Compelling Form

Compelling Form:
Architecture as Visual Persuasion

By

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by J. Donald Ragsdale

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PREFACE

My earliest career plan as a child was to be an architect. While that intention did not ultimately come to fruition, I recall much time spent as a boy drawing floor plans and planning my dream home. I have retained over the years an abiding interest in buildings and structures in general. Although I chose the field of communication studies and a career as a professor, it turns out that I have now found a way to merge my original and my eventual interests through the study of visual persuasion. This book is my fourth published by Cambridge Scholars Publishing on visual persuasion. Each has considered structures as types of visual influence. The first was a general and wide-ranging study of structures as argument (Ragsdale 2007). The second and third were studies of American and Western European museums. This one is a comprehensive study of many forms of architecture as examples of the compelling power of structures.

This consideration of the compelling forms of architecture was a daunting one in terms of its sheer scope. Even so, this book has very clear limitations. First, this is a book about Western architecture. In spite of its importance, architecture in the Nonwestern tradition was beyond the scope of the book, although I am confident that the principles on which I base my findings in this book are equally applicable to the Nonwestern tradition. I am simply limited in how much of that tradition I have experienced and studied. Second, and coincident with the first, I have restricted my assessments, with very few exceptions, to that architecture which I have actually visited, studied, and photographed. With widely available written and electronic sources, it would be possible to write about architecture without having seen it, but in my judgment it would not be desirable to do so. If one is to assess a building as a type of visual persuasion, then it seems necessarily that one should be able to draw upon personal experience as well as that of others.

The reader will notice, third, that there are both curious omissions and curious inclusions among the architectural items. Both of these facts follow from my desire to study forms that I have experienced. Some of my research for this book was done over many years in a casual way, without the thought that it would be used in a book. More recently, I have made several deliberate research trips to study and photograph architecture, but some desirable inclusions eluded me for the sake of time and money.

Finally, the reader will notice that some of the figures included are not of the highest photographic quality. This is the result of my own, perhaps perverse, desire to use my own work if at all possible. When that work did not meet minimal standards for presentation, I resorted to the use of photographs in the public domain, and these are identified at the end of the list of figures. Three photographs are by my spouse, Sandy, and are also identified in this list.

This work is meant as a scholarly one. I consider my task to have been an effort to demonstrate that the elements of visual literacy and the use of these elements in patterns of design were intended to strike the viewer as compelling. I also think that this impact is not unlike that which viewers call beautiful, and that thought is no different than Vitruvius's (1960) idea that architecture has three components: strength, utility, and beauty. However, the book need not be thought of as scholarship only, nor should it be avoided by the layperson. It is not really a travel guide, but it surely should serve well the visitor to any of the museums, performance halls, cathedrals, castles, palaces, and the like described herein.

CHAPTER ONE

COMPELLING FORM: ARCHITECTURE AS VISUAL PERSUASION

The traditional view is that communication is predominantly a human activity, and the emphasis has usually been on speakers and their messages. To be sure, scholars have understood that such other things as audiences and occasions made a difference in the outcome of communication, but in both rhetorical criticism and teaching it has been the speaker and her or his message that were spotlighted. Today it is a commonplace that communication is a process rather than a set of static and disconnected elements or something that requires looking only at one or two of the elements. One cannot understand the process without accounting for all of the elements, their interconnections, and the influence of the context.

One of the simplest representations of the process of communication, popularly referred to as the SMCR model (Berlo 1960), emphasizes the interdependence of a source or sources (S), a message or messages (M), a channel or channels (C) of communication, such as the vocal-auditory channel of spoken discourse, and a receiver or receivers (R) of the message or messages. Each of these elements influences and is influenced by the others, and of course communication always occurs within a particular context or in a particular situation.

