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CONTENTS

Decorative Arts and Furnishings

Decorative arts are those arts concerned with the design and decoration of objects, usually utilitarian, that in themselves do not necessarily possess aesthetic qualities. Certain of the decorative arts—basketry, pottery, and weaving, for example—are also collected under the term arts and crafts. By whatever name, they are distinguished from the fine arts in that the latter concern themselves with objects whose sole function is aesthetic appeal. The objects with which the decorative arts concern themselves range from humble household implements to monumental public works, and they include architectural units, furniture, rugs, and a host of items of metal, glass, clay, fabric, and other materials.

This article treats a number of traditional decorative arts in succession; the order in which they are discussed is suggested partly by historical development and partly by affinities. The opening section, an overview of interior design, sets a context in two senses: first, it begins with a general consideration of design that has implications for all the fine arts; and second, it discusses interior design as an art that makes extensive use of the products of the individual arts subsequently discussed in detail. Each section devoted to a particular form of decorative art includes discussions of materials and techniques and of significant historical developments.

The article is divided into the following sections:

INTERIOR DESIGN

Although man's desire to create a pleasant environment is as old as civilization itself, interior design, the conscious planning and design of man-made spaces, is a relatively new field.

Since at least the middle of the 20th century, the term interior decorator has been so loosely applied as to be nearly meaningless, with the result that other, more descriptive terms have come into use. The term interior design indicates a broader area of activity and at the same time suggests its status as a serious profession. In some European countries, where the profession is well established, it is known as interior architecture. Individuals who are concerned with the many elements that shape man-made environments have come to refer to the total field as environmental design.

The following section deals with principles of good design that are applicable to all design activities, with special emphasis on interior design, particularly as a creative and problem-solving activity.

Principles of interior design

It is important to emphasize that interior design is a specialized branch of architecture or environmental design; it is equally important to keep in mind that no specialized branch in any field would be very meaningful if practiced out of context. The best buildings and the best interiors are those in which there is no obvious disparity between the many elements that make up the totality. Among these elements are the structural aspects of a building, the site planning, the landscaping, the furniture, and the architectural graphics (signs), as well as the interior details. Indeed, there are many examples of distinguished buildings and interiors that were created and coordinated by one guiding hand.

Because of the technological complexity of contemporary planning and building, it is no longer possible for a single architect or designer to be an expert in all the many aspects that make up a modern building. It is essential, however, that the many specialists who make up a team be able to communicate with each other and have sufficient basic knowledge to carry out their common goals. While the architect usually concerns himself with the overall design of buildings, the interior designer is concerned with the more intimately scaled aspects of design, the specific aesthetic, functional, and psychological questions involved, and the individual character of spaces.

Although interior design is still a developing profession without a clear definition of its limits, the field can be thought of in terms of two basic categories: residential and nonresidential. The latter is often called contract design because of the manner in which the designer receives his compensation (*i.e.*, a contractual fee arrangement), in contrast to the commission or percentage arrangement prevalent among residential interior decorators. Although the volume of business activity in the field of residential interiors continues to grow, there seems to be less need

Impor-tance of total design

and less challenge for the professional designer, with the result that more and more of the qualified professionals are involved in nonresidential work.

The field of interior design already has a number of specialized areas. One of the newer areas is "space planning"—*i.e.,* the analysis of space needs, allocation of space, and the interrelation of functions within business firms. In addition to these preliminary considerations, such design firms are usually specialists in office design.

Many design firms have become specialized in such fields as the design of hotels, stores, industrial parks, or shopping centres. Others work primarily on large college or school projects, and still others may be specialists in the design of hospitals, clinics, and nursing homes. Design firms active in nonresidential work range from small groups of associates to organizations comprised of 50 to 100 employees. Most of the larger firms include architects, industrial designers, and graphic designers. In contrast, interior designers who undertake residential commissions are likely to work as individuals or possibly with two or three assistants. The size of the firms involved in nonresidential design is a clear indication of the relative complexity of the large commissions. In addition to being less complex, residential design is a different type of activity. The residential interior is usually a highly personal statement for both the owner and the designer, each of whom is involved with all aspects of the design; it is unlikely that a client who wished to engage the services of an interior designer for his home would be happy with an organized systems approach.

Specializ design firms

Most large architectural firms have established their own interior-design departments, and smaller firms have at least one specialist in the field. There are no precise boundaries to the profession of interior design nor, in fact, to any of the design professions. Furniture design, for example, is carried out by industrial designers and furniture designers as well as by architects and interior designers. As a rule, furniture designed for mass production is designed by industrial designers or furniture designers; the interior designer or architect usually designs those special pieces that are not readily available on the market or that must meet specific needs for a particular job. Those needs may be functional or aesthetic, and often a special chair or desk designed for a specific job will turn out to be so successful that the manufacturer will put such pieces into his regular line. The same basic situation holds generally true in the design of fabrics, lighting devices, floor covering, and all home-furnishing products. All design activities are basically similar, even though the training and education in the different design fields varies in emphasis. A talented and well-trained designer can easily move from one specialized area to another with little difficulty.

In the discussion of the general aspects of design, it is important to note that there is an important distinction between art and design. A designer is basically concerned with the solution of problems (be they functional, aesthetic, or psychological) that are presented to him. The

Distinction between art and design

artist is more concerned with emotive or expressive ideas and with the solution of problems he himself poses. A truly great or beautiful interior can indeed be called a work of art, but some would prefer to call such an interior a "great design."

AESTHETIC COMPONENTS OF DESIGN

A general definition of beauty and aesthetic excellence would be difficult, but fortunately there are a number of generally accepted principles that can be used to achieve an understanding of the aesthetic considerations in design. One must note, however, that such understanding requires exposure and learning; an appreciation of any form of art needs such a background.

A thorough appreciation of design must go beyond the first impression. The first impression of the interior of a Gothic cathedral might be that it is somewhat dark or gloomy, but, by the time the visitor senses its majestic proportions, notices its beautiful stained glass windows and the effect of light, and begins to understand the superb structural system that permitted builders of cathedrals to achieve their lofty goals, he can truly begin to appreciate the overall aesthetic qualities (Figure 1).

One of the key considerations in any design must be the question of whether a design "works" or functions for its purpose. If a theatre has poor sight lines, poor acoustics, and insufficient means of entry and egress, it obviously does not work for its purpose, no matter how beautifully it might be decorated. Such a design could be considered good only if it were thought of abstractly as a kind of walk-in sculpture. In some cases the building is meant to be sculpture rather than architecture. The Statue of Liberty, for instance, is primarily intended as a monument, despite the fact that it contains rather tortured interior spaces.

Importance of function

To use function as the only aesthetic criterion would be limiting, but it certainly is a valid consideration to be kept in mind. Designers are often tempted to overdesign or "style" an object or interior rather than design it. Some of the most beautiful objects of the 20th century are beautiful because they were the result of purely functional considerations. It is conceivable that future art historians will consider a modern jet plane the crowning artistic achievement of the middle of this century, rather than any building, interior, or conscious art form.

