Technical Communication

CREATING VISUAL ELEMENTS

Creating Visual Elements

- Decide
  1. Where a visual aid is needed
  2. What type it should be

- Design Goals
  - Relevant
  - Clear
  - Truthful

- Two stages
  1. Design rough copy
  2. Produce finished product

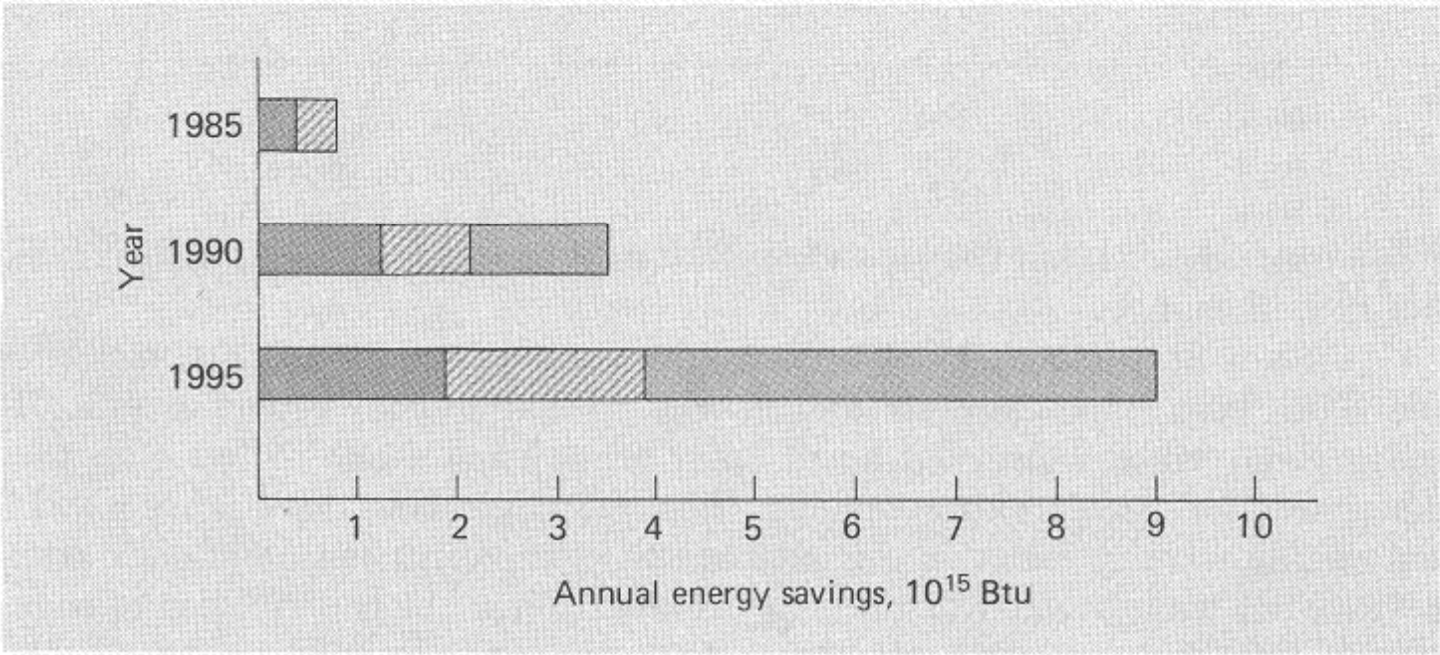
Making a Visual Aid Relevant

Table 9-1 ❑ EXPECTED ANNUAL SAVINGS FROM SOLAR ENERGY

	Annual Savings (10^{15} Btu)		
Year	Residences	Total Energy Systems	Solar-Based Electric Power Plants
1985	0.4	0.24	—
1990	1.2	0.92	1.4
1995	1.9	1.9	5.3

