

designer of the graphic did not intentionally mislead but was overwhelmed by the data or became too involved in its presentation.

Keep these four principles—clarity, precision, efficiency, and integrity—in mind as you read the balance of this chapter and as you prepare your illustrations.

## Types of Visuals

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Most business visuals fall into one or more of the following categories: tables; graphs; charts, drawings, and diagrams; maps; photographs; and text. This section describes these visuals and suggests how they should be designed.

### Tables

Tables present data in words, numbers, or both, usually in columns and rows. While tables are often the least enticing technique visually, they can be the most accurate method. As with most visuals, there are rules or standardized approaches to preparing tables, not all of which are always followed, but of which you should be aware.

- Keep tables as simple as possible. As a table becomes too complicated, consider breaking it into two or more tables.
- If you wish to follow common practice for printed or typed tables, enumerate tables by inserting Arabic numerals above each one.
- Place a descriptive phrase after the table number, such as “Relationship of Income to Expenditures, 2003 to Present.” For a table that accompanies an oral presentation, you may wish to simplify the phrase.
- Place units of time (if included) in a row rather than a column.
- Try to present the data in logical fashion (increasing years, alphabetically, and so on) where the logic is immediately apparent.
- Employ good design techniques, such as ample white space, judicious use of boldface, and appropriate use of shading when designing tables.
- Use the word “Source” and follow it with a bibliographical citation if the data in the table come from a source other than your own primary research. In an oral presentation, you can speak your citation.

See Table 3.1 for a sample table, which shows the standard table format and identifies the parts of a table.

With the widespread use of computerized spreadsheets and printers capable of a variety of visual treatments, many of the long-standing rules for tables prepared with typewriters are fading. Tables now often incorporate different weights of lines (called rules), shading, italic and boldface type, color, and different sizes of type. Table 3.2 duplicates the data in Table 3.1 to show some of these treatments.

### Graphs

Graphs, probably the most widely used visual support, come in many forms. Among the most popular are the line, bar, pictograph, geographic, pie, 3-D, high-low-close, Gantt, and scatter graphs. Usually graphs include data plotted on axes.

**Table 3.1**

**Sample Table**

table number → **Table 1: Impact of Marketing Strategy** ← caption

Product	Unit Cost	Marketing Investment	Former Price	Current Price	ROI
Bearings	3.05	0.27	7.71	7.93	0.53
Armatures	12.54	0.89	24.35	24.35	1.24
Flanges	5.55	0.12	10.25	11.12	0.35
Struts	9.75	2.13	20.25	22.45	3.75
Brackets	1.88	0.14	3.35	3.54	0.24

Annotations: boxheads (Product, Unit Cost, Marketing Investment, Former Price, Current Price, ROI); stub (Bearings, Armatures, Flanges, Struts, Brackets); body (data rows); rule (bottom border); column captions (ROI); rule (top border).

Source: Enter a bibliographic citation or note explaining the origin of the table if it is not your original work.

**Table 3.2**

**A Table Prepared with a Computerized Spreadsheet**

<i>Product</i>	<i>Unit Cost</i>	<i>Marketing Investment</i>	<i>Former Price</i>	<i>Current Price</i>	<i>ROI</i>
Bearings	3.05	0.27	7.71	7.93	0.53
Armatures	12.54	0.89	24.35	24.35	1.24
Flanges	5.55	0.12	10.25	11.12	0.35
Struts	9.75	2.13	20.25	22.45	3.75
Brackets	1.88	0.14	3.35	3.54	0.24

The following design considerations apply to most graphs:

- Place time units on the horizontal axis.
- Start the vertical axis with zero and increase in units, without a break, to the top to adhere to graphical integrity.
- Place an Arabic number under the graph and include a title for the graph, also called a figure or illustration. For example, you might label a graph “Figure 3: Mid-level Management Turnover by Year, 2003 to Present.”

- Keep all text in the same plane so that the page does not have to be rotated to be read. That is, avoid text printed diagonally or angled 90 degrees from the main text.
- Label both the x- and y-axes to identify the individual items on the axis. Thus, the label “Years” would be used for 2001, 2002, 2003, and 2004.
- Make sure to include a legend (or key) when necessary, but keep it unobtrusive. The legend is there to assist in understanding the graph, not to steal attention.
- If you decide to box the graph, do not allow the box to clutter the impression. Use boxes on other graphs in the same presentation for consistency if you place a box on the first graph.
- When selecting a typeface for a graph, try to match the typeface of the text of the report. Keep type sizes consistent—or at least complementary—if possible.
- Create a hierarchy of text treatments. For example, for inclusion in a written report, a graph might use a 12-point type for items on axes, such as 0, 1, 2 or 2003, 2004, 2005, and for text in the legend and source. Labels for the axes might be elevated with a 14-point treatment, and the title could be 14-point uppercase and boldfaced.

### **Line Graphs**

Line graphs plot data on a two-dimensional axis. When a single line is plotted, a trend is shown. Most trends are plotted over time. When more than one line is plotted, comparisons of the trends can be made. Use line graphs to reflect frequencies, percentages, and distributions, and to compare multiple trends.

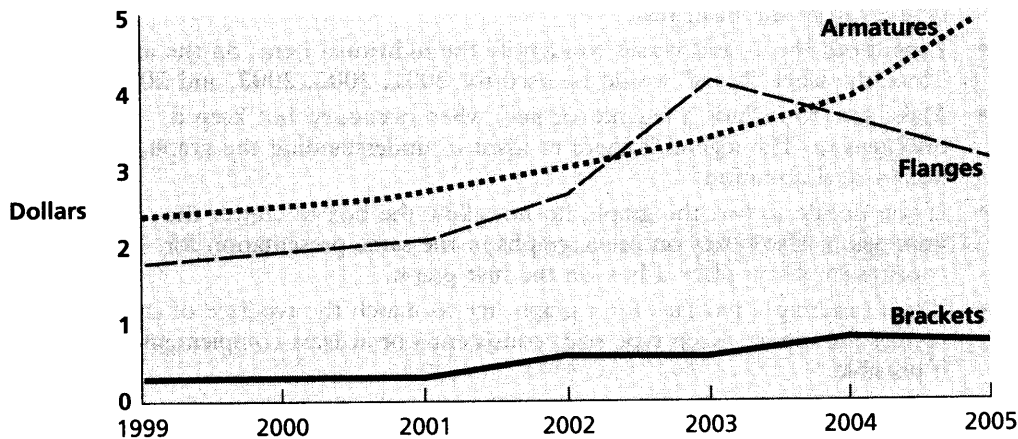
In designing line graphs, keep these thoughts in mind:

- Differentiate between multiple lines by using different techniques, such as solid, dashed, or dotted lines. Use solid lines for the primary data and dashes for secondary data, projections, or extensions. If no obvious primary (or first or most recent) line emerges, make the lowest line the heaviest or the solid line.
- Be wary of having more than four lines; readers become confused with too many lines, especially if they overlap.
- Make sure the plotted line is the heaviest line; the x-axis (horizontal) and the y-axis (vertical) should be medium-weight lines; the grid lines, if used, should be the lightest. If using colors for data lines, employ darker colors near the bottom of the graph and use progressively lighter colors on up the graph. Heavier and darker treatments at the bottom help achieve a feeling of low center of gravity, which aids aesthetics.

See Figure 3.3 for an example of a multiple-line graph.

### **Bar Graphs**

Bar graphs are popular because they can present a variety of information. Their main application is in showing comparisons. A bar typically is two-dimensional, and may be filled with shading or color, and the number the bar represents may be placed on or above the bar. You should be able to move from the top of the bar

**Figure 3.3****Multiple-Line Graph****Figure 1: Development Cost History for Three Products**

to the appropriate axis to determine the value that the box represents. A bar that meets these criteria is clear and is not as subject to misrepresentation as three-dimensional bars often are.