The aesthetic response to an interior and its furnishings must take into consideration the social and economic conditions as well as the materials and technology of the time. The elegant or ornate interiors that are usually associated with the 18th and 19th centuries were appropriate to the
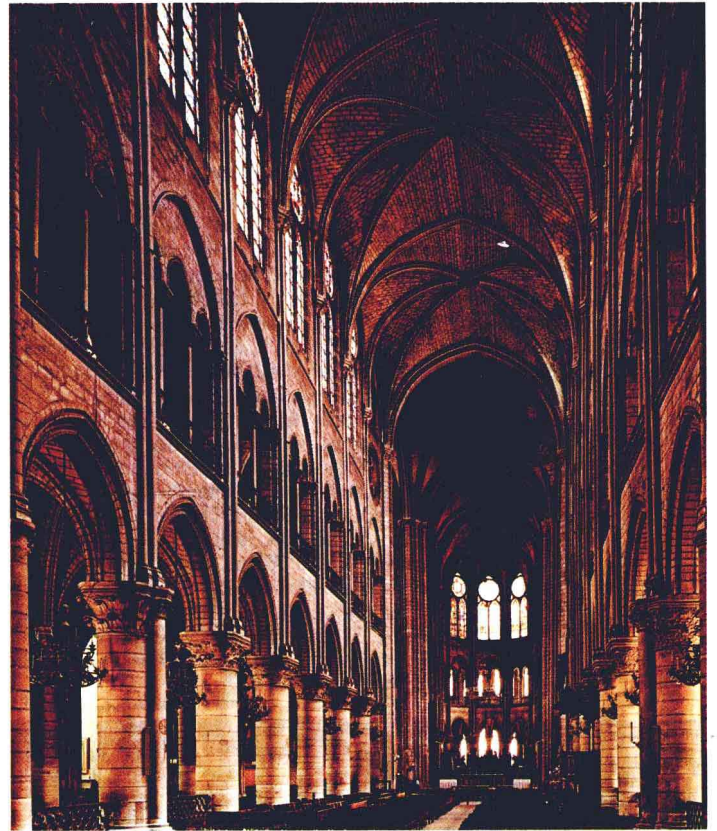
Figure 1: Majestic overall aesthetic quality of a Gothic interior: nave and choir, cathedral of Notre Dame, Paris, 1163–c. 1200.
Shostal—EB Inc

social and economic conditions of the nobility or the wealthy bourgeois who were the original occupants. The chairs were designed for formal living, and the elaborately carved furnishings were designed to be cared for by many servants (Figure 2, left). Such an interior is alien to the 20th-century way of life and would be totally inappropriate for a contemporary middle class family. It would also be inappropriate to use modern materials and processes to imitate earlier materials and processes (Figure 2, right). Many manufacturers try desperately to make plastic look like wood, stone, or just about anything but plastic. All

By courtesy of (right) Knoll International, Inc., photograph, (left) Louis Reens

Figure 2: Social and economic considerations in interior design.
(Left) Elaborate mid-19th-century dining room in the Gothic Revival style, Lyndhurst, Tarrytown, New York, designed by Alexander J. Davis. (Right) Simple pedestal table and chairs appropriate to the dining room of the mid-20th century family, designed by Eero Saarinen, 1956–59. Synthetic materials and mass production methods are used to achieve furniture suited to its function.

aesthetic criteria have something to do with honesty. Some aestheticians have compared beauty to truth, and there can be little doubt that honestly expressed functions and honestly expressed materials and manufacturing processes are far more beautiful than fakery and imitation.

Relation of interior to basic structure

All interiors, by definition, occur inside buildings and therefore have a very real relation to these buildings. The best interiors today, as well as in the past, are those that relate well in character and appropriateness to the particular building. The furnishings designed and scaled for spacious country homes or palaces would obviously be out of place in a small urban apartment or suburban home. A strong and unusual piece of architecture such as New York City's Trans World Airlines terminal (at John F. Kennedy International Airport) could not be properly furnished with standard commercial furniture and products. The building, as well as the interiors, was conceived as a total design by the Finnish-born architect Eero Saarinen. Whether the observer agrees with the architect's concept or not, he clearly senses the strong interrelationship between the exterior and the interior—and therefore the aesthetic unity and success. Another successful interior and building is the Ford Foundation headquarters in New York City, the work of architects Kevin Roche and John Dinkeloo, with interiors by Warren Platner. The design is notable for its handsome spaces opening out toward an enclosed garden space (Figure 3). This obviously would not have been possible or appropriate if the view from the offices had been unattractive.

J. Zimmerman—FPG

Figure 3: Aesthetic unity in the interrelation of exterior and interior space: Ford Foundation headquarters, New York City, designed by Kevin Roche and John Dinkeloo, 1967.

The interiors within indifferent or unattractive buildings must strive to make up for the lack of design qualities in the structures. Thus, it is sometimes necessary to ignore the ugliness of the building and create an inward-looking beauty if no architectural character exists.

The most difficult aesthetic consideration is the problem of appropriateness. The appropriate atmosphere or character of an interior must take all the foregoing points into consideration. The architectural character of the TWA

terminal would make it inappropriate for use as an office building. The appropriateness of individual, more intimate, and small-scaled interiors is more subtle. The interior design of a discotheque would hardly be appropriate for a research library, and a college classroom would hardly provide the desired atmosphere for a kindergarten. Many of these responses and relationships are complex and have psychological as well as aesthetic factors.

Elements of design. Of all the component elements that together form a completed interior, the single most important element is space. Spaces can be exhilarating or depressing, cheerful or serene, all depending upon the use the designer has made of the various elements that form the whole. Space is, in modern times, a costly commodity. The beautiful space of the Gothic cathedral achieved its success through generous proportions and lofty heights (see Figure 1). Due to the vast increase in construction costs in contemporary structures, spaces tend to be smaller and less generous; more skill on the part of the designer is required to give such limited spaces a particular atmosphere or character. On the other hand, sheer volume of space is not sufficient. There is hardly a larger space than the interior of the Vehicle Assembly Building at the John F. Kennedy Space Center in Florida, yet the aesthetic impact of that immense interior is negligible. A space need not be large and monumental to be aesthetically successful. The handling of mass and form even within a small structure can become exciting and beautiful. Frank Lloyd Wright was masterful in creating beautiful spatial sequences within residential-scale buildings (Figure 4). The Ford Foundation building is a relatively small structure among the huge buildings of New York City, yet the experience of that space is real and pleasurable.

Character-istics of space

Space can be thought of as the raw material which must be molded and shaped with the designers' tools of colour, texture, light, and scale. The interrelationship of design elements can be clarified by visualizing the result if the interior of St. Peter's in Rome were painted in garish colours or painted all black or sprayed with a foamy texture covering all surfaces or flooded with enormously intense floodlight that eliminated all play of dark and light. Obviously, any of these modifications would totally destroy the beauty and success of that space.

