termite attack, marine borers, and a Class B fire rating, along with its availability in a full range of architectural components made Jarrah the ideal material.

In previous years the imported timber and timber components have been primarily used in commercial or industrial situations and for marine construction, especially for piers and boardwalks. Untreated Jarrah is currently being used to replace and repair the famous Atlantic City boardwalk and other promenades along the east and west coasts of the USA.

The competitors were asked to design two unit types — a two bedroom unit not to exceed 1000 square feet, with a minimum of 1 and ½ baths, and a three bedroom unit not to exceed 1200 square feet, with 2 full baths. Measurement standards for balconies, double height spaces, and garages were also set out.

The competition program also specified several requirements concerning construction. The key criteria were that the design should be based on post and beam construction and that all of the components for one unit should fit into a standard 40 foot shipping container.

First place was awarded to the team of Frederick Jules, Harry Van Oudenallen, James Shields, Aniruddha Gupte, Robert Ruggles and Todd Davies.

The entry awarded first prize impressed the jury as "really a beautiful scheme — a skillful plan." They noted both the sophisticated and sensitive use of the site, and the way the street is related to the units. The units themselves received praise in that, given their small size, they are unusually spacious and well-organized. The jury also particularly liked the way in which the secondary roof tucks under the main roof. In the jurors' opinion this scheme clearly outdistanced all of the other entries. It did this urbanistically, as a combination of units, and technically as individual units. This scheme could also be easily adapted to other sites. The designers were also complimented "for their beautiful presentation."

A catalogue containing a full description of the competition, the entries, and the jurors' comments is available from the School of Architecture, UWM.

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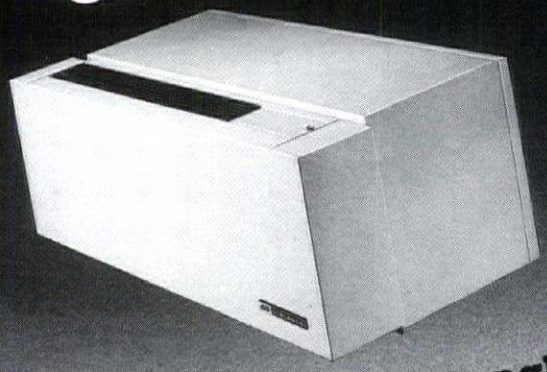

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Post-Occupancy Evaluation Of Educational Environments

Buildings are evaluated in many ways throughout their lives, beginning with the approval of a construction project, through program and design reviews, and concluding with the decision to raze or renovate a structure judged to no longer be adequate. Many of these evaluations — for example, code reviews — are highly formalized and their findings feed back directly to the design process. Other forms of evaluation — such as the effect of the building on its users after occupancy — are just as important but in the past have been less formally and less clearly tied to the programming/design process.

In the past decade however, the emergence of post occupancy evaluation has allowed the effects of buildings on their users to be documented, communicated to both designers and management, and fed forward to those charged with the design of similar building types. While early post occupancy evaluations — or POE's — were relatively specialized affairs conducted by architectural researchers, the emergence of increasingly standardized methods for the acquisition, organization, and analysis of information has begun to move POE activities into the professional mainstream.

The School of Architecture and Urban Planning at UWM is nationally known for its work in POE. The project that we are describing here is one of our latest projects, a study of a 60 year old K-8 school building in the Milwaukee metropolitan area. Other POEs conducted by faculty of the school include a museum, elderly housing, day care centers, a middle school, a YMCA, and also recently, an evaluation of Army barracks buildings at installations around the country. This article provides an introduction to the nature of post occupancy evaluation and highlights some of our findings regarding the relationships between the educational process and the environments within which education occurs.

The POE Process

The POE process can be employed to assess the full range of building components and characteristics and can do so at varying levels of detail and effort. In terms of subject matter, POE's can focus on technical, functional and/or behavioral factors. In terms of time, effort and depth of analysis, POE's can be arrayed along a continuum from a simple indicative or "walk through" study, to a more detailed investigative one, to a full blown diagnostic effort. In our evaluation study, the focus was on functional and behavioral factors at an investigative level. The charge from our client had us focus on 4 key questions: (1) the adequacy of existing educational spaces; (2) the degree of building accessibility for persons with disabilities; (3) quality of interior spaces within the building; and (4) the condition and performance of existing furniture and equipment.

Post occupancy evaluation can be characterized as including 4 phases, each of which was clearly reflected in our school evaluation study.

Planning. In the initial planning phase of an evaluation study, the project team reviews a variety of literature, including research studies by both architects and educators, relevant codes and standards and examples of particularly noteworthy educational facilities. For example we assembled data from a sample of 12 "benchmark" schools reflective of a high quality of current practice. They provided the square foot criteria by which to evaluate educational spaces within the school we were to study.

Conducting. The actual conduct of POE at any level of effort involves the project team in a great deal of on-site data collection. Some of our data collection methods included: systematic observation of patterns of student and teacher behavior within classrooms; interviews with students, faculty, administrators and parents; updating of measured drawings for the buildings; assessment of physical conditions within the buildings, and an inventory of furnishings and equipment found within each educational space.

Analysis. The information provided by the planning and on-site data gathering obviously generates raw material to be organized and examined. Classrooms, for example, in our project were analyzed in several different ways. Square footages for various functional areas within these rooms — students' desks, small groups, teacher's desk, and circulation were compared by grade and size of classroom. Based upon systematic observations of teacher and student behavior within classrooms, patterns of behavior within each room (e.g., Reading, Writing & Listening, Student/Teacher Interaction, Student/Student Interaction, and Active Behavior) were determined as were patterns of desk arrangement, and student and teacher location. Most important in this analysis phase was our effort to establish key relationships between architectural and educational variables.

Reporting. The final phase of the process involved reporting of our findings and recommendations to our clients, the Board of Education. This was accomplished through a public presentation at a School Board meeting and in written form.

Findings

In doing the literature review for this project we encountered a dilemma common to many architects. Recommended classroom sizes, as well as the square foot per pupil criteria varied widely among states, school districts, journals and textbooks and educational organizations. The same situation was encountered for specialized teaching spaces as well as specific functional requirements, such as storage. Research in this area existed but was not very helpful or credible. Unfortunately this is a situation encountered by architects for too many building types. Some of our research, therefore, looked at very basic relationships between architectural attributes, such as the square foot per pupil in classrooms and its educational consequences.

As noted above, this evaluation focused on 4 key areas of the school under study: adequacy of educational spaces; building accessibility; quality of interior spaces; and furniture and equipment. Since the first of these topics is likely the least familiar to design professionals and led us to generate a number of innovative techniques, this will be the focus of the findings.

Rating the adequacy of educational spaces required that we related our data to a variety of sources. One key source of data was the standards developed from our sample of benchmark schools; it was found that some spaces were significantly larger than any of the benchmark schools while other spaces were smaller than any of the comparison settings. Using this data we were able to ascertain the educational priorities of the school, such as the emphasis on the music program, and raise questions about other functions, such as the much smaller than average library in this school. Such space-by-space comparisons support the importance of the kind of fine grained analysis carried out in this POE. Overall comparisons of aggregate square footages or square feet per pupil may mask important differences in particular educational areas.

These comparisons of square footages also served to focus our analysis of patterns of behavior within specific spaces; in what ways, if any, did an over or under-abundance of square footage influence the ways in which students and teachers used rooms? On-site data were gathered for 4 categories of classroom behavior. Our findings show that classroom size and the amount of square feet per pupil is related to the educational effectiveness of the classroom. We found that small group activities, teacher involvement with students on a one-to-one basis, and the flexibility of desk arrangements and inter-desk distance all relate to this basic architectural measure and the smaller rooms had critical disadvantages in this respect.

Basic research and credible findings were also developed in the area of classroom storage. These findings presented recommendations for storage by grade level and were consistant with results developed by the researchers in previous studies on other schools. Other findings were less generalizable, primarily relating to the specific needs of the school being evaluated.

Post Occupancy Evaluation is now beginning to be used routinely by many client organizations and architects. A few hundred of these evaluations have now been completed and documented, and in certain areas their results have had major influence, particularly in elderly and retirement housing, public housing, outdoor urban spaces, prisons, hospitals and a variety of commercial building types such as shopping centers.

Many of these evaluations also uncovered problems as well as excellent design features in the buildings they evaluated. Architects, doing similar buildings, and having access to these results, can produce better performance in their own buildings. There are many building types however and many technical, functional and behavioral areas, that have not been adequately evaluated. As the evaluation of performance in these areas is developed through the use of POEs, databases and information clearinghouses will also be created to provide such data to design professionals as well as their clients.

The changing nature of the professional context within which architects must work — the spectre of liability, litigation and insurance — make it doubly important that buildings perform as programmer, designer, user, and client desire and intend. Clearly systematic evaluation of one's previous work is among the most effective means of meeting this goal. As clients become more knowledgeable consumers of architectural services, the ability to carry out such evaluation studies may likewise emerge as a valuable tool for the marketing of services.

For further reading:

"Post Occupancy Evaluation", by W. Preiser, H. Rabinowitz and E. White will be published in the fall of 1987 by Van Nostrand Reinhold.

"Richards School Post Occupancy Evaluation" a report by H. Rabinowitz and G. Weisman is available through the Publications Series of the School of Architecture and Urban Planning, University of Wisconsin, Milwaukee, Box 413, Milwaukee, Wisconsin 53210.

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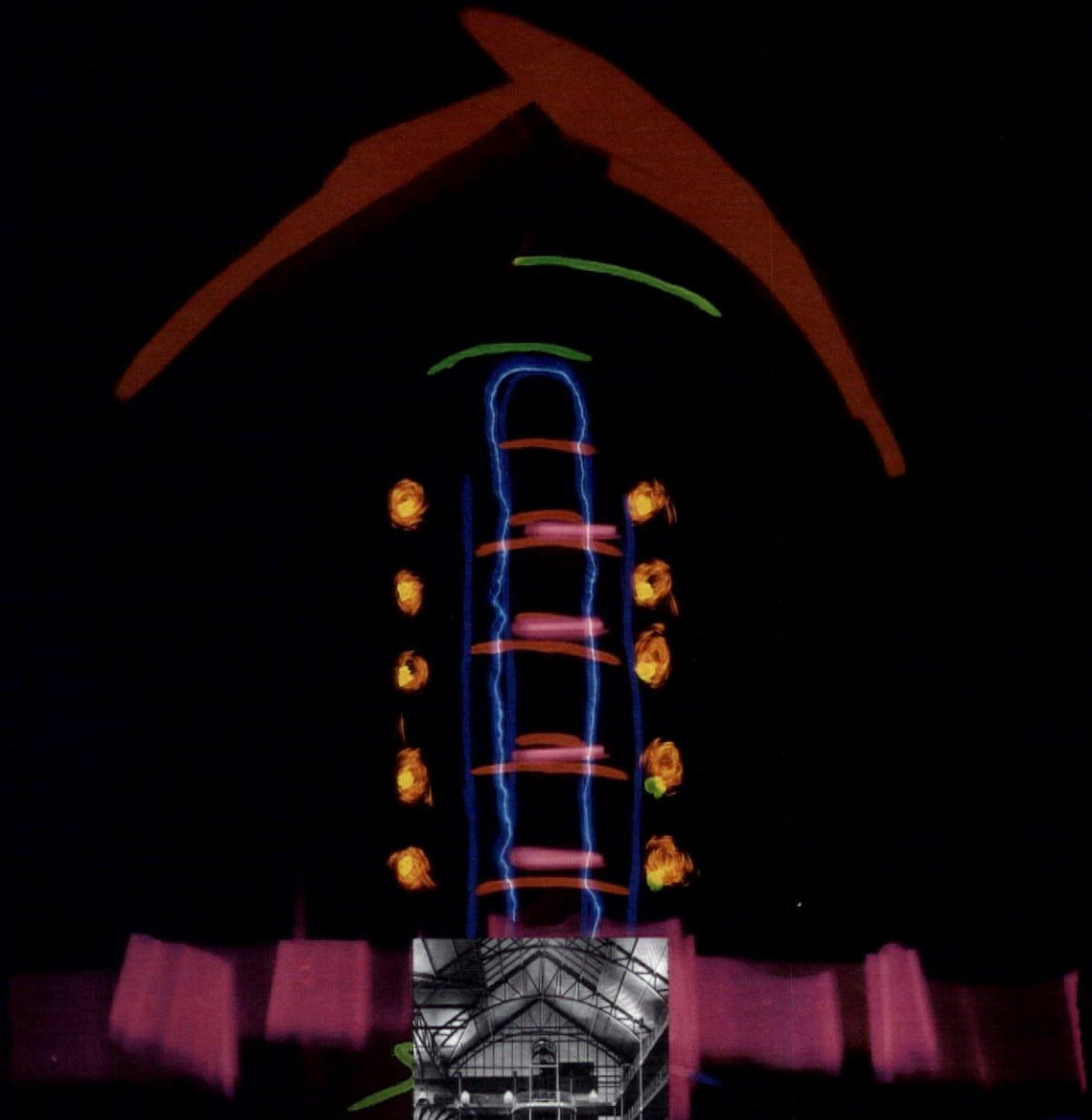

