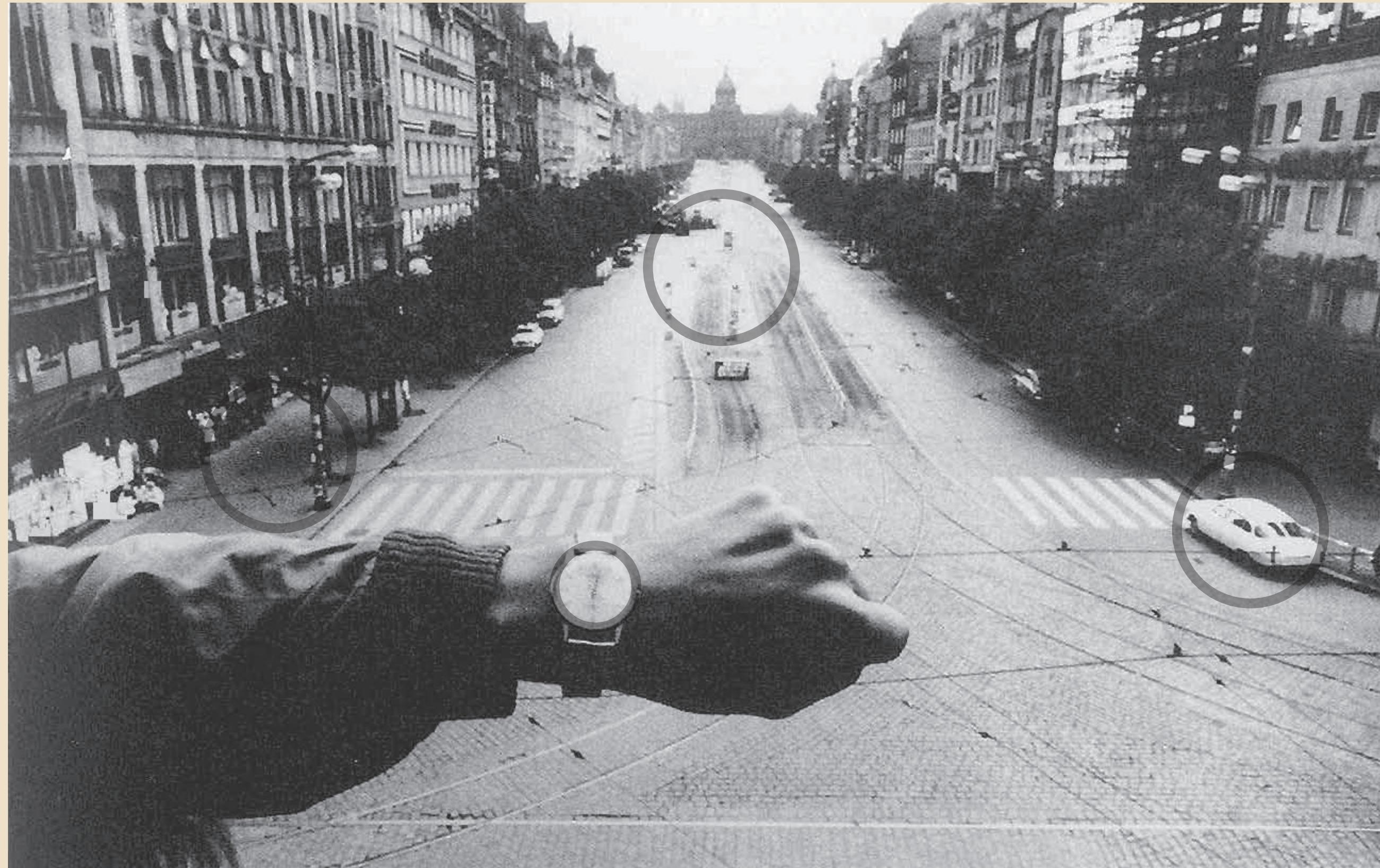


Image and Quantity

- 1.Direct Labels—numerically labeled grids
- 2.Encoding—color scale
- 3.Self-representing Scales—objects of known size



“Our thinking is filled with assessments of quantity, an approximate or exact sense of number, amount, size, scale.”

