Elements of Form

This chapter analyzes relationships between elements of architectural form. It relates form relationships back to the principles of perception/cognition discussed in previous chapters and puts them, as much as possible, in hierarchical order. This ordering is important to the designer of buildings so that he can understand the order of significance in which perceptual stimuli are received and understood by the general viewer in their designs and designs of others.

To accomplish this task, it is necessary to identify the basic elements of architectural form (including the spaces these forms imply), and some standard classifications by which they can be ordered. Architectural forms and space can be broken down into three element types: lines, planes, and volumes. In architecture, the elements are generally three dimensional volumes defined by edges, but as they become long or flat it is convenient to consider them as lines and planes respectively. This convenience also helps us when we wish to consider a part of an architectural composition from a particular location within that composition. Here, we can talk about a wall plane that is in our cone of vision which if viewed from some other vantage point might be
more readily recognized as the surface of a volume. The three elements of form/space can be classified and compared by relative scale, directionality, element type, and location in a total composition. The hierarchy based on element type is normally perceived as volumes, then planes, then lines. This hierarchy is based on the amount of closure these components typically provide for the activities the viewer is pursuing. A volume usually contains an activity, while a plane separates activities and a line directs one to them. Within this hierarchy, hierarchies of scale, strength of Gestalt, and dynamic qualities of direction are possible with scale being dominant over the other two. For example, when we look at a cityscape the largest volumes dominate the view and, in fact, seem to order themselves in significance by scale. Since most architecture does have some Gestalt, the differences in clarity between building Gestalts is not a major ordering factor. A contrast in color may be. However, a scale gradation is still more significant. Great differences in scale can change the hierarchy of elements i.e., a large plane can be perceived as dominant over small volumes if in context both are perceived as figures in a background. However, such relationships are uncommon in architecture.
The three element types have intrinsic characteristics in an architectural context. Lines denote direction (along the line), significant end points (at the end of the line), and boundary (from end to end or side to side). Intersections of lines identify a third point with more 'content' than the end points. This 'content' can be described as the resulting reference point (the intersection) from which relative judgments of distance and angle of intersection can be made. There are the following Gestalt implications for the various angle sizes formed by the intersection of lines, planes or volumes: an acute angle implies direction toward the apex of the angle; a 90 degree intersection implies discontinuation of the surfaces at the apex and less direction than acute or obtuse angles; an obtuse angle or curve implies continuation along the surface forming the angle. In addition, they all imply closure; the more obtuse the angle the softer the sense of closure.

Dynamic qualities of architectural form provide another yardstick by which we can analyze the built environment. The word dynamic will be used here to mean a situation in which a visual stimulus requires the viewer to make relational judgments between characteristics of

Plane separating activities
Sequence and color contrast to enhance separation.
Kresge College
University of California
1973
Sana Cruz, Calif.
MLTW/Turnbull Assoc. and
Charles Moore Assoc.
MA

Scale dominance of lines over volumes.
Habitat 67
1967
Montreal, Canada
Noshe Saffie
RB

Scale dominance of planes over volumes.
Roman aqueduct
Segovia, Spain
FJ
form or space. The stronger the stimulus the more dynamic the situation. For example, the sense of direction along an axis is dynamic. The longer and more directional a volume or plane, the more dynamic it becomes, i.e., the more it requires the viewer to recognize its directionality. If we accept the Gestalt viewpoint, we can build a hierarchy of importance to the viewer based on the dynamics of a situation presented to the viewer from a particular location in an architectural composition. A hierarchy based on dynamic qualities looks like this: first, ground is more dynamic than figure, orientation off axis is more dynamic than on axis, implied relationships are more dynamic than completed forms, and direction in completed forms is more dynamic than forms without direction. Within these levels scale provides an intermediate hierarchy. The dynamic quality of ground in a figure/ground relationship meets our definition of dynamic because it backs focus, and because of this it makes us feel uncomfortable. This discomfort motivates us to look around until we see figures to fixate on and can coordinate our activities in relation to them, thus alleviating our discomfort. Similarly, because of our sense of equilibrium, we find relationships that are not vertical, horizontal,
or parallel with our view point dynamic. They require us to make quantitative judgments to stabilize our and the object's relationship to the environment. Obviously, the more an object is out of equilibrium, the more strongly we sense it. These sensations can be hierarchically ordered, and the strongest is the most significant. Implied relationships are more dynamic than completed ones because they demand the viewer to complete the composition. For example, two planes implying intersection because of their directional quality would make the viewer provide the continuation to make the form 'good' in the Gestalt sense. Venturi suggested, in Complexity and Contradiction in Architecture, that a designer could superimpose different form/space organizations to reflect the complexity of any real design problem and that in doing so he would heighten the user's perception and enjoyment of the final solution. He states "if the source of both-and phenomena (double function of a space) is contradiction, its basis is hierarchy, which yields several levels of meaning among elements with varying values. ...Simultaneous perception of a multiplicity of levels involves struggles and hesitations for the observer, and makes his perception
more vivid." The hierarchies of form/space are developed by contrasts in their characteristics which yield logical sequences of perceptual stimulation. The strength of a designer comes in his ability to organize forms/spaces to produce the hierarchies he intends.