As you draw bars, keep these guidelines in mind:

- Draw bars so they are wider than the space between them.
- Prepare gridlines so they disappear behind the bars.
- Hold the maximum number of bars to 12—preferably far fewer.
- Draw bars of the same width.
- Arrange the items so that the bars appear in increasing, or perhaps decreasing, order if the x-axis does not show a time element and there is no other logical order to the x-axis items. Be aware, however, of other graphs in the same presentation with the same x-axis items. It is better to have a consistent arrangement of x-axis items across graphs than to modify the x-axis items for each graph to accomplish increasing or decreasing bars.
- When using segmented bar graphs (graphs that divide individual bars into parts), place the largest portion of the bar at the bottom to give a feeling of a low center of gravity. Use dark colors or treatments on low portions for the same reason. Then work in the next largest portion. Avoid conflicting adjacent patterns for the segments.
- Do not use part of the y-axis to form the leftmost bar; there should be some space between the y-axis and the first bar. This space typically is one-half the amount of space between the other bars.

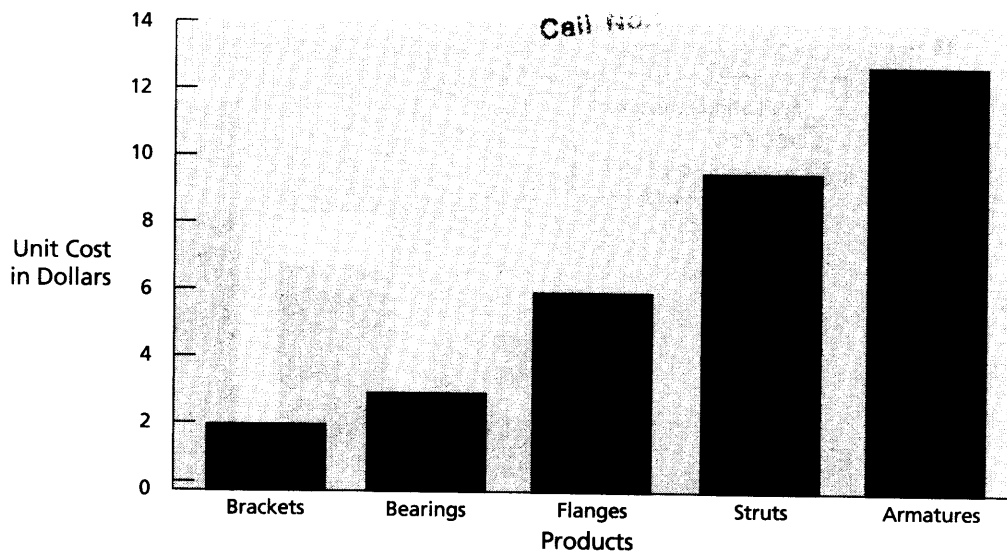
- Make bar graphs more precise by placing numerical values on or above the bars. The numbers should not be obtrusive. If the numbers are to be printed on bars that are black or patterned, they should be positioned within white boxes so that they can be legible.

The bars in bar graphs may be vertical or horizontal: Decide which direction to place the bars by first placing the time units on the horizontal axis and then deciding whether you wish to portray a comparison by time (a vertical bar graph) or by another variable (a horizontal bar graph). If there is no time dimension, use a graph that employs vertical bars. Figures 3.4 and 3.5 illustrate vertical and horizontal bar graphs. The bars in each are “staircased” since there is no inherent order.

When you break a single bar into components (which usually total 100 percent), it becomes a segmented bar graph. For example, a whole bar could represent income for 2004, but its segments could break income into taxable and nontaxable income. The bar for each year then would have two parts, each drawn to scale. Usually the parts are treated in some fashion to differentiate them from each other, such as using color or shading. The segmented bars may be vertical or horizontal. See Figure 3.6 for a segmented bar graph.

You may wish to group some bars together, especially when they do not add up to 100 percent of something as a group. For example, you may wish to compare three of five regions for net profit by year. Thus, you would cluster Regions 1, 2, and 3 as bars on each year. In drawing a clustered bar graph, the clustered bars

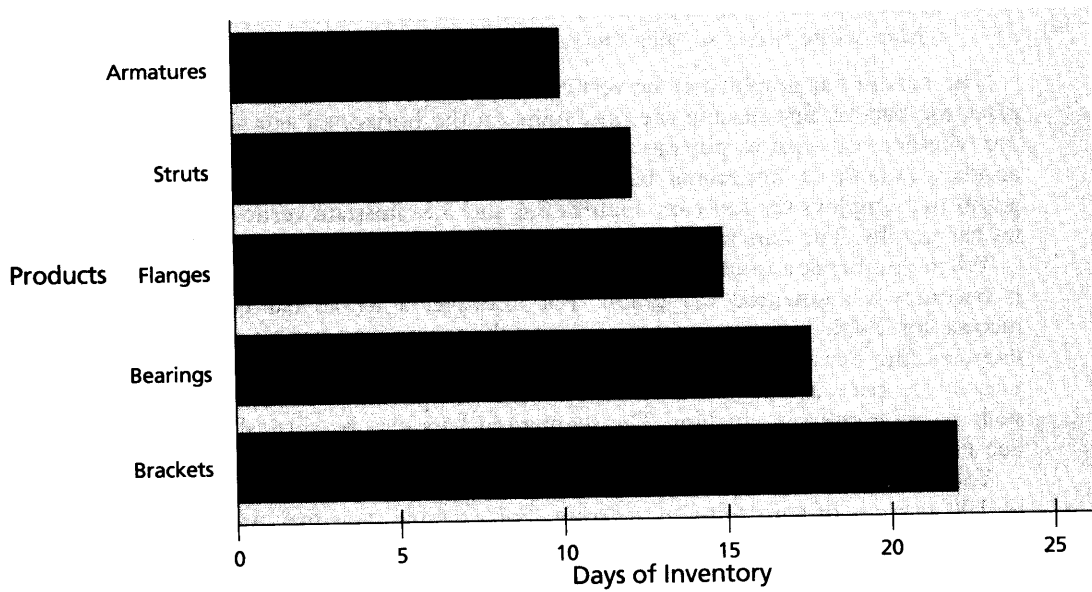
**Figure 3.4** Vertical Bar Graph



**Figure 1: Unit Cost of Five Products**

**Figure 3.5**

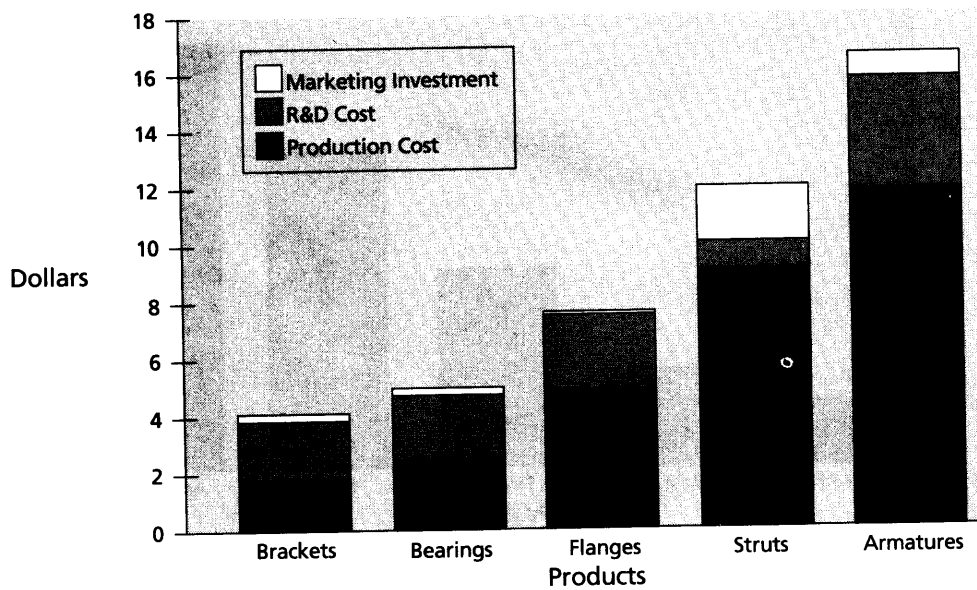
**Horizontal Bar Graph**



**Figure 1: Days of Inventory for Five Products**

**Figure 3.6**

**Segmented Bar Graph**



**Figure 1: Price Components by Product**

should touch each other and there should be an equal amount of space between clusters. See Figure 3.7 for an example of this type of bar graph. Compare Figures 3.6 and 3.7. Each bar in Figure 3.6 correctly adds up to 100 percent (marketing investment, R&D cost, and production cost). In Figure 3.7 there are five clusters of three bars each. If the goal is to compare the five products by the three types of costs, this approach is best, because all bars share a common zero point.

