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Jefferson Memorial. Photograph by Bill Haas.

SUBSTANCE AS LIGHT: A PHOTOGRAPHIC ESSAY

INTRODUCTION

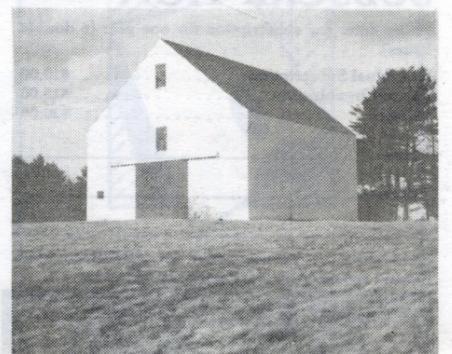
All we see is light. Everything seen is a source of light. Surfaces in shade, the sky, the water and bed of a stream are all part of the continuum of light sources ranging from dim to bright and from confined to broad. By regarding all substance as reflected light of a particular value and hue, a sensitivity to visual relationships can emerge, juxtapositions acquire significance, and causes of the feeling of space can better be understood.

While seeing comes without effort, understanding the causes of appearance requires a good deal of concentration. Nearly every surface commonly beheld is confused by superimposition of shadow or reflection. If we are to comprehend what we see, we are left to figure the sources of these images, the causes of illumination. The topic is relentlessly absorbing and, as a consequence, inherently distracting.

Appearance is the visually communicated description of both the qualities of an illuminating source and a surface's character as a medium for passing light. Substance modifies light, yielding appearance which is no more than a version of the incident light.

Light is reflected according to the principle that angles of incidence and reflection are equal in a plane perpendicular to the perceived surface. As clearly as this principle can be observed in a mirror, it is obscured in the rough surface of unglazed porcelain. The mirror returns a clear image of the source while the diffusing surface alters the source more significantly. It is this changed light which we call the appearance of the surface.

The nature of light sources is communicated by way of surface and form. Surface is the substance which light uses to gain expression. As substances vary in appearance while remaining constant in physical form, they reflect a changing character of light. The elements of architecture can be chosen and composed to reveal light, so that it may become expressive light, and the variety in appearance of substance may be emphasized.



continued on page four . . .

ARCADE

AUGUST/SEPTEMBER ISSUE

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ERRATUM

ARCADE sincerely apologizes for the error of misspelling the names of architects Keith Kolb and David Fukui in our last issue's Column of Many Orders.

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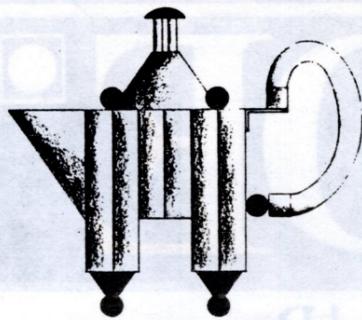
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Teapot of Michael Graves.

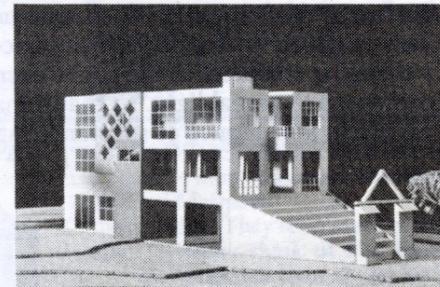
COLUMN OF MANY ORDERS

Rebecca Barnes

THE IDEA FOR THE CALL FOR NEW Work grew out of a series of efforts to find whether new work and fresh ideas exist in Seattle's design community. The design establishment couldn't do it. In spite of the AIA's effort to promote architecture, it seems to have encouraged little internal design dialogue, and assumed that criticism would damage rather than stimulate members' practices. How can the quality of architecture improve without a forum for the exchange of ideas? Small groups have formed recently in Seattle: ARCADE, BLUEPRINT: for Architecture, study groups like Baker Street, and special interest committees within organizations like Allied Arts, to promote open debate of design issues. Missing was the grand show, an electric, once a year, open to everyone, look at new work. In their Call For New Work, BLUEPRINT and ARCADE sought to fill the gap with a juried-by-peers exhibition and open discussion.

Nearly two hundred people gathered in the Seattle Art Museum in June to view the work on exhibit. Using a slide show format, the jury of five, plus moderator, awarded six and a half projects and discussed six others. The jury's comments focused on their search for a clearly-expressed idea in each project and the difficulty they had finding any (a presentation strategy problem, at least), rather than focusing on the validity and implications of imposing the idea on a building. The diversity of entries (houses, a gate, chair, painting of light patterns, a research paper, commercial buildings) made it difficult to draw comparisons among them; yet no framework was provided by which to categorize or organize types of work.

The logic of the idea of Wyatt Stapper's "Bannerworks" project appealed to the jury, which described the work as a carefully constructed set of pick-up sticks, well-ordered, and questioned the sources of its forms. Although criticized by some jurors as being overdesigned, the work was applauded by others for using a strong geometric design in three dimensions to create a provocative design statement. Such a mixture of "good" and "bad" points was typical of the jury's reviews throughout the evening. Members of the audience were also mixed in their reviews of the jury; for some, it was a welcome relief from the saccharine commentary occasioned by other awards series; for others, the jury seemed unnecessarily negative, or tuned into inappropriate criteria.



House by Stuart Silk.

A library by Mithun's office encountered the most typical of criticisms: The presentation was pretty, but too vague to show the building plan and explain the idea. Drawings expressed certain aspects of the building well: its dignity and neighborhood scale. Another project with "beautiful drawings" was the Stuart Silk house, described by one juror as "a set of stairs looking for a house." The drawings "conveyed a rigor and a discipline," and the symbolism intrigued the jury, even though they couldn't figure out how to get into the second apartment.

Missing in the Call For New Work was a range of building types that address more large-scale and urban issues. The single research project submitted stumped the jury; time allowed for reviewing the entries limited careful consideration of the report.

As a body of work, the New Work was stronger and more provocative than any single effort. Although the works address many issues (context, scale, logic, symbolism, humaneness, and delight), the presentations did not assist jurors in understanding the designers' thinking. Did this group of people get excited talking about fragments of ideas only because there is so little good architecture being made?

"These ideas are not complete." "I don't care; I'd like to happen upon it." "Too little good work is out there — any chance to experience and understand a good building is important." The Call For New Work was similarly important. Any chance to look at good, interesting, exciting work helps us to evaluate and test our own ideas. Thanks should go to all who participated in the first annual Call, for demonstrating the value of the event and the evolution needed to improve it.

— Patricia Shelby

SINCE MAY 2ND, ARCHITECTS, ENGINEERS, contractors, and assorted associates have been bumping and diving at Greenlake in the Archichoke/Enginerd Volleyball League. Games will continue on Wednesdays through August 22 and conclude with a single elimination tournament on Sunday, August 26. As of July 24, League standings are as follows, reported by select team members:

The Jungle Ball League			
Callison, A Team	11-0	Sparling "Shockers"	4-4
Swenson Engineers	11-0	Wyatt Stapper	4-5
VFT	9-2	Norkin	3-2
Waldron Pomeroy	8-3	CFI	3-5
Barrett Gleason	7-2	BCS	2-5
Callison, B Team	7-2	James Hamilton	2-6
LMN	7-3	Hudson	2-6
Mills John Rigdon	6-2	Westin Service	2-7
Lee Loveland	6-4	John Graham	1-5
Engineers NW	5-2	Hobbs Fukui Davison	1-7
KPFF, A Team	5-3	Rauda Scale Models	1-8
KPFF, B Team	5-3	ABKJ	0-8
Krekow Jennings Millet	5-4	Makers	0-9
Chester Lindsey	5-4	BSD	?
Mulvaney Blue	4-0	Tonkin/Greisinger	?
Eric Meng	4-3		

USVBA Rules (Real Matches)			
TRA	5-0	KCM "Cheapshots"	1-4
Mulvaney Green	3-0	Jonjegan Gerrard McNeal	0-4
Roger Newell	3-0	Streeter/Dermanis	0-4
HDR	2-2	John Graham	0-5
NBBJ "Groupers"	1-3	Team Archichoke	?

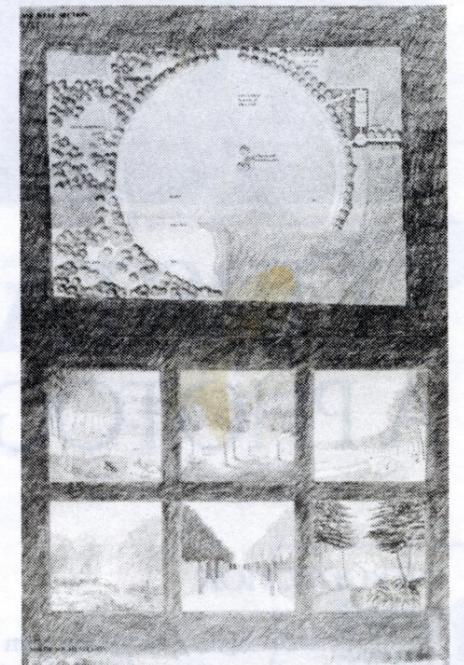
— Marsha Bach

AS A STRATEGY FOR EXPOSING THE character particular to each of eleven architects' design styles and purposes, offering the problem of designing a tea and coffee service to a hand-picked international group of famous designers brilliantly eliminated variations only due to interpretations of siting, cultural assumptions submerged in the program, unacknowledged whimsy, and logic of clients and assistants. For the manufacturer, Alberto Alessi Anghini, whose studio dreamed up this experiment, the purpose was "to carry out even more experimental research, free from the limits usually imposed by industrial mass production." For Alessandro Mendini, who operated the program and designed an entry, "The object was to offer architects and designers a place where they could work out and put forward experimental methods, forms, and typologies in the thick of the current debate on neo and post-modernism and on the claims of new Italian and international design." And for Fulvio Irace, who wrote the narrative for *Tea and Coffee Piazza*, the book now circulating with the teapots, "... the products of this programme can be variously interpreted as astonishing technological ikebanas of a new metal universe, or as three-dimensional volumes placed upon the polished enclosure of a tray like the meaningful elements of some bizarre architectural planimetry." It is, finally, in the eyes of the beholder that these silvery vessels, foundations of Empire, or intellectual paradigms, gain meaning. Beholdable at the Seattle Art Museum until September 2 as "Architecture in Silver," the tea services display the eleven individual resolutions of the war between function, form, and personality fought on the battlefields of Michael Graves, Hans Hollein, Charles Jencks, Richard Meier, Alessandro Mendini, Paolo Portoghesi, Aldo Rossi, Stanley Tigerman, Oscar Tusquets, Robert Venturi, and Kazumasa Yamashita. Although most people viewing the teapots, coffeepots, creamers, and sugar bowls seem to be trying to figure out, "Is it Art?," a few may wonder, "How would you clean it?"



REMEMBER WHEN "MARKETING" was what your parents did on Saturday afternoon at the neighborhood A & P, instead of the hottest new fad in architecture-firm-consultants? If bucking this fad is your aim, you may want to ride along on the back of a brand new mount: *The Design and Building Industry's Awards Directory and Publicity Directory*, a two-volume set compiled and published by Lord Communications and *A/E Marketing Journal* this year. For \$98 (\$76 for Publicity, \$38 for Awards), you can have access to the publications' deadlines, whims, interests, and editors' names of the major publications industry-wide, as well as listing of more than one hundred organizations which offer awards programs: requirements, selection processes, submission materials, timing. With these Directories, and a few excellent projects, fame and fortune are just a Marketing Assistant away. Order your fame and fortune from: *A/E Marketing Journal*, Box 1316, Newington, CT 06111.