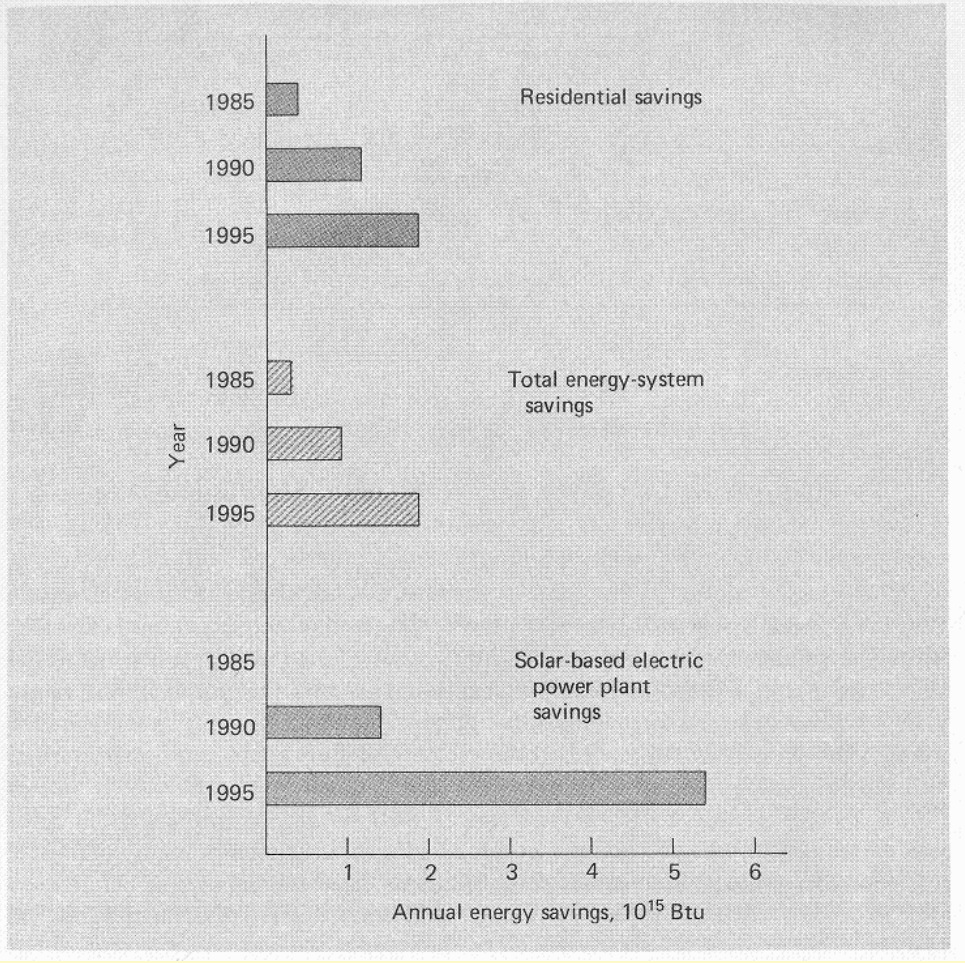
Making a Visual Aid Relevant

Figure 9-1 ❑ ANNUAL ENERGY SAVINGS FROM SOLAR ENERGY: VERSION 1



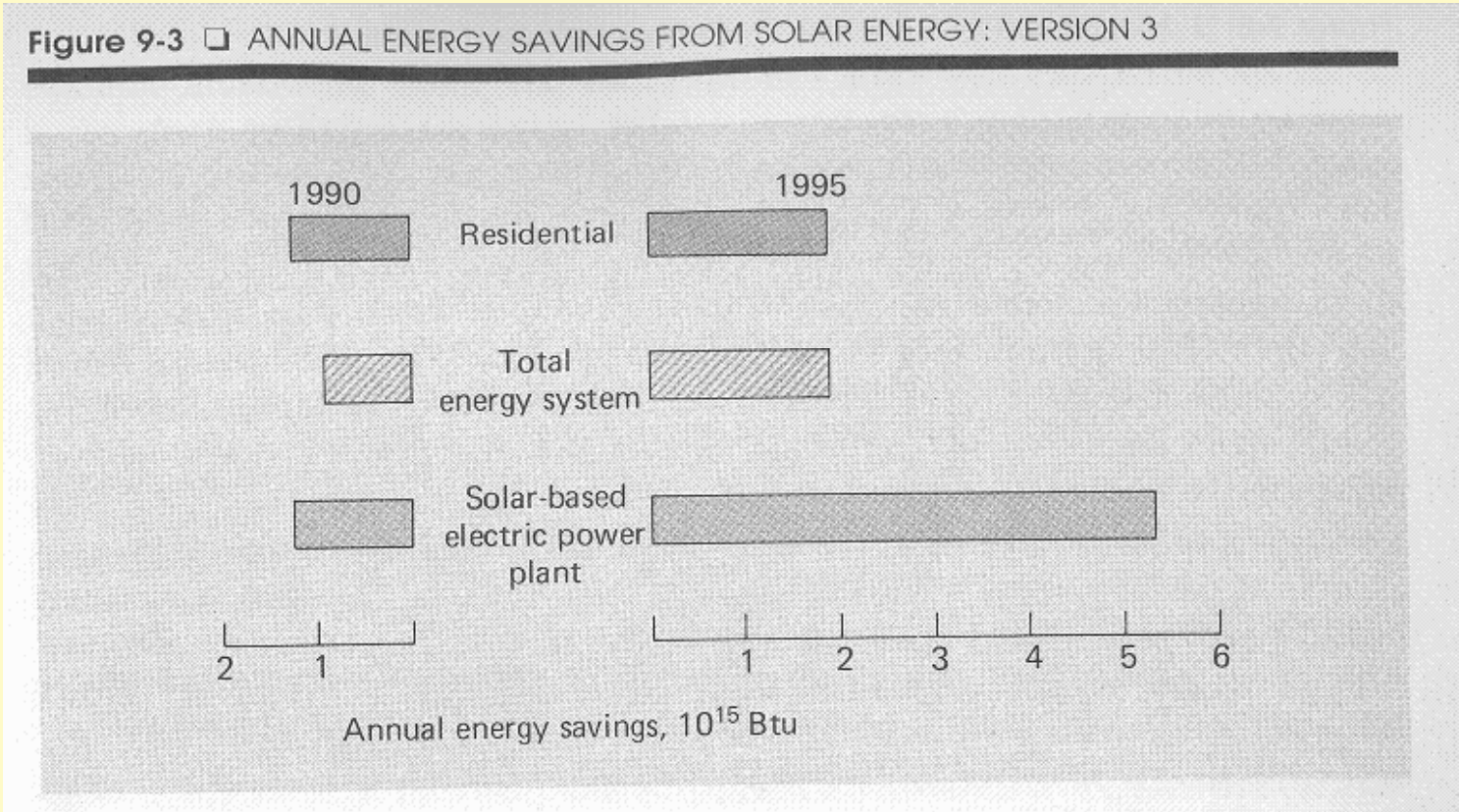