The literary critic Kenneth Burke (1945) proposed a similar way of looking at human communication, which has gained wide currency particularly in the sub-area of communication studies called rhetorical theory. Burke used an analogy from drama in proposing what he called a dramatistic pentad, which would account for the process of communication. It included five elements: act, agent, agency, scene, and purpose. While there is nothing in the SMCR model that confines it to the typical act of communication, a speech, the Burkean model has been more successful in being extended to different types of communication. An act may be any purposive behavior and may not be confined to human beings. An agency would normally be a human responsible for the act but would not have to

be. The agency is the means by which an act is performed. As we shall see, agency may not be done quickly but might be developed over a great span of time by different, unrelated agents. The scene is the context or environment of the act, and the purpose recognizes the importance of intent in the creation of acts or messages.

The idea of a typical act of communication today is not especially helpful in understanding the diversity of forms used by contemporary media and communicators. With the advent of visual communication as a legitimate area of study, it is almost the case that atypical has become typical. There is, for example, little question anymore that structures, buildings of all kinds, are communicative even persuasive (Ragsdale, 2007, 2009a, 2009b). What this means at its heart is that architecture is not some monolithic riddle, nor is it a meaningless accumulation of structural material. Architecture *means* something. While it might be superficially tempting to think of a building as analogous to a speaker in the process of communication, it is rather the architect that is the speaker's analogue. Architecture itself is a message or an agency. As John Ruskin (1989, 8) said, "All architecture proposes an effect on the human mind, not merely a service to the human frame."

Saying that architecture *means* something places it within the purview of semiotics or semantics. Semiotics or semantics is the study of meaning—how something means, the nature of meaning, the importance of types of meaning, and the like. In previous accounts of structures and museums as visual persuasion (Ragsdale 2007, 2009a, 2009b), the semiotic system of Charles S. Pierce (Buchler 1955) as adapted by Paul Messaris (1997) was used to provide a typology of visual signs. In this system, there are two types of visual signs: icons and indexes. Icons are *representational*, in that they look like that for which they stand. Icons are abundant in the portal sculptures of Gothic cathedrals. Indexes are *documentary*. They are direct evidence of a thing, such as unaltered photographs and artifacts like a tank used in the occupation of Budapest. Messaris recognized also that how a sign is interpreted often depended upon its juxtaposition to other signs. The theory of *montage* in film is an example of this juxtapositional effect. Messaris termed this phenomenon syntactic indeterminacy, and it has been used to explain such persuasive effects as those of the great dinosaur skeleton in the rotunda of The British Museum of Natural History (Ragsdale 2007) and the location in the Louvre of *Nike of Samothrace* at the head of a grand staircase (Ragsdale 2009b).

It was necessary to expand this simple system to account for museums and museum contents (Ragsdale 2007). The basic system did not, for

example, afford a way to assess the difference between *discursive* and *nondiscursive* visual signs. Discursive signs have a clear parallel in language, as in the case of the "sermons in stone" of the portal iconography at Notre-Dame de Paris. However, the light-gathering structure of a cathedral, probably intended to represent the nature of God himself or of Heaven, seemed not to have any parallel in language. The term nondiscursive was used to describe such visual elements. Color is a nondiscursive sign. Space is similarly a nondiscursive sign. The ruins at Oradour-sur-Glane near Limoges in France and the tranquility of a Shinto shrine must be considered within their encompassing contexts. It was also necessary to resort to the distinction between central and peripheral pathways made in the Elaboration Likelihood Model of how persuasive messages are processed (Petty and Cacioppo 1986). Central processing involves deliberative thought about the content of a message, while peripheral processing is more impressionistic. This distinction was especially useful in describing the differences between discursive and nondiscursive visual signs. Discursive ones would seem to necessitate central processing, while nondiscursive ones are likely to be processed peripherally.