WHEN VINCENT SCULLY TOLD A Bellevue audience one June evening that "All the greatest images of course have their own destruction built into them, by their very power," was he warning the townspeople that their yearning that Bellevue be put on the national design map as a consequence of this competition was a taste for forbidden fruit? Or was it a rationalization for the small number of standouts among the 67 designs finally entered? Quite possibly, the turn of phrase was merely meant to entertain, a talent Mr. Scully developed into a craft which he practiced for this gathering of Northwesterners, leaving a flavor of the quick wit and place-dropping one imagines to be the regular fare of the academic jet-set. Hired to direct the course of thinking of the local jury (including Norman Johnston and Sally Schuman of the University of Washington), Scully clearly influenced their work; the decisions were reported to be unanimous. Three proposals were granted semifinal status, which includes a \$10,000 fee and the charge to develop the design according to some clearer program directions, for a final judging by the same jury on October 15. The finalist will be identified shortly before the ballot measure through which Bellevue voters will decide whether or not to provide funds for the Central Park.

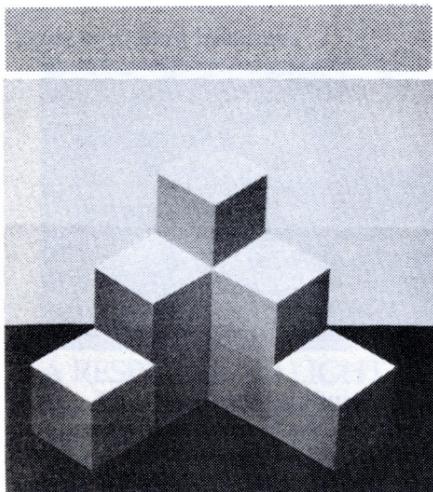


Beckley/Myers Park design.

The job of convincing Bellevue to spend millions of dollars on a major urban park belongs to EDAW of Seattle (a firm with offices in San Francisco and a national practice), or to Jongejan Gerrard McNeal of Bellevue (a local landscape architecture and planning firm), or to Beckley/Myers architects (the "foreigners" from Milwaukee, and the non-open-space experts in the bunch). The proposal by the latter is the one most discussed, because of its simplicity: a circle is inscribed in the square; it is a canal or aqueduct; at its center is a 3-tree grove of memorial elm trees. There is the possibility of eloquence here. The two other schemes depend upon imposed geometries, also, and "filling" the leftover space with assorted trees. Each of them offers simple structures for recreational/park use, which inscribe the entry at the Bellevue Square edge of the site. Although the JGM proposal uses a rigid 90° geometry and EDAW relies on a naturalistic arrangement of the grounds and plants, they are the same in their visual impact: Nice places. ○

COLOR LANGUAGE

I was educated by individuals who considered the use of color an indication that you were in the wrong field of study.



Spatial effect of color as an optical illusion. Study and photo by T.A. Rush.

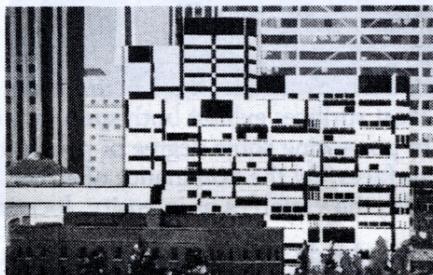
Like many architects of my generation, I was educated by individuals who considered the use of color in a presentation an indication that you were in the wrong field of study. This attitude was an offshoot of the Modern Movement which discouraged the use of color in all but highly functional applications, or in expressing the true nature of materials. These attitudes toward color have an interesting history.

A schism in approach to design education, known as the "Norm vs. Form Debate" took place during the Deutsche Werkbund Exhibition of 1914. "Norm" represented the need for the development and refinement of types in architecture and industrial design, and "Form," the creative sovereignty of the individual artist. This controversy carried into the early years of the Bauhaus. Johannes Itten, who taught the important beginning course, was an artist and color theorist who sided with the artistic, anti-authoritarian "form" approach. When Walter Gropius proclaimed his support for craft design and industrial production, Itten immediately resigned. He was replaced by Laslo Moholy-Nagy, a Hungarian artist with constructivist leanings who would execute "telephone pictures" by calling color specification to a factory supervisor who then produced the art in enameled steel. Needless to say, this programmed art impressed Gropius, who was influenced by the "New Objectivity"; a desire to take things entirely on a material basis without investing them with ideal implications. New Objectivity was the foundation for many early twentieth century movements such as Suprematism, Purism, and Neo-Plasticism or De Stijl.

The Dutch De Stijl Movement centered on Piet Mondrian, Theo Van Doesburg, and Gerrit Rietveld. These artists saw cosmic significance in the primary colors yellow, blue, and red. The application of color to architecture was a means of connecting surfaces and spaces through a dynamic relationship of loose colored planes appearing to float independently of one another. These ideas influenced Le Corbusier, who with Amedee Ozenfont evolved the machine aesthetic of Purism. The appearance of natural unadorned material was an important part of the Purist aesthetic. When paint was used, the palette was white, with a limited functional use of primary colors. This attitude was incorporated into American architecture when Walter Gropius and Mies van der Rohe came to the U.S. in the 1930s.

The current interest in color began when Robert Venturi sanctioned American subculture, dropped the restraints of modernism, and used color as imagery in much the same way as roadside advertising. In the last decade, attitudes toward color have changed considerably due to the impact of Post-Modernism, the painterly style of Michael Graves, and an increased number of journals that recognize and promote color as a requisite. Architectural color follows the lead of fashion, with personal

taste and preference determining its use and trends. Trends are sometimes short-lived but do produce experimentation and innovation, which have had a very positive effect upon the use of color in all of the design professions. Advances in materials, paint, and lighting technology have occurred, but most importantly, scientific research in color physics and visual perception has come to the attention of practitioners. Theorists, like Harold Kueppers and Frans Gerritsen, have shown that the standards used by many artists, architects, and educators today are founded on false premises. The traditional color wheel used by Le Corbusier and Mondrian was based upon the mixing properties of pigment. A paint color which could not be made by mixing other paints was called indivisible or a "primary" color: red, yellow, and blue. By mixing two primaries, the "secondary" colors were produced: orange, green, and violet. In this color system, "real colors" were only found in the spectrum. The colors crimson via magenta to indigo were considered false or "unreal," as were the interference colors of soap bubbles and abalone shells.



King County Jail showing strength of light-dark contrast in form manipulation. Concept and drawing by Reese Kaufman.

New research focuses on the eye's sensitivity to differing wave length of light energy, rather than pigmentation chemistry. Three color receptors are identified for those short, medium, and long wavelengths by which they are maximally activated. These are the eye primaries: blue-violet, green, and red-orange. When two eye primaries are simultaneously and equally activated, the eye secondaries are produced: yellow, magenta, and cyan (blue-green). A new color circle is thus formed which explains unreal and interference colors by how the eye produces color sensations. It also explains the relationship between additive (light), subtractive (paints), and partitive (mosaic) color mixing by locating additive and subtractive complementary pairs opposite one another on this color circle. The traditional system was inadequate in explaining either these relationships or the color theory principles of color television and printing which are evident in the new system.

Substantial research in the area of human behavioral response to color is in its infancy. Much of the science of color has associations with more mystical belief systems such as eidetic imagery, astral light, aural healing, color therapy, and the profession of chromopath. Although most have not been taken seriously by modern science, recent studies indicate a direct correlation between heart rates and exposure to different colors, or between the ability to perform various tasks and the color of spaces. The psychology of color response is another relatively young field of study. Human emotional reaction to color is directly connected to an area which, I feel, has special significance to the field of architecture: color association and color symbolism.

Color associations are the visual imagery and emotional values occurring in response to color. Though many consider this area too subjective to apply meaningfully to architectural design, one need only



Seattle cityscape showing Columbia Seafirst Center in a light value color. Concept and drawing by John Koppe.

look at how product advertising has capitalized on this imagery for decades. Champagne, toast, and avocado appliances; crushed violet lipstick; Persian melon, salmon, and peach enamels (Post-Modern appetizers!), and qualitative imagery such as "country gray" (would you buy "city gray"?) are so common that we might be surprised to discover how discriminating our responses to color really are. Mood and color is another familiar association. Most lay people can select colors which evoke sensation of warmth or coolness, masculinity or femininity, activity or passivity, loudness or quietness, etc. We are more sophisticated in these perceptions than we might imagine.

Color symbolism is based on association of the color of natural phenomena with important survival implications incorporated in mystical and spiritual beliefs. Some of these concepts represent the color of the elements: air, earth, fire, and water; other refer to night and day, sun and moon, blood and death. This primitive symbolism is an important part of nearly every religion and culture, yet Western Christian culture has forgotten meanings prevalent in Early Christianity until the Reformation. Red was the symbol of charity and martyrdom for faith; gold and yellow represented power and glory; blue signified hope, love of divine works, sincerity and piety; purple was symbolic of suffering and endurance and was the hue of the penitent; white represented chastity, innocence, and purity; and black represented death and regeneration. Much of this symbolism is present in the paintings, frescoes and mosaics of the Early Christian and Byzantine churches. Their interiors were designed to give the impression of celestial space using these symbolic associations as a color language. Builders of Gothic cathedrals used this symbolism in stained glass, but were also aware of the power of controlled lighting on the emotional response of the worshippers. Baroque architects were so keenly aware of these emotional effects that the spatial experience of the churches was used to command belief in the awesome power and glory of the church.

Admittedly, the use of strong religious symbolism is no longer consciously used in the color of most buildings. However, the association of black with evil (Darth Vader) and white with purity and aloofness (the Ivory Tower) is clearly derived from early symbols, and affects the attitudes we have about certain buildings. The prevalent attitude that color choice is purely a matter of individual preference is arguable.

The standards of color used by many artists, architects, and educators today are founded on false premises.

My primary involvement with color and form has been in teaching architectural design studios. The goal of these classes has been the experimentation with color language in architectural expression. Through experimentation of this kind I have come to some realizations about the use of color in architecture. The color issues we have found to be most important to architectural form are: spatial effect, an optical illusion in which certain colors advance and others recede when juxtaposed; color contrasts, the degree of activity which colors appear to have when juxtaposed; the change of colors in differing daylight and weather conditions; and color associations.

Urbanistically, color as a contextual matrix is one of the easiest and most effective ways to achieve unity (by using analogous colors) or variety (through strong color contrasts). Changes of color due to

climate and natural lighting are rarely exploited in Northwest architecture, although they provide a great opportunity for regional expression. Colors in the blue range and some yellows appear bright on cloudy days, whereas reds become dull. On a cloudy day, subtle pastel colors appear bright against a light gray sky. These same colors wash out in bright yellow sunlight with its dark shadows and deep blue sky.

The color contrast of extension — complementary colors in unequal amounts which "extend" each color or make it appear more saturated — can be inventively used. Blue-violet or magenta on a downtown Seattle building would turn the predominant gray-beige of surrounding buildings redder and warmer. This contrast is particularly effective in creating variety in street and building signage.