Making a Visual Aid Relevant

Figure 9-2 ❑ ANNUAL ENERGY SAVINGS FROM SOLAR ENERGY: VERSION 2



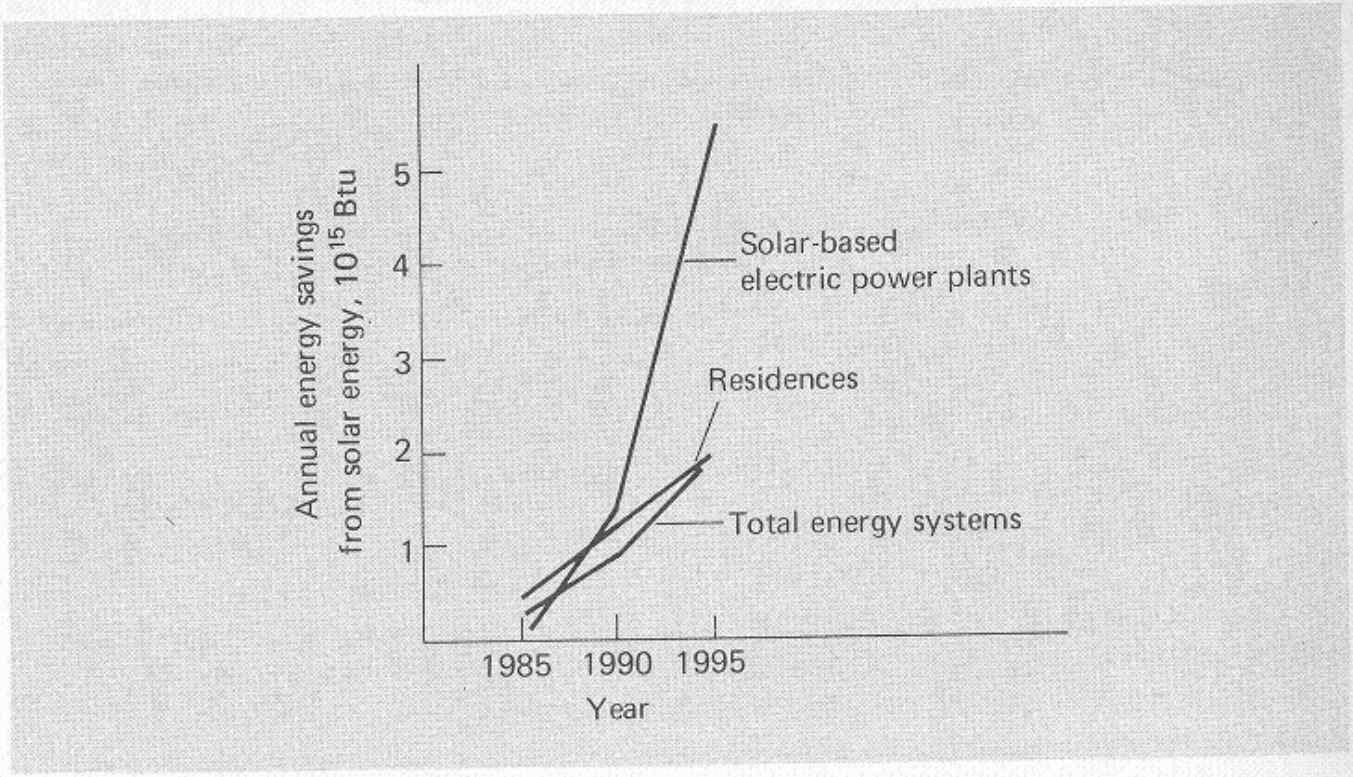
Making a Visual Aid Relevant