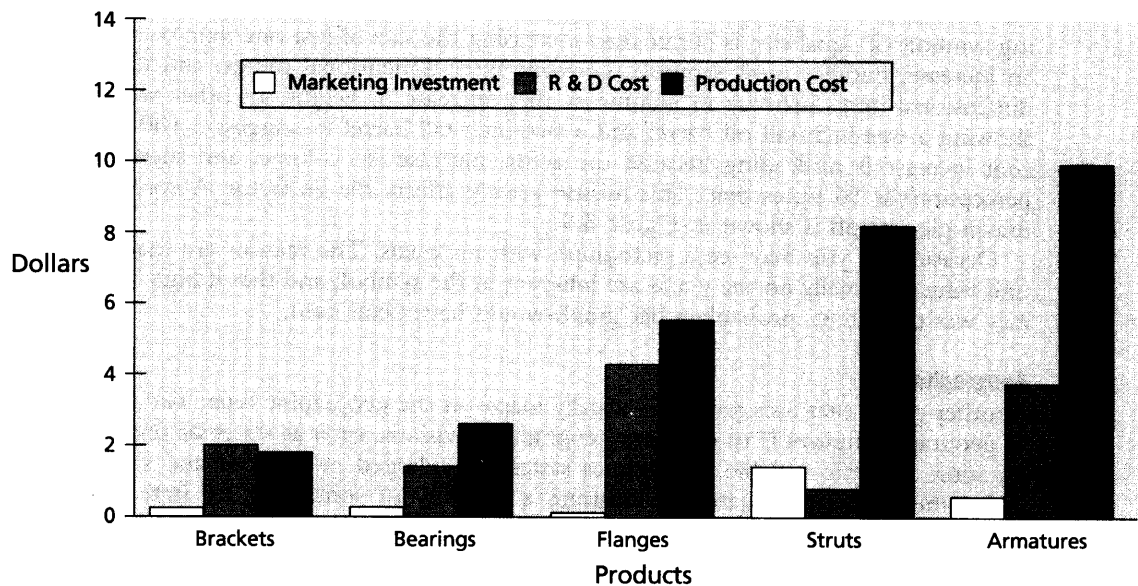
When confronted with data that could be either a segmented or a clustered bar graph, determine the main purpose of the graph. If it is comparing the sum of the parts, select the segmented bar graph. If, however, comparison of the parts is the primary intent, pick the clustered bar graph. Each type of graph allows the secondary purpose of the alternative analysis.

Most graphs are drawn in the upper-right quadrant (Quadrant 1) of the intersection of a vertical and a horizontal axis. This quadrant represents the positive half of the vertical line and the positive half of the horizontal line. Sometimes you wish to show negative numbers as well as positive ones, which means you must use more than one quadrant. A bar graph that uses two quadrants, such as the example in Figure 3.8, is a bilateral bar graph.

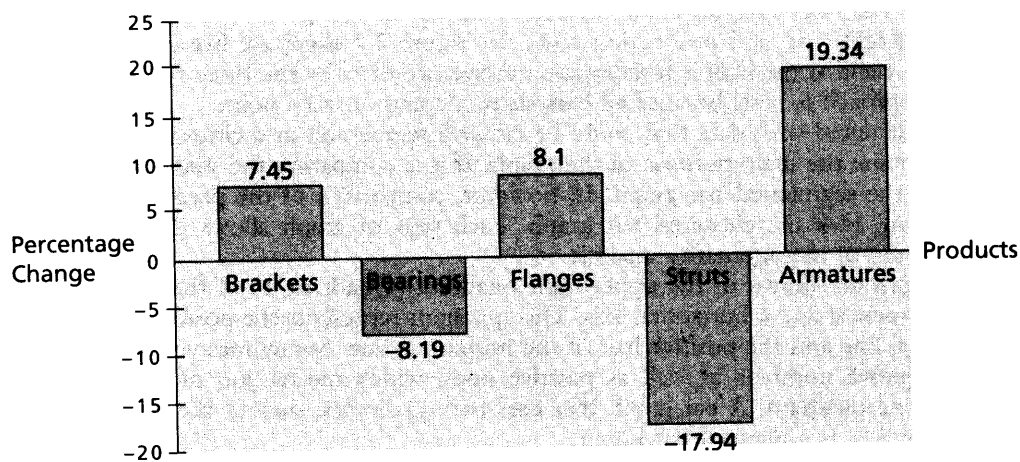
The reason most bilateral bar graphs use the upper-right and lower-right quadrants is that time is usually a variable, and thus plotted on the x-axis. Therefore, the other variable is the one with positive and negative values.

If there is no inherent order to the sequence of the bars (such as years), apply some order that enhances comparison, such as highest positive to lowest negative, or vice versa. An up-down-up-down approach may be visually pleasing and can stress the fluctuations. Figure 3.8 demonstrates this latter approach.

**Figure 3.7** Clustered Bar Graph



**Figure 1: Retail Price Breakdown by Product**

**Figure 3.8****Bilateral Bar Graph****Figure 1: Percentage Change in Five Products' Co, 2000–2001****Pictographs**

A pictograph is somewhat similar to a bar graph. Pictographs usually employ horizontal and vertical axes and plot data for comparison. However, instead of using bars to represent the amounts, symbols are used. For example, a picture of an oil drum might stand for 1,000 barrels of oil. Part of the symbol is used to show a fraction of the amount. Thus, in this example, half of an oil drum would represent 500 barrels of oil. Barrels stacked on top of each other show total amounts. Stacking symbols of equal size is better than increasing the size of just one item to show an increase, because most symbols represent three-dimensional things, and three-dimensional items increase in volume as they increase in height. In other words, showing a one-inch-tall oil barrel and a two-inch-tall barrel to suggest a 100 percent increase is misleading because the actual increase (in volume, and therefore perception) is 16 times that. This misuse greatly affects the lie factor. A correctly drawn pictograph is shown in Figure 3.9.

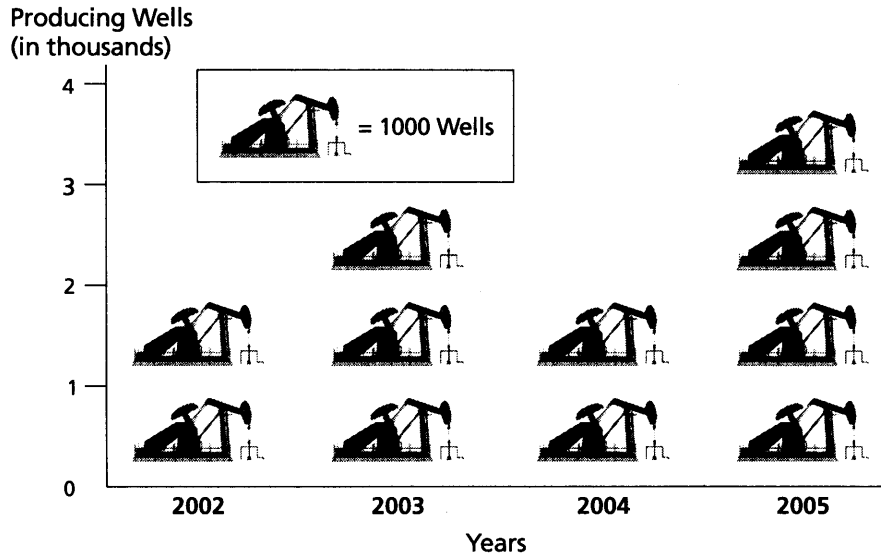
Occasionally you may see a pictograph with no y-axis. The reasons are that the unit values normally on the y-axis are inherent in the symbol, and that if high accuracy was the intent, probably a bar graph would have been used.

**Geographics**

Another graph that uses pictures—usually maps—is the geographic type. The value of geographic figures is to compare geographic divisions, such as states or regions, on some numeric variable. Sometimes states are enlarged or reduced and shown with other size-varied states to illustrate a quantity of something by state. For example, a geographic for population would reduce the relative size of Montana and enlarge Massachusetts. The intent is not to portray precise cartographic location or distance; that is the venue of maps, which will be discussed soon. A geographic visual is found in Figure 3.10.