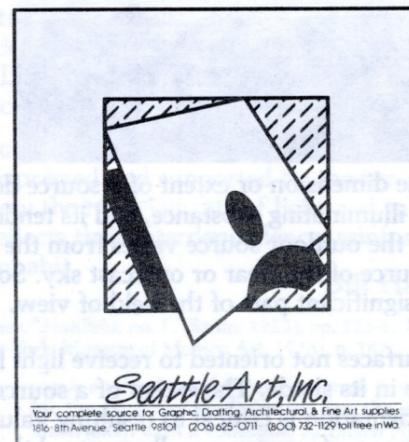
The most interesting color contrasts are those which produce spatial effects. These are seen whenever delineation of pattern is used in a building, usually in the dark-light contrast of trim or banding. Strong light-dark contrasts change the appearance of building form through their association to shadows which make form legible. Spatial effect through color is one of the best means to define the dominant and subordinate parts of a building. This is hierarchical expression, a technique for establishing concept or design intention architecturally. Warm-cool colors, such as maroon, magenta, and some greens which can take on either appearance, create richness in building surfaces because of their ability to change "temperature" depending on the nature of the light.

Associative and symbolic uses of color are becoming more apparent in large corporate buildings. It is not surprising that business, which has learned the advantages of color associations in advertising and retailing, tends to employ this knowledge to enhance an architectural image.

The potential of color association in architectural design is its connection to both imagery and emotional response, for color affects mood and atmosphere as well as architectural form. The link of present to past as a Post-Modern attitude is a logical way to justify the use of historical color associations and symbolism. But it is all too easy to justify architectural decisions on the premise that if it worked in the past, it will work in the present. I am more interested in those symbols which are viable and meaningful in today's culture. The importance of the past is in reincorporating values which allowed ideals and feelings, not just function and economy, in architectural expression, free of the exclusivity in Modernism. Architecture should represent both objective and subjective issues, and herein lies the greatest potential of color.

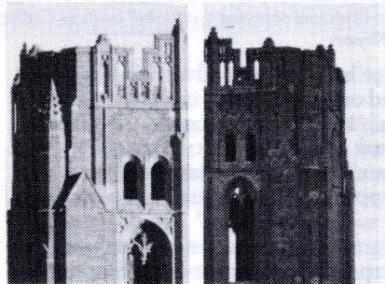
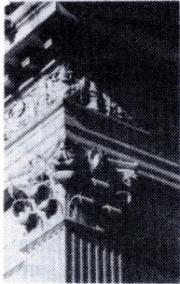
Galen Minah

Galen Minah is Associate Professor in the UW Department of Architecture. He is currently on sabbatical, doing research on color and architectural expression.



SUBSTANCE AS LIGHT . . .

. . . continued from front page.



CAUSES OF APPEARANCE

Apart from hue, differences in the intensity, location, and extent of illuminating sources are largely responsible for the wide range of appearance of the same substance.

Under all light conditions, shadow results from interference with light from the principal source. Even the sky's light on the grayest of days produces shadows. The extent of a light source influences the character and quantity of shadows produced. The shadow produced by a horizontal projection under the point source of the sun is well-defined. The shadow produced under the broad source of the sky grades in tone as a diminishing area of the sky lights the surface directly.



The range of light values within a context affects the way we interpret substance. What is considered as an illuminating source and what is interpreted as a surface depends on relative intensities. A grouping of brightly lit surfaces can appear to dissolve in light, unifying as a single source. At night, the surfaces within a porch illuminated by a concealed lamp can glow in a space bordered by dark walls denied the intense light. At the other extreme, a very dim space evenly lit and framed by bright surfaces can appear simply as a flat, dark surface. Space is momentarily denied. By revealing no dependence of the visual sense on materiality, these examples illustrate the nature of surface as a source of light. Ultimately the sensitivity of sight betrays the illusion, but fixed is an imprint of the ideal of that sense, the reception only of light.



Most surfaces exhibit both specular and diffuse light-reflecting qualities. In possessing some degree of polish they are composed, in a sense, of two surfaces. By the dominance of either, appearance can change dramatically with the variables of intensity, location, and extent of the light sources.

On a cloudy day the sky will readily transmit its image in specular surfaces. The character of the surface beneath may hardly be communicated. When the sun emerges from the side, the intensity of its light overpowers the light from that part of the sky reflected from the smooth surface. Through diffuse reflection the sun sends a clear image of the character of the surface beneath.



The relation between surface orientation and illuminating source location is critical for resulting light values. Sunlight provides an intensity of illumination which varies continuously with the changing striking angle. The movement of the sun causes changing appearance through time while varied surface orientations yield a range of intensities at any moment. Any gently rolling surface is thus modeled by different quantities of sunlight, yielding legibility.



*"I discovered by working with actual glass models that the important thing is the play of reflection and not the effect of light and shadow as in ordinary buildings." — Mies**



The dimension or extent of a source determines its presence, its influence in illuminating substance, and its tendency to resist interference. The extent of the outdoor source varies from the point source of the sun to the broad source of the clear or overcast sky. Sources of greater extent often occupy a significant part of the field of view.

Surfaces not oriented to receive light from an illuminating source will be in its shade. The extent of a source determines to what degree surface orientation is critical to resulting values. Under the clear or overcast sky, more surfaces are equally exposed than is the case in sunlight.

Shadow and reflection are fundamentally related, yet essentially distinct. Each connects neighboring substances by superimposing shapes and images. Shadow results from blocking the principal source, while reflection sees everything as illuminating sources. The location of reflection is dependent on our position; the location and presence of shadow is not. It is surface character which determines whether shadow or reflection will be the means of superimposition of images. As the light-diffusing surface consistently reveals incident light from all illuminating sources, it can display shadow. The specular surface transmits true images of sources, because the effects of all the sources are never combined. The stillness communicated by strong shadows contrasts sharply with the dynamic character of reflection.

Line is the edge of tone. Changes in line and tone are largely responsible for visually communicating the feeling of space. It is motion which results in the changing image. We infer space from the change in appearance resulting from movement through time.

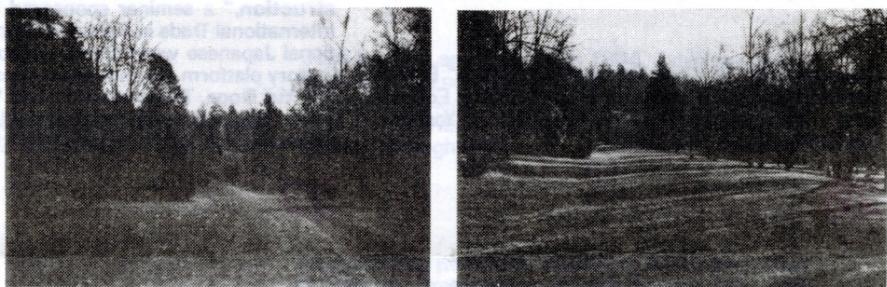


MOVEMENT AND CHANGE

On the sunny day, light induces shadows and diffuse reflections dominate our attention. Tones are fixed, and perspective takes over as the expression of movement. We are aware of objects on view. Tones are influenced more by the slower movement of the sun. An understanding of our position comes from reference to the location of the principal source.

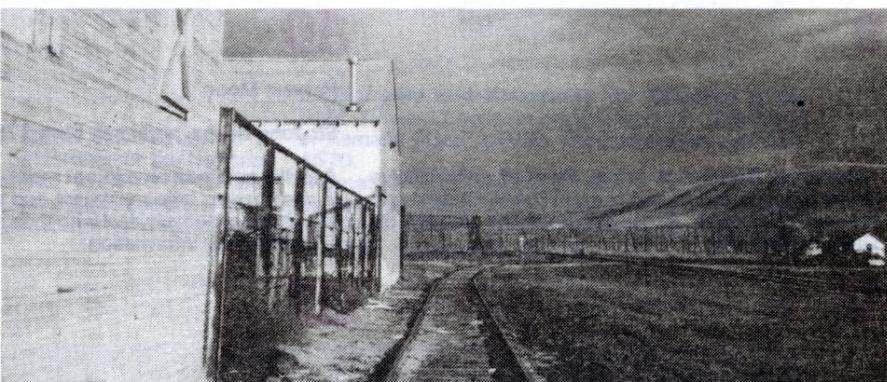


On the overcast day, because of the dominance of reflection, our movement brings frequent changes in the appearance of surfaces, augmenting the changes in perception caused by perspective. We feel a close link to spaces, because we are so connected to the causes of our awareness.



Under the overcast sky the low values separate objects from the brighter sky-ground so that successive objects are unified and the space seems continuous. As strong values do not separate the observer from the sensed space, it has an intimate and accessible quality.

In sunlight, the bright source generates an extensive range of values. The ground plane takes on great importance, and in receiving shadows, it generates a multitude of distinctly felt spaces. Space may seem more discontinuous and apart from the observer. The background may seem very distant. At the same time, however, sharpness of detail can bring distant objects nearer.



All photographs this article by Bill Haas.

CONCLUSION

A purpose in understanding light contrasts lies in awareness. A consciousness of what is all around reflects back on us, generating focus, ultimately revealing continuity and connection. Light is symbolic of focus. It provides the means for identity and the reference for location of the material world.

Beyond enabling vision, light holds much potential for expression. Regarding light as something which can be expressed and supported by the surface and form of architecture may allow the two elements of light and substance to assume an equality which reflects their interdependence, reinforcing our connection to the spaces we inhabit.

Bill Haas

* Ludwig Mies van der Rohe, "Two Glass Skyscrapers," *Fruhlicht*, no. 1, (Berlin: 1922), pp. 122-4. Translated in: Philip Johnson, *Mies van der Rohe*, (New York: Museum of Modern Art, 1978), p. 187.

Bill Haas is currently employed by Bouillon, Christofferson, and Schairer. His Master of Architecture thesis, from which this article is adapted, received the Architecture Thesis Citation Award from the University of Washington College of Architecture in 1984. The

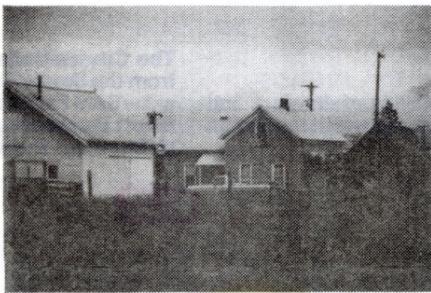
work evolved partly from research funded by the National Endowment for the Arts undertaken with a colleague, Kathleen Flynn, in 1981. The support of thesis advisory committee members Galen Minah and Tom Bosworth is gratefully acknowledged.



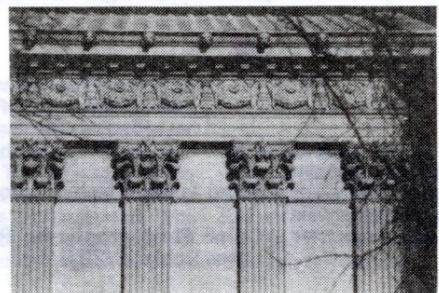
A RESPONSE TO LIGHT

The tonal range of light-diffusing surfaces is limited in conditions without incident sunlight. By encouraging source-image reflection with specular surfaces, the light of the sky and of nearby sunlit objects can take a place within a surface.

Value contrasts also result naturally from a polychromatic treatment of surfaces, using the variety in light-absorbing qualities of materials to supplement the limitations of the characteristic light. Under the sky's light, high values may be best in small quantities, as when they are dominant, the light cannot provide the life they demand. On a dark ground, high values are powerful even in dim light, as they bring life to a composition. In its limited extent and in contrast with the dark, the high value thrives.

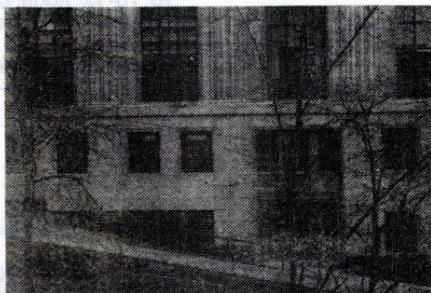


The character of overcast light can also be reinforced if value contrasts are minimized. Other color contrasts may then be especially pronounced. Contrasts of hue and cool-warm contrasts may become unusually significant.