Colour is the quality of light reflected from an object to the human eye. When light falls upon an object, some of it is absorbed, and that which is not absorbed is reflected, and the apparent colour of an object depends upon the wavelength of the light that it reflects. The scientific attributes of colour and light in interior design are, however, less important than the skillful combination of colour values, hues, tones, shades, and above all textures. Although there can be no strict rules about colours and textures, it is well to remember the famous statement of the modern architect Mies van der Rohe that "less is more." His Crown Hall at Illinois Institute of Technology in Chicago, built in 1956, is elegant, understated, subtle, and is notable for its careful handling of textures and materials. To accept "less is more" as the sole guideline to design, however, would be a serious fallacy. Space, which is the essence of a meaningful interior, would be dull indeed if it were never varied—if there were no intimate spaces with low ceilings, in contrast to large spaces of greater height, and if spaces did not interrelate to provide the user with a sequential experience of moving from one to another. Monotony would also result if all interiors in a given building were of the same colour, material, and textural quality. Man needs variety and change.

The use of colour

The manipulation of space is a matter of both aesthetic and functional consideration. A small entrance vestibule in a building is needed to keep out wind and cold or heat and rain, yet it is equally important in providing a visual transition from outdoors to the interior of the building. The sheltered sleeping alcoves in early cave dwellings served not only to express man's desire for smaller and more intimate spaces for personal use but gave protection from draft or cold.

Much in our man-made structures is built of natural materials, and it must be remembered that these materials have natural colours and textures that usually are supe-

Value of natural properties

Figure 4: Carefully modulated spatial sequences in residential scale exemplified by the living room designed by Frank Lloyd Wright for his home and studio, Taliesin East, at Spring Green, Wisconsin; photograph, 1939.

Hedrich-Blessing photo

rior to anything man can create artificially. Competent designers are very much aware of the innate qualities and textures of all materials, especially natural ones (see Figure 4). For instance, a sensitive designer would choose a simple oil finish on wood to bring out the beauty and quality of the grain rather than use the once-fashionable high-gloss finish that tended to obscure and change the texture. Textures are important not only for their appearance but also for their sense of touch, and for their effect on light absorption or reflection. Abrasive surfaces or very rough plaster would obviously be unpleasant to the touch and possibly dangerous in an interior, depending upon the use the interior is intended for. Textures can evoke feelings of elegance (such as silks) or informality (such as rough, tweedy materials).

Light, both natural and artificial, is one of the most important design elements, but unless surfaces are appropriate in colour and texture, the control and effect of light will be lost. The beautiful quality of space in a Gothic cathedral is very much related to the handling of light (see Figure 1). The source of daylight, high overhead or filtered through stained glass, creates exciting patterns of light and shade and a variety of intensities and pools of light. This same principle can be used in all interior spaces, and contemporary interiors often have skylights or high windows to provide variety and changing patterns of light. Artificial lighting is equally important, and, again, the same considerations of highlights, good overall illumination, and variety are important.

Concepts of design. The scale and proportion of any interior must always relate to the architecture within which the interior exists, but the other important factor in considering the scale of man's environment is the human body. Throughout the ages, designers and architects have attempted to establish ideal proportions. The most famous of all axioms about proportion was the golden section, established by the ancient Greeks. According to this axiom, a line should be divided into two unequal parts, of which the first is to the second as the second is to the whole. Leonardo da Vinci developed a figure for the ideal man based on man's navel as the centre of a circle enclosing man with outstretched arms. The French architect Le Corbusier developed a theory of proportion called Modulor, also based on a study of human proportions. Yet, at best, these rules are merely guidelines. They can never substitute for the eye and judgment of the designer, and it is reasonable to predict that attempts to make the all-powerful computer a substitute for the designer's sensitivity are also bound to be far from perfect.

It was stated earlier that the need for a changing scale

The search for ideal proportions

and spatial relationship in the environment seems a natural one, almost a physiological as well as a psychological one. Perhaps the need for "personal" environment and scale can best be understood by considering some extreme examples. To a person flying at 30,000 feet in an airplane, the scale of anything seen on the ground appears so small that he loses touch with the reality of objects. People who fear heights are rarely bothered by the view out of an airplane because the distance to the objects on the ground has transcended normal perceptions of scale. In a similar manner, a person's reaction to the scale of a small house is quite different from his reaction to a large high-rise building. Details of pattern, texture, and material are accepted and expected in the small structure since they are in a meaningful scale with respect to man. By the same token, the sculptural ornaments on the tops of early skyscrapers seem absurd today.

Almost all principles of design for interiors can be comprehended with clear analytic understanding and common sense, without regard to dogmatic rules. If a beautiful 18th-century breakfront (which might be more than eight feet tall) is placed in an apartment with a ceiling height just an inch higher than the piece of furniture, it would obviously look out of scale. If a space is planned so that all the heavy and massive pieces of furniture are pushed toward one end of the room, with nothing on the other side, the room would obviously look out of balance. Yet balance and symmetry applied as inviolate design principles would result in very formal, very traditional, and somewhat dull interiors. Careful symmetry was a generally accepted rule during the Renaissance, and in any classic building one can be sure to find a carefully balanced and symmetrical facade, just as most formal and classic interiors have rigidly balanced plans. It is now recognized that balance can also be based on asymmetry. Both architecture and interior design in the 20th century have consciously broken with the many rules handed down from past eras. It is more important for a building or space to be expressive of its purpose. At one time, it was traditional for a theatre, opera house, or concert hall to embody certain forms and shapes without any real consideration of sight lines, seating distance from the stage, or acoustics. On the other hand, the Berlin Philharmonic Concert Hall (1964) works beautifully as a concert hall and expresses its purpose and function clearly in an exciting and dynamic way (Figure 5).

Departures from the rules in the 20th century

Balance and symmetry, colour, pattern, and repetition used to be a matter of adherence to a tradition. Until fairly recently, many interiors were painted in dark colours, often ignoring the fact that light reflection was adversely affected and that no real contrast or sparkling accent was achieved. In many contemporary rooms, however, most surfaces are kept in neutral or light colours, possibly with one wall accented in a strong colour or texture. An interior with uniform overhead lighting might be an efficient work space but would lack the character that can be achieved by providing some accent lights in small areas.

The designer's concern for honesty of materials and textures has brought about changing attitudes toward some of the conventional practices of interior decoration, such as the use of strongly patterned wallpapers and flowered prints. Any interior that has too many different patterns, too many textures, and too many repetitive features of any kind will appear overpowering, overly busy, overdesigned, and confusing. A designer often attempts to have a dominant theme or idea, be it colour, form, texture, or some rhythmic pattern. It must be noted also that design is influenced by changing attitudes and fashions. The movements in art and architecture of the 1950s and 1960s have influenced interior design in the direction of an emphasis on pure form, the absence of superfluous decoration, and expressiveness of materials. Recently, however, a kind of countermovement in the field of painting and sculpture has been influential. For instance, the use of large-scale graphic elements (supergraphics) in interiors has become popular and accepted, in spite of the fact that its very idea often consciously denies or destroys the visual clarity of existing architectural design features. Some of the leading designers in the United States and in several European

Figure 5: Dynamic, asymmetrical architecture creating an unconventional yet functional interior design space: Berlin Philharmonic Concert Hall, designed by Hans Scharoun, 1964.

By courtesy of the Staatsbibliothek Preussischer Kulturbesitz Bildarchiv, Berlin

countries have also become very interested in large patterns, rhythmic geometries, and decorative surfaces, and this may point toward a new trend (Figure 6).