It was also necessary to add to icons and indexes another pair of visual signs to account for the varieties of art found in museums (Ragsdale 2009a). There are inadequacies in the icon/index categorization raised by the existence in the vast majority of art objects of symbolism. A recognition of such a symbolic image is to be found in C. S. Peirce's theory of verbal signs. For Peirce, a symbol was a conventionalized representation of its object. The best example is a word, such as "man." By contrast, a stick figure drawing of a man is an icon, and a photograph of a man is an index. What, then, is a visual symbol in Peircean terms? While it might be more difficult in visual communication to find instances than in verbal communication, where symbols abound, there are conventionalized visual symbols to be found in every culture (Ragsdale 2007). Trees of life, owls, crucifixes, angels, and the like all have implications beyond mere representation. Accepting that visual signs may be symbolic provides a means for interpreting the many instances of traditional art, which are merely puzzling when contemplated as icons.

Peirce did not anticipate the rise of modern art and its practical rejection of representation. The works of such painters as Pollock, Kandinsky, and Mondrian cannot be classified as either icons or indexes. Neither can they be called symbols. For this reason, a fourth sign is required, which has been called a *presentation*. A presentation is a visual composition of dots, lines, tones, colors, and the like presented through

visual communicative strategies such as balance, symmetry, sharpness, randomness, and the like, but it does not "represent" anything. The interpretation of a presentation will always be subject to more variation than that of a symbol, an icon, or an index, since presentations do not have clearly differentiated objects. Objects of presentations are ordinarily unknowable, ineffable, or indecipherable, and their persuasive impact is likely to be a function of subjective interpretation.

What is architecture, then, as one of the types of visual signs just mentioned? Is it an icon? Is it an index? Is it a symbol? Is it a presentation? Is it a combination of signs? Clearly, buildings are not indexes, although other structures such as bridges probably are, neither do they match the definition of an icon. Aspects of some buildings are certainly symbolic, as in the case of the cruciform floor plan of a Gothic cathedral, but taken as a whole it does not seem reasonable to call buildings symbols. While buildings certainly contain a variety of visual elements and communication strategies, as will subsequently be evident, it does not seem productive to think of them as combinations of signs. How, then, does a building mean? The most appealing answer seems to be that buildings are presentations. They depend for their meaning on the visual elements and communication techniques which are their basic components. While parts of some buildings may be discursive, architecture is probably best conceived as a nondiscursive visual sign and likely one that is processed peripherally.

Like the other arts, architecture has the power for its message or messages to be repeated again and again across the ages. The other arts, however, do not have quite the omnipresence of architecture. It is in this sense that Roth (1993, 1) calls architecture "the unavoidable art." "Every moment, awake or asleep," Roth writes, "we are in buildings, around buildings, in spaces defined by buildings, or in landscapes shaped by human artifice. It is possible to take deliberate steps to avoid looking at painting, sculpture, drawings, or any of the other visual arts, but architecture constantly touches us, shapes our behavior, and conditions our psychological mood." "Architecture is shelter," Roth continues (141), "but it is also symbol and a form of communication. . . . [and] is a physical representation of human thought and aspiration, a record of the beliefs and values of the culture that produces it."

It is the omnipresence and enduring nature of architecture and their potential influence that makes it very important indeed to understand how communication works in this case. This is especially so to the degree that buildings also persuade or exert social influence. *Structures as Argument* (Ragsdale 2007) was an initial exploration of buildings as means of

persuasion. It examined museums, zoos, cathedrals, Spanish missions, Protestant churches, non-Western buildings, monuments, and cemetery stones, and found clear evidence of the use of architecture to exert influence. *American Museums and the Persuasive Impulse* (Ragsdale 2009a) and *Western European Museums and Visual Persuasion* (Ragsdale 2009b) extended this study of buildings to an assessment of museums, their collections, their exhibition designs, and their architecture, as visually persuasive phenomena.

The present volume is an extension of the previous three and grows directly out of the approach used before. It develops a methodology for assessing architecture as communication and as persuasion, beginning with the fundamental elements and communication principles of visual literacy. It then considers the specific elements of architecture in terms of these basic ideas to construct a framework for evaluating the visual experience of buildings. This framework, which is not unlike a set of distinctive features, then will be used to assess the messages that are cathedrals, museums, performance halls, government buildings, skyscrapers, and the like, as kinds of visual communication and persuasion. Before proceeding further, it would be wise to consider the differences between communication and persuasion as those terms are used here.