The conditions of illumination affect the impression of form, providing ideas for response and expression. Under the light of the sky, when objects are seen against the sky, the greatest value contrasts occur with the figure and ground. The edge of form attracts the eye. Looking south, the relationship of building and sky values is darker to brighter. The same is typical with all orientations under the overcast sky. The sky's ubiquitous presence emphasizes the significance of profile. Profile can flatten space and transform volume to shape.

Under the light of the sun, often the greatest contrasts in value occur within forms where shadows and shade cause juxtapositions of the brightest and darkest surfaces. On the sunny day our eye focuses on the complexities of forms rather than on profiles.



Diffusing surfaces lit by the broad source can describe themselves clearly without strong shadows. Surfaces of different orientations will be exposed to varying amounts of the sky source, and value contrasts will be low, but the surface may be clearly presented. Under this condition the subtlety of shadows can either emerge or be lost. Form can reinforce the breadth of the source and consequent softness of the light. The gently curving contour of a stone facing may strike such a balance.

ARCADE

- 1** **Competition: House for the 1990s.** For info send a letter to Inland Architect, PO Box 103, Seattle Landmark's Board, Yesler Building. Call 625-4501.
- 5** **"Pogo,"** a new chair by Christopher Webb, at Northwest Gallery of Fine Woodworking, through 8/15. **Industrial Design Society of America** national conference in Seattle, 8/4-8/8. Featuring top design thinkers such as Victor Papenek, computer animators, researchers, doers. Write IDSA, 6802 Poplar Place, Suite 303, McLean, VA 22101, or call (703) 556-0919.
- 6** **"Now and Then"** you ought to submit photographs describing Seattle and the Northwest in the 1980s, for a Bumbershoot exhibition. Deadline: 8/15. Call 622-7656.
- 7** **Dale Chihuly Exhibit.** Work in blown glass by outstanding Northwest artist and Pilchuck School founder. At the Bellevue Art Museum, continuing through 8/19. **Inua: Spirit World of the Bering Sea Eskimo.** An exhibition at the Thomas Burke Museum, UW, focusing on the spiritually and aesthetically rich material culture of the 19th Century Bering Sea Eskimo. Through 8/12.
- 8** **Public hearing on Parking for Council chambers.** How they'll be on the 11th floor, I don't know. See 9:30 am.
- 12** Peter Eisenman, architect, born MCMXXXII. **The Whites and Greys go Silver:** Exhibit of silver tea and coffee services, designed by architects, in silver. Continuing at the SAM, Volunteer Park, through 9/2. A fascinating and revealing opportunity to compare, without rhetoric, the work and personalities of 11 leading designers.
- 13** **Position Available** — Public Information Representative for Seattle Arts Commission. Requires excellent writing skills and broad knowledge and experience with news media, print projects, familiarity with the arts. Job description, application requirements and form available through City of Seattle Personnel Dept., 4th fl., Dexter-Horton Bldg., 710 Second Ave. Deadline 8/15.
- 14** **Salmon Derby for Artists:** deadline 9/1 to enter designs for 1985 sport salmon fishing license stamp. For entry forms call (206) 753-6552, or write Salmon Stamp Contest, WA Dept. of Fisheries, Rm. 115 General Administration Bldg., Olympia, WA 98504.
- 15** **Interfaith Forum on Religious Architectural Design Awards.** IFRAA, 1777 Church St. NW, V Seattle Landmarks Board m Building. Call 625-4501 for details.
- 19** **Competition: "A Style for the Year 2001."** Entries accepted 8/20-9/3. Write to: Style . . . 2001, Editorial Dept., Shinkenchiko-Sha Co., Ltd., 2-31-2 Yoshima, Bunkyo, Tokyo 113, Japan.
- 20** **"Current Trends in Japanese Wood Frame Construction,"** a seminar sponsored by the Center for International Trade in Forest Products, will cover traditional Japanese wood frame construction, as well as 3-story platform and lam beam construction in Japan. Mr. Yuji Noga, Tokyo architect and Visiting Critic from Nihon University, will speak at the UW College of Forest Resources, 22 Anderson Hall, 1:30-3:30 pm.
- 21** **"Art of the Architects":** Exhibition of drawings and models by local architects and designers, at the Design Concern Gallery, through 8/31.
- 22** **The City as Collector** (art, n from the Seattle City Light Por at the SAM Pavilion, Seattle Cer **Elliott Bay Marina:** Public hea tie Municipal Building, 11th fl
- 26** **Michael Graves Victory Tour Comes to Seattle!** 8 pm, Kane Hall, Room 130, UW, sponsored by the Seattle Art Museum. Order tickets from SAM, Architecture Now Lecture Series, Volunteer Park, Seattle 98112. \$120/4 tickets. (Oops, wrong Michael. \$4 students, \$5 members, \$7 nonmembers.)
- 27** **Photographs by Alaska artists.** Invitational exhibit at Equivalent Gallery, 8/9-9/9.
- 28** Morris Graves, painter, born 1910.
- 29** Ingrid Bergman, actress, born California: **The Changing I** Photographs by Laura Volkerd Gallery, San Francisco, 8/15-9
- 2** Romaldo Giurgola, architect with an A, born 1920.
- 3** **Valerie Wilson, "Oregon Portfolio":** Color intaglio and relief color prints done to poems of John Riley, at Davidson Galleries 9/6-10/3. Works in prismacolor pencil on paper by **Gregory Foster**, and computer prints by **C.T. Chew**.
- 4** Kenzo Tange, metabolist, born 1913.
- 5** **Color Photographs by Peter Millet** at Donnally/Hayes Books, 8/23-9/18. **Seattle Landmarks Board m** Building. Call 625-4501 for de
- 9** **"Medicine Bundle"** A group show of collaborative works by visual artists and poets of the Northwest and Northern California. Show will run at the Jackson St. Gallery 9/6-9/25.
- 10** **Harvest Moon**
Sir John Soane, architect, born 1753.
- 11** **A 2-day seminar on project management** at Battelle is designed to help managers and supervisors understand and effectively deal with their jobs. 9/10-11. Call 527-0542 for information.
- 12** **Paul Thiry, Seattle architect, born 1904.**
- 16**
- 17** **32nd PA Awards postmark deadline.** See June *Progressive Architecture*.
- 18**
- 19** **Tools of the Artist: series of 10:15-12 noon on Wednesday** Examines line, form, space, color and Asian art. Call 447-4796 for **Seattle Landmarks Board m** Building. Call 625-4501 for de
- 23** **Successful Rehabilitation** according to the National Park Service: a 3-day technical workshop. Chicago in September, Boston in October, Seattle 11/15-18. Write Center for Preservation Training, National Trust for Historic Preservation, 1785 Massachusetts Ave. NW, Washington, D.C. 20036.
- 24** **Felice Lucero Gjacardo:** mixed-media paintings at Sacred Circle Gallery 9/6-9/29. **The Architecture Gallery** opened its doors in July at 615 SW Park Avenue, Portland. Sponsored by the Portland AIA, and the Architecture Foundation. Exhibitions to foster education and esthetic appreciation of architecture.
- 25** **Francesco Borromini, Renaissance Man, born 1599.** **"Strangely Beautiful,"** a group show of works in mixed media by 26 Northwest artists, at the Stone Press Gallery through Sept.
- 26** **George Gershwin, melting mus** **Uniform Building Code Co** Tuesday evenings 10/16-12/18 William Justen, PE, Director information, call UW Confer 543-5280.

august & september

2

Out-to-Lunch Concerts in downtown Seattle, through summer (officially, summer lasts into September). Call 623-0340 for a schedule.

"Gardens": a presentation by artist and landscape architect Martha Schwartz. UW Architecture Hall, Rm. 207. Sponsored by the College of Architecture & Urban Planning, and COCA. For information, call COCA, 624-6394.

9

Eileen Gray, architect, born 1879.

Throne of Blood: Kurosawa film at SAM, Volunteer Park, 7:30. First of a series of films in the Japanese tradition of telling ghostly tales to induce soothing chills on a hot summer night. Call 447-4796 for more information.

16

Onibaba: another ghostly tale at the SAM. 7:30. (See 8/9)

"Wild Beauty: Photography of the Columbia River Gorge." Exhibition opens today at SAM Pavilion, Seattle Center. Earliest photo documentation of the gorge, which is currently under new pressures for development and preservation. Through 10/21.

23

Kuroneko: marauding samurai, murder, black cat, and a haunted bamboo grove, at the SAM, Volunteer Park, 7:30.

30

Theo van Doesberg, de Stijl architect, born 1883.

Empire of Passion: another ghostly tale at the SAM. Oshima, 1978. Lovers and a ghost in the foggy moors.

6

"Architecture on the Move" is what you'll have to be to attend this year's Northwest Regional AIA Conference, in Portland, 9/6-8. Neil Goldschmidt, once-Mayor of Portland, will keynote with an address on "Portland, Architecture and Transportation." Transportation is the theme of this gathering that will get you all around this good city. Wrap it up with tours of Timberline, Mt. Angel, the Gorge, "Belluschi," and/or local vineyards. Contact Portland AIA, 615 SW Park, Portland 97205.

13

Herb Greene, desert expressionist, born 1929.

Furniture that Keeps Secrets: Secret compartments at the Northwest Gallery of Fine Woodworking through 10/7.

20

Stanley "I will never design another serious building" Tigerman, born 1930.

Peter Blake, critic, born 1920.

27

3d Annual Pacific Northwest Computer Graphics Conference. 10/29-30 in Eugene. Write to: Continuation Center, 333 Oregon Hall, University of Oregon, Eugene, OR 97403.

3

Pierre Chareau, architect of Maison de Verre, 1931, born 1883.

"The Birth Project," Judy Chicago, continues at the Jackson St. Gallery (and at The Bumgardner Architects, 6 new ones this summer) through 8/26.

10

"Woodworking" lecture by Yoshikumi Shimoi, 8 pm at UW Architecture Hall, Rm. 207. Sponsored by the College of Architecture & Urban Planning, and the Northwest Gallery of Fine Woodworking.

Japanese Carpentry Workshop taught by Yoshikumi Shimoi today through 8/12, at Northwest Gallery of Fine Woodworking. Call 625-0542 for details.

17

Round Peg Fits Square Hole: Sacred Circle Gallery moves to Mutual Life Building in Pioneer Square. Contemporary art by native Americans, including paintings by James Lavadour, Walla Walla, through 8/25.

24

Eruption of Mt. Vesuvius destroys (preserves?) Pompeii, Stabiae, Herculaneum. AD 79.

31

Bumbershoot 1984: 8/31-9/3 See the Broad Street gates designed by Sonia Ishii, artist & architecture student, and Pacific Science Center/Art Center gate by Joseph Mucci, architect, designed for the festival.

7

Wooden Boat Show, Port Townsend, 9/7-9. **Frozen Music: A History of Portland Architecture,** photographs by Gideon Bosker from his book by the same name, authored by Lena Lencek, to be released this fall. At the Oregon Historical Society in Portland through September.

14

"Olmsted Parks of the West: The Future of a Tradition." 1984 Annual Conference of the National Association for Olmsted Parks. 9/14-16 in Seattle. Lots of tours, workshops, and notable speakers! Very reasonable fees. Call UW Conferences and Institutes at 543-9233.

21

28

Fine Woodworking: Sculpture, Furniture, and Constructions. An exhibition at the Whatcom Museum of History and Art, Bellingham, by woodworkers from six surrounding counties in Western Washington. Through 10/27.