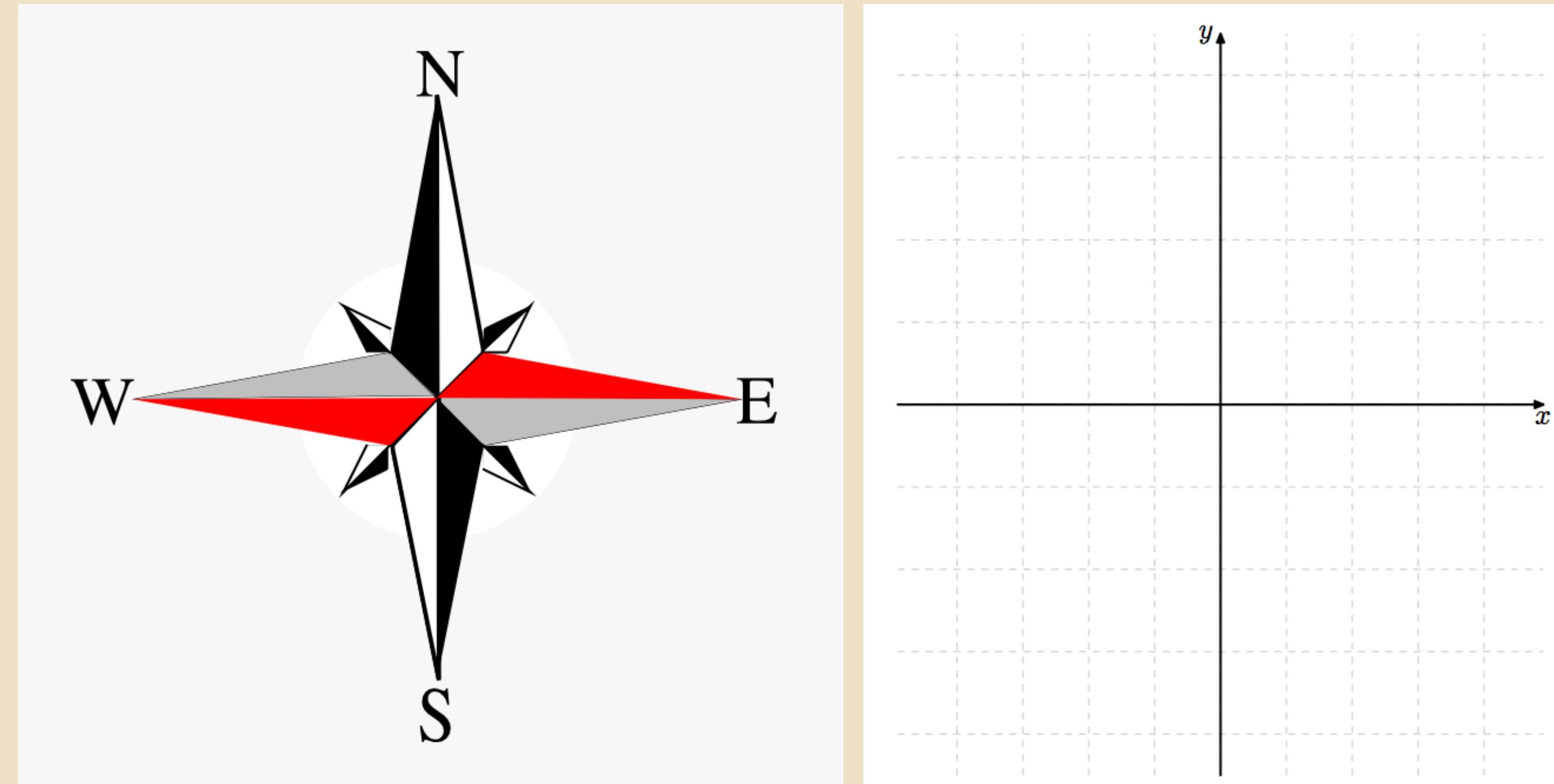
- 1.Visual Location—latitude and longitude
- 2.Areal Extent—surface coverage



“...quantified measures of location...”