Communication and persuasion, while not synonyms, are considerably more alike than they are different. Since the process of communication was introduced at the outset of this chapter, it is really only necessary to consider persuasion. Communication is the umbrella term, and persuasion is one of its forms. Indeed, persuasion is probably the most important of the forms of communication. It refers to messages that are designed to change attitudes, beliefs, values, and behavior, although it is certainly true that even messages not so designed may have a persuasive effect. Mere awareness of the availability of a product may lead to a decision to purchase it even in the absence of an advertising campaign. It should be evident in the forthcoming pages that buildings are normally persuasive, not just communicative. Roth (1993, 4) puts it this way: “architecture has the power to affect and condition human behavior; the color of walls in a room, for example, can help to determine our mood. Architecture acts upon us.” What this chapter is primarily about is finding ways to understand how architecture acts upon us and to assess the effectiveness of its social influence.

It has long been the traditional view that persuasion results from the use of modes of proof—logic, emotional appeals, and the source’s credibility. Logic or reason provided the basis for insisting that an attitude or an action needed to be changed, with the premises of such reasoning

amply supported by examples, statistics, facts, testimony, and the like. Appeals to patriotism, to religious beliefs, or even to fear provided the motivation for action. Sometimes, perhaps even usually, the source's reputation for expertise, trustworthiness, and good will added strength to the persuasive effort. Sometimes, one mode of proof alone might be persuasive. At other times, two or three modes might be necessary. What is obvious, however, is that there is nothing directly comparable to this traditional view of persuasion to be found in the messages that are buildings. If it is not modes of proof that influence our attitudes and behavior when we encounter buildings, then what is it that does? The answer to this question lies in an analysis of the elements of architecture, which are in fact what we see. An understanding of these elements in turn begins with the most basic elements of visual communication. These ideas have been explored at length in previous works (Ragsdale 2009a, 2009b), and the following discussion repeats those earlier explorations.

The Concept of Visual Literacy

Visual literacy is a trained awareness of the elements of visual communication. A student of architecture must possess this awareness. Theories of architecture, however, begin at a macro rather than a micro level. In the principal document from antiquity on architecture available today, *Ten Books on Architecture* (1960), Vitruvius describes the subject as having three guiding principles: strength (*firmitas*), utility (*utilitas*), and beauty (*venustas*). In Chapter 2 of Book 1, he sets forth "The Fundamental Principles of Architecture" (13). These are order, arrangement, eurythmy, symmetry, propriety, and economy. As with many ancient texts, these terms are not so clear today as they undoubtedly were in Rome. Order, for example, appears to arise when the parts or modules of a building are all in harmony with each other and when they are symmetrical and in proper proportion to one another. The idea of thinking of a building as a set of modules rather than as an organic whole seems quaint today, but it is not an irrelevant way of thinking.

Arrangement proceeds directly from order and has to do with "the putting of things in their proper places" (Vitruvius 1960, 13). "Eurythmy is beauty and fitness in the adjustments of the members" (14). This beauty and fitness come about when a building's dimensions are properly proportioned. Eurythmy also requires symmetry, which Vitruvius includes as a separate principle. Appropriateness was an important consideration in many of the Classical arts, such as oratory, and architecture is no exception. The Greeks, and later the Romans, thought of art as arising

from adherence to a set of rules. The Greek word was *techne.* Vitruvius explains that propriety comes from "prescription . . . usage . . . or from nature." One particularly helpful example he gives is that a building with an elegant interior also ought to have an elegant entrance. Economy, finally, has to do with costs and the use of materials.

To be sure, Vitruvius's ten books are quite explicit in explaining these basic principles, but the list itself remains general. Modern authors fortunately provide more elaborated lists. Strickland (2001, xi-xiv), for example, includes the following:

- Rhythm
- Line
- Scale or size
- Light
- Texture
- Color
- Ornament
- Acoustics
- Site
- Space
- Weight and Mass

Roth (1993) provides a very similar list:

- Proportion
- Scale
- Rhythm
- Texture
- Light
- Color
- Ugliness
- Ornament
- Acoustics
- Space
- Function
- "Firmeness"

These two lists are not substantively different, which will subsequently make it possible to combine them into a framework for assessing the visual impact of architecture.