4

Walking Tours of Historic Tacoma begin at Tacoma Community College Downtown Center at 1 and 3. Brochures and more information at Tacoma CC, 756-5000.

Group show of Seattle artists at Linda Farris Gallery through August.

11

Full Moon

"Landmarks": Photographs of distinctive masonry buildings in Portland, exhibited at The Architecture Gallery, 615 SW Park Avenue, Portland, 8/6-29.

18

Pietro Belluschi, NW's favorite architect, born 1899.

Pilchuck School Open House 10-5. Outstanding flat and blown glass work in an outstanding setting. Take I-5 north to exit 215 and follow the signs. A good place for a picnic. Call 445-3111 for more information.

25

Jack Lenor Larsen: Seattle 1984. Exhibition of textile design and personal collection of one of the world's leading designers. A Seattle native and UW alumnus, too. At The Henry Gallery, UW. Call 543-2280 for details. Through 8/31.

1

Competition postmark deadline: Washington Trust for Historic Preservation. Awards for students, architects, public agencies, non-profit organizations. Call (206) 753-0099 for information.

Walking Tours of Historic Tacoma begin at Tacoma Community College Downtown Center at 1 and 3. Brochures and more information at Tacoma CC, 756-5000.

8

Isozaki: See and/or buy his drawings — not of his buildings — on exhibit at the Seattle AIA Gallery space at 1911 First Ave., during the month of September. Call Peter Miller for details. 623-5563.

15

Calligraphy and Kakemono for Children at the SAM, 10 am-12 noon, in conjunction with "The World of Kameda Bosai" exhibit. For information call 447-4670.

"Romance with the Rails": Design competition for the renovation of Evanston's Davis Street Station. Write to Robert Lubotsky, Preservation League of Evanston, Box 731, Evanston, IL 60204.

22

The Seattle Arts Commission is seeking an artist to design Seattle Water Department hatchcover which will be placed on sidewalks in the downtown and other areas of the city. Deadline: 10/5. To obtain a project prospectus, write: SAC, 305 Harrison St., Seattle, WA 98109, or call (206) 625-4223.

29

Henry Hobson Richardson, architect, born 1838.

Glass Seminar: Intensive one-day seminar on the evolution of glassmaking techniques and connoisseurship. Experts from the Corning Glass Museum, Henry Ford Museum, and Traver Sutton Gallery, and a trip to the Pilchuck School. Co-sponsored by SAM and UW. Call 543-5280 for details.

S

REGIONALISM AND THE NORTHWEST PALETTE:

Warren Hill and Roger Williams

ARCADE'S conversation with Warren Hill and Roger Williams took place at Williams' home. Williams teaches Visual Design and Color at the University of Washington, and is a principal with Wyatt Stapper Architects. Hill teaches Interior Design and the History of Interiors and Furniture Design in the UW Architecture Department.

Roger Williams: We've probably gone beyond regionalism, accepting that it may have existed at all. I don't think it's wood and glass. It was a history of many talented artists, designers, and architects doing houses for a challenging clientele. I guess that's the regionalism. It wasn't a particular style. The materials, the forms, and the clients in particular were quite alike. And the colors were also alike and imitated the natural environment — to extremes. That's changing, and one begins to ask, "Why are colors changing? Is color just applied to whatever is in style, or is it more fundamental than that?" I think it is. All of the former design vocabulary is breaking away, and color is being carried along. You don't need to be stuck in browns and greens and tans. When I first came here in the sixties, this area reminded me of Scandinavia in its use of primary colors set in a natural, low-chroma environment. But Scandinavia's connection of palette to geography and culture is constant. American palettes change with time and taste. The press has a great deal to do with that, even more in this region than some others. Some designers consider their job to be style-setting or style-following. Form or decoration or a client may not have much to do with it. There's not enough color experimentation. I'm not sure if it's regionalism, but our buildings are very warm-neutral. Out sailing on the sound yesterday, I was struck by how tan-5 everything was! With a couple of glaring exceptions! Those exceptions are remarkable in trying to call attention to themselves. Other cities' new buildings are a lot more colorful, even if they're curtain-wall. Ours is a very homogeneous downtown in color.

ARCADE: Very conservative.

RW: In all the houses, too. The original houses were very conservative — everything was tan or grey. Seattle tends to be all this . . . the color of my house!

A: I think it's due to a recessive kind of behavior!

RW: I agree with that! It's more than just conservatism.

A: Compared to Los Angeles.

RW: Or even compared to Portland. Portland is known as a conservative town, yet there is a huge difference in the downtowns alone. One theory is that it was just a few families who viewed the city as their ward,

and they wanted it right. They carved out the parks and they established a level of aesthetic quality that was unparalleled. But Seattle was always a rollicking town. Here it was a series of fistfights. This place was such a free-for-all that it was Selig's style from the time it began. Historically, you'd come in, make a hit, and go on. A few stayed, but they were all very private. They didn't develop culture or make it permanent in the way Portland did. It really is LA. Get what you can and go. Or get what you can, stay, and build yourself a wall. You get this incredible conservatism about standing out or participating for the common good. The color of downtown buildings symbolizes that conservatism. We've always had a narrow palette of warm neutrals or natural materials. Developers, institutions, and their architects are now beginning to show courage in the use of color, by broadening the palette to include more intensity.

A: Maybe it's a fallacy, but one of the standard ideas is that intense color in this climate is so vibrant against the greyness of the sky and the air that it becomes too shocking. . . .

RW: It's not so much the intensity of color as it is balance. Scandinavia uses only primaries. They really do! The vividness of seeing the tulips and seeing the Icelandic poppies in that broad grey and green environment is just incredible.

A: So the attitude or the nature of the people makes the intensity of that contrast desirable, whereas here it's held in restraint.

RW: It also exists in Japan. Japan uses small amounts of intense color in contrast to this climate.

Warren Hill: Japanese architecture exists in a climate that isn't very different from ours. Our skies aren't very different. If you look at the Inland Sea and the San Juans, they're very similar. In a way, I'd say the Japanese won the war. Aesthetically. They were playing by different rules, however.

RW: The people of older cultures have understood the use of color and the repetition of those colors for so much longer than we've had the privilege. We're just too young.

WH: All of us came from somewhere else at various times. My great-grandparents were so grateful to get out of Europe that they wanted to become "Americans" and nothing else. They brought none of their culture.

A: What did that mean, "becoming an American"?

WH: I think part of it meant becoming anonymous. Our cities are not like European cities which used the local building materials. Sienna has a color. Rome has a different color. Venice has a different color.

Florence has a color, but it's all blackened with car exhaust.

RW: There are residential neighborhoods that have used, not a standard palette, but a reasonable collection of colors. Ballard has transplanted colors, originally because of the cultural link, but now because of the tourist attraction. The University certainly has its own palette because of materials again. We do have some distinct areas, but it would be very hard to characterize the city as a whole.

A: The conversation was leading earlier to a conclusion that color reflects a desire for anonymity. Suppose you want to change that.

WH: I attempt that at school. I keep persuading the students to look at their heritage. One thing that was an interesting push was Porter and Mikellides' book, *Color for Architecture*. One article was the l'Enclos study, in which the French government asked for a study of the various areas of France to find indigenous color. They took trays of soil for each area, and bark, and leaf, and then man-made color, or the use that people put color to. It was very different from north to south. The indigenous use of color is both harsh and romantic in certain places and austere and puritanical in others.

RW: In that study, the color of the soil predominated. One of the mistakes of that kind of exercise is that you get one equal amount of each color, rather than understanding that there are more burnt umbers than there are violets.

WH: All the photographs of that study are not seen against soil, but against the sky, so that you've got the seasonal color of vegetation and the sky. French skies are as varied as American skies. Our Northwest skies are so green in contrast with, say, the skies of Phoenix.

RW: What that study promoted was that if you had a building that you wanted to hide or camouflage, you colored it the same color as the ground. That's what is happening in Seattle. When you allow architectural colors to become indigenous colors, they become one with the environment, as opposed to contrasting. We have a real opportunity as educators, but as designers and architects as well, to break that mold of anonymous color usage. It's anonymous only in that people don't have a working vocabulary of color. They don't know that color can mean things, except in our signs and symbols. Those things are ingrained

We have a real opportunity as designers to break the mold of anonymous color usage.

into our culture, but people just don't think about color meaning in houses and buildings. Clients are very receptive to color, though. They're excited about their project. If you're talking about any other kind of meaning, and you overlap or integrate it with color, they get excited about that. It's much easier and more personal to say, "Let's make your front door count."

WH: Designers have to submerge their color taste — not their knowledge of color, but their particular color persuasion, in order to do something that's right for the clients. For me, there's a certain amount of, I wouldn't call it fencing, but observing what people wear, what they put on their tables, what they obviously feel comfortable with, and then I work from there. Sometimes that doesn't represent the truth of the client. You may stumble on the fact that they secretly are passionately fond of violet!

A: But haven't the nerve!

WH: That's right. They're still remaining anonymous.

RW: You've mentioned Northwest palettes. Is that your focus?

WH: I try to work with indigenous materials or materials that have been used so often here that they are a part of our palette. It is a very tight palette. I have the students find natural objects to do a study of modulation in value, hue, and intensity. It's really designed to help them see color better. They begin by thinking they're going to go from A to Z. They end up going from A to C, with fifteen steps in between. You can tell when they've done it properly, the steps are exactly the same. We've done things like grinding up brick to get a brick dust. What we lose in doing that is the patina which is part of the surface of that material. In a sense, you might as well use paprika! Also, we arrange chips of bright color plastic laminates inside around the window frame and outside on the opposite building wall. We even put some farther across the parking court to see what happened to them near and far. We had them in shadow, we had them in direct sunlight, and they were extremely different.

RW: The greatest problem that designers have is that they perceive a color to be what it is when they're standing right next to it, rather than what it looks like in the environment.

WH: Another thing is orientation, because our sunlight is so different in the morning from the afternoon. My house faces west, and the interior is not apricot-colored, but over certain times in the spring and in the fall, the sun goes all the way back twenty-five feet, and the whole place is apricot-colored. Light and sun are going to give all sorts of varieties that you have to anticipate.

A: So individual colors are only important in their relation to light and other colors.

WH: That's right. You never see one color alone.

A: Could we talk about some local examples? The Bagley Wright Theatre is one of the most conscious, blatant uses of color on a building.

WH: You said it — I didn't!

A: Well, I don't like it.

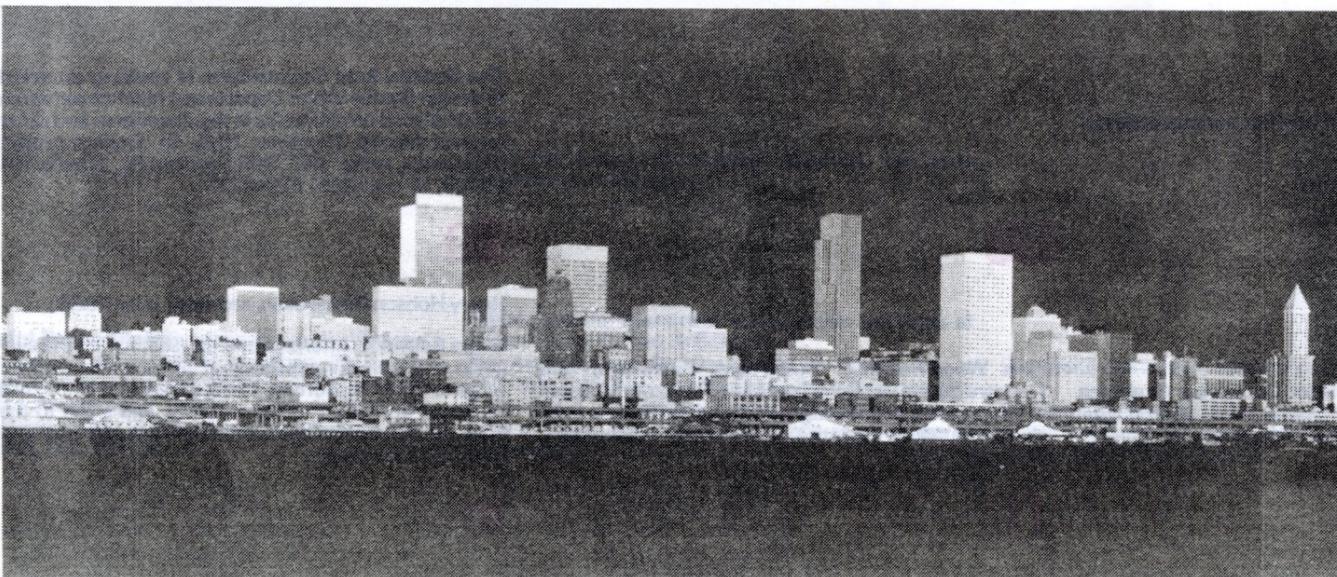
WH: Nor do I.