Figure 9-3 ❑ ANNUAL ENERGY SAVINGS FROM SOLAR ENERGY: VERSION 3



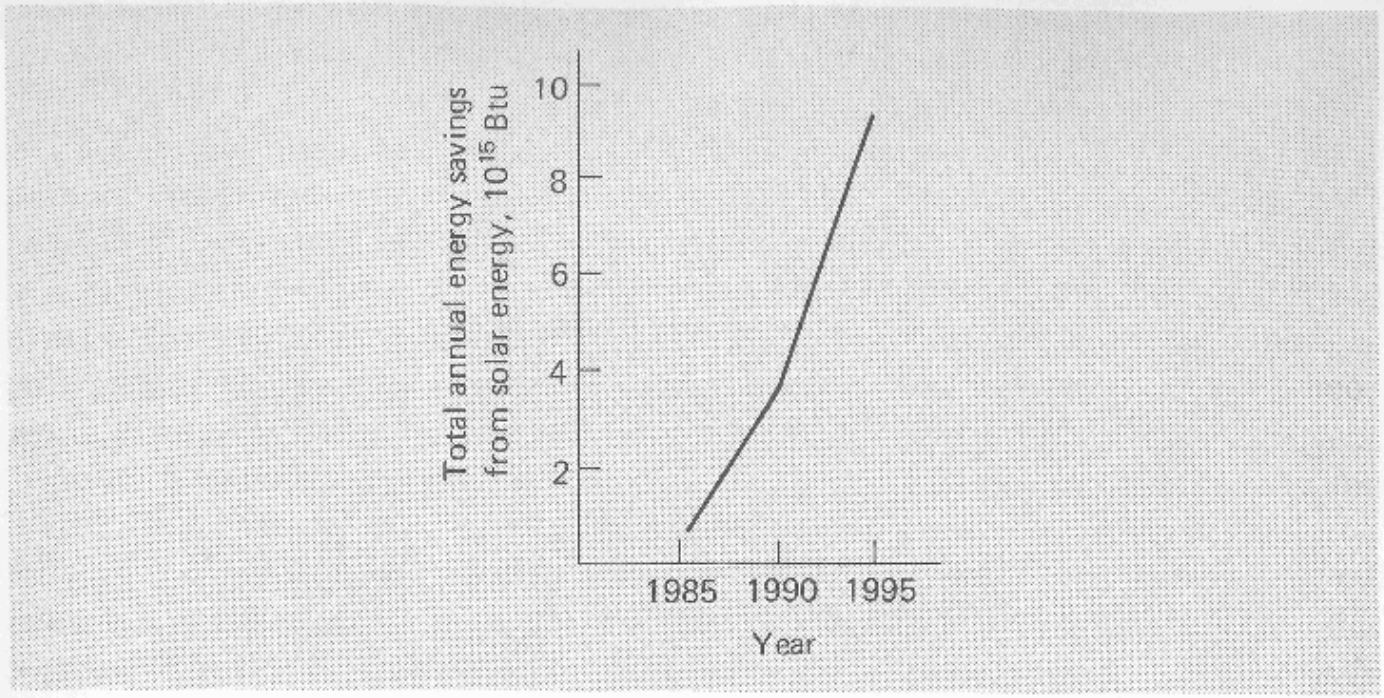
Making a Visual Aid Relevant

Figure 9-4 ❑ ANNUAL ENERGY SAVINGS FROM SOLAR ENERGY: VERSION 4