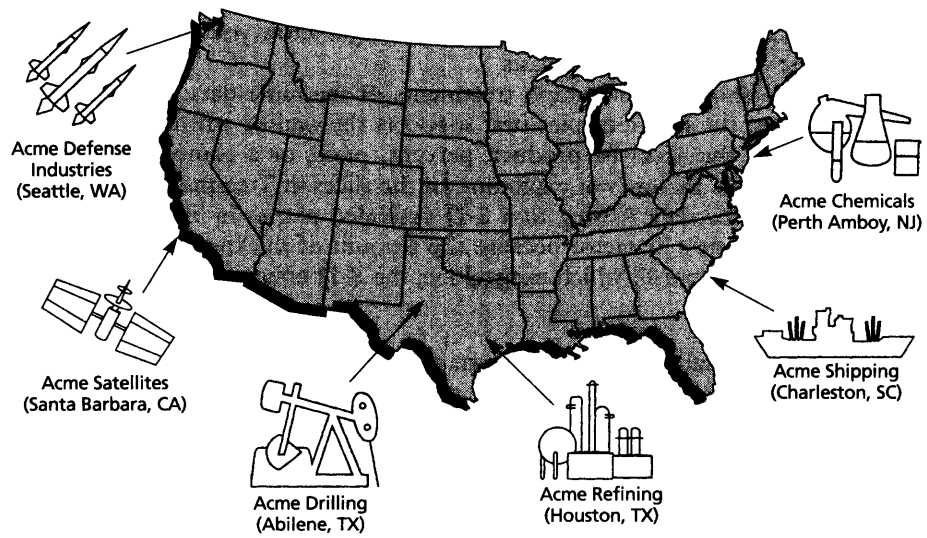


**Figure 3.9** Pictograph



**Figure 1: Producing Oil Wells by Year**

**Figure 3.10** Geographic Graph



**Figure 1: Primary U.S. Holdings**

### **Pie Graphs**

A popular but frequently boring and incorrectly prepared graph is the pie graph. Although commonly referred to as pie graphs or pie charts, note that they are not true graphs or charts. Pie graphs present data as slices of a whole, and the sum of the pieces totals 100 percent. According to William Cleveland,<sup>6</sup> author of *The Elements of Graphing Data*, these wedges are not an effective way to present percentages. His research shows that visual perceptions of pie slices are consistently inaccurate. He is also concerned about the problem of labeling narrow slices. Tufte, too, is critical of pie graphs because they do not order numbers along a visual dimension.<sup>7</sup>

Be cautious: Many of the computer software packages that facilitate preparation of pie graphs do not follow time-honored pie-graphing rules. These rules include:

- Always show 100 percent of something.
- Start at 12 o'clock with the largest slice and move clockwise in descending size. An exception to this rule is to place an Additional or Miscellaneous slice, no matter what its size, as the last slice.
- Use a protractor to draw each slice if you are hand-drawing the pie; each 3.6 degrees represents 1 percent.
- Consider using colors or patterns to visually differentiate the slices. Be careful, however, not to clutter the graph.
- Try to limit the number of slices to six. If you have only two or three slices, question whether you need the graph at all.
- Use the lightest color for the largest slice and move to progressively darker, smaller slices. Other alternatives are to move from darkest to lightest, or to alternate between light and dark to allow each slice to stand out. See which approach works best.

Try to use a software package that conforms to the rules above, but also be aware of its capabilities. For example, some packages allow you to “explode” a slice from the rest of the pie for emphasis.

Figure 3.11 shows six pie graph treatments of the same data. The author must decide which of the first four pies best supports the oral or written message: Does identification of the slices by product, percent, price, or a combination make the most sense? Notice the uneven exploding of the slices in Treatment D, which starts to misrepresent the data. Going to a 3-D exploded pie, as in Treatment E, introduces some of Tufte’s lie factor because the amount of thickness given to the slices is not equal. Treatment F, which exaggerates the 3-D effect, amplifies the lie factor.

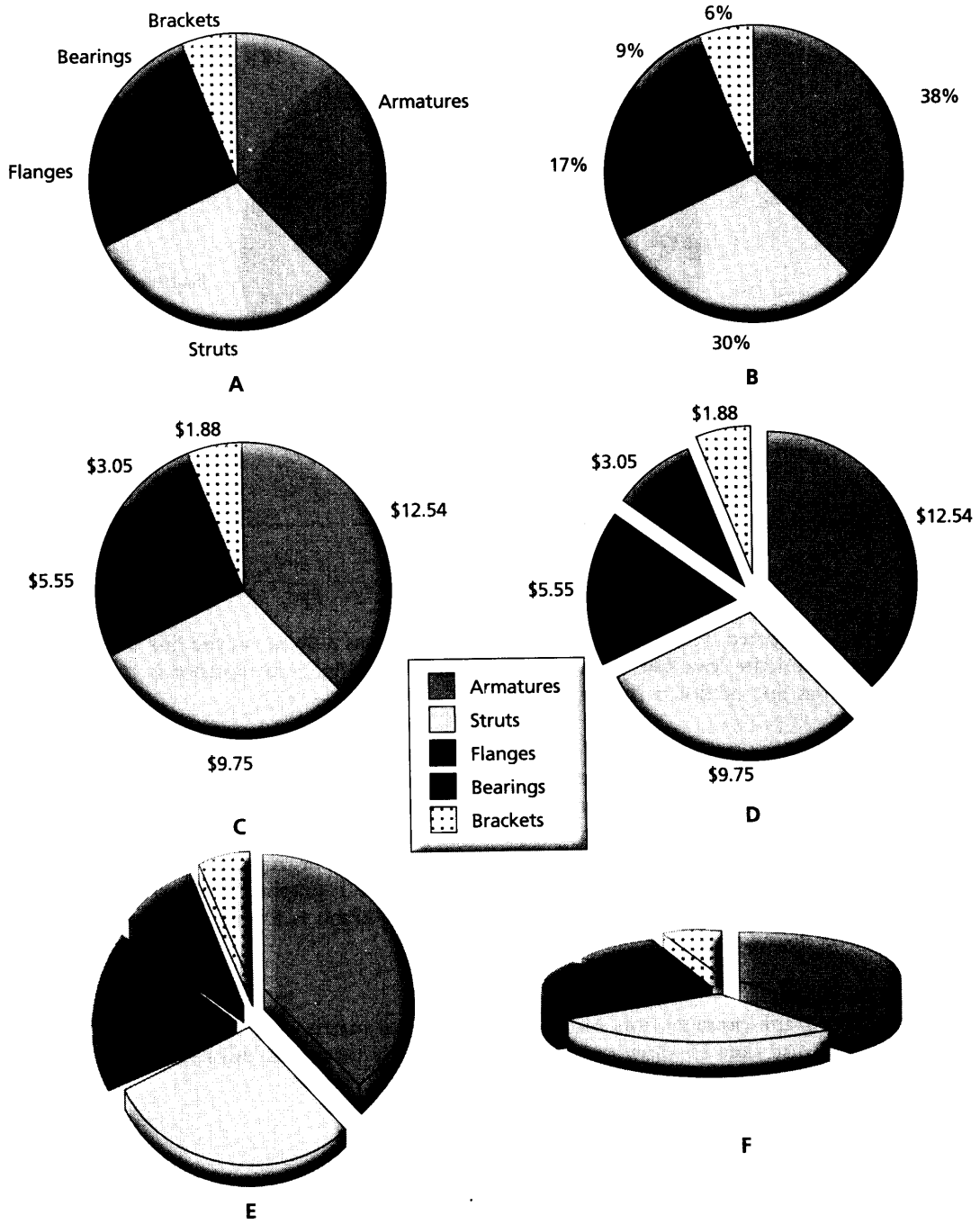
### **3-D Graphs**

For variety and visual excitement, 3-D graphs are popular. On the other hand, 3-D representations can be misleading and are often difficult to draw. Software can facilitate 3-D graphs, such as the 3-D pie graph shown in Figure 3.12.