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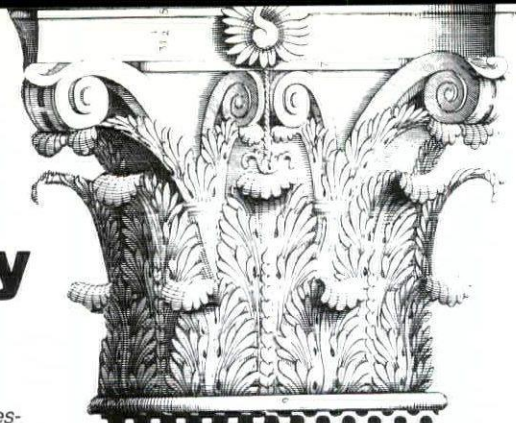
Lynne • JD Fabrics • JVC • Jack Alexander • Jack Cartwright • Jack Foley & Assoc. • Jackson of Danville • Jade Intarsia • Jamali • James Clarke Glass Studio • Jaru • Jeffco • Jeffrey Zigulis • Jenkins Brick Company • Jenn-Air • Jerry Shelby • Jessel • Jo-Vel • Joanna Western • John Orr • John Rosselli, Ltd. • John Widdicomb • Johnston Casual • Johnston Casuals • Jonathan Handpainted Tiles • Jonathon Studio • Jones & Irwin • Josh Simpson • Jovel • Judith Kindler **K** K-2 Studio • K.W.C. • KAB • Kallista • Karin Appel Handpainted Fabrics • Karl Mann • Karl Springer • Kate-Lo • Katzenbach & Warren • Kay Lyn • Keilhauer • Ken Jensen • Kentile • Kentucky Wood Floors • Kerenyi Kustoms • Kilims • Kim Huber • Kinder-Harris • Kinetics • Kinney Wallcovering • Kirsch Fabrics • Kisabeth Furniture • KitchenAid • Kitchencraft • Kitchens by Krengel • Kleen-Tex, Inc. • Kloss • Knoll International, Carpet, Office • Koch & Lowy • Michael Kodrich Assoc. • Kofabco • Kozy Heat • Kraus Carpets • Kreiss Collection • Krengel Custom Cabinetry • Kueco • Kuzio Vessels **L** L&B Empire Collection • La Financier • LaBarge • Lakeland Florist Supply • Lakeshore Foliage • Lakewood Brick & Tile Company • Lanark • Landes • Lane • Langhorne Carpets • Larsen Furniture • Laue • Leathercraft • Lee Behren Silks • Lee Jofa • Lees Carpets • Lehigh Company • Lehigh-Leopold • Lehman-Connor • Leni's Handwovens • Leonardo Looms • Les-Care • Levolor • Levolor Blinds • Lightolier • Linear Lighting • Lion in Frost • Lissner Chairs • Litton • Lobofloor Carpets • Loewenstein • Lonseal Products • Louis Bowen • Louverdrape • Love My Walls, Inc. • Lublin Graphics • Lucite & Lacquer • Lukman • Lumark HID Lighting • Lumenata—The Light Source • Lutron • Luwa • Lux Company Inc. • Lynchburg Works **M** MDC Wallcoverings & Fabrics • MJL Impressions • MSAIA • MacCorkindale Porcelain • Madison Square • Mae Martin Designs • Magic Chef • Magnat • Maharam • Mainly Baskets • Majestic Furniture Studio • Mannington • Manuscreens • Marble Trading Company of Spain • Marble Concepts • Marbleworks • Marcello Mioni • Marco Fine Art Resources • Marge Carson • Mario Industries • Mark B. • Mark Jacoby Custom Lighting • Marketing Professionals • Markiewicz Porcelain • Marktex • Marshall Moody • Marvin Walker • Marvin Windows • Mary Anne Wise Rug Works • Masland • Material Things • Matteo Grassi • Matteograssi • Maytag • Mazzega • McDonald Products • McGraw-Edison • McGuire Furniture • McMillan's of Santa Fe • McPhilben Lighting • Meadowcraft • Mel Brown Lighting • Melrose House • Merry Companies Inc. • Metallic Art • Metalux Fluorescent Lighting • Metropolitan • Michaels Mirror • Midland Brick • Midwest Brick & Supply • Midwest Custom Fireplace Surrounds • Midwest Design & Woodwork • Midwest Fireplace • Midwest Granite & Tile • Midwest Millwork Products • Midwest Plant Works • Miele • Milbrook • Milliken • Milliken Fabrics • Minton-Corley • Mirak • Mirart • Miroflector • The Mirror Place • Mohawk • Louis J. Molnar Assoc. • Monarck Mirror Door • Monster Cable • Montgomery Furniture • Morgan Mantels-Stair Co. • Morganton Furn. • Morris Greenspan • Morrison Lighting • Moss Design • Motif • Mueller Furniture • Music & Sound **N** NEC • NSS @ IMS • Nancy Freeman • Nann Miller • National Gypsum • National Mount Airy • Natural Vinyl Tile Company • Naturescapes • Naugahyde • Naurelle Int'l • Navan Carpets • Neinkamper • Nessen • Nessen Lamps • Nestle • Nevers Industries • New Horizons • Newmarket • Niche • Nicoletti Italia • Niedermaier • Nienkamper • Nobs • Nora Fenton • Nora Flooring • Norbar Fabrics • Norco Windows • Norman Perry • Norman's of Salisbury • Northampton • Northern California Imports • Northern Sun Sunspaces • Northland Cabinets • Northwestern States Portland Cement Co. • Norton Blumenthal • Nutone Food Center **O** Oakes Design • Of Distinction • Oggetti • Oggo • Oklahoma Brick • Old World Weavers • Olson & Associates • Omega Lighting • Orient Express • Oriental Lacquer • Oriental Object D'Art • Originals 22 • Origlia • Osram • Osvold • out of hand, inc. **P** PMI—Prestige Mktg. Inc. • Pace • Pacific Dynasty • Pacific Furniture • Pacific Textures • Palco Brand Architectural Grade Redwood & Douglas Fir • Palecek • Panel Concepts • Pantera • Paoli • Paramount Carpets • Patcraft • Paton Carpets • Patterson-Piazza • Paul Associates • Paul Hanson Lighting • Paul Jones • Payne Co. • Payne Street Imports • Pearl Baths • Pegg Whitney Woodworks • Pennsburg • Penrose Glass • Perspective Concepts • Pervel • Peter Pepper Products • Peter Schneider • Peterson Designs • Pewtarex • Philabaum/Carlson Gallery • Philadelphia • Phillip Graf • Philosophers Stone • Phylrich Int'l • Pilgrim Glass • Pilsen East Guild • Pioneer • Pirelli • Plato Woodwork Inc. • Platt Furniture • Pleri • Porter Carpets • Potter • Pouliot Designs • Preferred Stock Imports • Preview • Preway, Inc. • Princeton Technologies • Prudential— Card & Upright **Q** Quaintance Fabrics • Quaker • Quality House • Quartet Ovonics **R** R L Shafer & Sons • R. McKeown Inc. • RPI • Racquel's Collection • Rag Rugs • Rainbow Lighting • Rambusch Decorating Co. • Raquel's Collection • Ravani Lighting • Redco • Redwing Wood & Laminate • Reff • Regal Textiles • Reid Watson • Reliance Lamps • Remington Lamp • Renaissance Designs • Reprodux/Bevan Funnel • Richard Muller • Richard Ray Custom • Richardson Brothers • Richmond • Richtex Corp. • Ritts Co. • Rob Jones • Robert Aaron Young • Robert Allen • Robert Crowder • Robert F. Lehr • Robert Kerns • Robert Long • Robertex • Robinson Brick Co. • Rock Cross • Roden • Rodeo Mills • Rodolph/Jim Thompson • Roland Kentfield • Ramweber • Ron Charles • Ron Rezek Lighting • Ronald Charles • Ronald Schmidt • Ronson • Rose Cumming • Rose/Johnson, Inc. • Rosenbaum Fine Arts • Ross L. Silver Silks • Rougier • Royal Scot Carpets • Royaleigh • Royalweve • Royalyte • Rubble Tile • Rubicon • Ryan Associates **S** S. Bent Brothers • S. III Fabrics • S.R. Wood • S/W Metalsmiths • SPI • Sahaj Glass Studio • Samuel Heath • Sandys Custom • Sanford Brick Co. • Sanitas • Santa Fe • Santa Fe Pottery • Saporiti • Sarreid • Sausalito Craftworks • Savnik • Sawhill Cabinets • Saxony Carpet • Sayre/Strand Too • Sayre/Strand • Scalamandre • Scandiline • Schafer • Schlage • J.C. Schmidt & Assoc. • Scholes At IMS • Schrunk Studio • Schubertoldi • Schulte Shelving • Schumacher • Scotsman • Sea Cove • Secrest Glass • Select Imports • Sellers & Josephson • September Woods • Seven Continents • Sharon Concepts • Shaw Architectural Millwork • Shenandoah • Sherle Wagner • Showerette Shower Door • Signature • Silvestri • Simon Bigart • Sitmatic/USA • Gene Smiley Showroom • Smokador • Snaidero • Soicher-Marin • Soil Shield Int'l • Solnhofen • Somaca • Sommer of France • Sonance • Source 5 • Southwest Marble • Souveran • Sova & Sova • Spacemaster Systems • Spancraft • Spanish Marble & Granite • Spectrum • Spinneybeck Leather • Spinning Wheel Rugs • Spring Air Mattress • Springer-Penguin • St. Croix Valley Cabinetry • Staff • Stanton • Steamist • Stem Graphics • Stendig • Sterling • Stone Int'l • Storland Woodcraft • Storwal • Stratton • Streator Brick Systems Inc. • Stuart Scott • Stucco Stone of California • Studio Int'l • Style-Tex • Sub-Zero • Summit Brick & Tile • SunarHauserman • Sunrise Carpets • The Sunroom Company • Superior Fireplace Co. • Susan Myke Concepts • Swaim Designs • Swaim Originals • Syma Systems **T** T J Woodcraft • T.L. Royal • TRS Furniture • TSAO • TWIL • Taher Oriental Rugs, Inc. • Tai Ping Rugs • Talisman Carpets • Tamm's Industries • Tapestry Treasures • Tarkett • Tavola • Taylor • Taylor Backes • Taylor Chair • Taylor Clay Products • Taylor Desk • Taylor Ramsey • Techline • Ted Weinberg & Assoc. • Teka • MarJean Telke Associates • Tempo—Laminates • Tempo Window Fashions • Tennessee Pink Marble • Terra Design • Terra Furniture • Terra Glaze • Thayer Coggin • Thayer Coggin Institutional • Thema • Theresa Bisceguia • Thermador • Thonet • Tiffany Tilt • Timber Toys • Toledo Plate and Mirror • Tomlinson • Tonon U.S.A. • Top Grade • Top Grade Carpets • Touch of Brass • Tour De Bebelle • Tourek Quilting • Toyo Trading • Tradition House • Traulsen • Tressard • Tri-Mark • Tri-Mark/Tulip • Tri-State Brick & Tile • Trueheat Fireplace Inserts • Tuft • Tulip Inc. • Tuohy • Turk Art • Turner Mirror • Twin City Concrete • 2000X **U** U-Line • U.S. Brick • Union National • United • United Pacific • Upholstery Fabrics • Urkov-UMC • Used Brick **V** V&B Carpets • V'Soske • VPI Products • Van Teal Ltd. • Van Vechten • Van-Luit • Vecta • Vecta Contract • Velodyne • Velodyne • Vent-A-Hood • Venture Lighting Int'l • Vermont Marble • Vermont Structural Slate • Verosol • Versatility • Vescom • Vestal Manufacturing • Victor Cushwa & Sons • Vitra • Vitrix **W** Walker and Zanger • Wall-Nuts • Wall-Pride • Wallco • Wallcoverings, Unltd. • Wallpapers, Inc. • Walls Alive • Wallsource • Walltrends, Inc. • Warner • Warren Keith Studio • Warren Porch Shades • Warren Shade Co. • Watson Smith • Watson Smith/V'Soske • Waverly • Wayne Carlson High Country • Weave-Tuft • Webb Custom • Webster Brick Company • Weiman • Weiman Tables • Wellco Carpets • Wellspring Custom Furniture • Weskuske Rugs & Carpets • Wesley Allen Brass Beds • Western Lime • Westgate Fabrics • Westwood Industries • Whirlpool • White of Mebane • Whitehall Furniture Inc. • Whitehead Studio • Whittaker • Whitten Studios • Wicanders Cork Products • Wicklund & Associates • Wilderness Collection • Wilderness Pottery • William Switzer • Wilson-Hunt • Wilsonart • Winfield • Winn Graphics • The Wiremold Co. • Wisconsin Furniture • Witherspoon • Wolffwire • Wood Design • Wood-Mode Cabinetry • Woodhill Industries • Woodlee • Worden • Wunda Weve • Wundaweave • Wunder Klein Donohue **Y** Yankee Hill Brick • York **Z** Zapotec Art & Indian Rugs • Zax • Zimports

Pattern Book Technology



"Beauty will result from the form and correspondance of the whole, with respect to the several parts, of the parts with regards to each other, and of these again to the whole; that the structure may appear an entire and complete body, wherein each member agrees with the other, and all necessary to compose what you intend to form."
Andrea Palladio[1]

Kent Keegan

Prior to the twentieth century, buildings were constructed *in-situ* with a completeness of purpose and a directness of solution. Each completed edifice reflected the architectural greatness of the period and the unique cultural heritage of the people. These monuments of the past: temples, great pyramids, cathedrals and the dwellings were directly attributed to a unique group of individuals; the masterbuilders, carpenters and stonemasons.[2] Successive generations of these master builders fused the spatial program with the available building materials requirements and the construction techniques necessary to achieve a functional and harmonious whole. The resolution of spatial problems occured with the customization of the structural material in response to specific placement requirements. The correspondance between material and human need was defined within very strict parameters, and the shaped material assumed its rightful place and identity within the spatial vision of the master-mason.[3] The stonemason shaped the stone, often carved in-situ, expressing the "materiality" of the process — a pure process of construction. The unique vision held by the mason in the shaping of the stone, fitted within the framework of a much larger vision of the whole. It may be argued that the shaped stone derived its meaning only from the whole and not the individuality of the piece of stone. The vision of spatial form (e.g. church, hospital, palace, etc.) and its construction were united by the constructor, in a manner that produced structures of undeniable beauty and directness of intent.
Whether shaped by hand or hammer, those monuments represented a fusion between intent and realization which is a particular quality no longer prevalent within our contemporary technocracy. The evidence suggests that our ability to comprehend the whole vision is being eroded. This paper will examine the decline of holistic thinking by investigating the evolution of the professional "pattern book", and the impact of the "standard detail" on the building construction professions: the architect, the constructor and the manufacturer.

The Problem

There are major forces reshaping the design and construction professions. The present formula, which consists of displaying a series of drawings, standard details and related specifications to a builder/contractor and then requesting that it be built as drawn, appears to be at the root of the problem. The breakdown in communication between the various discip-

lines is a major force that is reshaping the whole of the construction industry. In a society dedicated to the delegation of responsibility, it is that delegation (expressing a rejection of any and all liability) that results in inadequate, mismanaged, uneconomical and poorly built structures. The continued preservation of the current modus operandi furthers the distance between the inception of the idea and its effective resolution. The dialogue of equilibrium has broken down.

"A representative of the aircraft industry has said that if airplanes were put into production in the manner of buildings, they would not fly."[4]

Based on recent findings, the architectural design profession is undergoing dramatic changes. Changes being shaped by an acceleration of social and technological factors (liability insurance and computers, etc.), The current state of the "art of building" suggests that economic constraints have a far greater impact on formal design considerations than at any time in the evolution of the profession. The architectural critic/historian Vincent Scully, argues that there is a new breed of building, based not on humanistic or even environmental concerns, but on the image of the corporation, the power of the dollar. The denegration of the art of building has been pushed one step further by the logarithmic escalation of building failures and the resultant financial awards to the injured parties. Liability insurance, once considered a reasonable and realistic part of a job cost, has sky-rocketed beyond the capabilities of many architectural practices and construction companies.

Lewis Mumford argues that contemporary society is "a society based on the worship of the machine."[5] The product of the machine; the building material, represents a major component in the transformation of the art of building. What was once mined, shaped, extruded and installed by hand, has been replaced by a sophisticated level of mechanization. The distancing of the craftsman from the material, due to the influence of the machine, has produced a building/construction industry dependent upon new forms of communication: the pattern book and its progeny.

Historical Perspective

The history of construction outlines man's continuous struggle with physical material and its translation into built form. The material expressing its inherent purpose through its form, a form ornamentalized by the organic nature of the material. The regional availability of construction materials often dictated the built form, giving rise to the codification of design and construction processes in both a descriptive and an analytical sense. The means of conveying design intent was an inherent part of the construction process, evidence of which can be found as early as the Sumerian era. "Asbuilt" drawings and three-dimensional models, based on a Cartesian coordinate system have been discovered throughout Mesopotamia, Tigris, and Euphrates river valleys. Egyptians described their construction processes with a high degree of accuracy, relying on a geometric perfection of angles, proportions, and measurements carved in bas-relief on their structures from the Pyramid complex at Giza to the great Temple of Abu-Simbel in Upper Egypt.

Similarly, the concept of the pattern book is not a new one to the design profession. The Roman architect/historian Vitruvius undertook to organize, in a series of ten books on architecture, the principles, methods of construction, materials, and proportions of Greek architecture and its influence on the state of Roman architecture during the time of Caesar Augustus. The text is both descriptive and analytical in nature. Whether laying out the Greco-Roman theatre or the analemma (sundial), he dictates a comprehensive set of building standards. By establishing those standards, he undertook a major break with the past by establishing a design methodology that relied on graphic representation to describe materials, their limitations, means of assembly, and a variety of construction techniques.[6]

The writings of Vitruvius have been a major influence in the development of the pattern book. Alberti, Palladio, Inigo Jones, and Thomas Jefferson, for example, used similar approaches when attempting to codify their principles and theories of architecture within a pattern book format. The format utilized an orthagonal graphic presentation coupled with technically accurate descriptions of materials, design and construction methods, historical perceptions, and an expanded vocabulary of architectural elements. Since the 1800s, the evolution of the pattern book has reflected a tendency within the burgeoning building construction industry to systematize the principles of design, the fabrication of parts, and the methods of construction commensurate with the demands of an expanding machine-based society. Joseph Paxton, with the Crystal Palace of 1851, was able to document the entire building process through graphic modeling coupled with a technical description for the standardization of machine produced structural elements to fit the emerging needs and aspirations of a technocratic society — the entire proposal submitted in pattern book format.[7]

The development of pattern books in the late 1800s and early 1900s reflected a need to systematize the principles of design to the extent that an exaggerated trust in the efficacy of the methods and principles of building design, fabrication, and construction emerged. Scientism was the new ideology. No longer was the art of building relegated to a pluralistic viewpoint but to one based within the doctrine of technical absolutism where the use of the pattern book became the basis for design. The Chicago Columbian Exposition of 1893, under the guidance of Charles Burnham, is an example of the extensive use of the strength and limitations of the pattern book. The development of the classical standard of buildings began to emerge, suggesting that the building, once conceived as a holistic event, was being dismantled along lines of parts, sub-assemblies, and assemblies.

