

GRAPHIC CONSTRUCTION

6.1 Strategies

Broad steps in an analysis:

- A preliminary (mainly graphical) exploration of the data
- A deeper exploration based on the formulation, fitting and assessment (mainly graphical) of explicit models.
- Weaknesses or failures in a model are addressed by modifying and reassessing the model in an *iterative process* which continue an adequate model is obtained.

Important elements of Graphic Construction:

- Iteration. Begin with a basic high-level function and then make a sequence of modifications by changing the arguments to this function and incorporating low-level functions to produce the desired graphic.
- Purpose. Graphics should always be constructed for a clear purpose and, to be successful, should achieve that purpose.
- Comparison. The best graphics are likely to be those that facilitate and encourage *comparison*.
- Interpretability
- Visual Phenomena. Graphics exploit the power of visual phenomena.

6.2 Principles of Graphic Construction

- Presentation graphics versus Analysis graphics.

Four basic principles:

1. Graphics should have substance.
2. Graphics should be based on good statistics.
3. Design aspects should be appropriately chosen to reflect balance, proportion and a sense of scale.
4. Graphics should be simple.

Errors in Graphical Construction

- a) Misrepresentation of data
- b) Redundant dimensions
- c) Excessive Decoration
- d) Multiple axes on the same plot
- e) Gratuitous meddling with convention

6.3 Visual Perception

Section 6 - Graphics

1. Effect of different syntax
2. Effect of symbol choice
3. Effect of scale
 Organisation: (b) and (c) are alternative perceptions of (a)
4. Effect of familiarity of emergent forms
5. Effect of continuation
6. Figure-Ground phenomenon
 (vase or face)
7. Differences between ordinates (a)
 Precise relative magnitudes (b) and (c)
8. Effect of perception of dimension
 Projection of cubes
9. Effect of intention: silhouette.
10. Effect of loose-jointedness: are arcs I and II on the same side? Escher.
11. Distortions