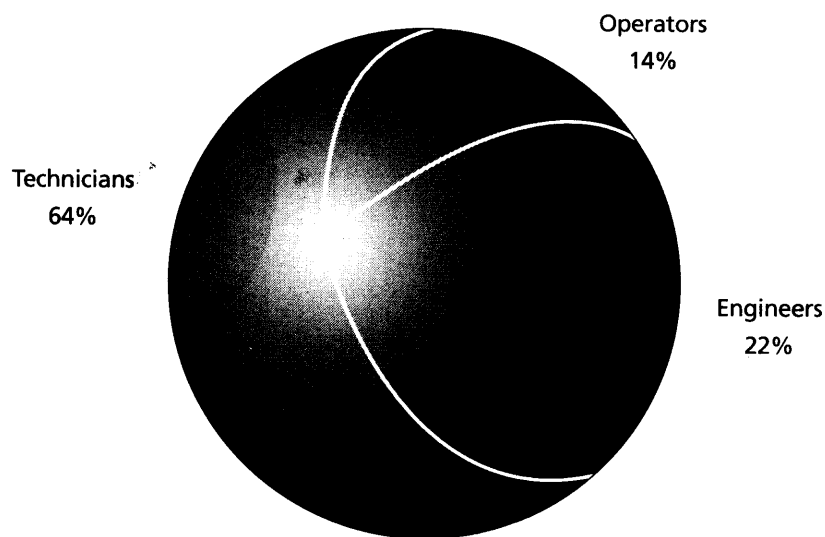
### **High–Low–Close Graphs**

Especially valuable for financial graphs is the high–low–close graph, like the *Wall Street Journal* uses. Rather than show a single dot for a dollar amount, the high–low–close graph shows the dots (the high and the low) that indicate a range

**Figure 3.11** Pie Graphs



**Figure 3.12** 3-D Graph



and are connected with a line. The close may appear as a point on the line between the high and the low. Or, the top of the line is the high, the bottom is the low, and a cross line or dot is the close.

### **Gantt Graphs**

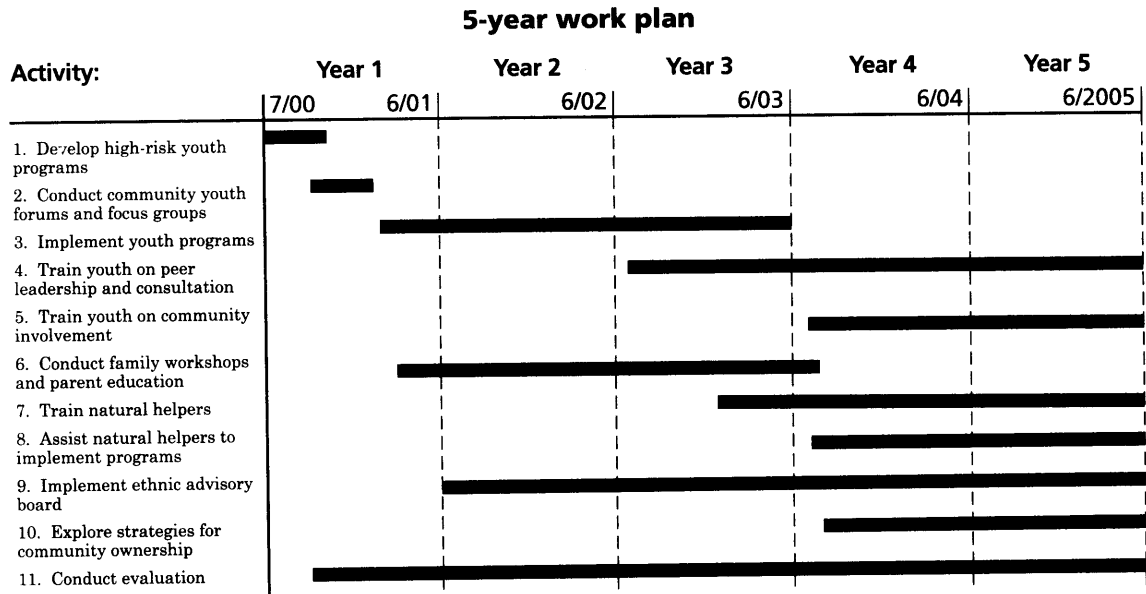
The Gantt graph is used for event or production planning and process scheduling, such as for coordinating ordering, delivery, prefabrication, final fabrication, packaging, and shipping of a product. Bars on the graph show initiation and completion dates. Many software packages ease the tedious or repetitious burden of preparing Gantt graphs, and their first cousins, PERT graphs. A Gantt graph is shown in Figure 3.13. Another form of scheduling graph is found in Figure 3.21, yet to be discussed.

### **Scatter Graphs**

A scatter graph presents dots on a two-dimensional matrix and is most often used with statistical data to show correlations. Lines may be drawn through clusters of dots to show trends or make forecasts.

## **Charts, Drawings, and Diagrams**

Charts, drawings, and diagrams, as opposed to graphs, usually represent less-precise data, relationships, and flows of activities.



Source: Used with permission of Union of Pan Asian Communities.

**Charts**

Charts often depict relationships, such as those in an organization. Within organization charts, solid lines usually connect line personnel and dotted lines link staff personnel. Organization charts show the channels that formal communication should follow. An organization chart appears in Figure 3.14.

Bubble charts present data, people, or departments inside circles (or bubbles) and then connect them with various thicknesses of lines to illustrate interrelationships. The size of the circles illustrates the amount of data or department size (see Figure 3.15).

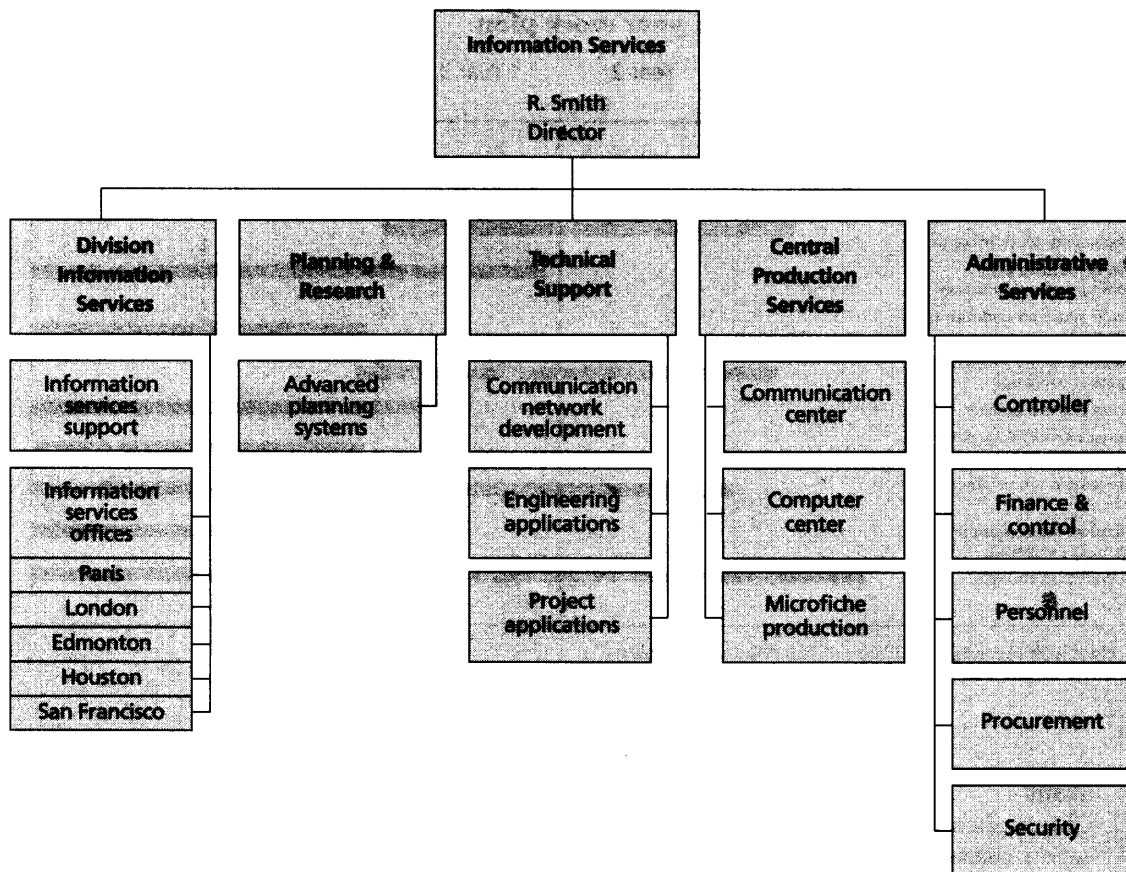
**Drawings**

Drawings are beneficial for accurate representation of images that do not lend themselves to verbal descriptions, such as blueprints and technical drawings. These drawings often use standardized techniques and symbols to facilitate understanding.