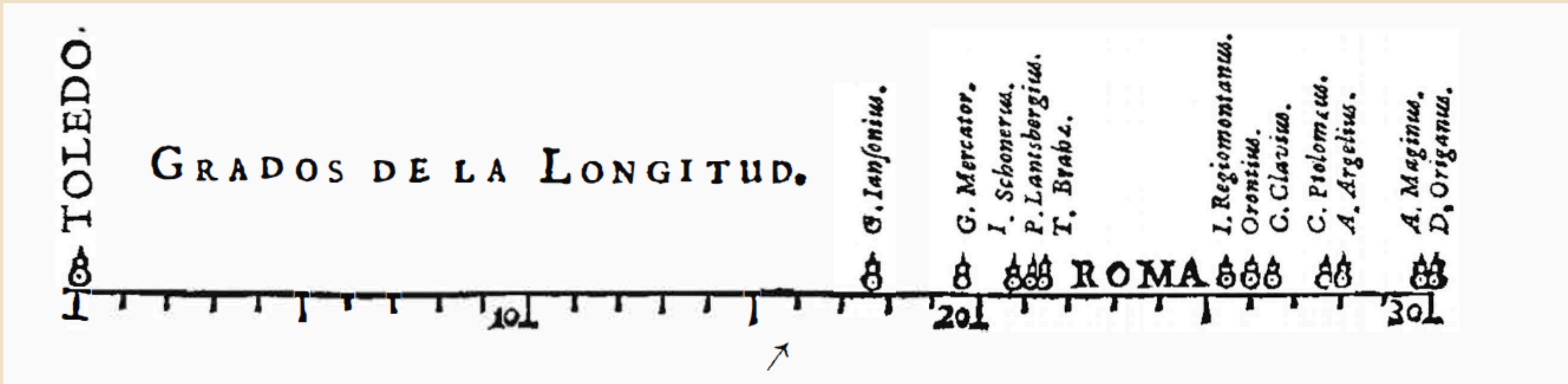
From Specific Spatial Scales to Abstract Variables

—depicting relationships between any measured quantities



“...replacing the map’s natural spatial scales with abstract scales of measurement not based on geographic analogy.

1. Spatial Arrangements of Quantity
2. Display of Common Measurements



1644—This graph shows 12 diverse estimates of the distance between Toledo and Rome.