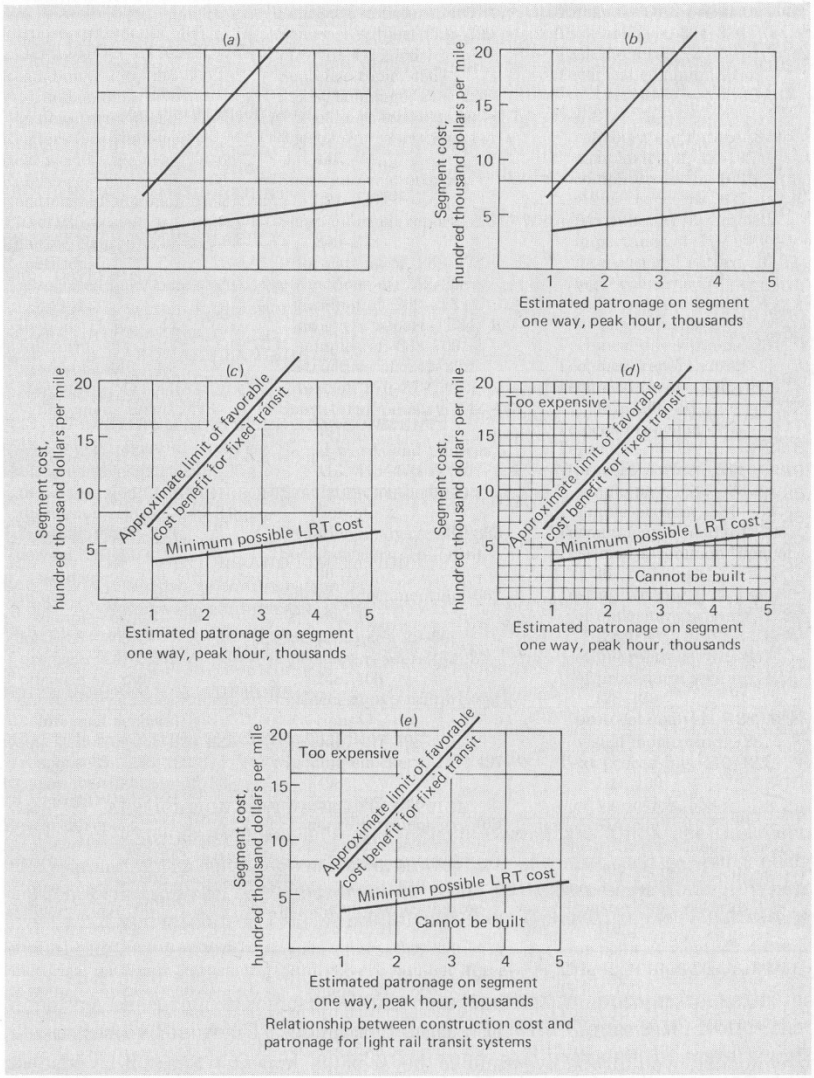
Making a Visual Aid Relevant

Figure 9-5 ❑ ANNUAL ENERGY SAVINGS FROM SOLAR ENERGY: VERSION 5



Making a Visual Aid Clear