**Diagrams**

Diagrams are often drawings, but diagrams usually show a flow between items, such as communication between people or the electrical current in a wiring scheme. The parts of a diagram relate to some actual object, such as the depiction of a laser printer toner cartridge that looks like the true component. Diagrams

**Figure 3.14** Organization Chart



**Figure 1: Information Services Structure**

Source: Reproduced with permission from Computer Support Corporation.

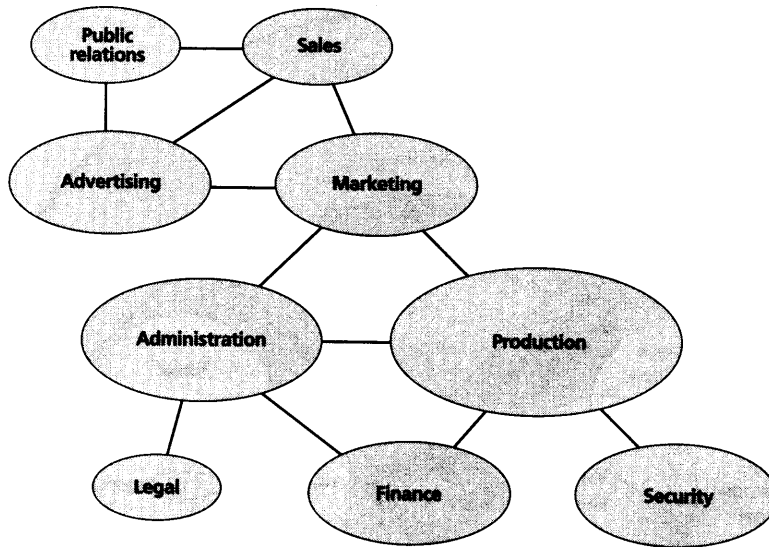
showing steps in information processing by computer hardware and software are flowcharts. Figure 3.16 shows a diagram.

A **Venn diagram** uses overlapping circles to characterize mutuality and exclusivity. Venn diagrams can quickly illustrate what would often take many words to describe. See Figure 3.17 for a Venn diagram.

## Maps

Maps are used when geographical precision is important, as opposed to a geographic graph, which might show a map but have the purpose of showing characteristics by section, such as product penetration by state. Identifying exactly where oil leases are on a piece of property may well call for a map (as well as a legal description of the location). See the map in Figure 3.18.

**Figure 3.15** Bubble Chart



**Figure 1: Relative Size of Departments**

**Figure 3.16** Diagram

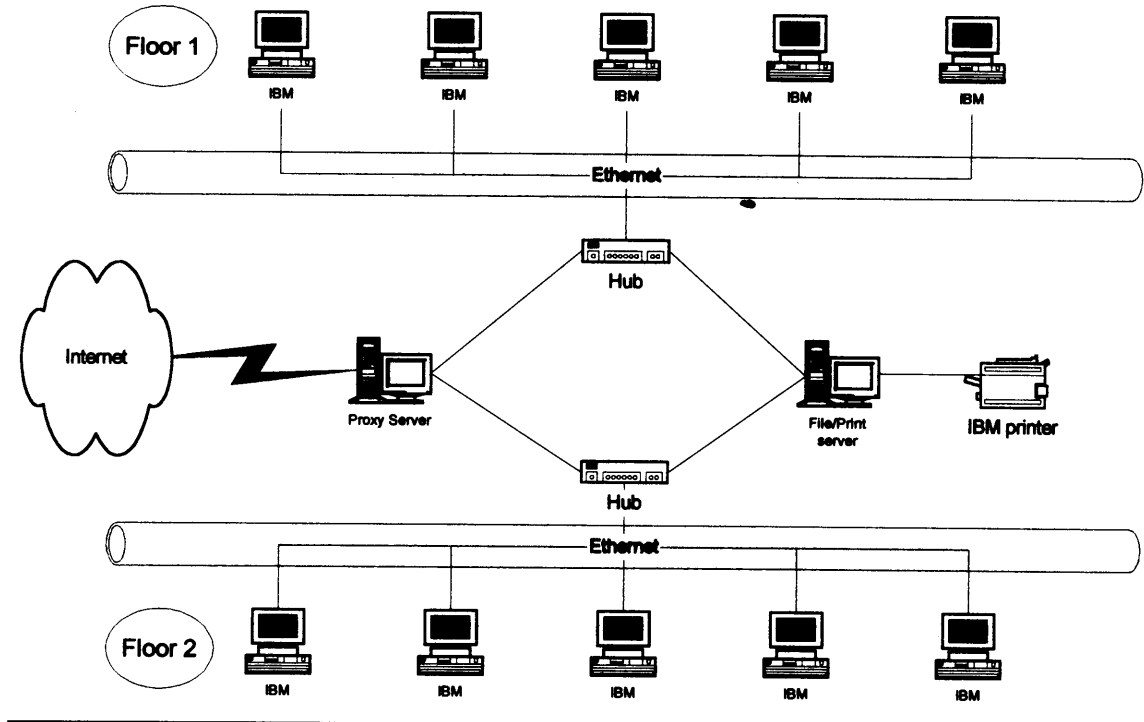
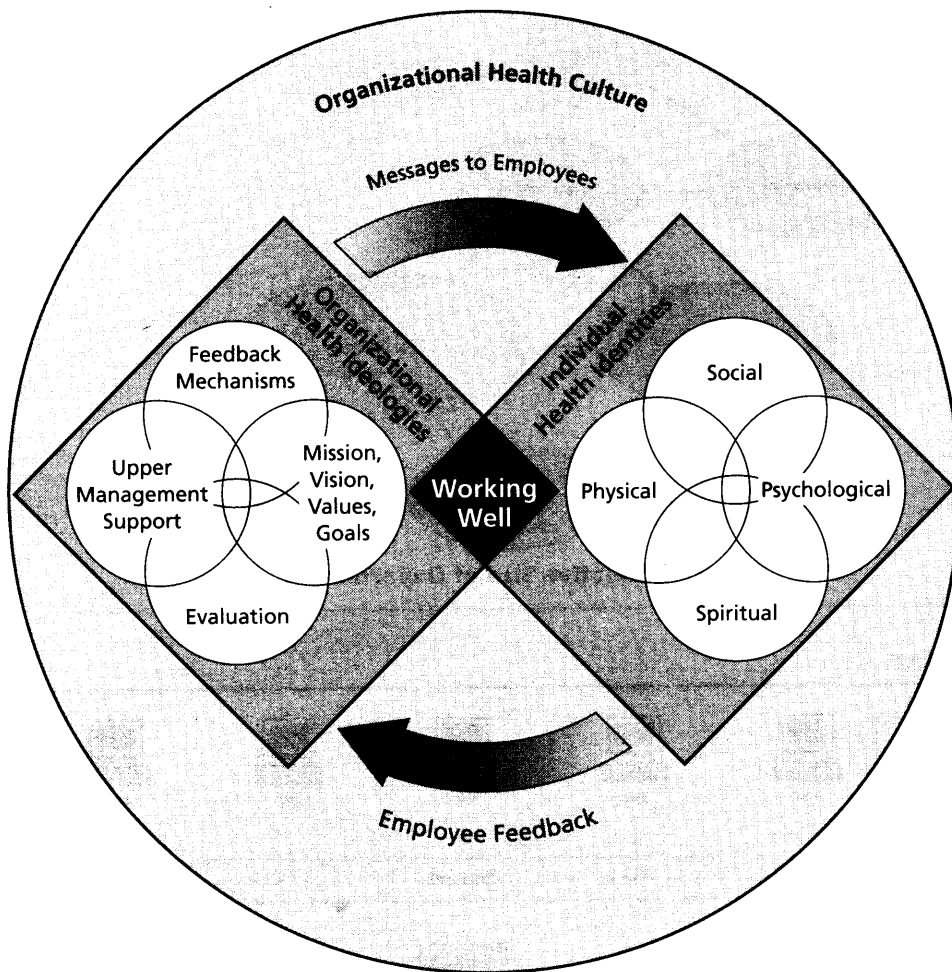