Underlying the three principles of Vitruvius and the lists of Strickland and Roth are some even more basic elements of visual literacy, a micro level as it were. As sounds or phones underlie spoken language, so "the dot, line, shape, direction, tone, color, texture, dimension, scale, movement" underlie visual communication (Dondis 1973, 39). These basic elements are used to formulate visual messages through the application of "visual techniques" or "communication strategies" (104). Dondis (1973, 16) discusses a number of the most common of these communication strategies but points out that there are undoubtedly many more. Some of the most common are as follows:

- Balance—Instability
- Symmetry—Asymmetry
- Regularity—Irregularity
- Simplicity—Complexity
- Unity—Fragmentation
- Economy—Intricacy
- Understatement—Exaggeration
- Predictability—Spontaneity
- Boldness—Subtlety
- Simplicity—Complexity
- Depth—Flatness
- Sharpness—Diffusion
- Sequentiality—Randomness
- Repetition—Episodicity

Visual literacy, then, requires an awareness of the fundamental means of visual communication, i.e., the component dots, lines, colors, and so on, but it also requires an appreciation of the ways in which these components may be put together to create such effects as depth, subtlety, sharpness, balance, and the like.

Ching (1973) is well aware of the interaction of these two levels in his account of the art of architecture. He begins his account with the most basic elements: points, lines, planes, and volume. Ching then shows how form and space is organized according to the principles of circulation, proportion, and scale acknowledging a familiar set of principles: an axis, symmetry, hierarchy, rhythm/repetition, a datum, and transformation. While his list of principles is shorter than those of Strickland and Roth, Ching shows more explicitly than either of the other two writers how such elements of architecture as rhythm, line, and scale are related to the more fundamental basic elements and communication strategies.

Another and perhaps more enlightening way of regarding this third level of elements is to see it as describing the goals or outcomes of architecture. The architect, for example, manipulates such things as lines, shapes, tones, and textures using principles of balance, symmetry, and the like to arrive at a structure that is firm and strong, functional, and comely to look at. Turned back on themselves, the elements of architecture offer a framework for the assessment of structures as forms of visual communication and persuasion. In order to build a clear framework for this assessment, it is necessary to examine each of the elements of architecture in terms of their basic visual components. Essentially, one

wants to know how meaning is conveyed by architecture and how that in turn results in social influence.

Communication through Architecture

Perhaps the best-known and most influential treatise on architecture ever written is Vitruvius's *Ten Books on Architecture* (1960). Vitruvius is spare indeed in enumerating the basic elements of his subject, saying that architecture should be strong, functional, and beautiful (1914, 17). He considers strength at considerable length and function a bit less so. While beauty might seem to students of visual communication to be the most significant of the three elements, Vitruvius is virtually silent on its components. However, beauty is rather obviously a persuasive goal, inasmuch as to regard an object as beautiful is to have been compellingly influenced by its form (Ragsdale 2008a). Indeed, it is implied in the lists of elements of architecture of Strickland and Roth mentioned above that the ultimate goal is primarily to influence the observer. To begin, then, one must scrutinize each element first as a means of communication.

As Roth (1993, 57) states outright, these elements arise from "the most fundamental concept . . . that the mind, particularly the human mind, is programmed to seek meaning and significance in all sensory information sent to it. . . . [which] no doubt, is linked with the instinct for survival." Additionally, "how the mind interprets forms and patterns presented to it is the subject of Gestalt psychology (from the German *Gestalt*, 'form' or 'shape')." The mind does this interpretation through a set of preferences "for proximity, repetition, simplest and largest figure, continuity and closure, and figure/ground relationship" (59). Roth's explanation is not unique, since Dondis (1973) also bases her discussion of the elements and communication strategies of visual literacy on the perceptual principles of Gestalt psychology. In viewing works of art, for example, Dondis asserts that one's eye is naturally drawn to "the felt axis . . . in an unending process of establishing the relative balance" (27). Next, the eye is drawn to the lower half of the visual field. Elements of architecture, it would seem to follow, are consciously selected principles whose use produces a predictable effect. Let us see how this idea plays out in practice.