Frank Lloyd Wright, in the *Art and Craft of the Machine* foretold of the architect's dependence on the machine and its byproduct.[8] The use of standardized elements — pure in their production and honest to the nature of the material, formed the basis for the new technology. It was a technology that reflected the visions of the future state, and was based on the potentiality of the machine and its by-products. As the technical sophistication of the products increased, the society expressed a greater need for order and stability giving rise to a philosophy of reductionism. The procedure necessary to reduce societal complexities down to their simplest form instigated the movement toward *generic* representation resulting in the generation of new building material standards, part of which included the "generic detail". The complexities of the building design and construction process created by the shift from the customized to the machine

fabricated building resulted in the development of "graphic" standards. The need for building construction standards during the late 1800s is evidenced by the number of architectural design manuals, encyclopedias, and monographs that were circulated within the architectural and engineering communities.

The Present Perspective

As the shift away from the "arts and craft" movement (customized) became evident, a major explosion in the art of building occured — the "standard detail". Konrad Wachsman, equated the standard detail to a series of modular orders, each order dictating its own spatial and technical requirements. The standard detail, as a modular fragment of the building viewed in a two-dimensional graphic framework, became the new symbol for the building professions. Disconnected from form, structure, material and aesthetics, the standard detail became the thread that linked together the architect, the constructor, and the manufacturer.

The evolution of the professional architectural practice and the thrust toward a manufactured building resulted in a need for greater communication within the building industry. The manufacturer, following the lead established by the architect, began to incorporate the architect's building construction details into a series of standardized machine-made pieces. As the number of manufactured building parts emerged, the manufacturer relied on the technical data sheet or a product information sheet, to advertise the desirability of the product. The manufacturers even went so far as to advertise their "details" in a variety of publications oriented not to the profession but to the family.

The Architect

Architectural Graphic Standards, first published in 1932, has been a constant "drafting room companion" of architects, engineers, draftsmen and builders. The "graphic standards" had emerged from a defacto compilation of generic details, technical data sheets, material specifications, and performance criteria found in many professional architectural offices. The success of the graphic standards format gave rise to a plethora of publications that attested to the need of the architectural and construction professions for a greater level of specificity. The machine age resulted in the need for specific information on the nature of the manufactured part, the manufacturing process, cost, availability, specification, and the "recommended" means of insertion into the building matrix.

The machine, as represented by the manufacturer, has established the *modus operandi* of the design and construction of the building. What once was the perogative of the architect has been taken over by the manufacturer. No longer does the architect "invent" the detail. The new office companion, as represented by "Sweets Catalogues", has become the design source. The traditional role of the architect has changed, the architect becoming an entrepreneur, putting distance between formal and technical considerations. The architect has become a business executive, delegating responsibility to a "team". A team of design professionals, each operating separately, often in conflict over their territorial imperative, each having its respective pattern book and each dependent upon the authenticity and the authority of the information represented within.[27]

A "new" drafting room companion has supplemented or even replaced the more traditionally used pattern books. Initially replacing many of the traditional methods of graphic delineation and specification writing, the computer has become the latest expression of pattern book technology. It is able to present instantaneously what here-to-fore had taken weeks and even years to compile. The dramatic and costly shift to the "electronic office" has furthered the dependency of the architect on the machine.

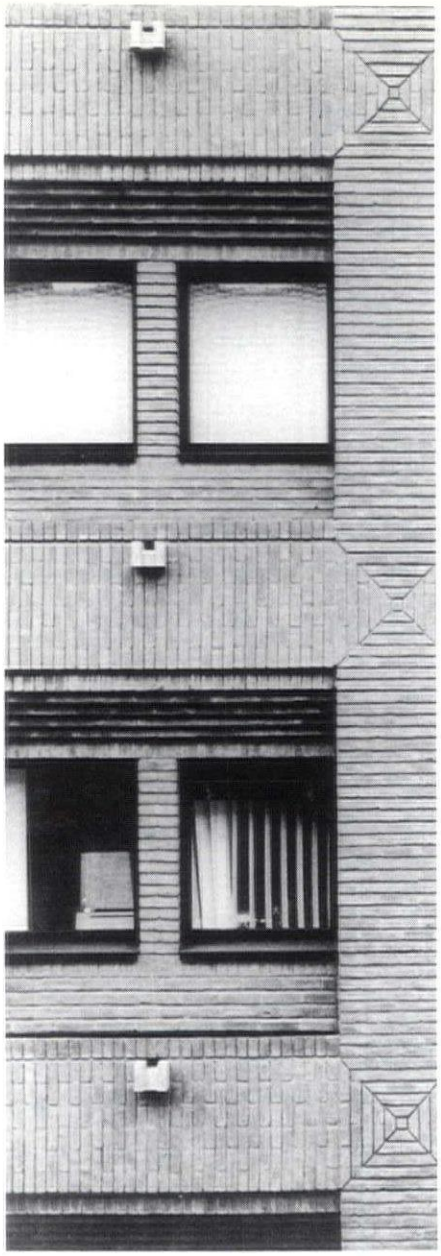
Commensurate with the level of technical specialization and computerization, the building and its component pieces have undergone fragmentization. The building, no longer conceived as a whole, has evolved as a kit of manufactured parts. Parts, in fact, so numerous that the technical and design literature necessary to describe them takes twelve feet of shelving space. The technological explosion has created an environment responsive to new methods of information retrieval, whether in printed or electronic form, the new graphically oriented pattern book format has become the central warehouse of building construction information.

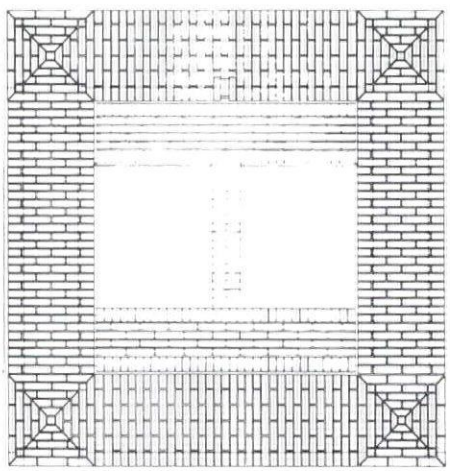
The Constructor

The constructor has been a part of the triumvirate since the New Machine Age. The builder's role has now been transformed into that of a broker. Caught between the "designed part" and the "manufactured part", the contractor negotiates price, performance and longevity through the translation of a series of construction documents into the built form. The constructor performs a service, relying on the authenticity of the drawings which, in their graphic format, are often confusing, misleading and at times, faulty. The dichotomy between the interpretation of construction drawings and accepted practice, forces the builder to rely on the manufacturer and the in-situ practicality of building construction experience. The building, conceived of as a kit of parts, requires that each part be assembled in its generic form. The generic detail, from the contractor's point of view, represents a delegation of responsibility that cannot be accepted. Turning to the manufacturer for the interpretation and translation of the generic details, the constructor is simply following the lead already established by the design profession.

The Manufacturer

The new technology, based on a reductionist ideology, supports the idea that the manufactured part is central to the design process. While building form may be generated from a variety of esoteric motives, the translation of that form relies not on the architect's ability to design, but on the architect's ability to make the proper selection of materials, assemblies and parts. The machine, as nurtured by the manufacturer, has succeeded in 150 years to neutralize the design professions to such an extent that the "shop drawing" has become the final authority in the translation to the built form. The "shop drawing" has become the standard on which everyone depends. When the architect's "approved" stamp appears on the shop drawing, it represents the transfer of authority to the manufacturer. The manufacturer or assembly fabricator has translated the building into final form. The contractor and architect, dependent on the "new design", look to the manufacturer for the authenticated image, an image found within the manufacturer's product literature.





Construction details: drawing and reality

The manufacturer's technical data sheet, has become the new "drafting room companion". The manufacturer, as the primary representative of the machine and its by-products, initiates the new technology. The delegated responsibility of producing a series of designed parts has pushed the manufacturer into the forefront of the building construction industry as the designer. The manufacturer, like Vitruvius, has published the equivalent of the "Twelve Books on Architecture", to organize the principles, methods of construction, specifications (product or performance), and material standard details of the new state of the art. Sweet's Catalogue, as published by McGraw Hill, is one form of expression the new pattern book has taken.

In its format, the Sweet's Catalogue has structured itself around the currently accepted standard: the Construction Specifications Institute format of divisions of labor. Each division is replete with a range of generic details and applications and each division comes with its own spokesperson — the manufacturer's representative. The representative acts as the translator for the machined product as the mechanization of the information requires an intermediary. Within this setting, the manufacturer is capable of affecting the final product by controlling the economic and technical conditions under which the structure is fabricated, assembled, and constructed.

Conclusion

Given the exponential explosion of technological information confronting the design professions, the need for reliable data becomes more and more evident. The evolution of the "electronic office" parallels that of the "electronic building", stressing a greater dependency on the state of the art and the associated technological innovations. The pattern book has come to be central figure in the building construction industry. In the hands of the design professional it has become a constant companion, an imperative, a map to which one refers for direction and inspiration. In the hands of the constructor, it has become a resource on which the assemblage of the kit of manufactured parts is totally dependent. In the hands of the manufacturer, it is the means through which the machine can dictate the final objective — a built form generated exclusively by technological constraints. By accepting the pattern book as a constant companion, the architect is accepting the role of the "ornamentalist." What was once only implied, has now become evident: the designer has been allowed to design within the aesthetic and technical limits dictated by the manufacturer representing the machine.

It is a time of full mechanization with still newer developments occuring on a daily basis whose implications and directions cannot be fully appreciated. It is no longer the replacement of the human hand by the drafting machine, but of the intervention into the substance of the human mind that is of concern. The inroads of the computer and its programs that permit the architect to draw, to specify and to verify as well as to communicate have had a major impact on the design profession. Computer aided design (CAD-CAM) has changed the traditional notion of design and detail drawings to the extent that manufacturer's details can be incorporated directly into the design via the telephone. The electronically transmitted detail is the final connection between machines. The designer sits in front of the display terminal and marvels at the dexterity of the machine — the tool has achieved the status of designer replacing the human component.

The education of the new design professional suggests the need for machines to teach about how to use the machines that serve. No longer does the hand generate the drawing but the hand becomes the machine extension articulating the drawing. While the machine may render the built form and establish a new aesthetic language through the pattern book format, the future of the design professional is being shaped by the machine. The gradual shift from individual responsibility to that of a delegated collective suggests the need for an alternative form of pattern books that can address the technological imperative while maintaining and expressing the human values so necessary for survival.

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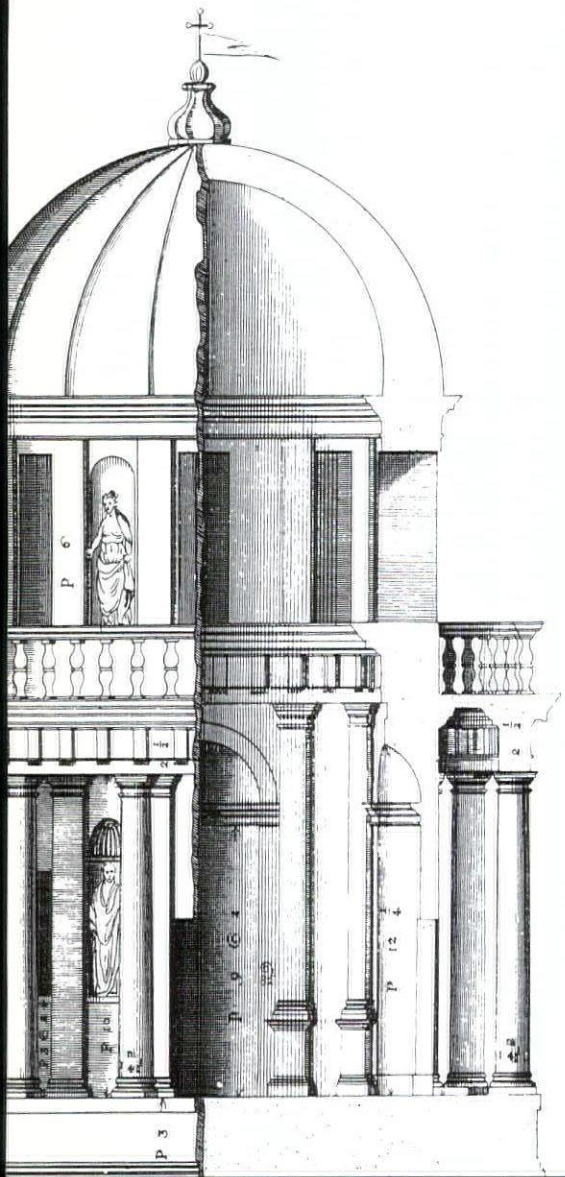
Architectural Representation: Techniques of the Past

Robert C. Greenstreet and James W. Shields

For centuries, architects and artists have struggled to represent three dimensional form on a two dimensional surface, during which time a large repertoire of graphic techniques have developed, each with its own unique characteristics.

Some of these techniques concentrate on the realistic portrayal of a design, while others are analytical and abstract in their appearance, and are more relevant to designing than presenting. Designers presumably choose a drawing type based primarily on its suitability to the intended task, but also on personal preference, stylistic whim and perhaps even ideological concern. During the 1920's for example, perspective drawing was seen by many to contradict the conception of space conceived by modern architects and artists. Many designers no longer felt that perspective techniques corresponded "to the objective and unequivocal representation of space" but rather that they "rendered space limited, finite and closed".[1] Axonometric drawings were instead forwarded by such Modern Movement proponents as Thes Van Doesberg as the most appropriate drawing type for depiction of modern architecture. Therefore, as architectural ideologies shift and change, certain drawing conventions will fall from favor and virtually disappear from common use. Some of these drawing types can be successfully applied in a number of situations but, by virtue of neglect, their potential may be lost to architectural designers.

During the preparation of a new text on architectural representation, the authors discovered a number of techniques and applications which have largely passed from common usage, but which seem to provide some very useful applications in the design and presentation processes, showing aspects of space and form in unusual and revealing ways. Some of these are now presented for potential consideration by designers.