Sequential relationships

Most interiors consist of a series of interrelated spaces. It is important that the various spaces be designed in a sequential relationship to each other, not only in terms of planning but also in terms of the visual effect. A successful interior should be cohesive within each area and cohesive as a totality. It must above all relate to the building and to the architectural concept. A good example is the previously mentioned TWA terminal by Eero Saarinen. In spite of the extremely complex sculptural forms used, there is a sequence and clearly balanced rhythm that not only unifies the total composition but clearly relates it to the total architecture.

Jeremiah O Bragstad

Figure 6: Supergraphic interior emphasizing decorative rather than architectural design: Hear-Hear Record Shop, San Francisco, designed by Daniel Solomon, graphics designed by Barbara Stauffacher, 1969.

The best examples of design are those in which no visible difference exists between the interior and the exterior, between the building and its site, and between the many parts or spaces to each other and the total building. An example is the house of the American architect Philip Johnson in New Canaan, Connecticut. Johnson's home and its setting appear effortlessly united, with individual parts subordinated to the success of the whole (Figure 7).

Design relationships. The real and conscious relationship between art, architecture, and design is of long standing. Though mural painting was largely neglected in the mid-20th century, in the past great murals have been the planned focal points of interiors and have in a way determined the architecture (Figure 8). Similarly, sculpture or sculptural forms, as fixed and permanent spects of buildings, can be the most important design features if planned that way by the architect together with the interior designer and artist. Perhaps the best design is one in which there is no visible difference between architecture and interior and in which even the artwork is incorporated as an integral part of the total (see Figure 14).

The design relationship of interiors to architecture can be clarified by citing an extreme example: the stage set. A set for a theatrical production is a form of interior design but, unlike all other aspects of interior design, it attempts to create its own world and atmosphere concerned only with the play and not at all related to the world or even reality. The creation of a world of make-believe is precisely the function of a stage, but in real life it is impossible to divorce a particular interior from everything else around it. Sometimes a designer may attempt to create a "theatrical" interior, but the point being made strongly and unequivocally here is that every interior must relate to the architecture and to the nearby environment.

Design relationships of individual works of art (paintings, prints, or sculptures) to interiors are most significant in terms of scale and placement, rather than in terms of subject matter, colour, or style. A very old painting, if it is good, will look well within a contemporary interior; a very modern piece of sculpture can be beautiful within an interior furnished with some beautiful traditional pieces. Any work of art, if successful within itself, is "correct" with any interior if properly placed or selected to work with the total space. Certainly there is no need to match

Art objects and interior design

Figure 7: *Interrelation of interior and exterior space.*
Harmony of landscape, architecture, and interior design: Glass House, New Canaan, Connecticut, designed by Philip Johnson, 1949. (Left) Exterior. (Right) Interior.
Russ Kinne—Photo Researchers

colours of paintings to interiors or to select subject matter in works of art that reflect a particular theme, such as food for dining rooms or hunting scenes for the den.

Interiors as they relate to landscape or cityscape are sometimes misunderstood by architects. A crass but typical example is the ubiquitous picture window in suburban housing tracts. Often the only view from the window is the picture window of the neighbouring house. When the view is a beautiful one, it should be possible to plan the

interior with the furniture plan and orientation such that seating arrangements can take advantage of the view and yet work for other functions, such as relation to a fireplace or a conversation group, as well.

In many areas of interior design the field of graphics is taking on increasing importance. In every public or institutional building, signs, directories, and room identifications play an important visual part. Good architectural graphics have been stressed only in recent years, as a result of the increasing size and complexity of structures. Buildings such as airports depend upon clear and handsome graphics to make the spaces work and to make them aesthetically cohesive. A related aspect of graphics is the printed matter that is part of certain interior functions. Interior designers must be concerned with the design of menus, wine lists, napkins, and matchbooks in a well-designed restaurant. Designers dealing with stores or shops are concerned with the graphics of shopping bags, signs, and posters. Often the interior designer is the actual graphic designer, or he works together with the graphic designer, just as the architect works with the interior designer or landscape architect.

Graphics in interior design

Modes of composition.   It must be emphasized that there are many different moods, or modes of composition, that are possible in interior design. The recognition of this fact makes it difficult to apply valid critical criteria to these modes, since many of them are intensely personal. What may appear to be picturesque to one person might be ugly or cluttered to another. Each person brings to interior design his own cultural mores and his own prejudices, and in many ways he is psychologically conditioned and influenced to accept certain things and to reject others. In discussing various modes of composition, one must therefore take into consideration the occupants and their backgrounds, the locale and site, and then try to apply the most basic design principles as general guidelines.

Formal and informal compositions are relatively easily defined and classified; in fact, this distinction is useful throughout the history of furniture and interiors. Formal styles are usually associated with life at court or furnishings for the palatial homes of nobles or a moneyed elite. The informal periods usually are associated with rural living or the simpler pieces of furniture made by the local craftsmen in rural areas, where they plied their trade with limited tools, using local woods. Formal furniture, as a rule, leads to formal interior compositions. Balance and symmetry certainly tend to lead to formal compositions. Formality is not associated with any particular period. In fact, a very famous contemporary chair, the Barcelona chair by Mies van der Rohe (Figure 58), is an extremely formal and elegant piece. It would seem wrong to use that chair in a casual catercorner room arrangement.

Formal and informal compositions

Setting strongly influences the character of a space. By its very definition, a rustic setting would be rural and infor-

Figure 8: A simply designed interior space made vivid and compelling by frescoes on the ceiling and walls: Sistine Chapel, Rome, by Michelangelo, 1508–12, 1533–41.
SCALA —Art Resource

mal and would seem wrong and incongruous in a formal townhouse or city apartment. Since most business and public interiors are located in urban centres, any attempt to make such interiors look rustic or homey would be an aesthetic paradox. By the same token, it would appear equally incongruous to design a restaurant located in an old mill or barn in New England in a formal and urban character with elegant furnishings, whether they were contemporary or antiques of a formal nature.

Functional compositions
Certain modes of composition are determined by the function of the spaces as much as by the location and by the architecture. For example, a cozy or homey interior is normally associated with residential interiors or similarly intimate interiors, such as restaurants that may wish to appear "cozy." Some interiors, such as discotheques, require excitement and other interiors, such as funeral parlors, require serenity or dignity. One expects certain modes of composition for certain functions, but one's expectations are subject to many external influences, such as personal background, location, psychological associations, and changing fashions. For instance, the typical bank interior until about 1950 was expected to be solid, dignified, awe-inspiring, formal, and above all confidence inspiring. Contemporary design for business and industry has become accepted by all, and the early 1950s saw the logical extension of these firmly established design principles into the area of bank design. One of the first radical departures of traditional design for banking spaces was the Manufacturers Trust Company Manhattan office designed by Skidmore, Owings and Merrill in the early 1950s. It was the first widely published "glass" bank, and it set a trend that has become the new mode of composition for banks.