Strickland's (2001) first element is rhythm, which is also included in Roth's (1993) list. Rhythm is "a pattern of . . . repetition of elements like solids and voids, walls and windows, projecting or receding parts" (Strickland 2001, xi). It is "the alternation between incident and interval, between solids and voids" (Roth 1993, 67). "This architectural rhythm is read by scanning the surface, much as one might scan a musical score. . . .

for both must be experienced in time." This account suggests flat surfaces, but Roth says that "undulating or curving walls" also qualify, with the rhythm expressed as "curves and countercurves" (70). In terms of the communication strategies of visual literacy, rhythm comes from the use of sequentiality, regularity, and, obviously, repetition. The experience of the rhythmic patterns of a building is a pleasing one based as it is on repetition and continuity.

Rhythm is such a fundamental characteristic of architecture that there are innumerable examples to be found. The entry façade of the Prado in Madrid is a particularly nice example. The entry itself is a projecting portico supported by a row of six Doric columns. The ground floor is a series of arches interspersed with solid supporting walls within which are niches for sculpture. The second floor is a succession of Ionic columns and windows. The use of successive columns is a very old and frequently repeated feature, perhaps best illustrated by the Parthenon in Athens. The Altes Museum on Berlin's Museumsinsel features Ionic columns each topped with the German eagle. An expanse of columns also is evidence of an underlying solid structure of considerable strength.

Roth's (1993) first element is proportion. Although Strickland (2001) does not include this term in her list, it is clearly of fundamental importance in the design of buildings. The primary reason for this is that something which is out of proportion will strike the eye as irregular or out of balance. "The mind . . . seeks out mathematical and geometrical relationships—or proportions—in patterns" (Roth 1993, 62). Architecture in Classical Greece often utilized the Golden Section, a "proportional relationship . . . believed to be perfect." Such a proportion obtains in a rectangle, for example, when the shorter side of the shape is to the longer side as the latter is to the longer and the shorter sides combined.

The Greeks regarded the human body as a divine proportion created in the image of the gods. Vitruvius (1960) explained this proportion by setting the center of the geometric pattern as the navel and then showing that the outstretched limbs described both a square and a circle, "the most basic and ideal of geometric figures" (Roth 1993, 62). Leonardo da Vinci made a drawing, much copied even today, of "Vitruvian man," showing these relationships. While modern anatomists would warn against any idea of a uniform proportion among human beings, it is very curious indeed that several writers on the subject of facial attractiveness seem to agree that a vertically symmetrical face is universally regarded as more attractive than an asymmetrical one (Rhodes, Proffitt, Grady, and Sumich 1998).

In buildings as well, symmetry is of paramount importance. It is a communication technique in Dondis's (1973) system and underlies the

rhythmic use of columns, arches, and statues in the Prado and columns in the Altes Museum. The Pantheon in Rome is a building of enduring beauty, probably especially because it uses both the square and the circle combined together in its floor plan. The design is also fundamentally strong. Closely related to the idea of proportion is line (Strickland 2001). The line or lines of a building suggest a number of visual qualities. Horizontal lines imply solidity, while vertical ones imply "uplift" and "striving for ascent to a heavenly realm" (xii). Diagonal lines are dynamic and "imply action and energy." Lines, of course, are among the basic elements of visual literacy and are fundamental to the formation of geometric shapes.