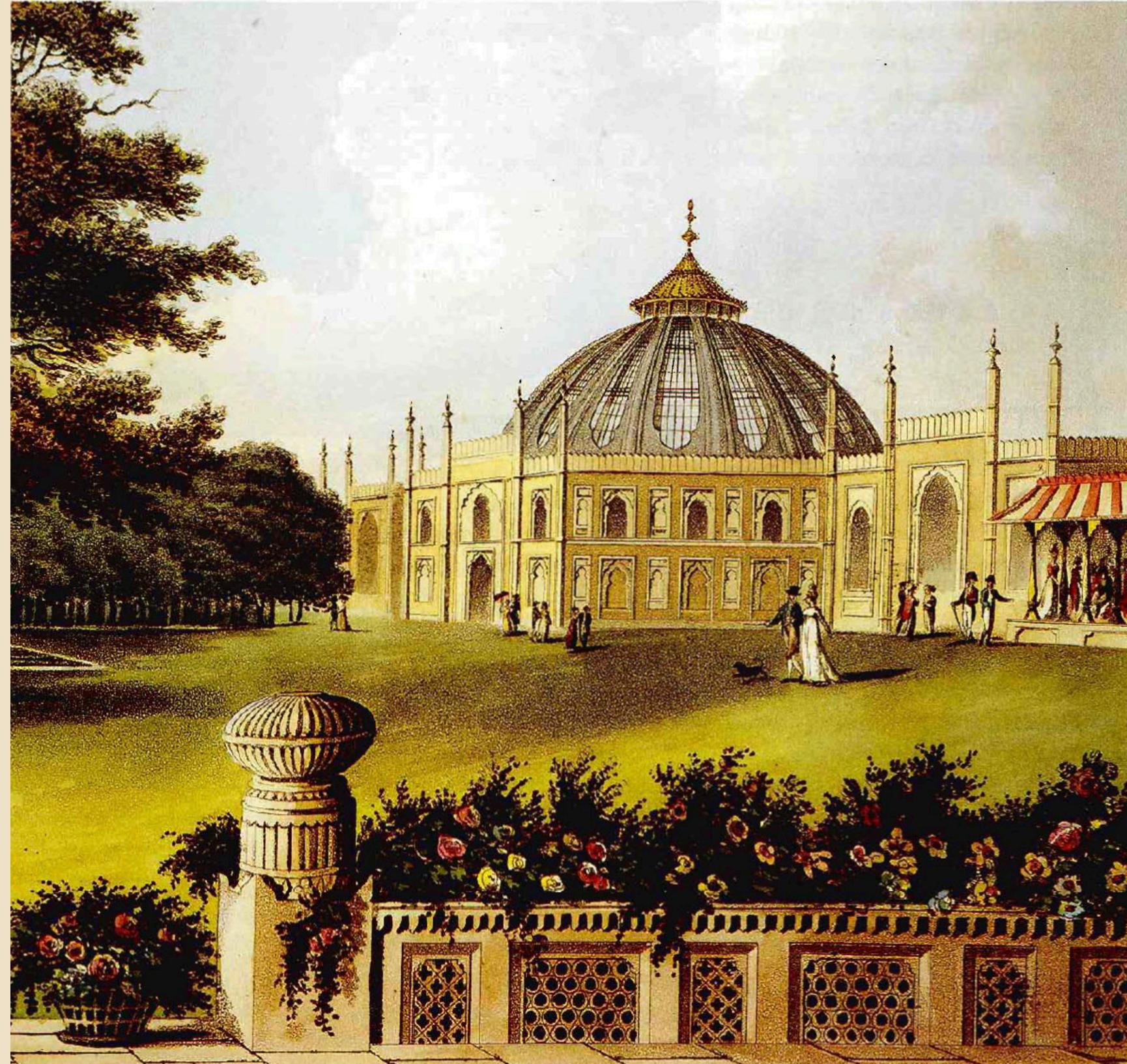
General Graphical Grids

—systematic relations between quantities

“We have in general two variable quantities, x , y , which will be collated with one another by observation, so that we can determine for each value of x , which may be considered as an abscissa, the corresponding ordinate y .”

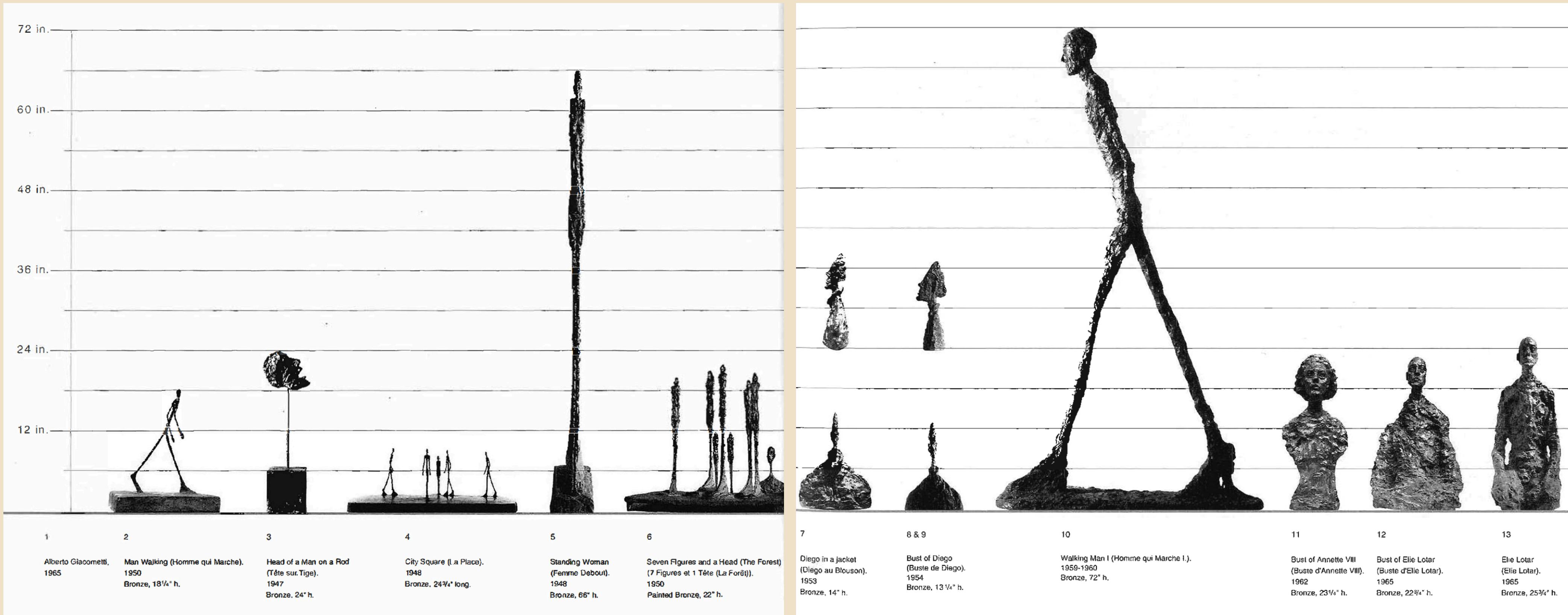
1765—J.H. Lambert describes that the two-dimensional plane was quantified, available for any measured data