A: Somebody really went out on a limb there. They supposedly did many, many color studies.

WH: I don't think they did! That's what they're saying to justify it now. They didn't know whether it would work or not!

A: Do you know what the designer was trying to accomplish?

WH: He said he thought it would be fun! But it isn't fun. The use of the red — I'm not saying the color is wrong, but it's too small in scale. It looks like the wrong size ribbon on the wrong size package.



Seattle skyline. Photograph by Roger Williams.



When we do public color, it should allow for all of the personal colors that people bring. It should not be elitist. W.H.

RW: That's a problem with the design of the building. I think the colors represent risk-taking, and I really applaud them. The colors work as a scheme, but it's that old problem: you lay them out on a board in front of you and they work. They don't work applied in context with the surroundings and the light.

WH: I think there should have been a little humility on the part of the architects and designers, because it is part of Seattle Center. It could have been a building remarkable in its own way, but still more at home with what was around it.

RW: It's knit into the Center, yet it isn't. Actually it's tied to the QFC across the street better than it is to Seattle Center.

WH: And more to the product shelves than to the building itself.

RW: Particularly the vegetable bins.

WH: The Jolly Green Giant!

A: Could we talk about reflective buildings?

WH: I don't think they work in juxtaposition. It becomes a hall of mirrors, and I find it a little spooky. They also look terribly temporary to me, because of the wavy reflectance and resultant distortion.

RW: It's a false argument to say we are good neighbors because we're reflecting the surroundings. It simply says you don't have enough courage to use materials with their own color and texture, and claim that piece of ground as a place.

A: I don't know how many times I've heard a designer say that the value of the reflective glass buildings is that they disappear. It's exactly the opposite of what they actually do.

RW: Or what a building should do.

A: That's something I've never understood about Columbia Center; that it's black so it will disappear.

WH: Well, it doesn't disappear in the view from my house!

RW: I keep wanting to come back and find out whether there's a Northwest color palette.

WH: You have a camera? Take a trip to a less-provoked area, like parts of the San

Juans, and just photograph the rocks and the lichen and the madrona. Some really amazing things happen that are absolutely natural. Like the stoncrop, a succulent which has blue-green leaves, a pink stem, and yellow flowers. That's all in one thing! And it's beautiful because they are adjusted perfectly. And yet your sensibility wouldn't allow you to block those three colors together in any composition. They're small against a large mass of neutral, but richly-colored stone.

RW: We do have the mass of varied, but neutral-colored buildings as a downtown backdrop: the blue-green Norton Building, the dark terra cotta of the Seattle Tower, and a variety of beiges. Now we can begin to introduce to that small amounts of intense, polychromatic color: the stoncrop!

A: Earlier, you were drawing the conclusion that any regional palette would have to come from light effects, not substance.

RW: There is something here that establishes a very different color palette from other places. We are not New Mexico. We are not New England. But we do have unique light. Central California coast is magenta light. Southern California is very blue, white light.

A: Look at the light coming through those poplars!

WH: It's green. We're all very green.

A: It's always green here. For all our talk of what a grey climate it is, there are things blooming all year round.

RW: Bob Buchanan [painter and UW professor in landscape architecture] is convinced that everyone in the Northwest takes green for granted. It is such a major portion of our color scheme. It's like the sky. We don't think about the blue sky or the grey sky. We don't think about the green. It's just the backdrop to everything else. And it tints everything. The reflection off that green on every other color is significant. We have another very strange phenomenon: many times in the winter, we have spectacular sunrises and sunsets, because we are under clouds but our flanks are not. We get this intense orange light,

Why are colors changing? Is color just applied to whatever is in style, or is it more fundamental than that? I think it is. R.W.



WH: But they always have a paid fashion designer to front for them.

RW: For anything that we value as an artifact that has to be colored, these people get together and predict the trends. And by predicting them a year in advance, establish and limit them. That's why we have pastels that are going into . . . olive and gold next year! Look out! It's all button-down collars.

WH: You've got to get out and fight!

RW: Do what's right!

A: Let's talk about trends, then.

WH: Ignore them!

A: There are a couple of buildings going up right now that are going to be around for awhile and that are very trendy.

WH: We do need changes as long as the changes are appropriate to the shape of the thing, the use of the thing.

RW: And the people who use them. If you're responsible in design and color design, you are in fact going through a test. If it works first on the layout table, and it works as Warren has experimented — at a near distance, a mid-distance, and a far distance — you test it for as many varieties of light as you can. At that point, a responsive color scheme may emerge. If it's a valid color scheme, based on harmony, on balance, on value contrast, and on hue contrast, and you've gone through a fairly objective process, then you put it through the real tests. You consider who's using it, what their tastes are, what heritage or tradition they bring to it. Color is emotional.

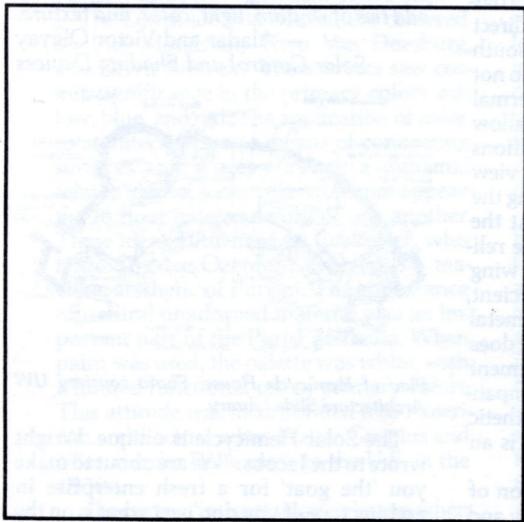
A: That's a very different description of how you pick color from the one in the *Weekly's* interview with Jim Olson. He said that they went and looked at the salmon and the vegetables in the market and that's how they selected colors for the South Arcade building.

RW: That's convenient.

WH: It makes a good cold supper.

Photographs of Roger Williams and Warren Hill by Rebecca Barnes.

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LIGHT AND SHADE: Three Houses

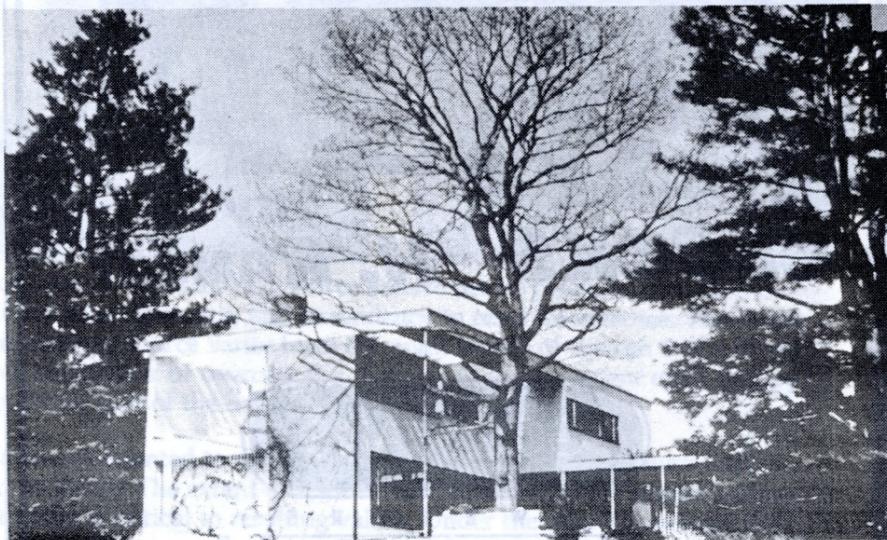
A strong technical solution can lurk behind a strong architectural form. The correct and imaginative use of light and shade is fundamental to the making of architecture.

Buildings which utilize shading accurately as a passive environmental control device also can communicate strong visual images. Although we contend that shading is a secondary, modifying force in architecture, still it has great potential as a means to achieve expressive, symbolic form. By seeing shading in the larger context of design intention, we can understand its inevitable integration with other forces acting on the building form. This holistic approach provides the basis for a productive method of inquiry in teaching architectural design, and is a model for a more immediate integration of formal and technical issues in design.

Shading is a fundamental design strategy wherever overheating occurs. Architects have at their disposal a multitude of forms with which to shade buildings. The shading approach can reinforce and enhance the formal content of a building, and in some cases may be the primary form-giver to it. Some forms will provide similar protection from overheating but will affect other design considerations, such as view, privacy, daylight distribution, and connection between inside and outside, very differently.

Design is prioritization and integration, not segmentation. Architecture is the confluence of forces realized in form. We have recently completed a set of building case studies initiated in a graduate seminar with Lisa Anderson, Martha Hunting, and Bill Singer. The choice of the case-study method was critical in forcing the exploration of Form, Technics, and Building Task simultaneously. Buildings were chosen by criteria ranging from the ideal to the pragmatic.

The approach involved a number of different study methods. Photographs, publications, and when possible, the architects were consulted. Working drawings were used to construct models, although Turnbull's office generously loaned us their model of the Zimmerman House. The drawings and models were used to study formal relationships and construction details. Shading and daylighting effectiveness were studied by testing the models in the heliodon and in the overcast-sky simulator located in Skylab in the University of Washington Department of Architecture, and, for the Zimmerman House model, in the Lawrence Berkeley Laboratory sky simulator. Assessments of the shading were made through graphic analysis techniques. Seasonal and diurnal daylight distribution was plotted graphically from the model measurements and was compared with visual observation in forming assessments of daylight characteristics.



Gropius House. Photo by Marietta Millet.

In all cases we studied, shading is not deterministic; it is not conceived of as a singular driving force in the building, nor is it divorced or separated from the expressive quality of the building. These architects have challenged the notion of the single purpose. The shading is technically effective, but it is integral with the conception of the work. It embraces and gives a flowering to its expression. Its shape, configuration, material, and method of construction is integral with the design conception. It is modified by other forces and considerations. It sometimes provides ambiguity or is contradictory to a purely technical approach. These studies reveal the architects' conscious weaving of design forces, according to each designer's interpretation of their relative value to the building's statement.

The Gropius House
Lincoln, Massachusetts,
Walter Gropius and Marcel Breuer, 1938

My husband is always identified with the functionalists — only the way the functionalists are thought of nowadays has a very narrow, almost materialistic view of it. This house was built for our comfort and enjoyment, our amusement, just as any Victorian house would have been built for purposes. It fit our life like a glove.