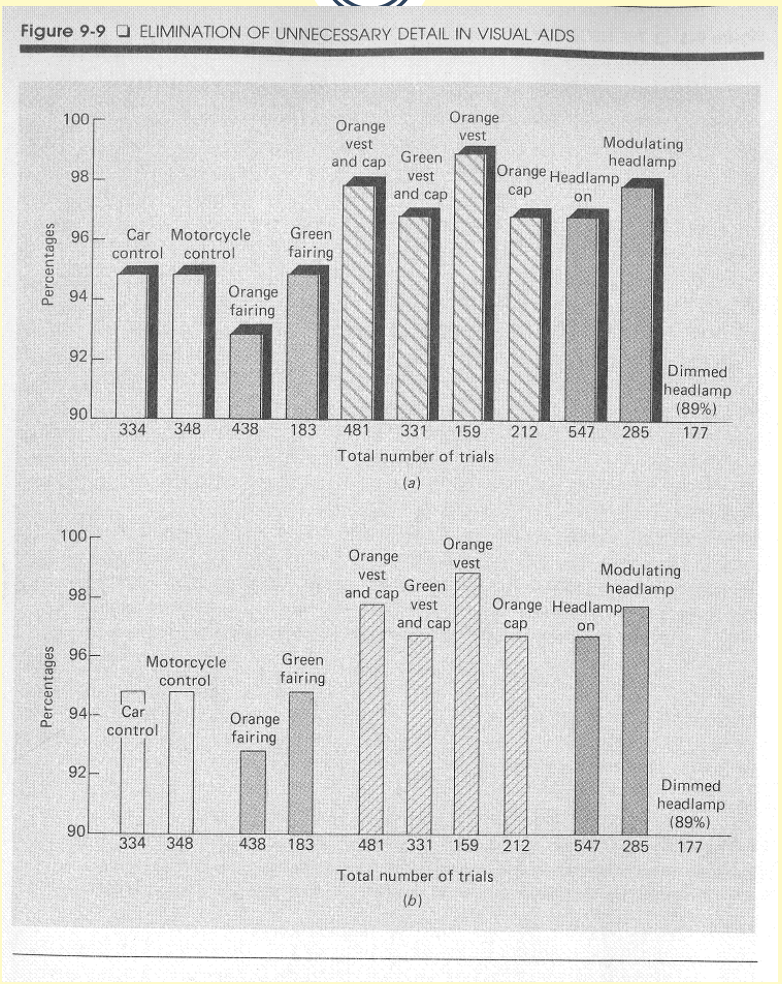
Figure 9-8 ❑ THE NECESSITY OF LABELS, HEADINGS, AND TITLES IN VISUAL AIDS



Relationship between construction cost and patronage for light rail transit systems