Shift in Scaling and Visual Cheating



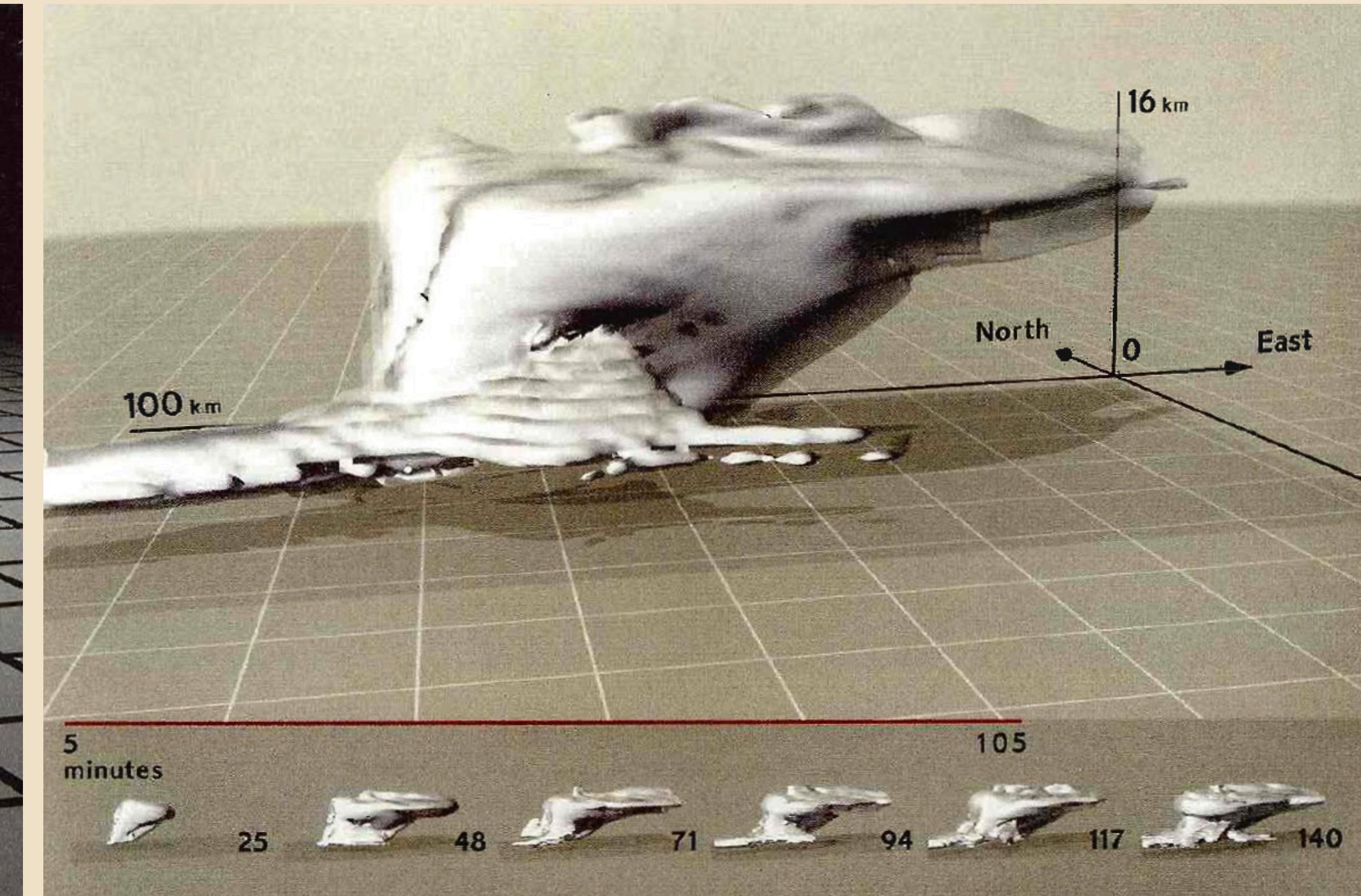
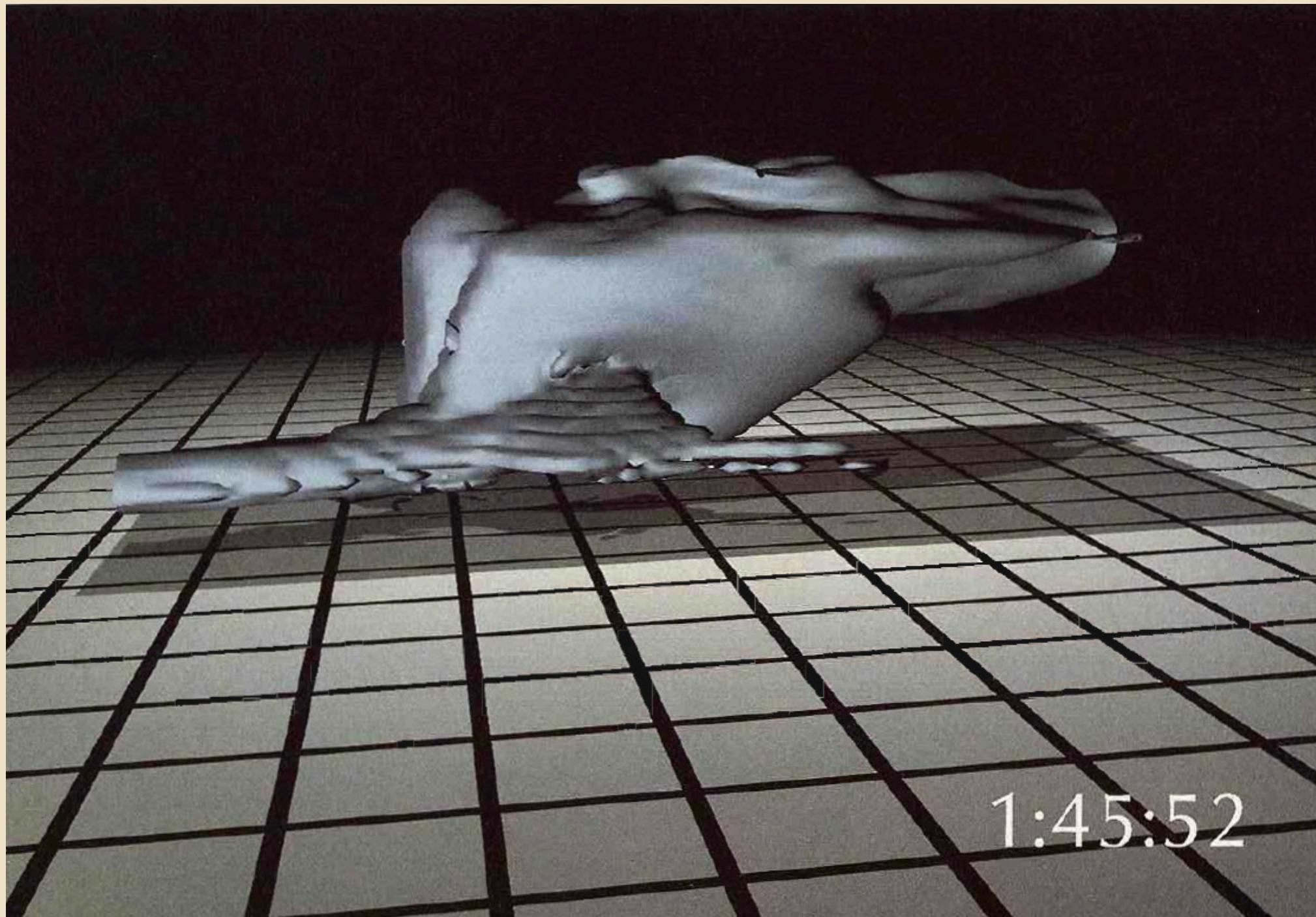
"In the plan at left, the designs of the flap, the pole-people, and the integrated text are all ingenious and delightful—but the integrity of the work is compromised by persistent visual cheating."