Figure 3.17

Model of Working Well



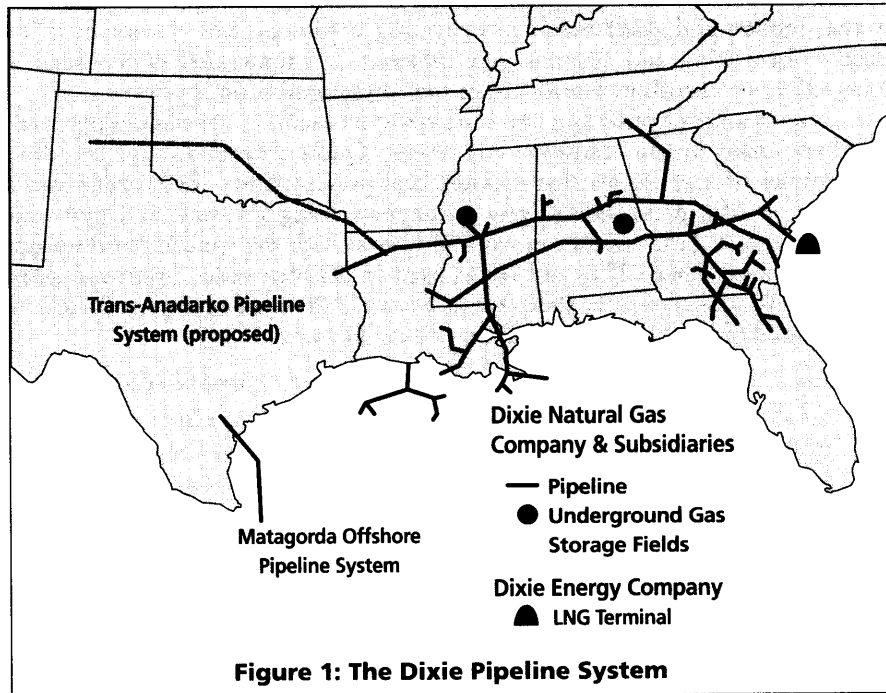
Source: "Working Well: Communicating Social Health," Angele M. Farrell.

### Photographs

Most illustrations represent something; photographs often come the closest to representing what they stand for. Few people have the ability to describe a particularly beautiful sunset accurately; a photograph of the sunset can capture much of the emotion elicited by the original occasion. Photographs, then, not only effectively document a visual moment better than words but also improve on other visual means. They can, of course, be accurately duplicated as prints, prepared for print media, or scanned into a computer. A photograph that underscores these thoughts is found in Figure 3.19.

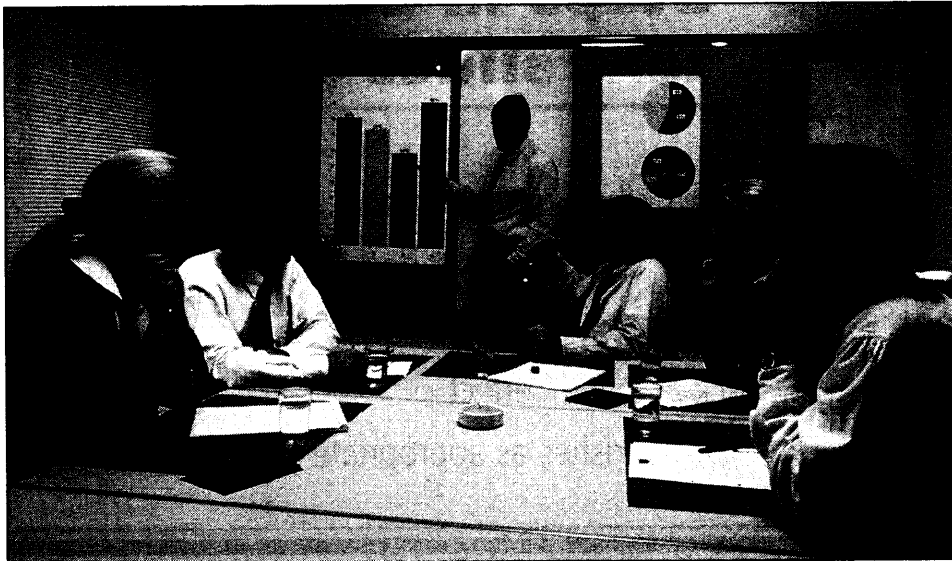


**Figure 3.18** Map



Source: Reproduced with permission from Computer Support Corporation.

**Figure 3.19** Photograph



Source: © PhotoLink/Getty Images.

## Text

Because reports *are* text, the text is not considered visual support. That is not to say that reports and other forms of delivering hard-copy text do not benefit from effective formatting and appropriately bulleted or enumerated items. Such documents often are distributed prior to an oral presentation on the topic.

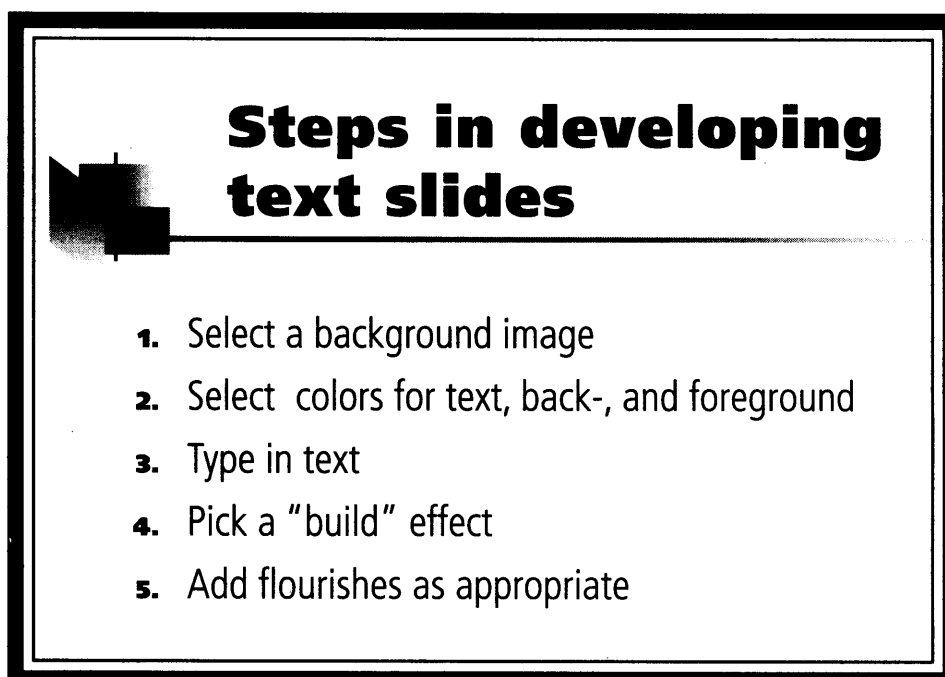
In support of previously prepared written documents or as stand-alone oral presentations, many visuals transmit only words. Quotes, outlines, and key thoughts are examples of text visuals that support oral presentations. Text visuals can show the direction of a presentation, give guideposts along the way, and pull together final conclusions. Text visuals can work in unison with the spoken word for emphasis or can stand alone. They are often used in 35-mm slides, overhead projector presentations, and computer slide shows. Figure 3.20 is an example of a text visual.

Some guidelines for the preparation of text include:

- Use a mixture of capital and lowercase letters to enhance readability.
- Select a simple, readable typeface if possible. Serif typefaces are easier to read than sans serif faces. (Serifs are the little lines on the ends of letters.)
- Select bullets or symbols to make items in a list show up and to clarify relative importance among items.
- Use color, boldface, or large type to differentiate among levels or to make important items stand out.

Figure 3.20

Text Visual



**Steps in developing text slides**

1. Select a background image
2. Select colors for text, back-, and foreground
3. Type in text
4. Pick a "build" effect
5. Add flourishes as appropriate

- Keep the lettering style for titles, legends, tables, and other illustrations consistent.
- Use no more than three type sizes in a single visual. More than three becomes too complicated.