Fashion or design trends influence one's reactions to many kinds of designs. The term clutter is usually associated with Victorian design of the 19th century. Under the usual definition of the term clutter, one thinks of home interiors with collections of accessories and with an overabundance of knickknacks—the typical Victorian home (Figure 9). In the mid-1960s a new approach to office design, reflecting the "cluttered" approach, was developed. This office appears disorganized at first glance. Actually, the system (called office landscape; see below *Kinds of interiors: Public interiors: Space planning*) is very efficient and for that reason is deemed acceptable, even if the visual impact tends to be chaotic. Traditionally, office and business interiors were pristine, orderly, and very organized, and the idea of a cluttered appearance would have been anathema to designers.

Exotic compositions
The most difficult mode of composition for objective analysis is one that some people call exotic. The chances are that all exotic interiors are highly personal statements and cannot be rationally understood in theoretical design terms (Figure 9). To begin with, what may appear exotic to the average American could be very ordinary or even homey to another culture. Japanese or oriental design in general serves as an example. A Japanese style interior is extremely subtle, serene, and understated, yet to the uninitiated such an interior will appear exotic. Undoubtedly that same phenomenon holds true in reverse. Oriental people have often been impressed with Western-style design and have adopted it presumably because to them it appeared exotic. The increased mobility of the middle classes of many nations today has made foreign travel possible for more and more people, thereby tending to soften some of the very strong regional differences in design. The modes of composition are still discernible nationally or certainly by major geographic and ethnic divisions, but they tend to be less distinct. Many subtle differences exist within the same country, some of which are based on varying socioeconomic backgrounds, much in the manner of the traditional difference between formal styles (at court and in homes of nobility) and informal modes of composition for the country people and middle classes. The labels that one applies to these modes of composition are often only descriptive. They must not be confused with objective evaluation of design values. An interior that is by the creator's definition exotic or picturesque may or may not be a well-done exotic design.

Symbolism and style. There are many historic examples

Figure 9: A cluttered Victorian interior in the exotic Moorish style, designed by the landscape painter Frederick Edwin Church for his home, Olana, at Hudson, New York, 1870–72.
Frank Lerner

of symbolism in design, but often the symbolism is not a conscious statement so much as a more subtle reflection of style. Religious buildings, especially churches, have until recently been consistently traditional expressions of style or symbolism. The church and church architecture flourished during the Middle Ages, and the style of church architecture that became the dominant symbol was the Gothic style. Until the recent past, churches were still designed, as a matter of course, in Gothic style. It is interesting to note that a "Gothic" church designed and built

Symbolism in religious buildings

By courtesy of United Airlines, Inc

Figure 10: An interior shaped by objects symbolizing Theodore Roosevelt's personal interests and personality, North Room, Sagamore Hill, Oyster Bay, Long Island, 1880.

in 1820 can be clearly identified as such, and a "Gothic" church from the year 1920 has the imprint of that year as obviously as the date on its cornerstone. There has been a similar symbolic or stylistic tradition in the design of public or governmental buildings. Both interiors and exteriors of city halls, court buildings, and major government structures were usually in the "classical" style, symbolizing authority, power, and stability, based on our long historic association of these concepts with Greco-Roman antiquity and Renaissance thought.

Another form of symbolism in interior design has been the creation of interiors around specific themes or concepts. Among the earliest examples is the Egyptian tomb. The interior design and decoration depicted the life of the king or special events from his life, and the total interior was intended as a kind of magic to assure the occupant's journey into life after death and guarantee his happiness there. Another example of a symbolic interior created for a specific purpose is the Roman hunting lodge, Piazza Amerina, in Sicily, which has splendid murals and floors depicting animals and hunting. A more recent example of a similarly symbolic interior on the same subject is Theodore Roosevelt's home at Oyster Bay on Long Island, built in 1880. It is full of hunting trophies and mementos symbolizing his personal interests and his personality (Figure 10).

The styles that developed in interiors and in interior furnishings were always symbolic of the social structure of the society that created them. It is easy, for instance, to look at the graceful, feminine lines of a Louis XV chair, delicately curved and luxuriously upholstered, and to see it as a symbolic expression of the superficialities of court life. One can also look at some of the crudely fashioned early American furniture and see in one's mind the life of the settler who fashioned it. Life was harsh, time was precious, and articles of furniture were confined to essentials. The need for economical use of space was symbolized by dual-purpose, functional pieces such as dough boxes that served as tables and tables that turned into chairs and had storage compartments for the family Bible as well.

Symbolism in business offices

As functional and efficiency-oriented as business and office design is today, it is full of unwritten rules relating to symbolism. The design of an office reflects the status of the occupant. Top executives are located in the largest corner offices with the best views of the city and invariably are on the top floors of the corporate headquarters. The size of desks is a symbolic indication of the executive's importance in the hierarchy of the firm. The very top officers may, however, do away with desks altogether and have offices resembling living rooms—to symbolize the fact that they are beyond routine paperwork and above the need for standard office furnishings. The fashions (or styles) of design vary and develop even within a brief period of 10 or 20 years. Thus, another symbol—carpeting—has become somewhat outdated. Until recently, top executives expected wall-to-wall carpeting in their offices. Today such offices may have wood or other natural floors, perhaps with beautiful area rugs. The very idea of a private office is, of course, the most important symbol in a status-conscious business community (Figure 11). Designers have found, however, that the need for communication between executive and staff, including visual contact, often makes private offices less than efficient.

Symbolism in residential interior design occurs on many levels but again tends to be influenced by changing styles. When television first became available, the home screen became a symbol of prosperity and at the same time became the focal point of residential interiors. By the 1970s a television set had become a standard possession and was no longer a compositional emphasis; in fact, it was often concealed or casually incorporated into the total design.

A homeowner is likely to be very conscious of the image his house or apartment conveys. Traditional furniture, for instance, is still associated with elegance in the minds of many laymen, a situation that can lead to the acquisition of poor reproductions or meaningless imitations of nonexistent styles. To most people a real fire in a fireplace is a delightful physical and visual experience that often has nostalgic associations. Since they are no longer needed to

Figure 11: Executive office resembling a residential interior: Fabergé Corporation Headquarters, New York City, designed by Dallek Inc., Design Group, 1968.

By courtesy of Dallek Inc., Design Group

heat houses, fireplaces in the 20th century increasingly have become a luxury and thereby a symbol of substance to many people. These circumstances have often resulted in imitation fireplaces of the worst possible design, with simulated fires.

Contemporary symbolism

From the designer's point of view, design symbolism in public spaces is valid at times but can and should be used in contemporary terms rather than as stylistic imitation of past eras. An example of the success of such design can be seen in the new Boston City Hall, built in 1968, which symbolizes government, authority, and dignity in totally original and contemporary terms. There is little valid reason to consciously introduce symbolism into residential interiors, unless it is the kind of cultural symbolism exemplified in Japanese interiors, such as that of the Zen tea house (*cha-shitsu*), where certain design features reflect a way of life and have ceremonial meanings.

PHYSICAL COMPONENTS OF DESIGN

The foregoing section on aesthetic components stressed the fact that, in design, the whole or total effect is more important than the specific device or element used. The same is true of architectural components, and this should be kept in mind in the following discussion.

Ceilings. Although ceilings are in most interiors the largest unbroken surface, they are often ignored by amateur designers and even by professional designers. The result, especially in public and office interiors, is frequently a mass of unrelated lighting devices, air conditioning outlets, and the like. Ceilings were emphasized in the Baroque and 18th-century traditions: beautiful interiors of these periods had highly ornate, decorated ceilings, with painted surfaces or with intricate plaster details and traceries (Figure 12, left).