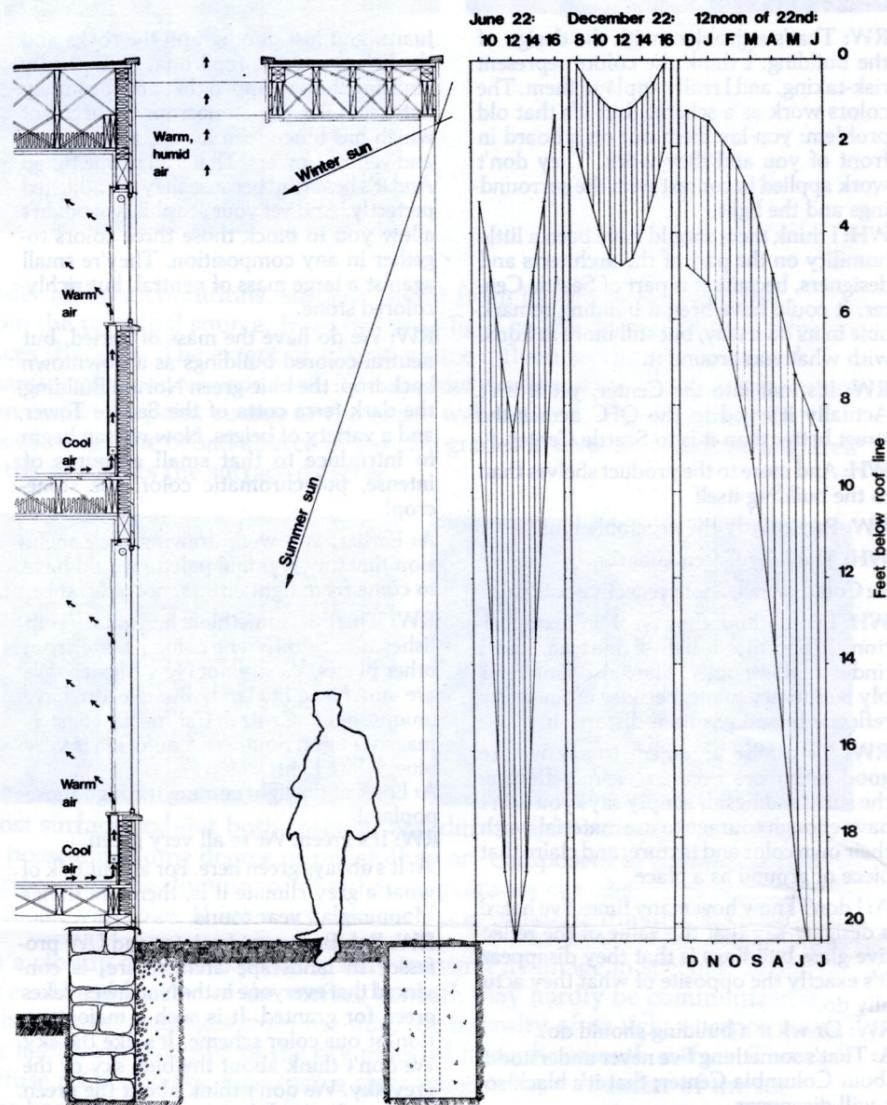
— Ise Gropius

For Walter Gropius, who designed his family's house in New England as a newcomer to the United States, there is a weaving of his Bauhaus design theory with forces gleaned from studies of indigenous New England houses and of the site. He stated his approach to ornament in a manifesto published as he was building his new home:

The blight of ornamentation has fallen on all our intimate surroundings. . . . Modern architecture represents the vital reaction to this chaotic confusion — a vigorous attempt to rid us of these hopeless narcotics and to find again a true expression which may mirror our very life of the machine age.

Although the building is a modern-style archetype, the lessons spring from tradition. The whole building, from siting to details, responds to local climatic and site conditions.

The response of the building to the sun is explicit in the orientation of the building and zoning of living areas. Large areas of glazing to the south for winter solar gain are shaded in summer. Sun control is incorporated into the existing formal predilection of the designer. The outrigger sun control device over the continuous south-facing living/dining room windows completes the basic rectilinear volume of the house from which the space below is carved and to which is added the screened porch



Section of Gropius House with sunpath diagram. Drawing by Nevin Summers.

on the south, the entry canopy on the north, and the chimney on the west. It reinforces the strip window it shades, giving freedom to look out in all directions. The detailing of this shading device is both functional, allowing hot air to rise through it while allowing light to be admitted, and aesthetic, stating the designer's expression of the structure through the slender steel support columns and the exposed roof rafters. The integration of Form and Technics seems nearly complete.

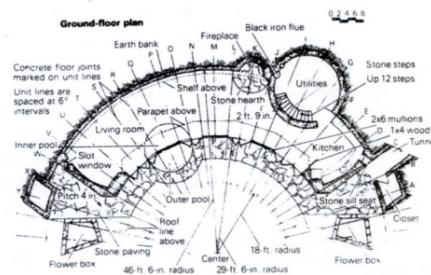
Building Task was included in the provision of natural ventilation, views, and direct access to the outside through the south wall. Other openings in the building do not use this integrated approach to thermal and lighting control. Instead, very shallow strip windows are used in most locations to maintain the important continuous view and horizontal aesthetic, while limiting the amount of thermal gain and loss. At the west living room window, where the reliance on plantings and the vertical wing wall for shading proved insufficient, Gropius provided a single-purpose metal roll-down blind. While this approach does not represent an integrated reinforcement of the architecture, it at least seems compatible with the undecorated machine aesthetic of this house and of which Gropius is an advocate.

The Gropius House is an expression of elegance achieved by spatial simplicity and efficiency of purpose. It conveys a certain confidence, a sense of daring and openness, reinforcing the basic importance of shelter, but without restricting its occupants. Shading has been used and adapted here to express a particular aesthetic: Gropius has given concrete forms to the modern polemic. This example fully exposes the fickle or dark side of shading: its ability to be adapted to any conception of beauty. It is revealed as the server, not the served.

Second Jacobs House —
The Solar Hemicycle
near Madison, Wisconsin,
Frank Lloyd Wright, designed 1944

The materials which provide a screen between man and the natural environment offer rich possibilities for visual expression. Many materials only elaborate the surface, others invite a rich play of light and shadow, or add to the spatial composition, while some constitute their own architectural entities. To their plastic appearance they add ties of rhythm, light, color, and texture.

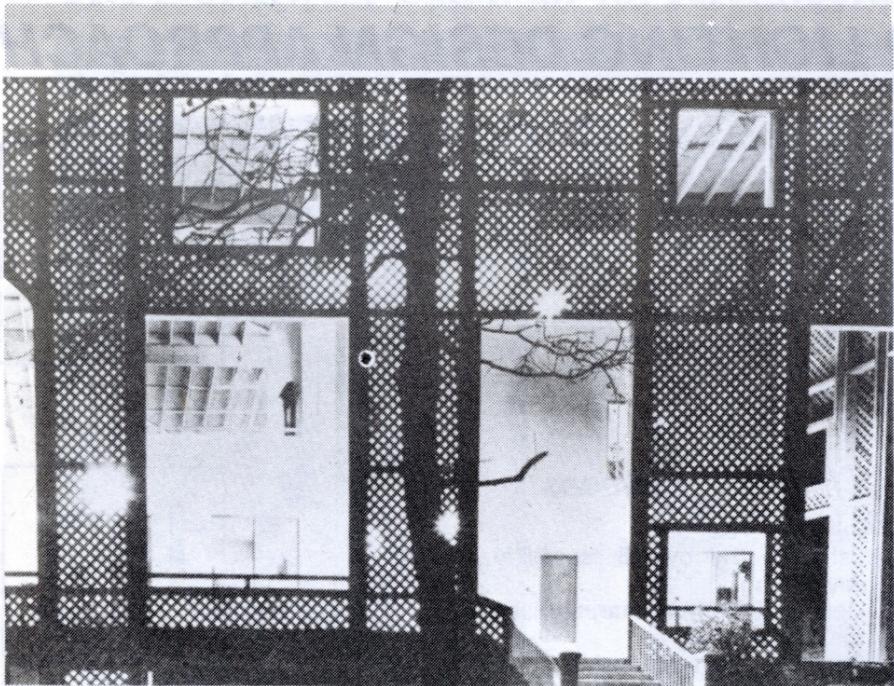
— Aladar and Victor Olgyay
Solar Control and Shading Devices



Plan of Hemicycle House. Photo courtesy UW Architecture Slide Library.

The Solar Hemicycle is unique. Wright wrote to the Jacobs: "We are about to make you 'the goat' for a fresh enterprise in architecture. If you don't get what is on the boards some other fellow will. So 'watch out.' It's good. I think we have a real 'first' that you will like a lot." Wright was speaking about a building which derived its form and its character directly from its relationship to the sun. It uses some of Wright's characteristic signatures of stone, wood, and horizontal roof, but the shape is totally new. The nearly half circle plan and varying-depth horizontal overhang are the counterpart of the sun's diurnal path. The

A great American poet once asked the architect, "What slice of sun does your building have? What light enters your room?" — as if to say the sun never knew how great it is until it struck the side of a building.
— Louis Kahn
"Light is the Theme"



Zimmerman House. Photo by Marietta Millet.

house becomes a solar clock. Thus the fundamental relationship is fused between abode and the light and shade of the sun. This creation of place and marking of time is an ancient concept, but its aesthetic potentials have been little explored in the recent materialistic history of the west.

As the sun rises, it penetrates the living quarters on the first floor and master bedroom via the second floor. Similarly, the western sunset is visible from the entrance/kitchen until mid-summer. The plan shape and location of the solid end walls allow for a unique combination of openings for view and admittance of the sun.

Vertically, there is a similar critical relationship established. The horizontal overhang and interior second floor balcony eliminate the sun during its highest position. The overhang becomes deeper near the ends of the house as the enclosing walls are retracted from its edge, giving the building additional protection from low-angle sun. Yet, sun is admitted fully to the main living spaces during the underheated season. It is absorbed by the massive substance of the building and reradiated with Wright's "gravity" system to warm the entire house. There is a strong gradient of light from front to back, providing a variety of moods and types of spaces. Each space changes dramatically in character depending on time of day. One is aware of the constant motion in the diurnal cycle of the sun, through the placement of spaces in relation to its path and their use during the day.



Hemicycle House. Photo courtesy UW Architecture slide library.

The vertical mullions of the single great aperture mark the times of the day; the horizontal at door height indicates the time of year; and the changing reflections of the curved overhang in each linear segment of glass firmly establish the sense of fixed place in relation to the constant motion of the sun.

Wright has here supplied a unique twist on the traditional solar model. He excludes, rather than admits the sun during the period of the summer solstice. He establishes its presence through its absence. He has designed the building coincident with the sun's most beneficent aspects, and celebrates the light, shade, and shadow it provides.

The Zimmerman House
Fairfax, Virginia, MLTW/Turnbull Associates, 1974

Now my aim is clear: I must show that the house is one of the greatest powers of integration of the thoughts, memories, and dreams of mankind.

— Gaston Bachelard
The Poetics of Space

The Zimmerman House is a house within a house. The house proper nestles inside a second skin of wood lattice wall and translucent fiberglass roof. Openings are incised in the screen to frame views. The form is derived from a number of dialectical concerns: the wife's desire to have a house with porches reminiscent of her grandmother's Maine house; the husband's wish to have a house filled with light (a contradiction); and the hot, Virginia muggy summers. There is a need for shading and for maximizing ventilation at the same time. These paradoxes have been translated into a unique form in which the exterior shell is a porch which is a shading device allowing both ventilation and a dramatic patterning of light. The form of this house is a result of the unique circumstances acting on it and is not the product of a set of rules of order. It is outside the modern idiom, perhaps outside any idiom. It is individually, not universally ideal. In Frank Lloyd Wright's words, "There is all the difference when we work with style and not for a style." It is created of its desire to be and its architect's ability to have it be both light and shade.