Scale or size is the next element of architectural design to consider, and it appears in both Strickland's and Roth's list. In thinking of the great works of architecture, it is tempting to think that the larger a building the better. However, it is just as true that a smaller structure that is appropriate to its site and is suitable for its function deserves equal plaudits. In general, however, the structures to be considered in this book are large, even monumental, ones. Considered in relation to one's own size, large scale structures can be overwhelming or intimidating. Rome's Colosseum is such a place. However, the sheer scale of some buildings, like the scale of the Grand Canyon of the Colorado, also renders them awe-inspiring and visually arresting. The chateau and grounds at Versailles come to mind as does Schönbrunn Palace in Vienna. St. Peter's Basilica in the Vatican, La Sagrada Familia in Barcelona, and Salisbury Cathedral in England are examples, as is the American Capitol Building in Washington, DC, the skyscrapers of Manhattan, and La Défense in Paris.

Following scale or size, light is of crucial importance in the impact a building may have on the viewer, especially in the interior. Light enhances the perception of openness, spaciousness, and freedom of movement. The great Gothic cathedrals differed from their Romanesque predecessors in no greater way than their light gathering construction. Light has a fundamental symbolic value in the Christian faith, with darkness associated with evil and wrongdoing. Museums use skylights wherever possible to facilitate the viewing of their collections. Of course, there is also artificial light, which architects carefully utilize whenever natural lighting is not available. Light interacts with two other architectural elements: space and color.

The experience of space or spaciousness is directly influenced by lighting levels, so the architect must be aware of how the two interact as a design is being formulated. Roth (1993) devotes an entire chapter to space. He identifies four kinds of space with respect to a structure's

interior. The first is the obvious physical space, that which is enclosed within a building. The second is perceptual space or "the space that can be perceived or seen" (45). Third there is conceptual space, "which can be defined as the mental map we carry around in our heads, the plan stored in our memory. Buildings that work well are those that users can grasp easily in their mind's eye and in which they can move about easily." Fourth, there is behavioral space, "or the space we can actually move through and use." Although focused on buildings themselves, Roth points out that these four types of space could easily be adapted to such outdoor areas as a town square or the courtyard of a cathedral. As one thinks about how to assess the visual effects of architecture, this enlarged description of space should offer helpful guidelines.

With respect to behavioral space, architects may design buildings so that movement between rooms is either facilitated or not, which Roth (1993) calls interwoven versus static spaces. In connection with such movement, "space can determine or suggest patterns of behavior by its very configuration, regardless of barriers or hindrances. We speak of **directional space**, as distinct from **nondirectional space**" (51). Some designs suggest paths through space, such as the design of a contemporary shopping mall does to influence which shops will draw the most customers. Buildings, of course, cannot properly be thought of divorced from their surroundings. Sometimes those surroundings are as important in the visual experience as the structure itself. Site, therefore, is an independent element of architectural design.

In previous studies of the visual persuasiveness of museums, site was a vital aspect of assessing the power of a building's influence (Ragsdale 2009a, 2009b). Traditionally, art museums were thought of as temples of the muses. As a result, the ideal location for an art museum was on a hill, so that the ascent mimicked the approach to the realm of the gods. One, of course, recalls the Biblical reference to "a city set upon a hill," and many buildings are located so as to give them majesty. The Parthenon, set on the hill of the Acropolis in Athens, may be the best known example. When a hill is not available or appropriate, then the architect may use a wide avenue or the like. The Arc de Triomphe is located at one end of the Champs Élysées, with the Louvre at the other end, and west along the same axis is La Défense. These locations are hardly coincidental, and one can easily find numerous examples of the placement of museums, monuments, government buildings, cathedrals, and so on. Site enhances the visual impact of a structure and also draws visual attention through the natural tendency of the human eye to follow horizontal lines.

Light also augments the element of color in visual design. Color itself has specific visual impacts which are typically quite predictable. There are "warm" colors, such as red, orange, and yellow, and there are "cool" ones such as green and blue. The architect has at his or her disposal a palette the use of which can have a direct impact on viewers' experience of visual images, and it has been used throughout history as a symbolic motif. Many buildings, such as the Gothic cathedrals, were brilliantly painted but have lost their color through weathering. Fortunately, the stained glass windows in these and other cathedrals have survived. It is widely understood that warm colors in a building are inviting and comforting, whereas cool colors have a distancing effect. As noted, color also has symbolic value, especially in non-Western religions like Buddhism (Ragsdale 2007).