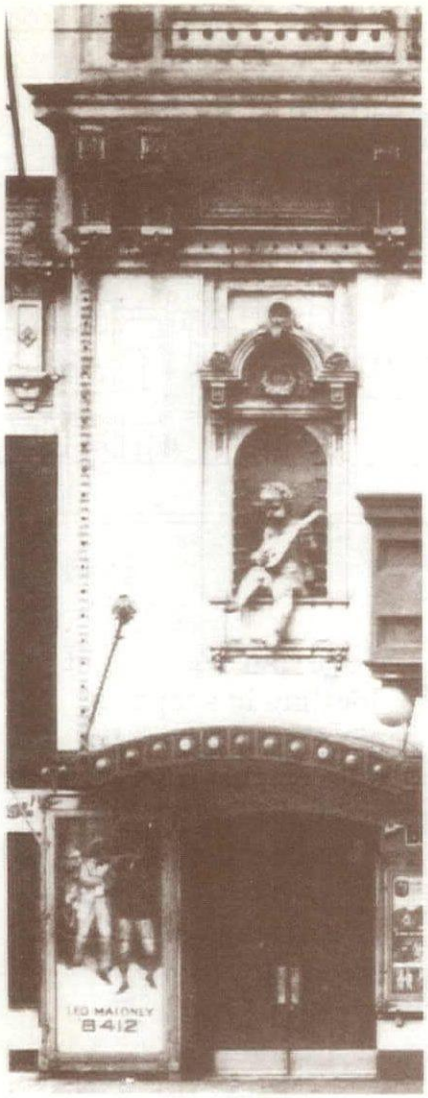


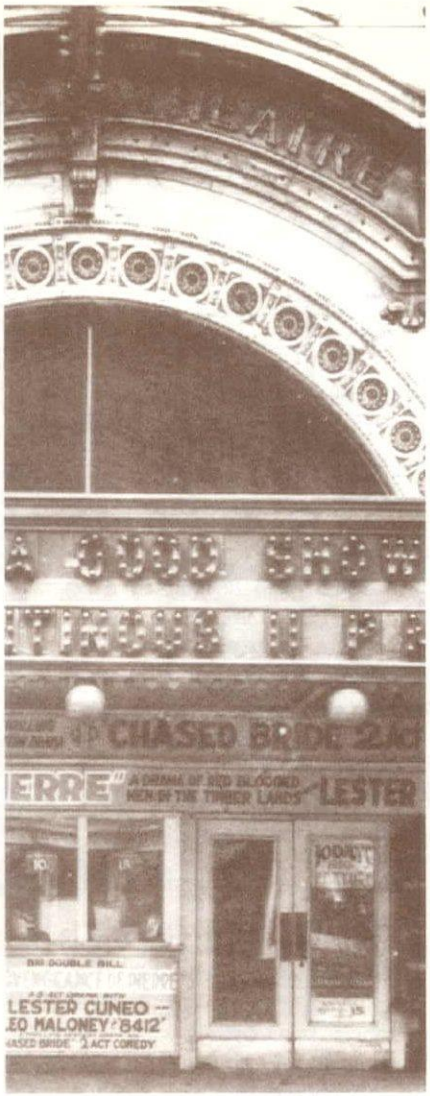
Composite Drawings

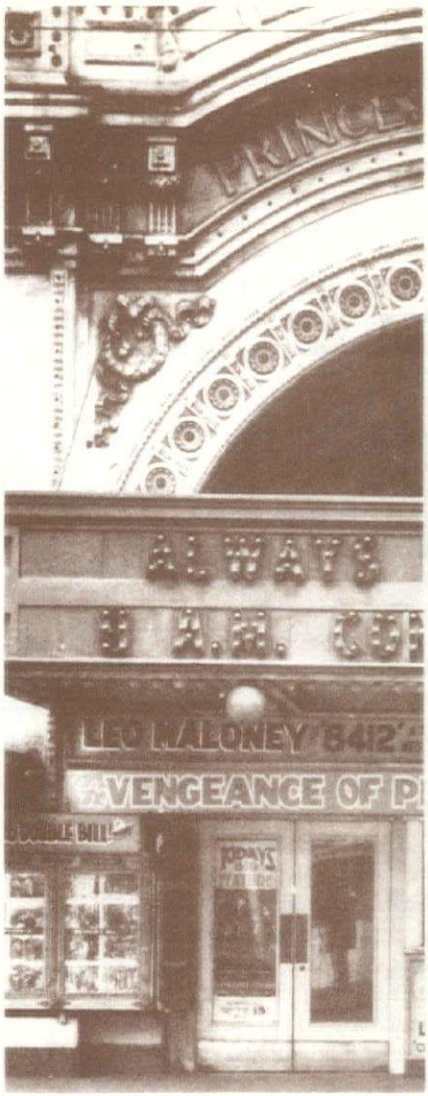
A glance at Ledoux's "L'Architecture"[2] will quickly demonstrate that architects have had at certain points in time very different ideas of how to present their designs and lay out different drawings on a plate or sheet. Contemporary designers will often approach drawing layout from a categorical point of view, i.e. all plans together, all elevations together, etc. Ledoux (and his engravers), on the other hand, would typically place different drawing types in direct association with one another. Plans, sections, and elevations would all be drawn to the same scale, and placed close together on a plate in axial alignment. The three images are bound together as a single unit, producing a complete image of the building at a single glance. While such a technique could be seen as a mere presentation device, if a designer develops building plans, sections, and elevations simultaneously (and directly related to one another) a design of greater unity and consistency of parts is likely to develop than if the design is developed by first working on all plans, then switching to elevations, and finally completing sections after the fact. There is evidence that the 'composite drawing' system was both a presentation and a design tool, as the design and travel sketches of such diverse figures as Leonardo, Palladio, and Latrobe demonstrate.[3] In addition to the depiction of buildings, individual rooms were often drawn in this fashion, usually the section, plans, and interior elevations being closely associated on the same sheet, combined as one drawing in order to describe every aspect of a space in a single sketch.

Section Elevations

There exists a composite drawing type which was traditionally used to develop and demonstrate the relationship between principal elevation and its major interior space.[4] By drawing both elevation and section as a single image (the two images meeting about the central axis), direct comparisons can be made between the two joined images. While this sort of drawing has been out of common use for a long time, it has a unique characteristic which should not be overlooked. The drawing type can compel the designer to simultaneously develop interior volumes and exterior surfaces, and the two together as a single, unified composition. One can easily understand how a major interior volume expresses itself on a buildings' primary elevation, and designing with such a drawing







Our Wisconsin Main Street Program

.....means economic development and revitalization for downtown

- economic restructuring
- planning and design
- promotion
- organization

PURPOSE OF THE TASK FORCE

The Wisconsin Main Street Task Force has been convened to bring into being a statewide downtown revitalization effort that would include all current revitalization programs and that would, in addition, bring to Wisconsin the proven Main Street Program of the National Main Street Center, which would provide proven consulting and training resources.

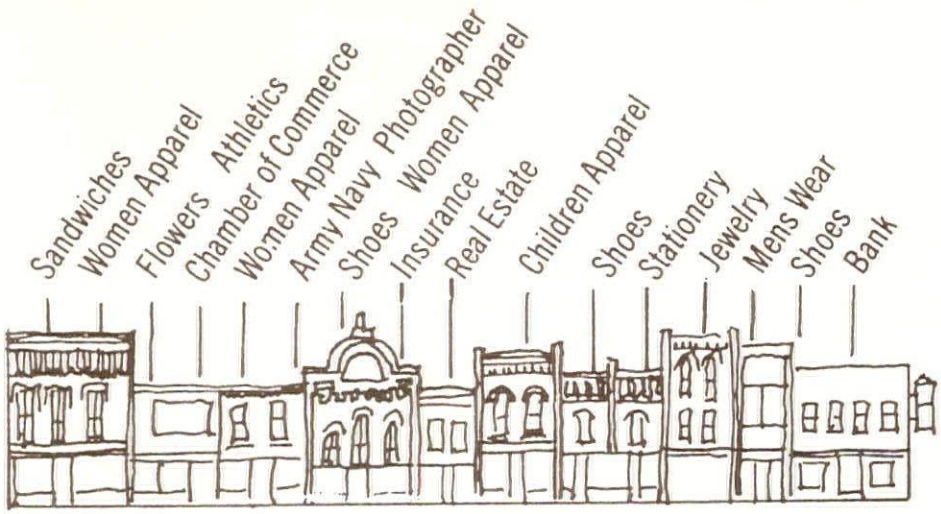
WHAT IS THE MAIN STREET PROGRAM?

In 1979 the Main Street strategy for downtown revitalization was created by the National Trust for Historic Preservation utilizing a main street's existing and historic assets adapted to today's markets. Formally established by the National Trust in 1980, the National Main Street Center provides human resource and technical information to states and communities seeking effective, affordable solutions to the problems of older central business districts. Focusing on four elements: Organization; Promotion; Design; and Economic Restructuring, the Main Street approach produces dramatic short-term improvements, particularly in appearance, while causing fundamental changes to occur in leadership and the downtown's economic base. The program is, however, a long-term project requiring the careful realignment of every aspect of downtown.

Wisconsin's Main Street Program

WISCONSIN'S MAIN STREET PROGRAM

Currently 26 states have joined the Main Street Program. It can be successful in Wisconsin too. Soon legislation will be introduced to appropriate $320,000 from the state budget to fund a 15 community, three-year Main Street Pilot Program in our state. It further provides for a cadre of advisors responsible for expanding the number of municipalities served by the Main Street Program.



DOES MAIN STREET PROGRAM WORK?

From 1981 to 1984 the focus of the Main Street Program was an unique three- year pilot partnership between the Center, six states, and 30 small cities. By any standard the achievements of the National Main Street Center's three- year state demonstration were remarkable.

* Five of the six pilot states have added communities to the program, creating a total network of 83 towns.
* Twenty of the original Main Street towns formed new downtown organizations; eight other cities strengthened existing organizations.
* Twenty-eight of the cities have established low- interest loan pools or subsidy programs to encourage facade renovations and building rehabilitation.
* More than 650 facade renovations occurred in the communities.
* Sixty-nine new construction projects occurred in the downtowns, representing an investment of $84 million.
* Nearly 600 rehabilitation projects, including new signs, storefront renovations, interior improvements, and conversion of upper floors, have been completed representing an investment of nearly $64 million.
* Nineteen of the cities organized business recruitment programs or methods to attract developers and investors.

"At one time we thought of locating in shopping centers, but . . . with the improvements we'd seen here in just two years . . . we decided to move downtown." (Restaurateur, Thomasville, Georgia)

MAIN STREET'S CITIZENS SPEAK

"You can just feel the impact as you walk up and down the street. So if the residents feel it, the citizens feel it, the merchants are feeling the impact - it's bound to be good!" (Resident, Tarboro, N.C.)

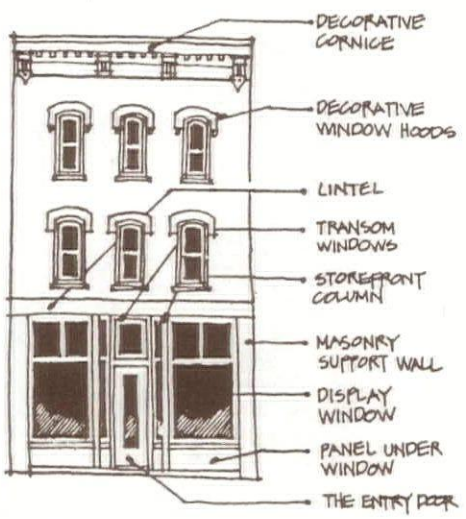
"...until the Main Street Project came along, we never had a coordinated effort to carry anything through to completion." (Pharmacist, McKinney, Tex.)

"...time has proved that the best results are obtained when everyone gets involved on a personal and individual basis." (Department store owner, Shelby, N.C.)

MAIN STREET PROGRAMS THROUGHOUT THE COUNTRY

About 26 states have established Main Street Programs, involving about 280 cities. Because of the phenomenal succes of the great majority of these Main Street Projects, most of the states are expanding the Programs to include more cities and villages.
Some of the results of these Main Street programs:

* Texas, 1981-86, 29 cities involved. 666 new business starts and expansions. 1,492 new jobs created. $95,586,031 in private investment downtown.
* Michigan, 1984-86, 14 cities involved. 252 new business starts and expansions. 588 new jobs created. $23,480,000 in private investment.
* Georgia, 1980-85, 12 cities involved. 486 new business starts. 904 jobs created. $64,518,478 in private investment.
* Virginia, 1986, 5 cities involved. 99 new business starts and expansions. 347 new jobs created. $4,028,432 in private investment.
* Kansas, 1986 (first six months), 5 cities involved. 26 new business starts and expansions. 57 new jobs created. $936,350 in private investment.
* Washington, 1985-86, 5 cities involved. 147 new business starts. 408 new jobs created. $4,549,425 in private investment.
* South Carolina, 1985-86, 10 cities involved. 106 new business starts. 350 new jobs created. $9,051,616 in private investment.



KEY TO THE MAIN STREET APPROACH

The key to the Main Street approach is its reliance on local business people working with government to translate investment opportunities into visible reality. But in each pilot town, it takes the consistent advocacy and professional guidance of the on-site project manager to get merchants and property owners to see a future in history. The goal of the Main Street Project is incremental but perceptible change.

"Revitalization isn't just a facial lift. It's down deep inside. It's something we have to do to make ourselves better." (Banker Bloomsburg, Pa.)

WHAT WILL A COMPREHENSIVE DOWNTOWN REVITALIZATION PLAN DO?

It will provide answers and recommendations pertaining to the following:

* What is the community's precise market area (market study).
* What types of businesses would be appropriate, successful, and interested in the community.
* What improvements in physical appearance should be made to enhance the central business area (conceptual building and streetscape drawings).
* What changes should be made to improve traffic flow and parking.
* What ongoing organizational structure should be implemented.
* What financial vehicles should be utilized to implement the plan.

BYWORDS OF MAIN STREET PROJECTS

The Main Street Project's bywords, economic development with the context of historic preservation, emphasize the intent to foster growth without sacrificing the qualities that make each town distinctive. In recapturing the best of its past, Main Street insures the quality of its future.

WISCONSIN'S MAIN STREET DAY

The Wisconsin Main Street Day took place in Madison on May 12, 1987. The objective of the day was to provide information and examples by practitioners of how the Main Street model actually works and what economic results can be anticipated. This information was offered to Wisconsin's community leaders to afford them a better grasp of the details and impact of the program. The seminar introduced Wisconsin's municipal leaders and state legislators to the current legislative proposal and to the comparative experiences of other states operating Main Street Programs.

WHO BENEFITS FROM MAIN STREET PROGRAMS?

The entire community. Revitalized central business districts mean a broader more stable tax base, a visibly improved quality of life which encourages new residents to settle in the area, and renewed pride in the community with jobs and the attraction of new investors and developers.

WHAT CAN YOU DO TO HELP?

Because the Main Street Program is a public-private partnership, both sectors must be involved in downtown revitalization to achieve maximum results. Contact your state senator and representative and urge them to support this legislation. Don't stop there. Your business association, service club, and municipal government can add their support for Main Street. Press releases to your local news media indicating your groups advocacy of Main Street will create more public awareness of the program and how it can benefit your community.

Remember there was a time when Main Street was everyone's neighborhood, the heart and soul of each community. More than a marketplace, Main Street was the center of civic and social activity, and its buildings reflected not only the town's past but also its pride. In a very real sense, Main Street symbolized the community's identity and embodied its heritage. A revitalized Main Street can once again become the focus of a community's life. It's up to you.

There was a time when Main Street was everyone's neighborhood, the heart and soul of each community. "Main Street revitalization isn't just a facial lift. It's down deep inside. It's something we have to do to make ourselves better."

It's up to you to act now.

How can you act?

Mail the cards to our Governor, your Representative, and your State Senator.
Or better yet, write a note to each and ask a friend or relative to mail the cards.

And, should you wish to testify on the Main Street Bills contact the staff person of the committees.
In the Senate, 1987 Senate Bill 285 will be heard by the Economic Development Committee chaired by State Senator Ulichny. Contact her office (608) 266-5830 for dates of hearings.

In the Assembly, the Main Street Bill, 1987 Assembly Bill 427 has been referred to the Assembly Economic Development Committee chaired by Representative Mark D. Lewis. Contact his office (608) 266-0660 for dares of hearings.

Or, ask your Representative and State Senator to tell you when these hearings will be held and if they are supporters ask them to testify in favor of the Bills or write a letter to the committee chairs in support.

And, don't forget that you may get a message to your legislator through the legislative hot-line: (800) 362-9696.

Thanks for your help!

Please thank your Representative and State Senator for their help.

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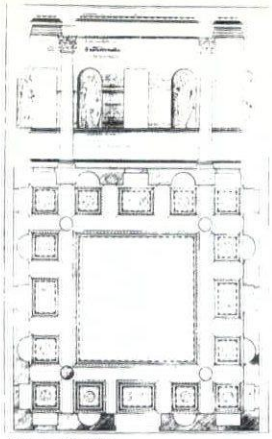
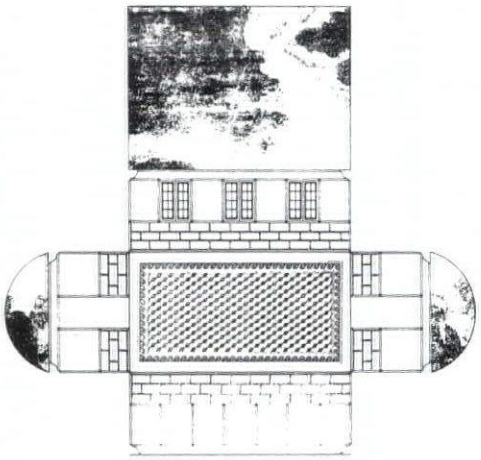
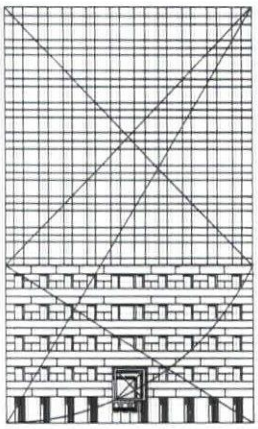


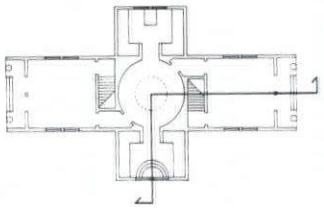
Composite Drawing

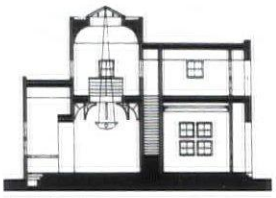


Unfolded Elevation



Regulating Lines





Bent Axis Sections

type can produce schemes which are better resolved in this respect than those developed with more typical 'separate' drawings. The usefulness of these drawings is generally limited to those designs composed with complete bilateral symmetry upon a scheme. Like many analytical methods the type presents information in an extremely abstract way, emphasizing some information at the expense of others (i.e. what does the entire elevation really look like?). In addition, the drawing type can be seen to emphasize certain design ideologies (bilateral symmetry, exterior expression of major interiors, unity between parts, etc.) which may or may not coincide with the design problems at hand, or the designers' intentions.