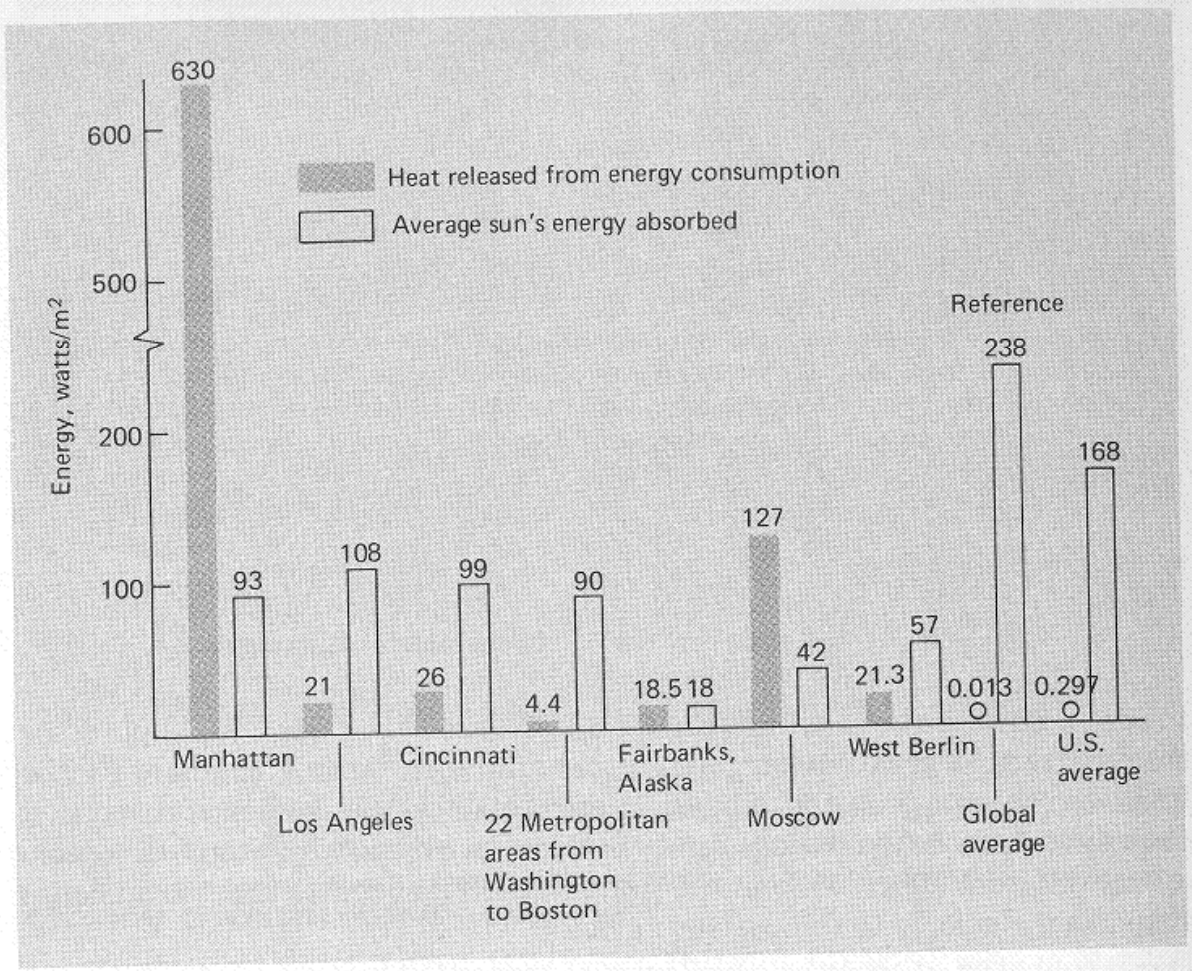
Making a Visual Aid Clear

Figure 9-9 ❑ ELIMINATION OF UNNECESSARY DETAIL IN VISUAL AIDS



Making a Visual Aid Clear/Truthful

Figure 9-10 ❑ USE OF WHITE SPACE TO SHOW STRUCTURE IN VISUAL AID DATA
[From David C. White, "The Energy-Environment-Economic Triangle," *Technology Review* 76(2) (December 1973), p. 18.]



Text as Visual Aid

- Text can be made more readable by organizing it hierarchically.
  - This is actually a type of visual aid
- Designing Text
  - Exploit the parallelism in the text
  - Headers/Sub-headers should be emphasized (bold, ect).

2.3 CBIR Ranking Methods

The second component we use to classify CBIR systems is how they construct the ranking function. We divide these into *global* and *local* methods.

Global Ranking Methods use all "meaningful" portions of the image in the ranking function. Observe that while salient point based methods only use the portions of the image around the salient points, if the ranking method is based upon the number of salient points that match those of the query image, then it is a global method since all portions of the image around the salient points are used in ranking the images. These methods can further be divided into two sub-categories.

Fixed Similarity Measure: A non-adaptive similarity measure is defined over the feature vector(s) which is then use to rank the images from the most to least similar with respect to the query image. Such a method is typically used when there is just a single query image (and no relevance feedback is used). For example, a cosine similarity measure can be used between the vectors defined by a color histogram. Some very sophisticated similarity measures have been defined. For example, the integrated region matching (IRM) algorithm [14] used within SIMPLIcity [32] computes a global similarity measure based on a weighted sum of region-to-region distances with the weights selected to minimize the distance while ensuring that all regions are matched.

Trained Similarity Measure: A machine learning algorithm uses labeled images (generally obtained via relevance feedback) to improve the performance of the ranking algorithm by optimizing parameter value(s) of a parameterized similarity measure. For example traditional relevance feedback often re-weights the features when the image is represented using a single feature vector such as a color histogram [4, 12, 13, 27]. More recently such approaches have been extended to representations using multiple feature vectors. ROI and Spatial Layout [30] both partition the image into pre-defined blocks and employ standard relevance feedback at the block level using the spatially corresponding blocks of the feedback images. In ROI, the user is asked to draw a bounding box around the region of interest in the query image which is used to weight each block relative to how much of its area is in the bounding box.