Value of the plain white ceiling

Few modern designers take advantage of the design possibilities offered by ceilings. One such possibility is the creation of textural effects with wood. Of course, one must respect the effect of a simple plaster ceiling in an otherwise well-designed interior; often the white plaster ceiling is needed to reflect light and to provide a calm cohesiveness to the space (Figure 12, right). Since most modern ceilings are low, a heavy texture or a strong colour could create a depressing feeling; hence, the popularity of a plain white ceiling. It is important for a plain ceiling to be just that: a surface without blemishes, without bumps, and without small unrelated areas of different height.

In contemporary public buildings there is frequently a "hung" ceiling below interior concrete structural slabs.
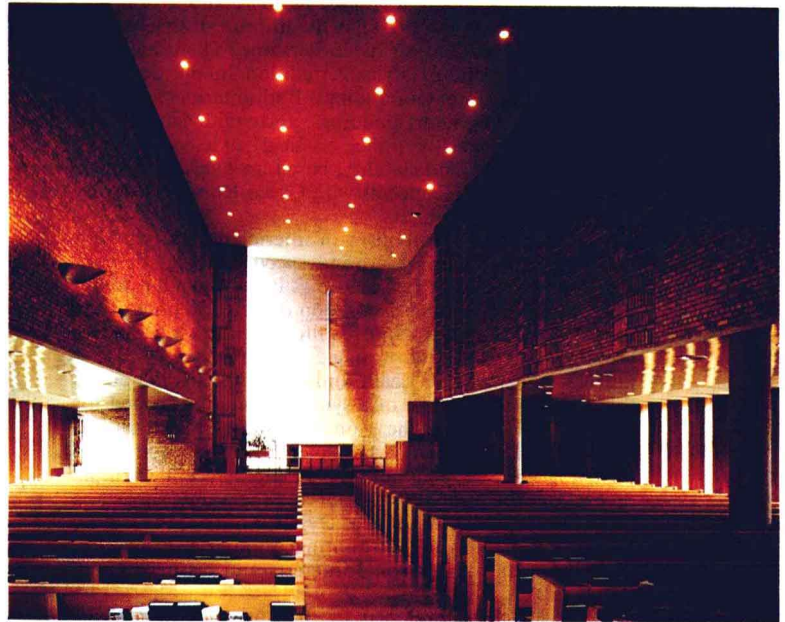
Figure 12: *Ceiling design.*
(Left) Highly ornate Rococo ceiling, Pilgrimage Church at Wies, Upper Bavaria (Germany), designed by Dominkus Zimmermann, 1745. (Right) Simple, white plaster ceiling, Christ Lutheran Church, Minneapolis, Minnesota, designed by Eliel and Eero Saarinen, 1950.

(Left) Toni Schneiders, (right) Balthazar Korab

The space between the slab and the "hung" ceiling is needed for mechanical equipment as well as to allow for the recessing of the lighting system.

An earlier section of this article discussed the variation of heights in relation to scale and space. It is important to keep such varying ceiling heights related to the plan of the room if such a device is to succeed. A lowered ceiling in a dining area, for instance, can be pleasant and intimate, but a lowered ceiling covering only part of the area can be most distracting.

Floors. Basically, there are two kinds of floors for interiors: those that are an integral part of the structure and those that are applied after the structure is completed. Interior designers working together with architects have the opportunity to specify flooring such as slate, terrazzo, stone, brick, concrete, or wood, but in most interiors the flooring is designed at a later stage and is often changed in the course of a building's life. Sometimes it is possible to introduce a heavy floor, such as terrazzo or stone, in a finished building or during remodeling, but these materials, beautiful as they are, tend to be too costly as surface applications.

Man-made, or synthetic, floor coverings are usually classified as resilient floors. The oldest of this type is linoleum. The resilient flooring materials marketed in the late 20th century include asphalt, vinyl asbestos, linoleum, cork, and vinyl. Cork, which is not a synthetic, is handsome, but is difficult to maintain and is not exceptionally durable. Basically, other resilient floor tiles are excellent flooring materials that are both economical and easily maintained. They can be given almost any appearance, which is a temptation that manufacturers are unable to resist. When the tiles are plain, in good colours or textures, they are very attractive and appropriate, but often they are made to imitate stone, brick, mosaic, or other materials, and the results are generally of a less satisfactory nature. Pure vinyls are the most expensive of the resilient floorings and have been the most tortured in terms of "design." The vinyls are the softest and most resilient of the tiles and are very easy to maintain. Asphalt tile is the least expensive and consequently the most widely used resilient flooring, although it is quite brittle and hard underfoot. Vinyl asbestos is somewhat softer underfoot and, being grease resistant, is easier to maintain than asphalt, but its cost is

Resilient flooring materials

generally higher. Linoleum, which ranges in cost between the asphalt and pure vinyl floorings, is strong and suitable for heavy-duty uses.

Ceramic tiles and quarry (unglazed) tiles are made not only for such areas as bathrooms but, particularly in the case of quarry tiles, are suitable for almost any space. Installation usually requires a cement bed over the existing subfloor, making this material difficult to use in existing buildings. Like other natural materials, quarry-tile floors possess a natural beauty and have the additional advantage of easy maintenance.

Wood floors still account for a very large percentage of all floors, especially in residences. In addition to the strip oak floors, the standard for many apartment houses or homes, many beautiful prefabricated parquet patterns are available in a variety of woods and in many shapes and sizes. These wood tiles can be installed, just like the resilient floor tiles, over existing floors. Wood floors have great warmth and beauty but have the disadvantage of needing more care than do some of the synthetic tiles or quarry tiles.

Walls. Every wall is a material in itself; and ideally no material, if it is properly used, needs to be covered up. Some elegant buildings constructed since 1960 have used concrete in its natural texture—*i.e.,* showing the formwork left by wooden forms as a conscious expression of the material. During the 19th century, fakery in design was very popular, and part of the concern with the true expression of materials today is a revolt against the earlier tradition. In the 20th century, for instance, interior brick walls are considered very beautiful and desirable, yet many old townhouses have layers of plaster and paint or wallpaper on top of attractive brickwork.

It is not unusual for a decorative detail or device to survive long after the valid reason for it has disappeared. Wall panelling has been popular for hundreds of years, and, indeed, a natural wood texture adds warmth and elegance. The only way the craftsmen of earlier periods were able to apply wood panelling was in frames (stiles and rails) or wainscotting, since wood panelling was made of solid wood and had to be broken up into narrow dimensions in order to prevent warping and shrinking. Out of that need developed beautiful details of moldings, carved details, and carefully proportioned panelling. A similar art devel-

oped somewhat later in plaster. Obviously, 20th-century building costs and methods rarely permit real quality in elaborate panelling or highly ornate plasterwork (Figure 13), nor would this sort of imitative design be appropriate in a modern building. But wood panelling and plywoods in many beautiful veneers are readily available and provide a vast range of beautiful, if expensive, wall surfacing for important spaces. Prescored, pre-finished inexpensive plywoods, on the other hand, are often used as finishing materials for basement, recreation, or utility rooms in many homes in the United States.

