The design disciplines are varied, but all share the challenge of creating a pleasing design. A successful design is the result of a series of steps known as the design process. This process, in logical sequence, includes establishing the program, setting up bubble diagrams, conducting a site analysis, developing design concepts, generating design approaches, and finally presenting design solutions to the client.

Whether you are an architect, landscape architect, interior designer, urban or regional planner, or graphic designer, you should first establish a program based on certain givens. Client needs, budgets, regulations, surveys and objectives must all be addressed. Based on these criteria, you can develop bubble diagrams. A bubble diagram is a graphic version of an outline. The bubble diagram in figure 9-1 gives an overview of this chapter. In architectural and other projects, it is used to show building spaces, circulatory patterns, and spatial relationships.

While you develop bubble diagrams, you can start conducting a site analysis, taking inventories of views, circulations, climates, topography, vegetation, utilities, and other data according to the nature of the project. Based on the relationships in the bubble diagram and the site analysis, a preliminary design concept can be established. This concept comes through analysis, diagnosis, and synthesis. Its content includes concept diagrams, character sketches, and concept statements. Revisions, based on client feedback, will most likely occur at this stage.

Once the design concept is formulated, and after careful study of the project and the client's responses, the designer can de-
THE DESIGN PROCESS

Establish a Program
1. Needs
2. Budgets
3. Regulations
4. Surveys
5. Objectives

Set Up Bubble Diagrams
1. Spaces
2. Circulations
3. Special relationships
4. Labels

Conduct a Site Analysis
1. Subsurface features
2. Natural surface features
3. Cultural and man-made features
4. Aesthetic factors

Develop Design Concepts
1. Processes: analysis, diagnosis, synthesis
2. Products: concept diagrams, character sketches, concept statements

Choose a Design Approach
1. Rectilinear
2. Rectilinear-45
3. Radial
4. Arc-and-tangent
5. Irregular
6. Curvilinear

Present Design Solutions
1. Plans or site plans
2. Elevations
3. Sections
4. Renderings
5. Models

ESTABLISH A PROGRAM

The first step in the design process is to establish the client’s needs, budgets, and objectives, and to research local regulations. Some of this can be done by a questionnaire survey. Even if this is done in an interview, however, it is very helpful to formulate all your questions in advance. A few examples of questions are:

What is the total budget for this project?
Will there be stages of development?
Will the site be accessible? to whom?
What will the site be used for?
Will this site be public or private space?
How many people will be using this space at the same time?
How much money is available for landscaping alone?
Is the site visible to and from traffic?
What are the circulation patterns like?

It is also necessary to understand building codes, zoning, and various regulations. These may become limiting factors to your project. For example, is the site zoned for commercial development? Are local building codes compatible with the client’s objectives? The kinds of questions will vary according to the client’s project and the location.

SET UP BUBBLE DIAGRAMS

Bubble diagrams use bubbles (circles), arrows, and words to represent activities, relationships, and spaces. In the design process, they provide a quick and easy method to study circulation, determine the feasibility of a scheme, present a concept, and achieve a better design.

Step-by-Step
1. Use a red pencil and circle template to draw different size circles which represent the scale and/or importance of the spaces. A good zig-zag layout adds interest to the overall composition. Assign a color to each space (fig. 9-2). This adds excitement and clarity. Use color pair and gradual value change.
2. With a bold Sharpie outline the colored areas first (with overlap corners). Outline again with a felt-tip pen, leaving ¼-to-⅛-inch distance between the two lines (fig. 9-3).
3. Label each bubble with a distinctive bold script lettering. Add stripes and dots with markers, colored pencil, etc. (fig. 9-4).

EXAMPLE: Figure 9-5.
Figure 9-5. Top left: Melissa Woodard; top right: Douglas Saulsbury; bottom: James Dulles. (Participants, ML Graphic Workshop.) Marker, colored pencil, and felt-tip pen on marker, yellow tracing and blackline diazo print paper. 20 minutes to 3 hours each.
CONDUCT A SITE ANALYSIS

Site analysis can be done in conjunction with bubble diagrams. In order to achieve a successful design, site analysis must be done carefully. Missing information may stall the design process as well as increase the construction costs.