Unfolded Elevations

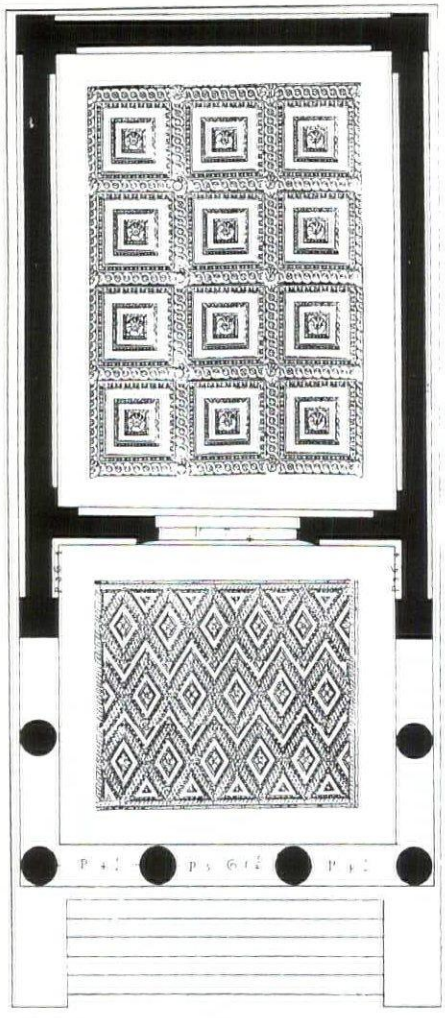
Unfolded, or bent picture plane elevations can be used when contiguous elevations about a space or a building need to be studied together.[5] All four elevations of a court-yard, for example, can be 'unfolded' and drawn together on a single plane. The advantage of this approach is that elevations that will be seen together in a completed building can be drawn and designed to produce a continuous and unified effect, which may be preferable to studying them as separate disjointed elements. This notion of 'unfolding' is appropriate in several situations, such as in the design of atria, squares, or other rooms where the elevations should be studied as a single entity. It can be employed to study curved surfaces by actually curving the picture plane so that all elements appear true to scale and proportional, without the foreshortening effect that elevations of curved surfaces normally provide. Furthermore, unfolded elevations can be combined with a plan of a space, with its corresponding elevations folded down onto a single picture plane. A reflected ceiling plan could be included too, so that the drawing might even be cut up and folded into a complete model of a room. The ability to see and work to scale on all surfaces of a room simultaneously has obvious design advantages.

Regulating Lines

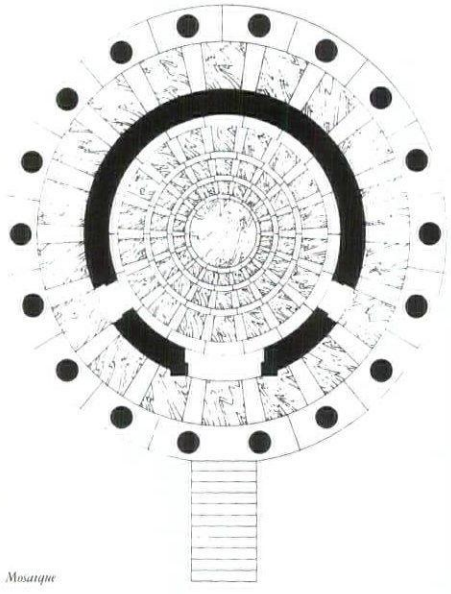
Regulating lines, or trace regulateurs as they are sometimes called, are light lines overlaying an elevation, plan, or section, which serve to demonstrate and clarify the geometric construction or proportional system used in the building's design.[6] The most typical use of regulating lines is probably the description of golden section proportioning of elevations. The geometric layout of these golden rectangles will actually be drawn (lightly, or in a contrasting color such as red) directly onto a finished elevation. Often, the diagonal of the rectangle is drawn, as all rectangles which have parallel or perpendicular diagonals are proportionally similar. Sometimes, more complicated constructions are recorded on a drawing, such as center points and compass swings. Regulating lines can help to clarify the process of the design, and give finished drawings a sense of the designer's intentions which is usually only seen in design sketches. This device is also occasionally used in both plan and section drawings, usually to demonstrate axial layout or an underlying geometric order.

Bent Axis Sections

Bent axis sections, sometimes referred to as bent picture plane drawings, are used infrequently today, but were at one time widely accepted as a useful drawing convention.[7] They were primarily used in cross-axis schemes, where the section (with corresponding interior elevations) would first cut down the major axis, but then turn at 90 degrees to depict the minor axis. Their use was limited principally to designs with near absolute axial symmetry, where a straight section would reveal mirror-image redundancy. However, the technique has broader application today, most notably in schemes with curved spaces, axial shifts or skewed grids, where the section cut can curve, shift, or skew to present all elements of a design both orthogonally and to scale. Although some designers may view this as a technique of distortion providing an unrealistic image, it does allow a section to be shown which reveals more information about a scheme than traditional sections.



Reflected Ceiling Plans



Mosaique

Reflected Ceiling Plans

A reflected ceiling plan is a drawing type which records all information concerning a building's ceiling as if seen in a continuously mirrored floor. Any patterns, textures, or materials can be drawn and studied in direct conjunction with the development of the plan, which enables the latter to describe volumes of space rather than simply flat planes. Although not a technique which is widely used in the design of modern buildings, the reflected ceiling plan (in conjunction with the plan and section) is an excellent tool which can be used to shape and form rooms, and provide an internal consistency between all of their surfaces. Typically, dotted lines are used to represent elements above the picture plane, although lightly drawn lines can also be used. At one time, in fact, it was an accepted convention for the shapes of the ceiling plane to be mirrored as literal floor pavement. Tile, brick, and stone joints would describe the vaults, domes, coffers and beams overhead, helping the plan to become a truly spatial design device.

Use of Mosaique

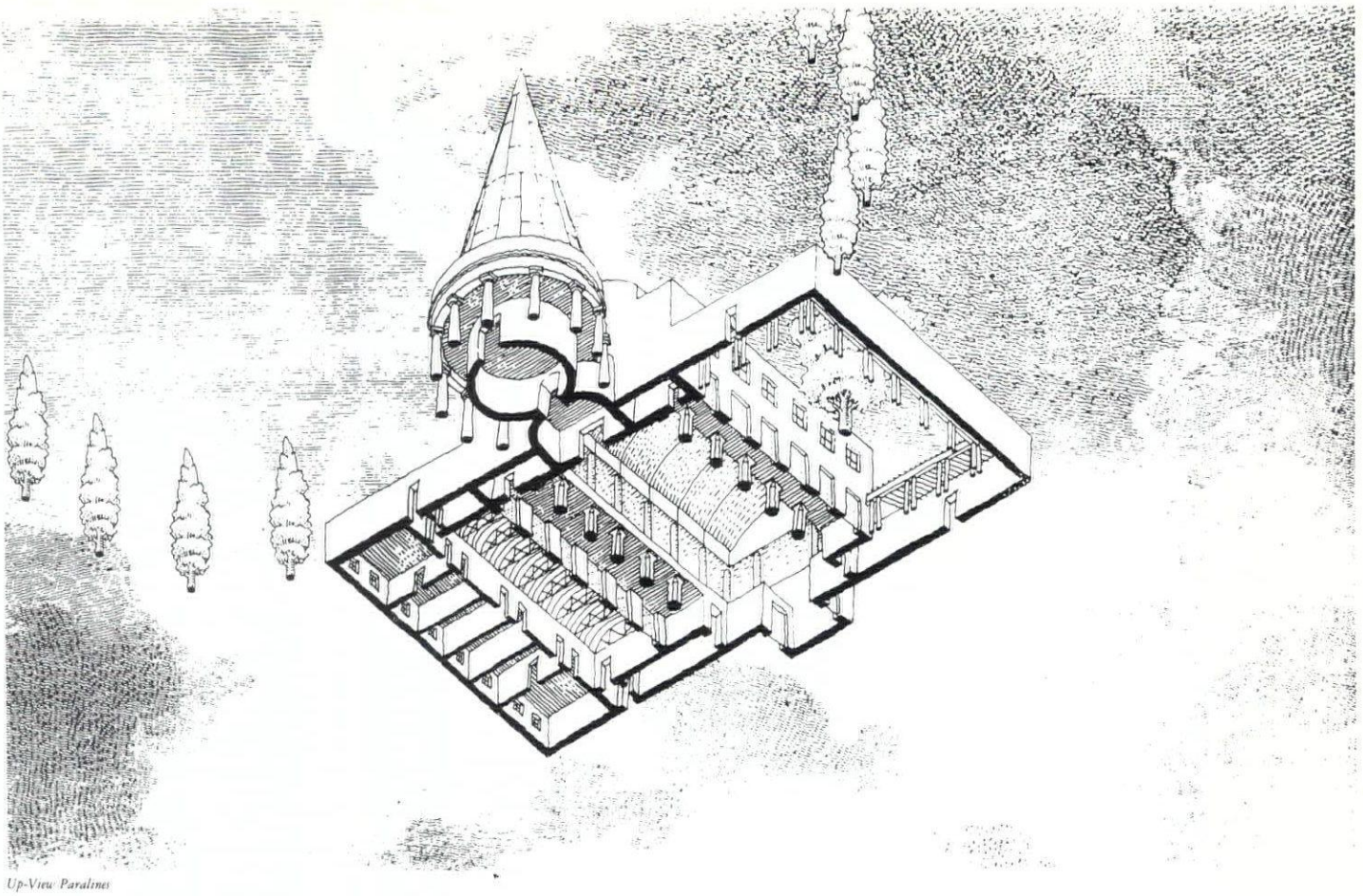
Mosaique was a term used at the Ecole des Beaux-Arts, referring to the design and rendering of the ground floor plane in a way that allows built solids to remain white, while toned floor planes recede in depth.[8] Although these kinds of drawings can sometimes be used for sketch designing, they generally take so long to complete that they are more typically used in presentation work. The pattern of stone, brick, or tile (hence mosaique) joints can also be correlated to a reflected ceiling plan, allowing the designer a broader range of information with which to work on the various surfaces of the design.

Plan/Obliques

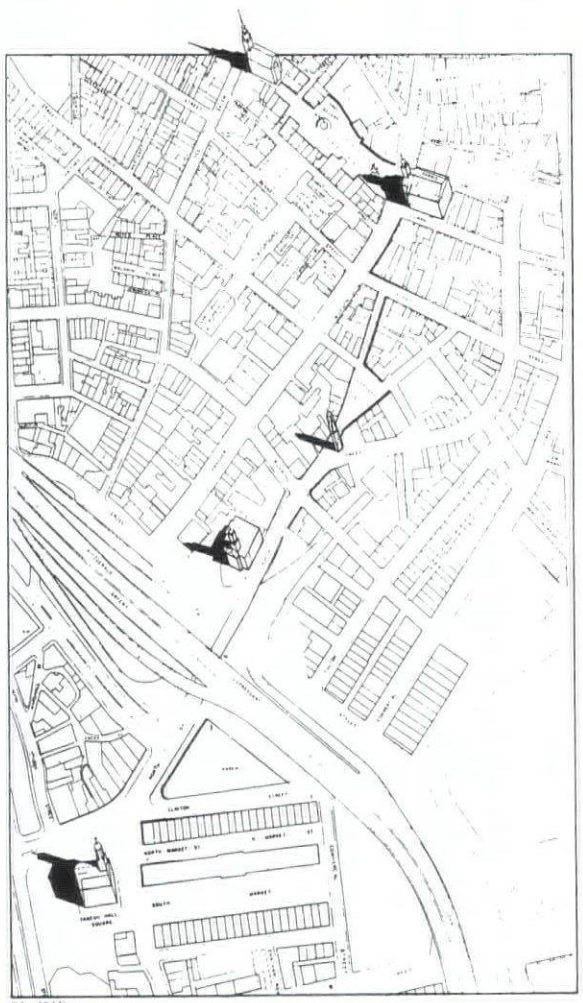
Pre-19th century cartographers and architectural engravers developed the interesting convention of adding to site plans certain elements :n in oblique (paraline). While a principle building may be drawn in true plan, entourage (trees, hedges, other landscape elements) could be drawn in oblique view seeming almost to 'stand up' from the plan in the third dimension.[9] Conversely in some site plans, major buildings can be found drawn in oblique, while minor elements remain in true plan.[10] The results achieved with this technique seem sometimes "naive" in character, resembling the true plan true elevation nature of medieval depiction. However, this remains a technique not to be overlooked, as it allows designers to quickly transform flat site plans into communicative, spatial drawings, or to help the viewer focus upon the essential (drawn in oblique) and allow minor information to recede into flat plan.

Up-View Paralines

Up-view, or 'worm's-eye' obliques and axonometrics depict a building or space as if viewed from below, looking up through the plan. Perhaps the best known drawings of this type were published by August Choisy in his 'Histoire de L'Architecture' of 1899 in which he presented a wide range of buildings, primarily from the point of view of their construction.[11] The drawing type allowed Choisy to depict, for example, the complete spatial and structural organization of a brick and stone groin vault, recording its plan, sections, elevations, and three dimensional forms in a single view. The technique represents a curious duality in that while its subterranean point of view is physically impossible, the drawings depict images of facades and rooms in manner which is closer to real perception of buildings than is normally achieved in other 'down-view' paralines. Ceilings, soffits, and wall surfaces usually hidden in typical paralines are all revealed in the upview paraline. This ability to look up into rooms, and up at facades from below is the drawing types unique characteristic, and makes it a design tool ideally suited for the study of schemes as seen from these points of view (with none of the construction and scale difficulties of perspectives). While the drawing type was virtually unknown for many years, this kind of drawing has seen some contemporary resurgence in the work of British architect James Stirling and others.



Up-View/ Paralines

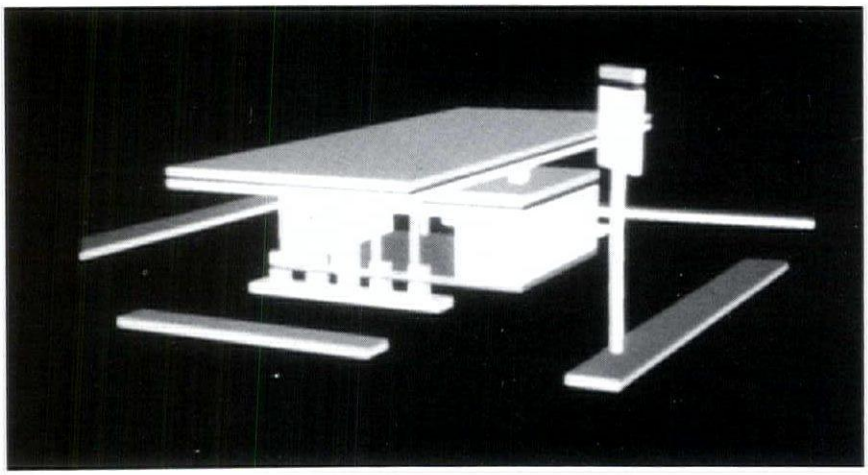


Plan/Obliques

1. Reichlin B. The Axonometric as Project Lotus International No. 2.
2. See Ledoux's "L'Architecture", plate 234, although many plates exhibit this notion.
3. "Masterpieces of Architectural Drawing" edited by Power and Leatherbarrow has several examples: pg. 22, 34, 39, 69, 72, 77.
4. Palladio's "The Four Books of Architecture" contains examples of buildings drawn in this way.
5. An 'unfolded' room by William Kent can be seen in "Masterpieces of Architectural Drawing," Powell and Leatherbarrow.
6. See, for example, Jefferson's drawings of the U.V.A. rotunda, with regulating lines describing the sphere which is the underlying geometric order.
7. For excellent examples of the uses of mosaique and bent axis sections, see "The Architecture of the Ecole des Beaux-Arts", Drexler.
8. Ibid.
9. See C.N. Ledoux's "L'Architecture", especially Plate 11.
10. A highly interesting plan oblique of the chateau of Vernevil can be found on pg. 175 of Rowe & Koetter's "Collage City". Although this is more like a true oblique, it gives an excellent impression of the potential of this technique.
11. For a discussion of Choisy's ideas see Banham's "Theory and Design", pp. 23.