Walls of wood veneer

The use of fake moldings, with printed moldings or panelling or with any of the countless imitation wall-surfacing materials from brick wallpaper to artistically poor wall murals, is the kind of decoration that a good designer avoids. Even so, not every interior should be a plain space with nothing but the natural walls. Highly decorative wallpapers have long been available in bold and exciting patterns. Often in 20th-century design a strong paper is employed on one wall only, instead of having the whole space surrounded by a dominant pattern. Many wallpapers, such as grasscloth and shiki silk papers from the Far East, have natural textures. For public spaces and for any space requiring easy maintenance and special cleanliness, a number of wallpapers have been developed that are completely washable and sanitary. Most of these are vinyl-coated fabrics, and some of them are extremely strong and durable and are particularly suited for such spaces as hospital or hotel corridors. Because these vinyl-coated wall fabrics are usually specified by designers and architects, the level of design is far superior to those made for the home.

There are many wall-surfacing materials using fabrics laminated to paper. These coverings provide warmth and texture, as well as acoustic properties. Fabrics in general have been used widely as wall-coverings in the past and continue to be popular.

A designer's imagination and the client's budget are the only limitation on the materials that may be used for wall surfacing. Some, such as ceramic or mosaic tiles, are extremely practical; some, such as cork, have excellent acoustical characteristics. For functional or for aesthetic reasons the designer may elect to use such materials as leather, metals, plastic laminates, or glass. No wall in itself should be designed or selected without relation to the total scheme.

Windows and doors. Windows and doors in contemporary design are not placed as decorative elements or as parts of symmetrical compositions but are primarily considered as functional elements and are expressed as such. If windows are carefully designed and placed for light, for ventilation, for air, and for view, decorative treatment is often unnecessary and a simple device such as a shade or shutter will suffice to control light and privacy. Most buildings, however, need window treatments, since no particular care in the placement of fenestration was taken by the builders.

The most frequently used devices are curtains and draperies. Although semantically there is no clear distinction between the two, drapery implies more elaborate treatments with lining, overdrapes, valances, and tassels. A curtain, on the other hand, is lighter, more direct, less theatrical, and more functional. Frequently, a light material is chosen to provide privacy or light control with minimum emphasis. Curtains, however, offer only partial control over light, glare, and privacy; complete control or privacy often requires shades, blinds, or shutters. Window shades without overly ornate borders and tassels are a perfectly good device for those controls, and Venetian blinds are also a most acceptable treatment.

Curtain characteristics

Since the 1960s designers have tried to simplify window treatments, and, if curtains, shades, or blinds were not deemed appropriate for functional or aesthetic reasons, devices such as chains or beads on windows or very simple sliding panels were found to be more effective than more elaborate treatments.

The essential considerations for windows must be based on the functional needs and on the overall aesthetic intent. If a space is well designed in architectural terms and presents a cohesive image, it rarely makes sense to feature a window or door. Poorly detailed windows in office buildings or apartment houses are often overcome or played down by using a simple curtain material covering a complete window wall. The wall-to-wall and floor-to-ceiling treatment of a window wall is frequently the only way to screen out unattractive details.

Doors must be carefully planned, relating the swing and location to the functional needs, and their heights, colour, material, or textures to the adjoining wall surfaces or design elements in the space. Most doors used in the 20th century are "flush" doors—that is, they have unbroken surfaces made of wood or metal; even where glass is used the attempt is usually made to have maximum glass area unbroken by frames and moldings. Sometimes the entrance doors to important spaces are designed or decorated as compositional focal points, but usually the emphasis is on excellence in detailing and hardware rather than on decorative surface designs.

Planning for doors

By courtesy of the Metropolitan Museum of Art, New York, Fletcher Fund, 1931

Figure 13: Ornate plasterwork to decorate wall and ceiling: dining room from Kirtlington Park, Oxfordshire, designed by Thomas Roberts, completed 1748. In the Metropolitan Museum of Art, New York City.

Other components. The detailing referred to in connection with the handling of doors is one of the most important factors in interior design. Every architectural component must be detailed well. Poor details make for poor design. The meaning of detailing in a design sense is more than the graphic explanation of certain components on a drawing. It means the way materials are put together, the way one part is fastened to another, the way parts and materials are expressed and articulated. Stairs or ramps are architectural components of great importance, whether in stores, in public buildings, or in homes. Since these structural features represent large vertical forms in space, they often become the dominant design feature in an interior space (Figure 14). Stairs in hotel lobbies, for example, are usually in very prominent locations. The actual stair design, however, is surprisingly restrictive and set. The height of riser and its relation to the tread is fixed, and variations for normal vertical circulation are extremely

limited. Matters of detail involve such considerations as whether the stair is open or enclosed, whether it is a bold sculptural form or an airy dynamic shape (resulting from the use of open treads without risers), whether the stair honestly expresses its material (be it wood, steel, or marble), or is wrapped in carpeting. The many detailing possibilities present a real challenge to designers and, unlike mass-produced windows, light switches, or plumbing fixtures, give designers a chance to design in a completely personal or creative way.

Maynard L. Parker

Figure 14: A ramp functioning as the focal element of an interior: the former V.C. Morris Shop, San Francisco, designed by Frank Lloyd Wright, 1948.

Components such as heating units, electric outlets and switches, and telephone connections offer no design choice other than the limited selection among mass-produced products and the best placement within the space. The pattern created by the placement of fixtures is as important with walls or any other surfaces as it is for ceilings. A given wall may have doors, windows, electric outlets, switches, air-conditioning registers, and heating units (radiators or convectors). It is the designer's job to deal with all of these components by design, by organization, by placement or elimination, and by detailing. Often, the more bulky components, such as radiators, can be "eliminated" by building the unit into the wall or, in existing, poorly detailed buildings, by creating a "built-in" appearance through the inclusion of some design feature. Radiators or convectors are often housed in neatly detailed enclosures that may run the whole length of a window wall and may at the same time provide an additional surface under the windowsill. Depending on the location, a continuous enclosure may contain some shelving or storage elements, thus making use of the extra space not needed for the actual heating unit (or air-conditioning unit).

In large, nonresidential interiors, the mechanical components are often massive. For instance, the telephone installation needed in an office for several hundred people requires a very large space and a complex installation of conduits and other elements that affect the interior design. The air-conditioning or heating unit for a simple store may be fairly bulky, and again the designer deals with the allocation of space as well as with the mechanical function of the equipment. All of the mechanical equipment for buildings is specified or engineered by specialists, but it is essential that an interior designer have the basic knowledge and understanding to be able to coordinate the various specialties. The many pipes, stacks, and vents that go into a plumbing system, although not exposed and shown as a rule, are of real concern to the designer.

Placement of utility fixtures

Whether architectural components are expressed and detailed, whether they are concealed or built-in, they are incorporated in the design.

Furniture and accessories. To the layman, furniture is the most important aspect of interior design. It is a significant component of design to the professional as well, since it is the most personal and intimate product relating man to a building. It is also personal because it can be moved from one home to the next and handed on from generation to generation, and often furniture takes on important sentimental value. Accessories are even more personal, but they are less significant to the overall effect of the interior, since they are by nature smaller than furniture. Almost anything that people own or collect could be called an "accessory," including functional objects, such as ashtrays, and decorative objects, such as porcelain, glass, or ceramics.