Tresidder (2006) mentions the almost universal color symbolism of white and black. The former is associated with positive values and is the color for the clothing of brides and the confirmation gowns of infants. Black, by contrast, is negative, although it is a color often used by the clergy as well as in the academic regalia of university faculty members. Red suggests energy, gold implies royalty and divinity, green suggests renewal and hope, and purple implies dignity. Of course, each of these colors also symbolizes other qualities, and each signification may vary according to culture.

Closely related to color, in turn, is ornament. Architecturally, ornament is not merely decorative like the icing on a cake. Instead, it serves a communicative function. In Romanesque and Gothic cathedrals especially, the sculpture around entryways served to represent stories from the Bible and served as visual homilies (Ragsdale 2007). Gargoyles not only were to ward off evil spirits but were functional as downspouts. Ornament has been proclaimed both as essential to architectural design and as inimical to it, but this difference of opinion does not need to figure in any assessment of ornament as a feature of visual communication. As Strickland (2001, xiii) says succinctly, ornament is "to emphasize structure, embellish the surface with visual detail, model light and shadow, add human scale, and delight the eye." The latter is so important in the visual experience of architecture that one wonders what could possibly be the motive for a truly plain building.

Texture is the relative roughness or smoothness of a particular surface. As such, texture is related to both color and ornament. Texture, for example, is an important consideration in evaluating sculpture, with the highly polished surfaces of some bronze, silver, and brass pieces conveying a much different "feel" than the rather coarser textures of either marble or limestone. Roth (1993) distinguishes between optical and tactile

texture. Even at a distance, some buildings will appear to be either rough or smooth. One of the desirable features of some Italian Renaissance buildings, such as the Palazzo Pitti in Florence, was a "rusticated" surface. "Rustication consists of courses of cut stone whose edges are chamfered (beveled), often at a 45-degree angle, and whose projecting faces are smooth or roughly textured and suggest solidity and mass" (Cole 2005, 272). The rough hewn stone appearance suggested the ramparts of a fortress and conveyed the idea of power and strength (Ragsdale 2009b). The titanium-clad surfaces of Frank Gehry's Guggenheim Museum Bilbao are highly light reflective and have rather a softer look than the rusticated surface. Up close, one may touch a surface and feel its texture. Again, smooth surfaces, such as furs, soft leathers, and rounded stones, are sensual and inviting. Coarser surfaces, such as wooden benches and concrete flower boxes, are cold and uninviting to the touch.

The acoustics of an enclosed space are another of the architect's concerns, and acoustics are affected to a large extent by such previously discussed elements as space and texture. The acoustics of a building are of greatest concern to the designer of performance halls, where the quality of a symphonic performance or the audibility of an actor's lines, depends on the shape of the space in which the performance takes place. Like light, however, sound within an enclosed space is pervasive and must be amplified, damped, or shaped in order to effect a pleasing experience for the visitor. There are more than 16,000 museums in the United States of America alone (http://www.greatmuseums.org), and interest in American museums appears to be at a record level. Museum visits are high on the list of tourist attractions in vacation spots, and an average of 2.3 million people a day visit an American museum. Given this large number of visitors to museums, it is crucial to design galleries both which will display the museum's collection advantageously and also help to offset the inevitable noises created by the shuffle of feet and the whispers of conversation. Roth (1993) acknowledges the importance of acoustics by devoting an entire chapter to the subject.

Strickland (2001) lists weight or mass as her final element of architectural design. Roth (1993) discusses "firmeness" instead. Both writers acknowledge the first of Vitruvius's three elements—strength—in their explanations. The first principle of any structural design, after all, is solidity, that is whether or not the building will stand up. Neither function nor beauty would be of any moment should the building collapse. With today's materials and engineering skill, one presumes on the solidity of a structure, but it has not always been so. The walls and spires of cathedrals,