Craig Butler

Automation of the Architectural Design Process



Automation of the architectural design process is a dilemma facing many firms these days. Most firms have taken the first steps toward automation with word processing or computerized accounting systems. Unfortunately, the clerical staff uses the systems more often than anyone else.

Deciding whether or not to automate the creative process with CAD (Computer Aided Design) is a time-consuming process. Budgeting, selection of a vendor and actual training on a CAD system will cut into production time as the transition from manual drawing to automation takes place but generally will realize a payback on the investment within a few, short months.

What is CAD? Well, it's best described as an interactive graphics system, allowing the creation of an electronic model of an object or a group of objects. In architectural terms, this refers to a building design and the standard details inside. Originally designed for basic engineering functions, today's software has many new functions that have been created to aid in the architectural field. The new emphasis is on systems that can automate the entire process, from design to working drawing, utilizing complex information. Many architects are embracing the new technology as there is documented proof that CAD use is increasing rapidly and can result in higher profit-margins even in a small design firm.

Bringing CAD into a design firm is, according to experts, based on a series of decisions and fact finding missions that have to be accomplished before a final decision is made. A feasibility study is recommended at the beginning, followed by a decision about where the CAD system will be used and by whom. This determination will aid in the selection of an easier or a more complex system and from there will help to determine the approximate final cost of a CAD system. A very basic system can be added to a microcomputer for as low as $2,000, but a higher investment will provide the enhancements required to make the system fit for the specific needs of an architectural firm.

Other considerations before a CAD system purchase may include:

1 Increased throughput/output of designing and drawing needs.
2 Overall benefit to the company.
3 Future business prospects (some customers are requiring CAD output).
4 Potential revenue.
5 Impact of CAD on profitability.
6 Image of the firm in the eyes of its clientele.

A CAD system should meet a company's specific needs at a specific price. And, more than likely, the price will be based on the number of functions required. Basic information, also known as "primitives," are available in all systems. Primitives include lines, circles and arcs. New software can make a CAD system intelligent because each software system integrates. With an integrating system, the user has the ability to assign disciplines to different levels or layers separate from the base drawing.

In an architectural firm, these are some of the basic features on which a CAD system should be built upon:

1 The drawing process should be able to draw efficiently and be able to shorten, lengthen or "rubberband" (move) lines, or even remove them entirely, as well as utilize standard symbols and details.
2 The on-line status must be able to provide the user with the exact location of a particular item in full scale on the coordinate system.
3 The user should be able to vary the distance between the grid points on a CAD system and have the option to choose different scales and angles of orientation from both the horizontal and vertical axis.
4 The software should be able to add or tie into other programs such as word processing, spreadsheets for takeoffs and structural engineering, not to mention communicate with other CAD systems.
5 The file-handling/memory management function of the CAD system should have the ability to retrieve lost information in the event of a system "crash" and also alert the user that the disk is overfilled.

Other function that should be considered, although they will add to the cost of the system, are creating surfaces and defining color for presentations, zoom re-scale view generation, creating perspectives

of modelled designs, creating surface cross section slices, performing hidden line removal and other 3-D functions.

So which system do you choose?

There are literally hundreds of PC-CAD software packages available in today's market. The market share of the CAD software manufacturer and their financial standing should also be a major consideration during the selection process. In the fastpaced technological field, software manufacturers have an extremely high attrition rate. You should select a manufacturer that has enough financial "clout" to stay in business and will keep pace with technical enhancements and revisions.

The two leaders in the market undoubtedly are AutoCAD and VersaCAD. Both have software designed especially for architects and both are worth a detailed analysis during your automation process. What's more, both integrate with most PC-based computer systems and, both offer multiple add-on, discipline-specific packages.

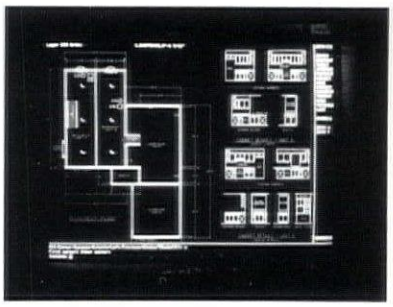
Another advantage to utilizing either an AutoCAD or a VersaCAD system is that a great variety of third-party, add-on software packages are available, allowing the user to include functions such as symbol standard detail libraries, structural engineering programs and automated schedule packages to the basic CAD package. For a few hundred dollars, these add-on packages may save a design firm thousands of dollars in implementation and production costs. What's more, both systems are easily upgradable, preventing you from being locked into an obsolete system as the technology progresses.

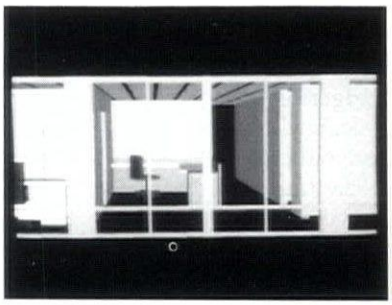
Architectural firms should put as much, if not more, time into selecting a CAD system supplier as they do selecting a system. Take your time with this step. Although there must be cost advantages in piecing together a system on your own, a CAD system integrator can save a firm a lot of time and money by ruling out inappropriate systems and configurations.

The selected systems supplier should participate in the installation, support and service of your CAD system, as well as offer extensive training programs on the system that you decide to purchase so that operators can become proficient in the system. Vendors should also be in tune with the latest technological developments as CAD software and hardware enhancements (such as 3-D) are available on a regular basis. And, most importantly, a CAD vendor must be able to help a firm initiate a smooth transition from manual drawing to automation during planning stages.

The selection criteria should take into consideration the following:

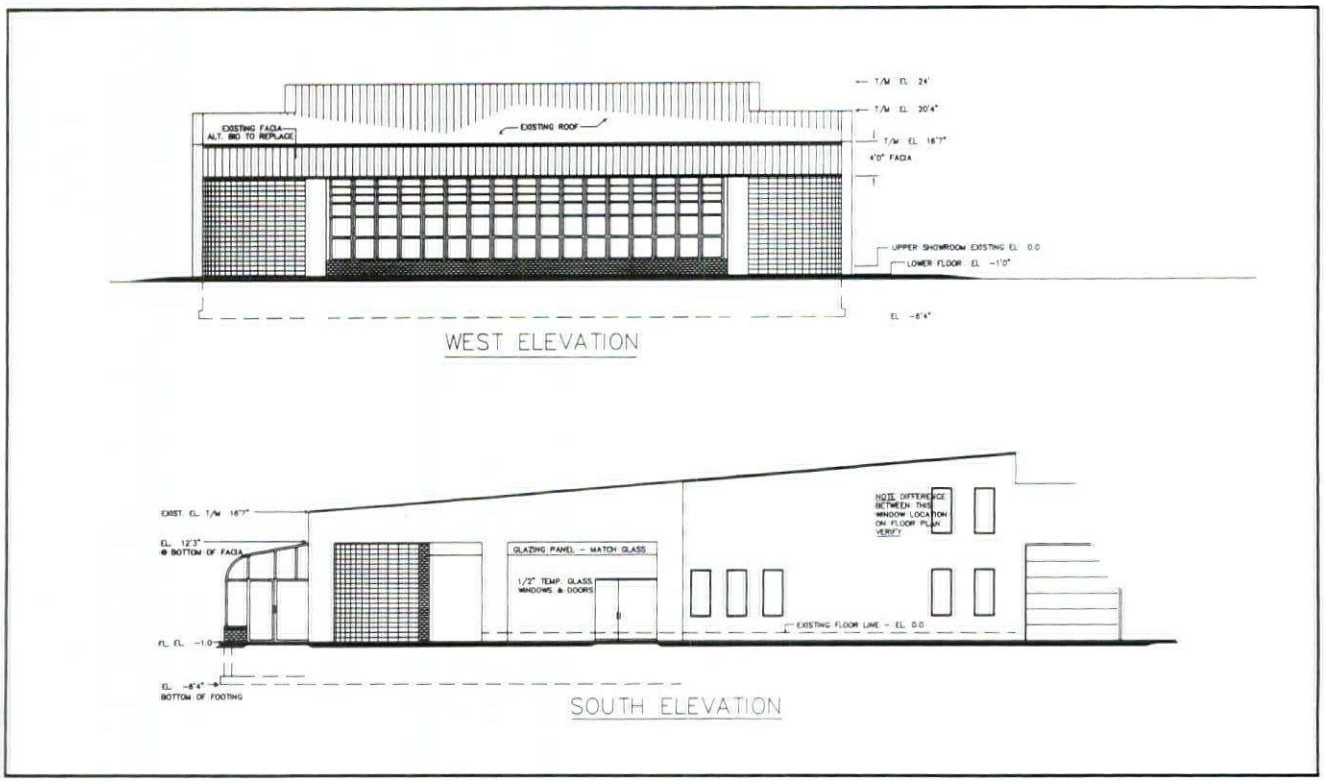
1 Does the systems integrator have a large customer base? You should contact their references.
2 How deep is their level of support? Is it a one or two-person organization, or do they have a large staff?
3 Can they provide you with the total solution? Do they have all the parts? Do they utilize outside services? An important feature to look for in a vendor is their ability to provide "all" without using outside resources. "Fingerpointing" between suppliers can become a detriment to your start-up. Are they authorized suppliers for their hardware and software companies? This is extremely important for warranty and technical backup services.





4 Do they have staying power? Like the software vendor, will they be around in a year or two to help maintain your growth?
5 Do they have a good training program? Training is a must. Whether you think you need it or not, do it. It establishes a patterned discipline in your CAD usage. Good integrators have trained hundreds of people. They know how to make you productive quickly.

Only after the equipment is installed and is in use for some time will the usefulness of a CAD system be realized. Two things should be kept in mind, however, when planning a CAD system. A CAD system is not just a marketing tool for your firm to be highlighted when proposing and bidding on projects against other architects. Remember that your competition can put a CAD system in place very quickly, and may purchase a system more advanced than yours. The second is that creating an original design on CAD may not save time over doing the drawing manually. The time saving aspects come into play during revisions made by clients and/or contractors or in duplications of other projects.

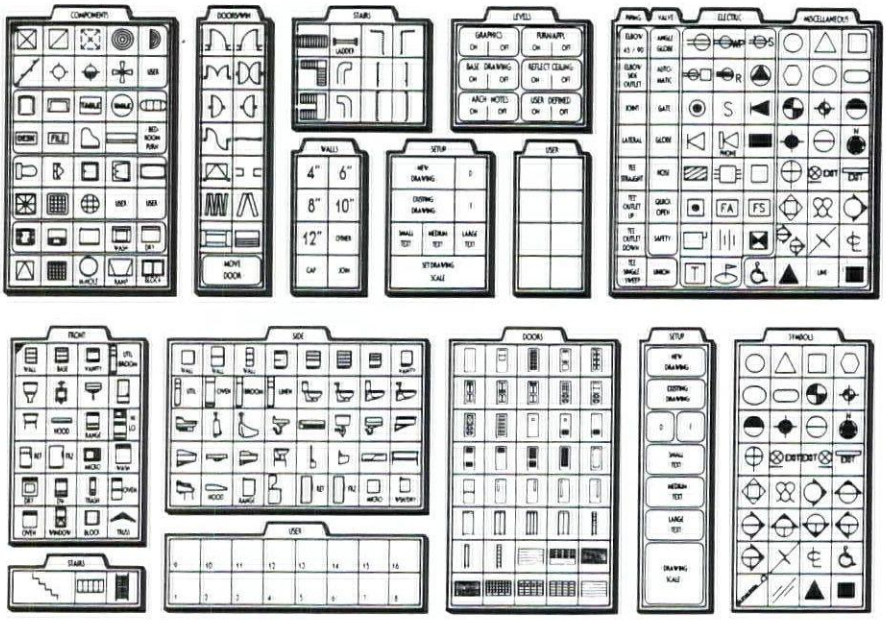


The age of affordable and usable computer graphics for the architect and designer is finally here. Now may be the time to consider CAD in your architectural design process. The cost of CAD hardware is falling, while capability and quality is on the increase. Basic training, even for those who have never used a computer, takes only a couple of days.

The ultimate test for CAD success is the increase in productivity. Studies have shown that CAD is more accurate, and can save 60 - 70% of the time spent during the revision process.

A total management commitment is necessary to understand the design process, to learn to simplify it and then to automate it.

By Craig Butler, CAD Specialist at Professional Control Corporation, Germantown, WI.



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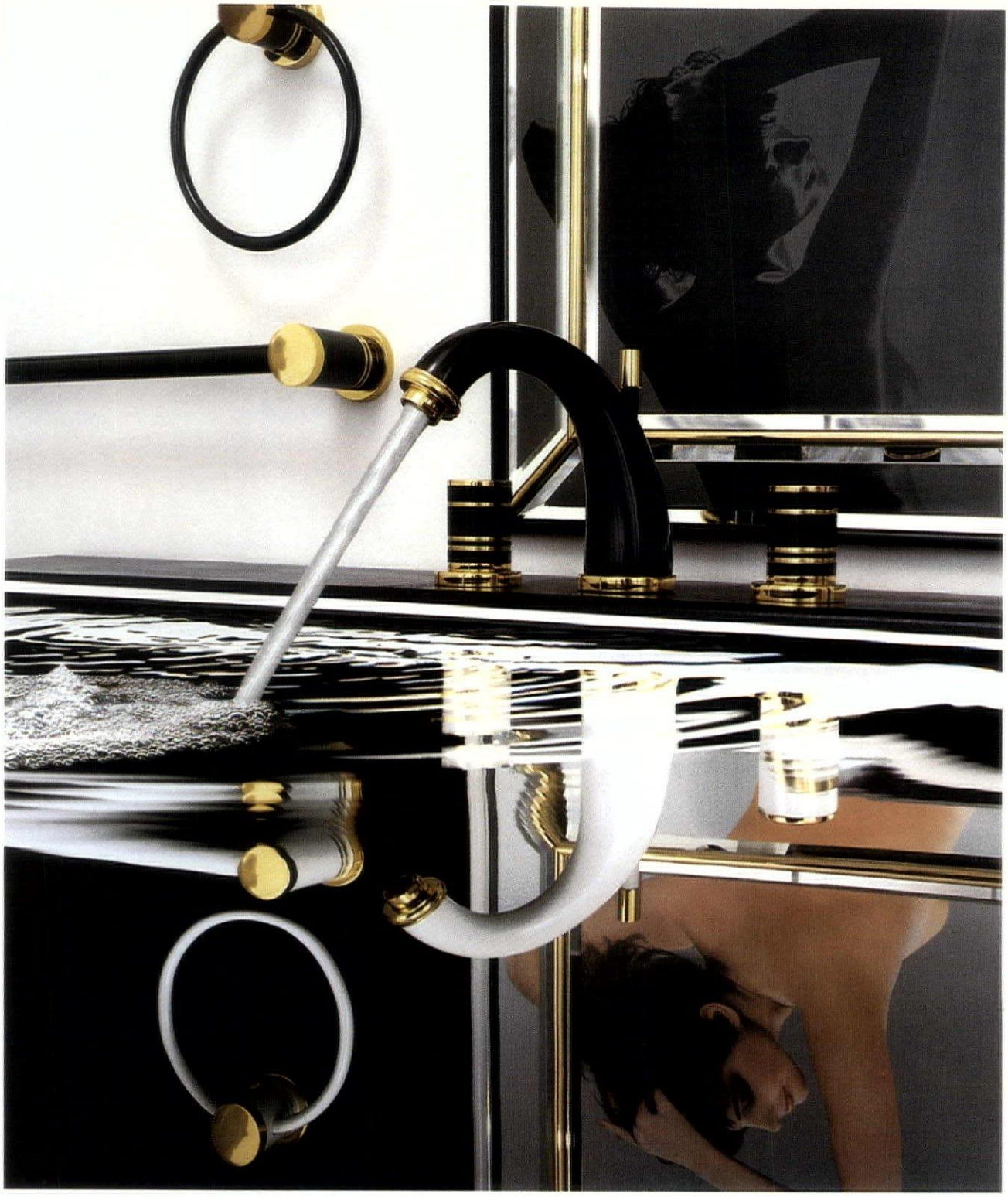