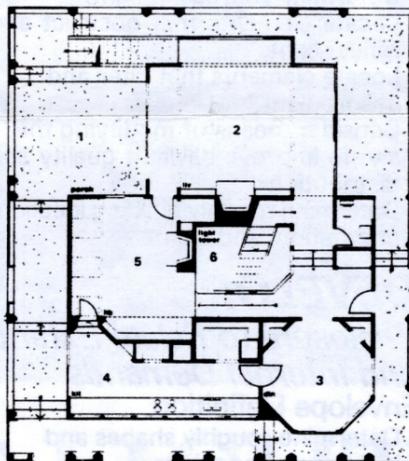
The area between the trellis and the house proper acts as an intermediary for climate control, privacy, view, and connection. There is a great connection between the interior and the porches via sliding glass doors. The connection between the porch and the exterior is intermittent, depending on location: either screened by the trellis or connected by framed openings. There is a changing kaleidoscope of view and light as one moves around the house and the decks.

Immediately on seeing this "lattice house" one senses the design concept of a "house as porch." Bill Turnbull confirms this basic concept: "... the 'Gordian knot' of conflicting demands was resolved by the lattice-work providing a psychological sense of shade while the fiberglass roof lets in light." According to Turnbull, openings in the lattice and the shell within were placed solely to frame views: views out to the Potomac and views in to the front door. However, the placement of openings in the two walls blocks much direct solar gain in summer while allowing penetration in some areas in winter. The lattice is a wind-breaker in winter and a sun-breaker in summer. Climate response was a factor in placing ground-floor bedroom walls so the porch floor above shaded them, and in

providing cross-ventilation through the lattice and windows and stack ventilation through the top of the stair tower. Maximum thermal efficiency has been compromised since the fixed roof extends over the space between the lattice screen and the interior wall, thereby restricting vertical airflow. It could have been made operable to alleviate stratification of hot air under the eave. Major concerns were for cost, however, and some shading effect and effectiveness was also lost when the 8" o.c. spacing of the roof rafters was changed to 16" o.c., a decision which Turnbull admits slipped past him.

Turnbull says he thought about the manipulation of light rather than shade, and certainly the house reads as an expression of light. The message of light is also in the kaleidoscope of shadows as they move across the planes of the white house within the lattice. Here we see the shading device as Form, modified to fulfill Building Tasks such as View and Entry, while also addressing Technics, but by design, not engineering. It is the experience of shade and shadow, the sense of the connection between inside and outside, the dynamics and excitement created by the "in-between," that gives birth to the building. It is a total conception, the whole which is greater than the sum of the parts, where the ephemeral qualities of light and shade now fully encompass us. They are server and served at once, a full integration.

Passive environmental controls have great expressive potential. However, this potential needs to be considered early and as part of the conceptual design process. Environmental controls should not be



Zimmerman House plan. Courtesy Marietta Millet.

thought of as an engineering problem to be subbed-out during working drawings. They can reinforce and even enhance design.

These vehicles can accommodate many styles and forms, ranging from the bries-soleil of Le Corbusier to traditional elements such as shutters, curtains, or blinds. They may have vernacular roots, as in the rediscovery and elaboration of the courtyard, the arcade, building shading building, and layering of roofs, or they may depend on new construction techniques and materials. International trends and regional solutions demonstrate the variety of viable solutions to a most common consideration. We challenge you to think of the early integration of the expressive control of sunlight and energy with the design content of the building. There is an apparent need to see this reunification take place in practice, to get the back pages of the architectural journals to speak to the front, and vice versa.

We were at no loss for fine works to study when we evaluated twenty-two buildings against our criteria for this project. The work presented here just begins to scratch the surface. A few additional examples give a broader range to the sample: John Deere and Company Headquarters by Eero Saarinen, Peabody Terrace by Sert, Jackson, the Gamble House by Greene and Greene, Seinajoki Library by Alvar Aalto, Indian Institute of Management of Louis Kahn, the Wolfe Residence by Rudolf Schindler, and the new California State Office Buildings. Our in-depth case study of Le Corbusier's Carpenter Center in Cambridge, Massachusetts will be published in the summer issue of the *Journal of Architectural Education*.

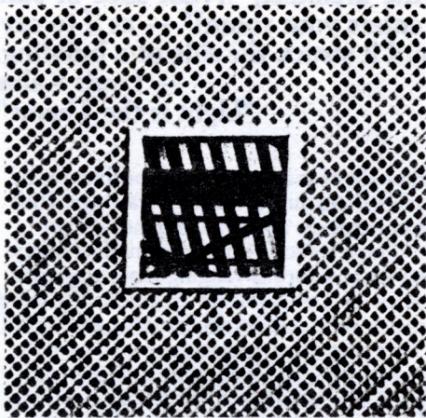
Marietta Millet teaches design, architectural lighting, and climate response in the Department of Architecture at the University of Washington. She has been on the Board of Directors of the Passive Division of the American Solar Energy Society and is currently on the Board of Directors of the American Collegiate Schools of Architecture. She consults and practices in Seattle.

Fritz Griffin was a founding board member of the New England Appropriate Technology Network and the National Center of Appropriate Technology. He has given congressional testimony on building standards and energy issues. He teaches design and environmental systems in the Department of Architecture at the University of Washington. His design and consulting practice is in Seattle.

Marietta Millet and Fritz Griffin

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AN INTEGRATED LIGHTING DESIGN APPROACH

The Integrated Lighting Design Approach outlines a process by which designers can integrate lighting and heating concerns into the architectural design process. The organizational format is used simply for clarity and is not intended to prescribe a specific order of events. It progresses from conceptual and general concerns to specific responses and details. Left and right, topics are concerned with the building skin or envelope, and the interior.

The order in which each issue is engaged will vary. It is important that there be agreement within the design team that lighting be considered from the start as a critical factor. Since lighting is basic to people's perception of buildings, it can be a powerful expressive tool.

Establish qualitative goals for the project early. Consider the "delightful" aspects of daylight, creating special places with the way light passes through glass.

Determine activities and factors such as climatic characteristics that will affect building comfort and performance and that may inspire regional architectural responses.

Each set of activities is associated with a different schedule, hence different qualitative and quantitative lighting requirements. Challenge some architectural "rules," and instead let in daylight or a view where it may not be expected.

Manipulate the site directly adjacent to a building to help control both the quantity and quality of daylight. White walls reflect sunlight and the sky's light into windows, whereas plantings block light and filter it.

Inside, activity areas can be located according to the need for light for visual tasks and as biological and psychological relief.

In developing the building envelope, start to consider what most people think daylighting is all about: the windows and skylights. The size of openings affects the amount of daylight less than does local climate, the orientation of the window, and the immediate site. Openings must be sized and placed for design, view, and ventilation purposes.

Electric lighting must stand on its own, but also must be complementary to the daylight distribution in a room. The value of interior surfaces can alter the amount of useful light from daylight and electric sources.

Modifications, or details, when conceived in totality with the building concept can make a building more than shelter. Forms that provide shading and still admit daylight, or even enhance its quality, can be functional and powerfully expressive.

Inside, lighting control devices range from "simple" curtains to "advanced" computerized systems.

Marietta Millet

CONSIDER

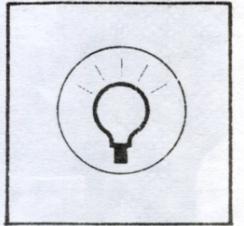
Essential Design Issues and Goals

Conservation

Include daylighting in conceptual building design.
Consider daylight in the context of overall energy balance.
Design for reasonable levels of illumination.

Delight

Eliminate glare.
Refine the view.
Accentuate the plan.
Complement the structure.
Celebrate the daylight.
Create a mood.
Break the rules.



ANALYZE

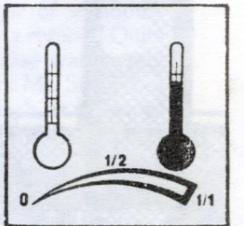
Existing Exterior and Proposed Interior Conditions

Climate

Determine the major climatic conditions that will influence the building.
Identify the critical or determining design conditions.

Building Type

Establish the overall feasibility of daylighting.
Define the thermal characteristics of the building.
Consider the relationship between daylighting and the thermal environment.



FORMULATE

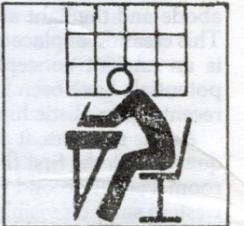
The Built Response to Existing Conditions

Site

Determine sources of light.
Locate elements that obstruct and reflect light.
Locate elements that filter and absorb light.
Consider means of modifying the site to improve daylight quality and distribution.
Determine roughly building location, orientation, and shape.

Activity Zoning

Analyze visual tasks to select qualities and quantities of illumination.
Locate activity areas within the rough building shape.
Integrate lighting (daylight and electric) with other building systems (structural, mechanical, electrical, acoustical, plumbing).



DEVELOP

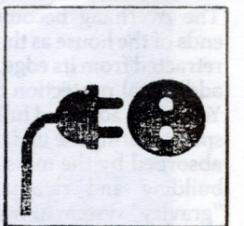
Enclosure to Relate Exterior Conditions and Internal Demands

Envelope Definition

Determine roughly shapes and locations of openings.
Estimate the approximate area of opening required.

Interior Definition

Determine the shape of each space for good daylight penetration and distribution.
Design electric lighting system, including control devices, to complement daylight and to function alone.
Design interior colors and finishes to enhance light distribution.



MODIFY

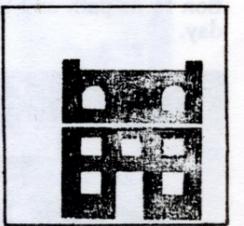
Light by Refining Enclosure and Interior to Provide Appropriate Illumination Quality

Envelope Components

External control devices, fixed, moveable, automated.
Building envelope.
Glazing.

Interior Components

Internal control devices, fixed, moveable, automated.



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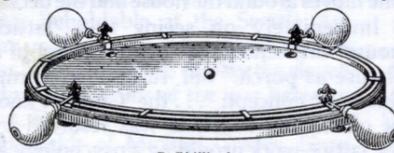
"IT IS SAD TO SUPPOSE THAT PLACES may ever be more important than people," continued Margaret.

"Why, Meg? They're so much nicer generally. I'd rather think of that forester's house in Pomerania than of the fat Herr Forstmeister who lived in it."

"I believe we shall come to care about people less and less, Helen. The more people one knows, the easier it becomes to replace them. It's one of the curses of London. I quite expect to end my life caring most for a place." (From *Howards End* by E.M. Forster)

"... GENTLEMEN SEEM TO MESMERIZE houses — cow them with an eye, and up they come, trembling. Ladies can't. It's the houses that are mesmerizing me. I've no control over the saucy things. Houses are alive. No?" (the same Margaret as above, *Howards End*)

puff-billiards (puf' bil' yärdz), *n.* A game played on a circular board surrounded by a



Puff-billiards.

frame bearing metal brackets opposite the pockets. The players take positions at the brackets, and by means of rubber blowers seek to force a cork ball into their opponents' pockets. It is a game requiring considerable skill.

Mrs. . . . is said to have invented puff-billiards, but the great mind who is responsible for ping-pong has yet to be discovered. *Com. Advertiser*, May 11, 1901.

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