Personal nature of furniture

Although some quite sophisticated furniture existed in ancient Egypt, the use of furniture was rare during the Middle Ages and only became significant in the West during the Renaissance. During most subsequent periods there have usually been close interrelations between architectural and furniture styles and modes of interior design. (That aspect of furniture will be discussed below under *Historical and stylistic developments of interior design.*) The 20th-century pioneers of design and architecture—such as Mies van der Rohe, Le Corbusier, and Marcel Breuer—were not able to find any suitable contemporary furniture available in the 1920s and 1930s when they built structures without historical references. They designed much of their own furniture, and some of these modern "classics" are still very much in demand. Well-designed modern furniture developed in Scandinavian countries in the 20th century out of the long tradition of craftsmanship and design prevalent in those countries. The real beginning of modern furniture design in the United States came only after World War II, and much of it was first developed for nonresidential uses. Charles Eames, George Nelson, and Florence Knoll are among the distinguished American designers who have pioneered furniture design and manufacturing processes. Their furniture primarily was introduced to the public through use in public or work spaces. A large segment of furniture manufacturers, however, has still not been touched by design of any kind, and furniture under such invented names as "Mediterranean" or "Italian Provincial" (both nonexistent historic styles) is still being foisted upon the public.

Whatever material or manufacturing process may be used, the important criteria that must be applied in furniture are function, comfort, and durability, together with aesthetic considerations. Architects and interior designers often prefer to build in furniture wherever possible, and, indeed, some of the best historic and contemporary interiors contain little movable furniture. An interior without any furniture or accessories would probably appear stark and uninviting, and it is clear that the personal touches possible through selection of appropriate furniture and accessories are very important.

Use of built-in furniture

One can use a vast array of decorative objects or plants as accessories. In a way, every accessory used in a home, office, or public space is in some way a part of the total composition, and must therefore be selected with care. No rules exist on what is "proper" other than the basic principles of design that were discussed earlier.

Lighting. Light is one of the key elements of interior design. Most interior spaces constructed in the 20th century are used as much with artificial light as with daylight; because of this lighting has become a very significant tool for the interior designer. There are three major aspects to lighting: function, aesthetics, and health. The latter factor is often ignored, but insufficient illumination can cause eyestrain and physical discomfort. Illuminating engineers have established recommended standards of illumination for various tasks and have also provided rules and standards relating to brightness of the source of lighting and controls for shielding the eye from direct glare. Light can be diffused and can, in general, be controlled very accurately.

Two basic types of lighting are used in modern interiors:

Figure 15: Fluorescent, incandescent, and neon light used to create a particular atmosphere or mood: Ocean Tank, New England Aquarium, Boston, architects and designers, Cambridge Seven Associates, Inc., 1967. The dim light of the aquarium is immediately evocative of the dark, mysterious underwater world.

By courtesy of the Cambridge Seven Associates, Inc.; photograph, Norman McGrath

Types of lighting

incandescent and fluorescent. The former is somewhat redder than daylight but contains all colours of the spectrum. Since fluorescent light has an uneven spectrum, colours tend to appear distorted. A mixture of the two is often the best way to achieve colour accuracy. Some of today's fluorescent lamps are close to daylight accuracy, and manufacturers continue to improve the quality of available lamps. Both types of light can be used in "direct" or "indirect" lighting in interiors or in a combination of these methods known as semidirect or semi-indirect (Figure 15).

Designers and architects strive to build in lighting as much as possible. Recessed lighting, lighting coves, and architectural lighting in general can be controlled much more efficiently than portable lamps.

A good lighting scheme must provide some variety in highlights, shadows, and accent lights to avoid monotony. An even, overall lighting system, such as a luminous ceiling, can be highly efficient, but it lacks character and interest. Most interiors require a certain flexibility for different functions within the space at different times of day and night. In certain interiors, such as stores and shops, lighting becomes a display and sales tool, and in festive spaces, such as ballrooms or theatres, the quality of light can provide sparkle and mood more effectively than any other component of design. One can think of the potential of lighting in terms of the theatre. Some productions are staged without formal sets, yet the changing mood and setting can be suggested by controlled illumination.

Design in portable lamps

Most intimate interiors depend to some extent on portable or fixed (ceiling and wall-mounted) lamps. The design of lamps, especially table lamps for homes, has somehow brought forth a vast array of bad designs, together with a smaller number of good ones. Many lampshades are similarly banal in design, but a shade as such is an excellent diffusor of light and shield against glare. Some lamps and shades are designed for specific tasks, others for accent lighting.

Fabrics. There are three basic aspects that determine appearance and suitability of fabrics for interior use: fibre content, weave, and pattern. Fibres are either natural or man-made. The important natural fibres are cotton, wool, linen, and silk. Although silk has long been considered the most elegant and desirable of all natural fibres, it does not stand up well under direct sunlight and heat and, in general, requires more care than most other fibres. Wool, like silk, is an animal fibre; depending upon its weave, it

can be made into extremely strong and beautiful fabrics and is therefore very much in demand for contemporary interiors. Both cotton and linen are made from vegetable fibres and are both durable and pliable. Unless cotton and linen are interwoven with other fibres, however, they are not generally as strong as wools or man-made fibres and tend to be restricted to light-duty interior purposes.

Man-made (synthetic) fibres in the 20th century abound under a variety of trade names, and new synthetics are continuously being developed. Some of the major families of synthetic fibres are glass fibres, acetate, acrylic and modacrylic, nylon, olefin, polyester, rayon, and saran. The chemical composition and processes used in the manufacture of man-made fibres make possible a variety of specific qualities. Some offer strength and elasticity; some offer resistance to fire, stain, mildew, sun, or abrasion; and some offer resistance to moisture and organic agents, others to crushing and wrinkling.

Families of man-made fibres

Many fabrics are woven in a combination of two or more fibres in an attempt to improve the appearance or utility or both. Another factor in selecting or specifying fabrics is the touch of the fabric, or the "hand." Certain fabrics made from man-made fibres seem unpleasant to the touch compared to silk or wool fabrics.

Weaving is an ancient art, and fundamentally there is little difference between the very early handlooms and the power looms found in major textile plants today. The three most common weaves in use are plain weaves, which include basket weaves; floating weaves, which include twill and satin weaves; and pile weaves, which include both cut and uncut weaves. Weaving techniques of lesser importance to interior design include knitting, twisting, forming, and felting.

The pattern of textiles, especially in contemporary terms, is frequently the natural pattern created by the weave of the fabric, although patterns are also created by printing. In traditional textile terms, reference to pattern usually meant a historic style. The history of textiles ranges from early Egyptian and Oriental patterns to the present. Each era has developed fashionable and popular patterns. Contemporary textile designs, for instance, are usually abstract or geometric, but floral and large flowing patterns were also popular in the 20th century.

Colour is one of the most important aspects of fabrics in interior design, inasmuch as the colours of fabrics are frequently the most important areas of colour in interiors. Dye colours can be added to unspun fibres, spun yarns,

Colour in fabrics