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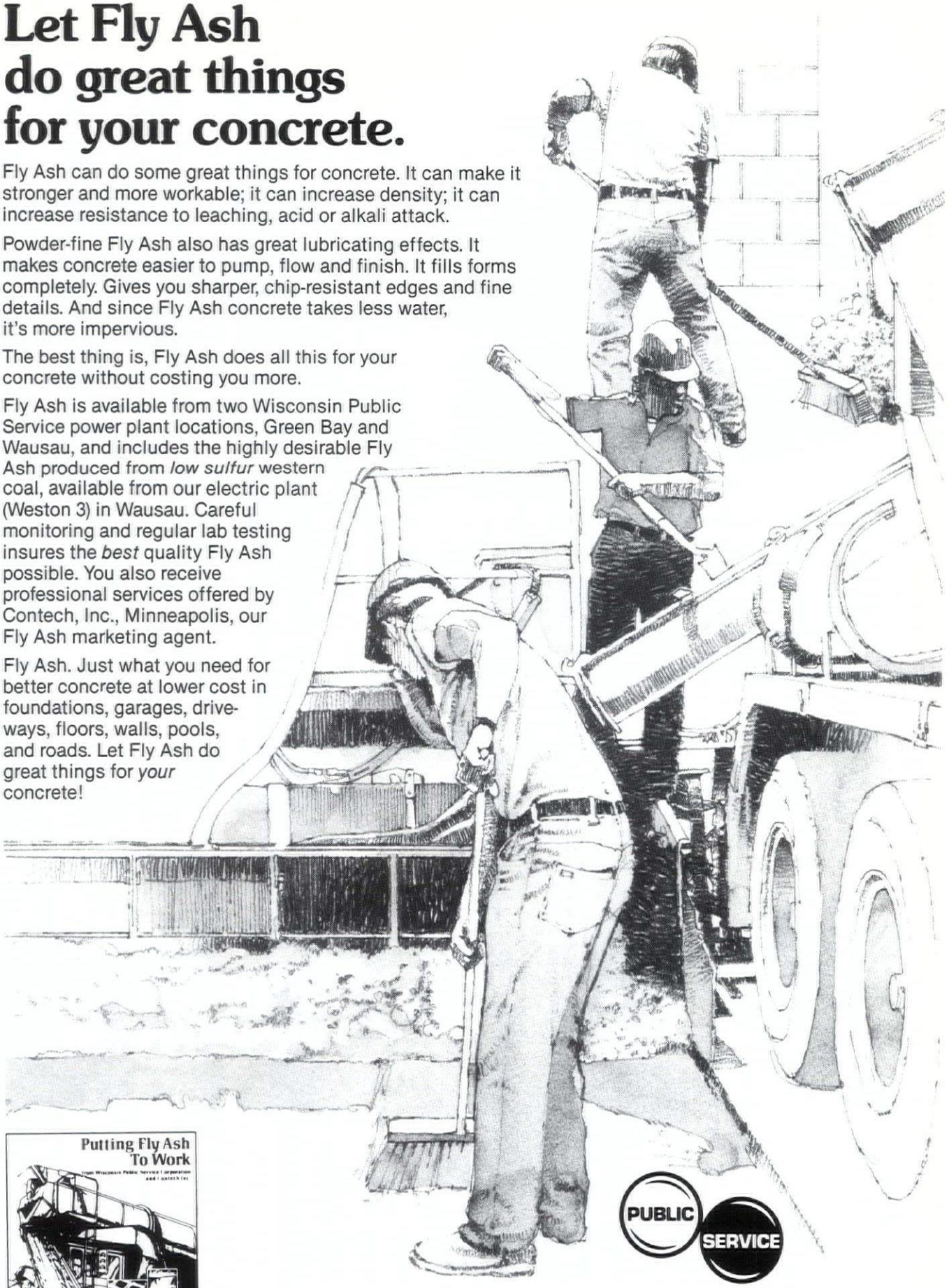

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E.J. Purcell

Computerized Slide Production

Effective communication is what it is all about! If you can't convey your thoughts and ideas, you can't sell them.

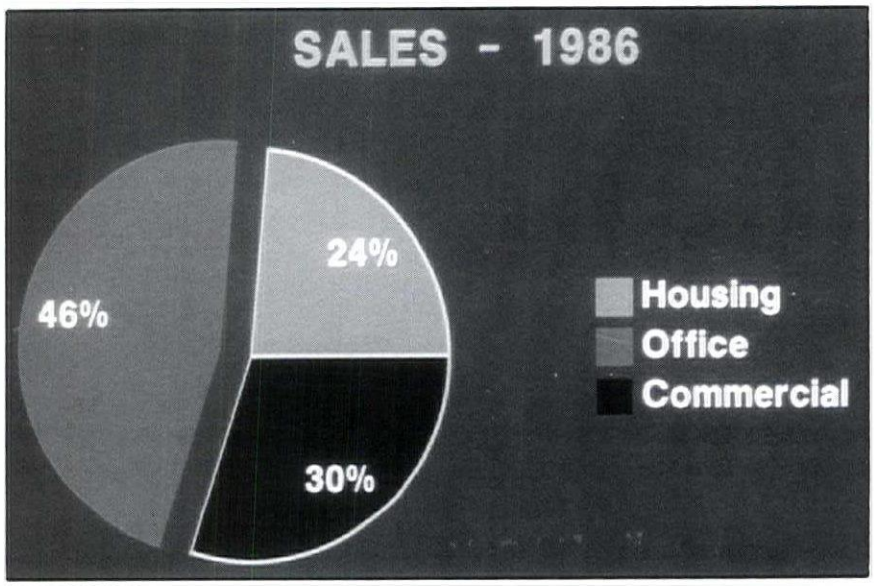
The entrance of the desk-top computer has certainly contributed its share of solutions to communication problems as well as having added new ones. One of the solutions that it has brought to the design field is the availablity of high quality graphics and imagery.

Slide presentations have been typical and effective methods of communicating with a large audience: be it a client group; a city council or a professional society. The advent of the computer has added a new dimension of possibilities to the appearance and effectiveness of these presentations. Two very cost-effective methods readily available to any design professional are the "On-Line" and the "PC-Based" slide production systems. Both of these systems can be utilized by nearly any design professional with access to a desk-top computer.

What are these things? They are systems that allow individuals access to high-powered slide production systems with a minimum of cost. The On-Line type of system is the basic version. It allows users access to a slide-making network (similar to other networks such as Compuserve and The Source) on which they can make slides from preset formats. The PC-Based type system allows the user to design slides on their own through use of preset formats or free-form drawing capabilties. These slide images are then transfered to an imaging camera.

"On-Line" Systems

The On-Line type of system allows anyone with the appropriate passwords access into a large, mainframe computer. This access is achieved through a desk-top computer equipped with a telephone hook-up (modem and communications software). Other special graphics software is not usually needed. These systems are similar to the major information networks available over the phone lines. As with any network, you must first establish an account in advance. There are several slide-making networks available in the state of Wisconsin.



EXAMPLE 1

Use of the system is quite simple. However, you must bear in mind that the results are quite simple as well. Once an account has been established with the network the user simply has their computer call the network's computer. After entering the appropriate passwords and greetings the user has "menus" available from which to choose. These menus allow the creation of various types of slides. These formats typically consist of title slides, text slides, spreadsheets, bar & line charts and pie charts. They usually are available in a range of color combinations as well. (Example 1 was made on one of these networks.) When creating the slide the user is "prompted" through the creation by the computer. The computer asks the user a question which the user must answer by inserting the appropriate text or data. In the case of example 1 the exchange consisted of the following questions and answers after the "pie chart" format was selected:

Question from computer	My Response:
Title, line one:?	Sales
Title, line two:?	1986
Number of slices:?	3
Legend slice 1?	Housing
Data slice 1?	33
Legend slice 2?	Office
Data slice 2?	65
Legend slice 3?	Commercial
Data slice 3?	42
Do you want the percentages shown? Y for in the pie N for in the legend.	yes Y

The computer then showed me all of the information again and asked me if I wanted to make any changes. (It's important to note here that my information (input) was shown to me for the purpose of proofing or verifying it. *I could not see the image!* Only the information was shown to me.) At that point I could change any of the pieces of information I had put in. After stating "no" to the computer, it asked me how many copies of the slide I wanted. I responded "1." It then went ahead and made the slide. The actual processed piece of film was available for me the next day at the network's office.

This type of system is one of the most direct and effective slide making-systems available. It does have its limitations in that you cannot see what the image will look like nor do you have any design control at all on the appearance of the slide (other than background color). Its advantages are that it is usually faster than the "traditional" slide production methods, it provides people that may not have good graphic skills the opportunity to produce professional looking slides and it is usually less expensive.

PC-Based Slide-Making Systems

The PC-Based slide making systems differ considerably from the On-Line systems in that they are a complete, stand-alone design station. They usually require special software (always), special graphic cards, monitors and RAMs (Random Access Memory). The cost to set up this type of system can range from $5000.00 to $30,000.00. Clearly this range of cost carries with it an extreme range in capabilities as well. As of this writing there are too many to mention by name. The generally are oriented to MS-DOS machines (IBM's or compatibles).

At the less costly end several options exist. These can include a design station with an inexpensive imaging camera (this is definitely a case of "you get what you pay for") or a design station which transfers its files (slides in computerese) to an "On-Line system for imaging. At the high end the system could consist of a design station equipped with a high quality production camera.

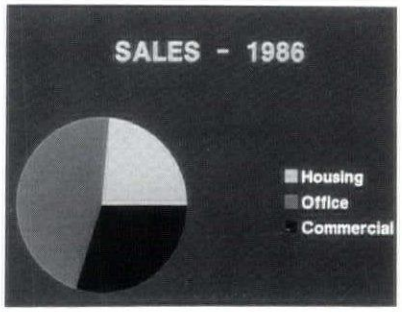
In any event, these design systems are considerably more complex to use than the On-Line type of system. You usually have the option of using the "formatted" approach as in the On-Line system but you choose all of your own colors, type faces and size (from those available). The option of free-forming your slides is usually available in these systems as well. This allows you the option of placing your copy anywhere you like in the image. Example 2 shows the same pie chart as shown in example 1 but through the free-form, slide-making mode. These options clearly provide the designer with greater flexibility than the On-Line system. Where the stand-alone system really shines, however, is in its free-form drawing capabilities.

Example 3 was made from a rough sketch of a site analysis drawing. The image was entirely constructed on the screen in about 15 minutes. Variations of this basic image could be generated quickly by saving certain portions and changing others to show different alternatives or plan modifications.

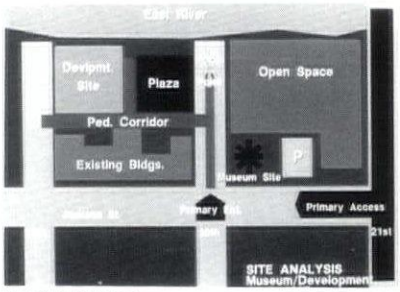
Each of these systems has their own special use. If very basic word slides and titles are what you need, the network option may be your choice. If, on the other hand, you need high-powered design capabilities then the PC-Based system may be the answer. When considering the PC-Based system however there are other considerations. Cost is certainly one of them. Operation is another. Nearly anyone can run the On-Line and make good looking slides. The PC-Based system however requires a trained operator who not only knows good design (a must) but good slide design!

When either system is used to its optimum it can make a considerable contribution to your company's ability to communicate as well as to its professional appearance.

Edward J. Purcell is an architectural/commercial photographer who also specializes in high resolution computer generated slide production.



EXAMPLE 2



EXAMPLE 3

State Sales Tax

Thanks to the efforts of the WSA Legislative Minutemen, eleventh-hour state budget proposals to expand Wisconsin's 5% sales tax to selected goods and services, including architectural services, were successfully blocked. However, it's a safe bet that similar sales tax expansion/property tax relief proposals will resurface in the Wisconsin Legislature.

In fact, a subcommittee of Governor Thompson's "Local Property Tax Relief Commission" has already offered a preliminary recommendation to broaden the sales tax base to include most of the goods and services which are currently exempt from the tax. The Commission's recommendations are due September 1, 1987. The Governor will be looking at the Commission's report to develop his property tax relief recommendations for the next state budget.

What is being done to head off a state sales tax on architectural and other professional services? The WSA has joined forces with other groups who would be impacted to fight an expansion of the sales tax. The Coalition Against New Taxes (CANT) includes representatives from the state's legal, accounting, engineering and medical professions as well as small business groups, the construction industry and others.

If you are not already signed up as a WSA Legislative Minuteman, please do so today by contacting the WSA office. It is important that WSA members stay in contact with their state legislators and impress upon them the adverse impact such a sales tax policy would have on the state's economic development climate.

QBS and WACE

Something new has been added. The WSA Board of Directors at its July meeting approved an agreement with the Wisconsin Association of Consulting Engineers (WACE) whereby the WSA will assist WACE in developing a Qualification Based Selection (QBS) program.

The initial agreement is for a six-month period. During this time the WSA's QBS Facilitator, Darius Van Fossen, will work approximately 10 hours per week assisting WACE in the development of a QBS program for its members. Van will continue to spend an average of 20 hours each week on WSA-related QBS activities . . . increasing owner awareness of QBS and working one-on-one with owners in establishing a fair and rational selection process based on qualifications and competence.

The WSA and WACE agreement represents the culmination of several months of meetings, involving representatives of both organizations, to explore such a cooperative QBS effort. Harry Schroeder, AIA, and Jim Potter, AIA, represented the WSA.

A number of advantages of a cooperative QBS effort were identified, including the following: 1) Increased exposure of QBS as an A/E selection process, 2) Potential to attract additional funding and to support a full-time QBS Facilitator, and 3) Ability to educate a common client, i.e. public owners, in a consistent and cooperative manner leading to increased A/E cooperation and a higher level of integrity for both professions.

To date, the WSA has assisted over 200 owners in establishing a QBS process for selecting an architect. It works. For further information on QBS, contact Van or Bill at the WSA office.

People & Places

Noble E. Rose, AIA, has started a firm of his own and is no longer with Rose/Orr Architects, S.C. If you want to reach Noble, you will find him at: Noble E. Rose/Architect, 4610 University Avenue, Suite 430, P.O. Box 55134, Madison, WI 53705. Phone: (608) 238-ROSE.

David E. Lawson, FAIA, of Potter Lawson & Pawlowsky, Inc., in Madison has been appointed to a three-year term on the Board of Directors of the National Architectural Accrediting Board. The NAAB Board is made up of three representatives from the AIA, three from NCARB, three from ACSA, one from AIAS and one public member.

Robert Torkelson, AIA, of Madison has been elected 1987 president of the Wisconsin Council of Professions. Robert Graves, AIA, is the other WSA representative on the WCP. The Council meets regularly to discuss issues of concern to members of Wisconsin's professional organizations. In addition to the WSA, it includes representatives from the State Bar, Medical Society, Pharmaceutical Association, Professional Engineers, Dental Association, Veterinary Medical Association and Certified Public Accountants.

The WSA office has learned that Dick Perrin, FAIA, is back home recuperating from a stint in the hospital. Cards and letters would be appreciated. Dick's address is 9825 West Concordia Avenue, Milwaukee, WI 53222.

WSA members Charles Engberg, AIA, of Milwaukee and David Peterson, AIA, of Eau Claire have been elected to serve on the Board of Directors of the Wisconsin Trust for Historic Preservation. The Wisconsin Trust is a private, statewide, nonprofit corporation dedicated to the preservation of the historical, architectural, and archeological heritage of Wisconsin. The group presented its 1987 Achievement Award to the Opera House Advisory Committee of Oshkosh. Robert Yarbro, AIA, was the architect for this restoration project.