Site analysis involves taking an inventory of site elements and analyzing these factors relative to the client's needs and aims. During the inventory stage, you gather all relevant information about the properties of the site, from topography to climate to wind patterns and wildlife. After all such information has been gathered, analyze these features and incorporate them into the design.

If, for example, under topography in the inventory, you discover an area with a 0-5-degree slope, your analysis might be that this is the ideal location for the building. A high spot might have a good view in one direction that can be incorporated into the plan, and a low spot might be right for an artificial lake. Or if there are prevailing northwest winds, you might want to suggest an evergreen screen to act as a buffer. You will also inventory all the existing trees and other plants, and in your analysis make recommendations for those to keep and those to remove.

To help you in compiling your inventory, the following checklist includes many typical considerations.

INVENTORY CHECKLIST

Subsurface Features
1. Geological: geologic history of the area, bedrock type, depth to bedrock, geologic texture
2. Hydrology: aquifers, underground river, springs, water table
3. Soil: genesis, classifications or types, fertility, erosion susceptibility, temperature, moisture (pF), reaction (pH), typical horizons, aeration, texture, organic content, bearing capacity

Natural Surface Features
1. Vegetation: type or variety, size, location, shade patterns, aesthetic value, ecological community
2. Slopes: gradients, landforms, elevations, drainage patterns
3. Hydrology: flood plains; rivers, lakes, marsh, streams, bogs, watershed; drainage patterns
4. Wildlife: ecology, species
5. Climate: precipitation—annual snow and rain; potential for mist or low-lying fog; humidity; wind direction, intensity; solar orientation; temperature—average, highest, and lowest

Cultural and Man-Made Features
1. Utilities: location; types—sanitary, water, gas, electric, storm drains; depth or height of each structure; condition
2. Land use: present use of site adjacent to the site, zoning restrictions, legal restrictions, legal ownership of the site, boundary lines, easement
3. Historical notes: archeological sites; landmarks; building type, size, condition
4. Circulation: linkages and transit (road), on or near the site; auto and pedestrian; bicycle, boat, mass transit
5. Social factors: population, intensity, distribution, age composition, educational level, income level, ethnic or type; economic and political factors; social configurations of the residents; usage of the area; other social factors affecting usage of the area

Aesthetic Factors
1. Perceptual: from an auto, by pedestrian, from a bicycle
2. Spatial pattern: views to the site; views from the site; spaces—existing, potential for new areas; sequential relationships
3. Natural features: significant natural features of the site; water elements, rock formations, plant material

EXAMPLES: Figures 9-6 and 9-7.
Figure 9-6. Edward D. Stone, Jr. and Associates, Fort Lauderdale, FL. Marker on 20" x 30" blackline diazo print paper (original ink on sepia). 8 hours.
Figure 9-7. Edward D. Stone, Jr. and Associates, Fort Lauderdale, FL. Marker on 30" x 42" blackline diazo print paper each (original ink on sepia). 4 to 8 hours each.
Develop Design Concepts

When designing a project, the designer must be able to present the design concept graphically, incorporating the results of earlier stages. The space relationships from bubble diagrams and the facts from site inventories and analysis form the basis for study. The established information can be analyzed, diagnosed, and synthesized to formulate an optimum solution. This is then illustrated in concept diagrams, character sketches, and concept statements.

The concept diagrams incorporate the information from bubble diagrams and site analysis into an actual site plan. Once the concept diagrams have been established, loose character sketches are added to express the designer’s ideas. Finally, written statements sum up the established programs, the design problems, and their solutions.


Figure 9-8. Left: participants. ML Graphic Workshop. Marker, colored pencil, and felt-tip pen on 19” x 24” marker paper. 1½ hours. Right: Ken Cobb, Johnson, Johnson & Roy Inc, Ann Arbor, MI. Marker on 20” x 30” white tracing paper.