In summary, you can choose from many types of visual support, but you need to know the rules for preparation and design. Learn which support is best for certain types of data; see Table 3.3 for a comparison of the support types by strengths and weaknesses. You also need some common sense. It is easy to allow visual support to become complicated, particularly when you are working with involved data. Figure 3.21 illustrates a complex graph that shows the timed steps of building an ocean-going vessel.

## When to Use Visual Support

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As we mentioned before, visual support can improve most written and spoken interpersonal communications. Because visual support has the ability to enhance involvement, understanding, and retention, it is used in written business reports, procedures, statements, proposals, feasibility studies, memos, and letters. Oral communications, such as individual and group presentations, speeches, seminars, training sessions, and briefings also are enriched with visual support.

When should support be used within the oral or written message? As it is needed. Visual support is support, not just entertainment. There are precise moments that call for visual support, at which point you would naturally use some visual. However, because visuals do have some value in garnering attention and in breaking up long blocks of text or extended periods of less-interesting information, you may be able to position them at a place or time when you need to rouse your audience.

As you decide whether to use visual support with your written or spoken communication, ask yourself these three questions:

1. Does the support increase efficiency?
2. Does the support increase effectiveness?
3. Does the support increase impact?

Efficiency reduces reading or listening time; effectiveness enhances understanding; and impact emphasizes the impression.<sup>8</sup> Your visual support should increase at least one of these qualities. If not, don't use it.

Within business reports, illustrations follow their discussion in the text. If an illustration is small—one-half page or less—it may be placed on the same page as text, with the text above or below. A larger illustration requires its own page. A separate page illustration should be placed on the first page following its mention in the text. The text will run on from its mention of the figure to the bottom of the page. The next page will be the illustration, and the page after that picks up the text. If the illustration requires a horizontal display, place it landscape (side-ways) in the report so it is read from the outside edge rather than across the binding. Illustrations also can be placed in appendices at the end of a report. Rules for the preparation of illustrations described in this section apply.

Table 3.3

Visual Support Classification System

Visual	Strengths	Weaknesses
Table	Shows precise numerical data	Tedious to prepare; slow to show relationships
<b>Graph</b>		
Line	Best for showing trends	Too many lines can be confusing; about 4 lines maximum
Bar	Best for comparisons; can be horizontal, vertical, segmented, clustered, or bilateral	Often incorrectly drawn; about 12 bars maximum
Pictograph	Visually interesting	Can be less immediately obvious than a bar graph; must stack numerous symbols rather than enlarge a single symbol
Geographic	Compares geographic divisions	Not drawn to scale
Pie	Popular; shows comparison of parts that total 100 percent	Wedges can be difficult to compare; too many wedges can be confusing
3-D	Visually exciting	Can be misleading
High-Low-Close	Best for financial data, such as stock prices	Complicated to prepare
Gantt	Excellent for scheduling events	Can be quite large and may need frequent updates
Scatter	Useful for statistical data and comparisons	Tedious; may require special software
<b>Chart</b>	Good for showing relationships; a bubble chart shows relative size or importance	Many items may require a large chart; a bubble chart is quite time consuming to prepare
<b>Drawing</b>	Beneficial for showing accurate representations of images, perhaps with standardized techniques	May require special knowledge or skills to prepare
<b>Diagram</b>	Best for illustrating flows; a Venn diagram efficiently shows overlaps of parts	May not accurately reflect relative importance of parts
<b>Map</b>	Shows geographic data	Relevant data can change over time
<b>Photograph</b>	Excellent for portraying pictures	Requires photographic ability or equipment
<b>Text</b>	Focuses attention on key words or phrases	Requires careful planning
<b>Videotape</b>	Shows motion; captures events, displays color	Requires special equipment to create and exhibit; carries high expectations by audience



In oral presentations, visuals supplement or complement spoken words. They generally are shown concurrent with verbal descriptions when they are used to explain or illustrate. Visuals may precede oral comment for striking effect or attention value. They may follow a description to emphasize a point or summarize.

Critical skills for effective communication, then, include knowing both the value of visual support and the formal and informal rules for when to use that support. You also need to know the media available to you and how to prepare the support.

## **Media Selection, Preparation, and Usage**

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Many media are available for transmitting visual images. Paper handouts, blackboards and electronic blackboards, flip charts, overhead transparencies, and slides are the most frequently used visual media. Other popular media include computers and videotape.

### **Paper**

By paper, we mean visuals that are prepared for delivery on paper, which probably will be prepared with a computer or typeset for inclusion in reports or used as handouts. Written words often carry a connotation of more formality than spoken words; this feeling of formality is even stronger with typeset words than computer-printed text, though the difference in perception between the two is narrowing. Therefore, if a sense of formality is desired, consider text visuals. Further, printed visuals usually carry the assumption that the audience may keep the paper for documentation or later review. The audience, of course, has the visual in its original form, not one subject to redrawing or interpretation.

One drawback to handing out visual aids prior to a presentation is that you lose control of when and how the audience receives your message. The audience is likely to page forward to sections later in your presentation and may even raise questions about that information before you are ready to discuss it.

### **Preparation**

While the cost of black ink on white paper is relatively low, adding color to a visual increases the cost. However, the cost of high-quality color printers and copiers is falling rapidly.

### **Usage**

If you use visual support in reports or handouts, number your illustrations. Give them titles that accurately describe the data and their relationships. Visual support should stand alone and require little explanation; the support should be carefully integrated into the presentation. Keep illustrations neat and attractive, but not at the cost of misrepresenting information. Proofread for accuracy. Aim for consistency across illustrations.

### **Blackboards**

Blackboards, now available in many forms, have several strengths: They are flexible, usually placed to be viewed by the entire audience, and can be changed easily. Colors add clarity and are especially easy to use with white boards.

### **Preparation**

Boards require little preparation beyond erasing them before use and perhaps putting complicated images or long passages on the board before a meeting. Make sure there are erasers and plenty of chalk or fresh markers.

### **Usage**

Boards are usually used to put information in front of an audience as it is generated by a speaker or from a discussion. In the haste of writing on the board and with an audience watching, many people write poorly. Take the time to write legibly. Avoid standing in front of what you are writing and what you have written. Erase unimportant messages. If what is being developed on the board requires dissemination, ask someone to take notes and duplicate them later.

Audio teleconferencing with an optimum eight to ten participants at each location has recently emerged as a mode of communication superior to a telephone conference call. Among the apparatus that enhance audio teleconferencing are a microphone that picks up only one voice at a time and the teleconferencing blackboard. Typically, two remote locations are connected by telephone lines, and each may have the teleconferencing blackboard and a television monitor. What is written on either board appears on both monitors simultaneously. Thus, as one group develops a forecasting model on the board, the second group can see it and modify it.

Yet another form of the blackboard is the electronic blackboard. This board is usually a white board that requires markers. Information that appears on the board can, at the touch of a button, be sent to a built-in photocopier. On some models, the screen rotates so that the message then appears on the back of it, and a clean screen appears to the audience. Again, the touch of a button returns the first side to the front.

### **Flip Charts**

Flip charts are not charts but, rather, large paper tablets. Speakers can mark on the sheets with colored markers and can remove sheets or flip to the next sheet with ease. Flip-chart tablets are usually supported on easels and can be moved easily. Expense is minimal, and no special skills are needed. Flip charts can help deal with unanticipated needs, such as recording an audience-developed list. Most uses of flip charts fall into one of two categories: as a visual aid for presenters, or as a way of displaying group thinking for problem-solvers or project planners.<sup>9</sup>

The impact of flip-chart visuals often suffers, however, from illegible writing, too many abbreviations, sloppiness, or audience frustration with someone slow at writing or drawing. Because most tablets are about three feet by two feet, viewers must be relatively close. You can't erase images; mistakes must be redrawn, crossed out, or ignored. See Figure 3.22 for a typical flip-chart image.

### **Preparation**

Speakers can overcome some of the disadvantages of flip charts if they can plan what images will be needed and can draw or print them beforehand. The corners of pages can be coded or stick-on flags can be used so the speaker can quickly flip to the correct sheet. Most audiences do not look unfavorably on this planning step. If there is reason for extemporaneous drawing or writing during a presentation,