William Weeks, AIA, president of W.C. Weeks, Inc., Architects, Sheboygan, has announced that he is closing his office on September 1, 1987, and that the firm of Linde Jensen Marcheske Architects, Inc., has ac-

quired the property of W.C. Weeks, Inc. They will be occupying the office at 1518 Saemann Avenue in Sheboygan. Mr. Weeks will remain on board as a consultant.

W.C. Weeks, Inc., had its origin in Sheboygan in 1848. Linde Jensen Marcheske Architects, Inc., was organized in 1986. Principals in the firm are Richard Linde, AIA, Erik Jensen, AIA, and Michael Marcheske, AIA.

New WSA Director-At-Large

At its July meeting the WSA Board of Directors, in accordance with WSA Bylaws, appointed Jerold Dommer, AIA, to fill the Director-At-Large vacancy on the Board for the remainder of 1987. Jerry is president of Durrant Architects in Madison. Welcome aboard.

The vacancy on the Board of Directors occurred as the result of the resignation of Wayne Spangler, FAIA. Wayne is a Past President of the WSA and served on the Board of Directors for 19 consecutive years . . . a feat which earned him the honorary title of "Resident Dinosaur."

The Spanglers for many years have planned to travel to faraway islands on their sailboat, and they decided this was the summer to begin their adventure. In his letter of resignation, Wayne made the following observations:

". . . When I first became registered, I must admit the reason I joined [the WSA] was to have the initials 'AIA' behind my name, but after attending meetings and becoming a Board member, I was astounded at the magnitude and scope of the problems which faced our profession — problems being addressed by the Wisconsin Society of Architects. I'm afraid I got hooked. Many of the problems we faced then are still with us. Far more, however, have been resolved. . . . WSA is now one of the most outstanding professional organizations in the state. We assist in the writing of legislation. We offer services to our members unheard of in many AIA Chapters. Our magazine is excellent and self-sustaining. Our programs are emulated by others. We haven't had a dues increase in ages and even have a couple of bucks in the bank. Not too bad for a bunch of architects!"

A reminder . . . nominations for WSA Directors-At-Large for 1988 must be submitted to the WSA Secretary on or before September 1, 1987. Nominations must be made by five or more AIA members. Contact your Chapter President for further information.

AIA Roundtable

WSA member David E. Lawson, FAIA, recently chaired a roundtable session on the AIA's policy on the licensing of interior designers. Dave is a Past President of the WSA and former Vice President of the AIA.

Component representatives from 17 states and the District of Columbia attended the session which focused on strategies for promoting the AIA position is: "In the building construction industry, the responsibility for the public health, safety, and welfare demands the education and experience required for the licensing of architects and engineers."

The AIA plans to prepare a strategy guide based on the roundtable participants' experiences with interior designer licensing initiatives.

Model Building Seminar

The eighth Annual Model Building Seminar sponsored by Northeast Wisconsin Technical Institute and Bay Drafting and Model Service, Inc., will be held October 20-21, 1987 in Green Bay. Fee: $50. The seminar will cover model building techniques and various applications used in architectural, prototype, mechanical and industry models.

For more information on the seminar, contact Joe Myrick at NWTI. His phone number is (414) 498-5556.

Membership Action

Toyne, Richard, was approved for AIA Membership in the Southeast Wisconsin Chapter.

Johnson, Samuel E., was approved for Associate Membership in the Southeast Wisconsin Chapter.

Eggert, Gene, was approved for AIA Membership in the Southeast Wisconsin Chapter. He has upgraded from Associate Membership.

Brothen, Scott, was approved for Associate Membership in the Southeast Wisconsin Chapter.

Matt, Jayne, was approved for Associate Membership in the Southeast Wisconsin Chapter.

Hemauer, Paul, was approved for Associate Membership in the Northeast Wisconsin Chapter.

Riendle, Ronald, was approved for AIA Membership in the Southwest Wisconsin Chapter. He has transferred from Texas.

Bridge, Gardiner Flint, was approved for Prof. Affiliate Membership in the Southeast Wisconsin Chapter.

McGriff, Patrick T., was approved for Prof. Affiliate Membership in the Southeast Wisconsin Chapter.

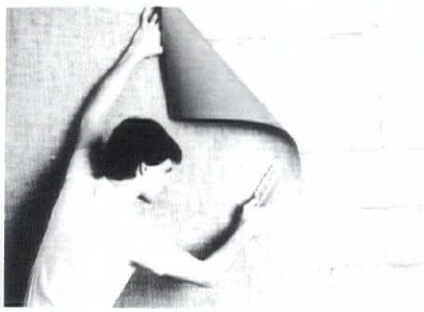
Marketplace

A fully-integrated drafting and drawing system that will allow the user to work in either a 2-D or a true 3-D environment is the latest system to be added to PCC's product line.

Called CADKEY, the system enables the user to convert virtually any drawing to a 3-D format using a standard x, y, z Cartesian coordinate system, and then rotate the objects in 3-dimensional space. While rotating, the drawing can be viewed in any one of 256 views. Primarily intentded for mechanical engineers who must continually work with solid objects in 3-D space, the new CADKEY system will also be of use in drafting and architectural planning because it is easily accessible and easy to understand.

Several versions (1.0, 2.0, 3.0 and 1.4E-Student) of the networkable CADKEY system are available from PCC, the leading PC-CAD systems house in Wisconsin. For more information, or for a free, no-obligation demonstration, call PCC at (414) 251-3000.

A sample kit containing 40 square yards of Flexi-Wall Systems' Plaster In A Roll™ is available to new customers from the manufacturer at a special low price. Also included in the kit are three gallons of Flexi-Wall #500 Adhesive and one gallon of Felexi-Wall #400 Anti-G™ protective coating. The 40 square yards of material, plus the adhesive and coating are sufficient for approximately 320 square feet of wall space, including waste.



The product hides patches, joints, holes and other irregularities on virtually any rigid surface and adheres directly to cement block, tile, glass, wood and plaster. It is easier to install than plaster and is more economical.

The sample kit is available in a choice of either the Scotland or Indian Jute weave patterns. Each comes in a variety of colors and has a class "A" flame-spread rating. For more information on the kits, colors and their prices, write: Henry Levy, President, Flexi-Wall Systems, P.O. Box 88, Liberty, S.C., 29657; or telephone (803) 855-0500.

LIBRA Corporation has announced its line of construction accounting software for IBM's new generation of personal computing - the IBM Personal System/2. IBM's PS/2 models include features on the mother board that were additional cards on IBM's previous personal computers. Some of these features include multi-color graphics array, display port, serial, parallel and pointing device ports. The Video Graphics Adapter (VGA) provides an interface to enhanced graphics, color graphics and monochrome displays. All of the models come with 3.5 inch diskette drives standard.

LIBRA construction software includes integrated modules for Accounts Payable, Accounts Receivable, Billing, General Ledger, Inventory, Job Costing, Order Entry, Payroll, and Property Management. All modules include 60 days installation support through a nationwide WATS network.

LIBRA markets through a nationwide distributor network. New dealer inquiries are invited. For more information call LIBRA's Marketing Department (800) 453-3827 or contact David Norby, Inc., 7609 E. Elmwood Ave., Middleton, WI 53562 608-836-3436.

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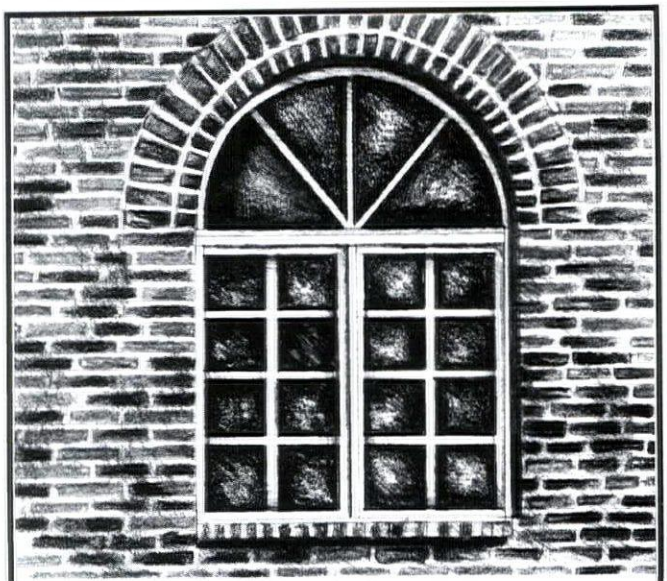

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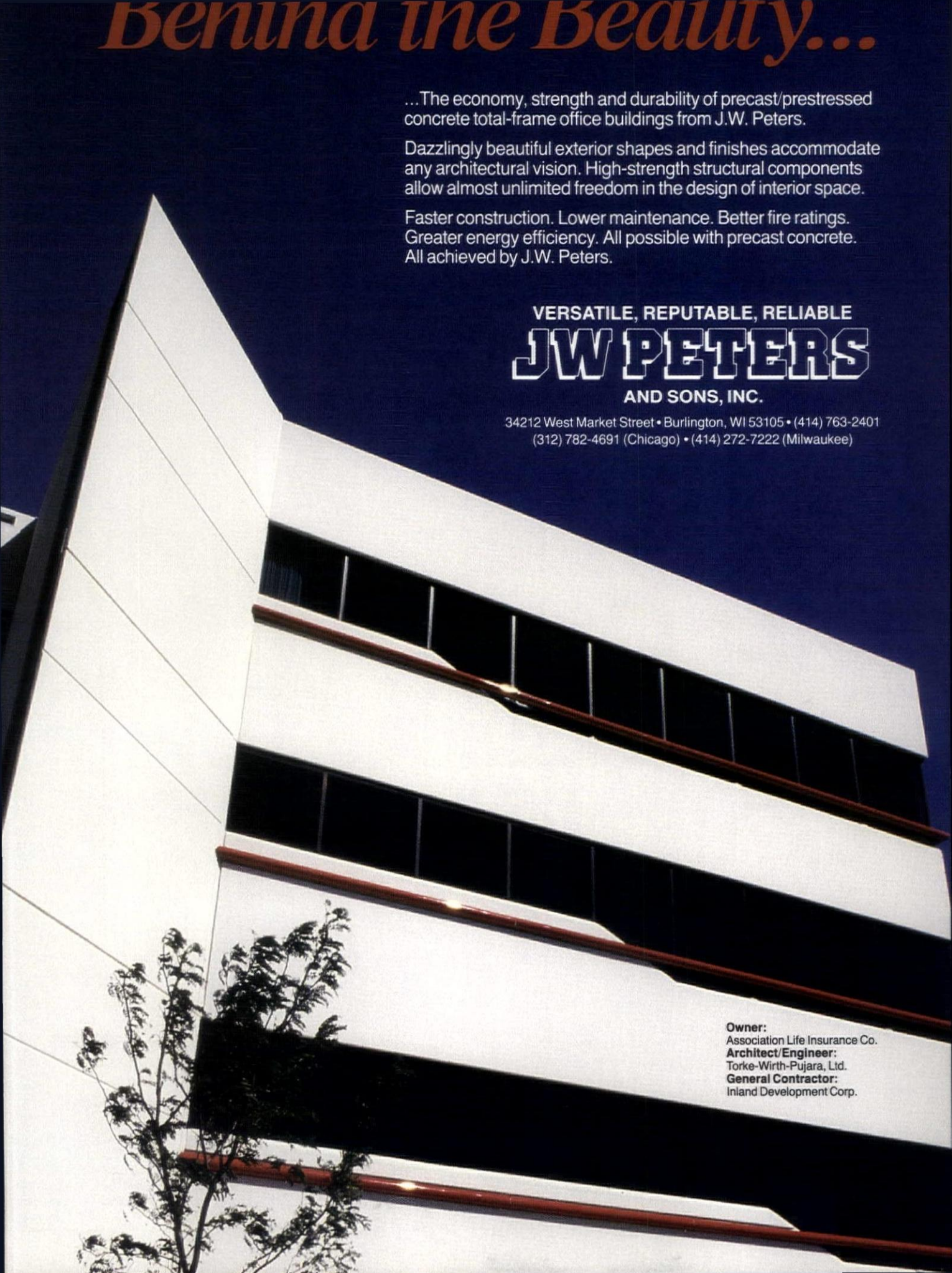
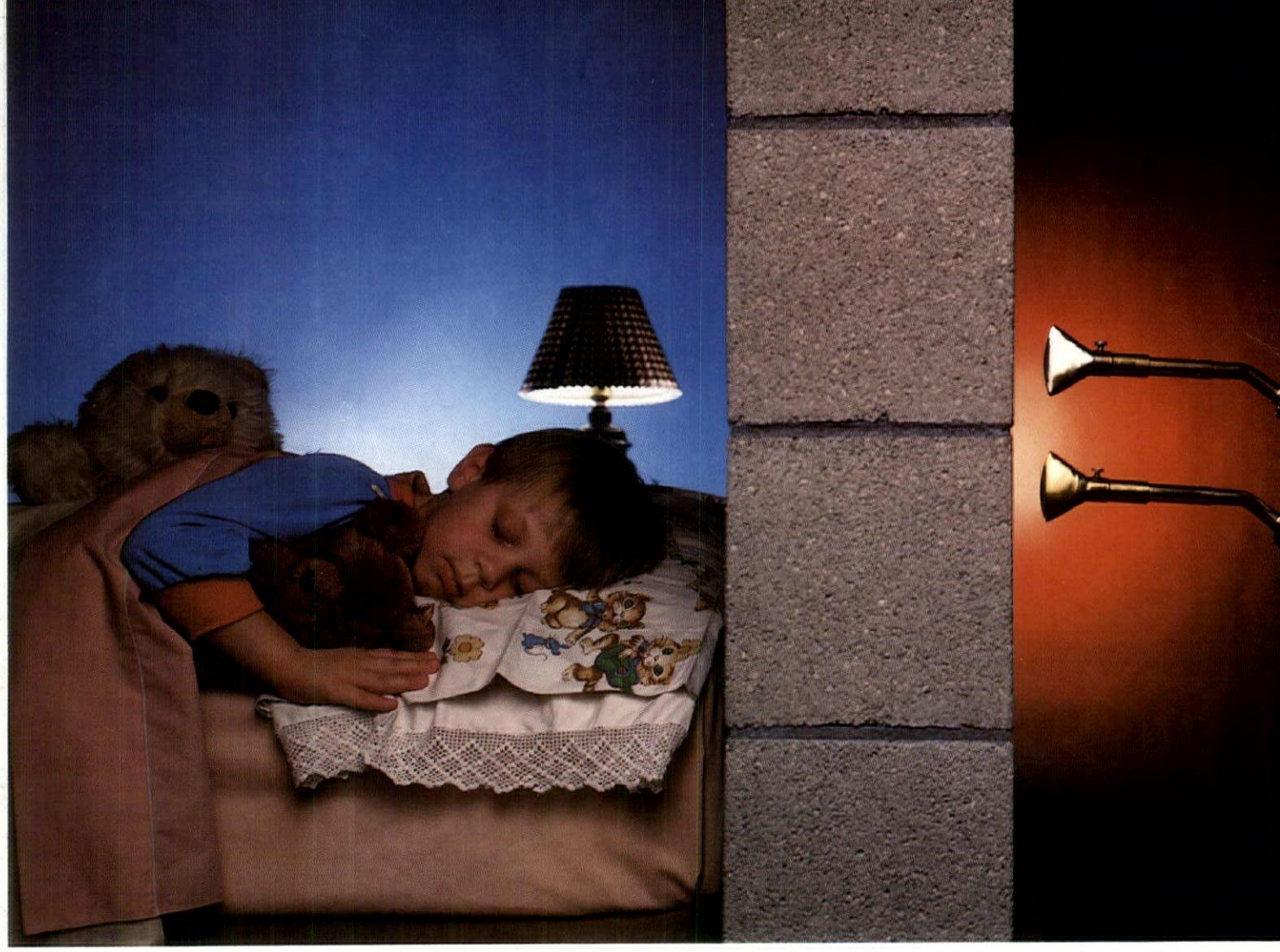


Owner:
Association Life Insurance Co.
Architect/Engineer:
Torke-Wirth-Pujara, Ltd.
General Contractor:
Inland Development Corp.



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