Tackling Dequantification—Utilizing A Common Scale



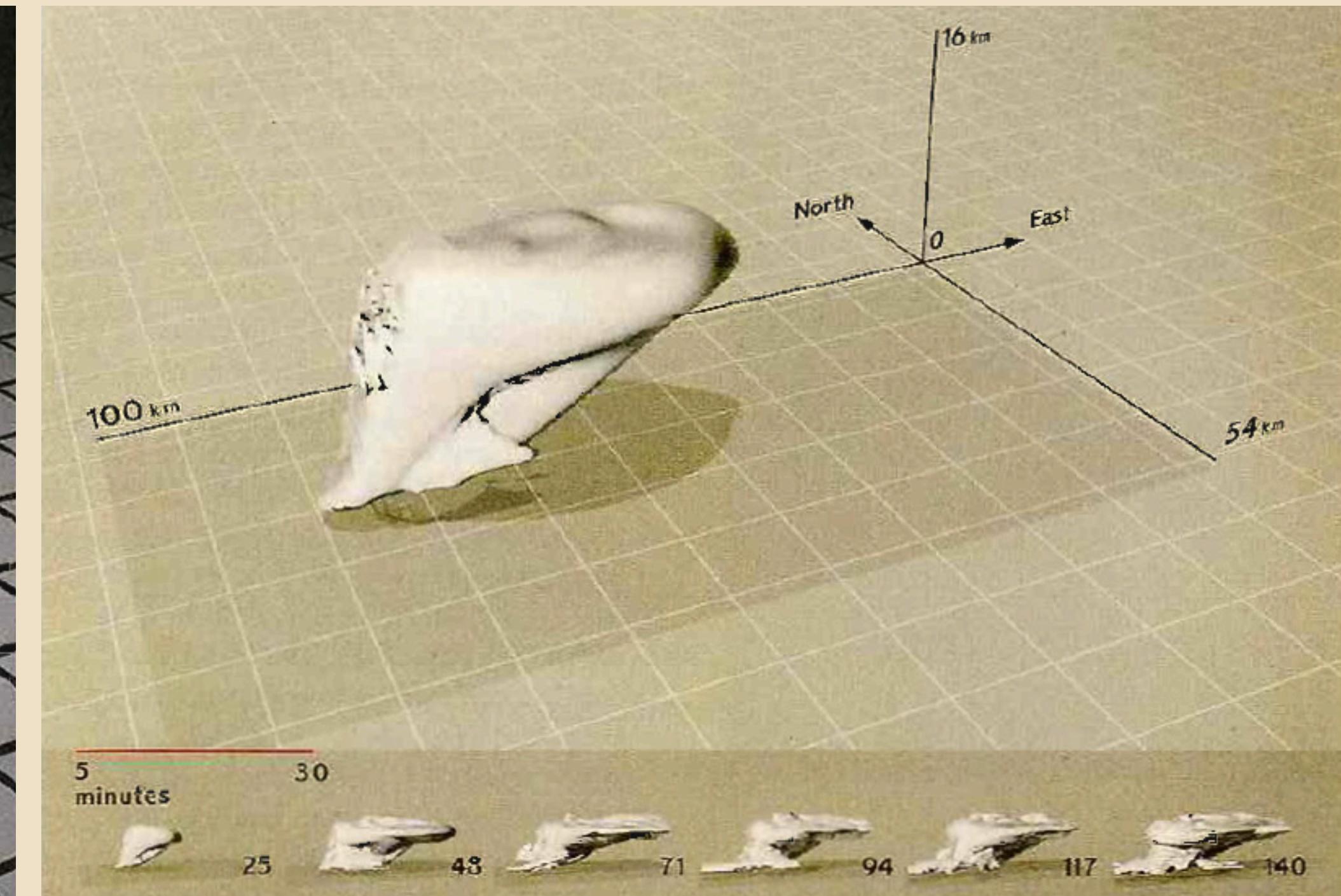
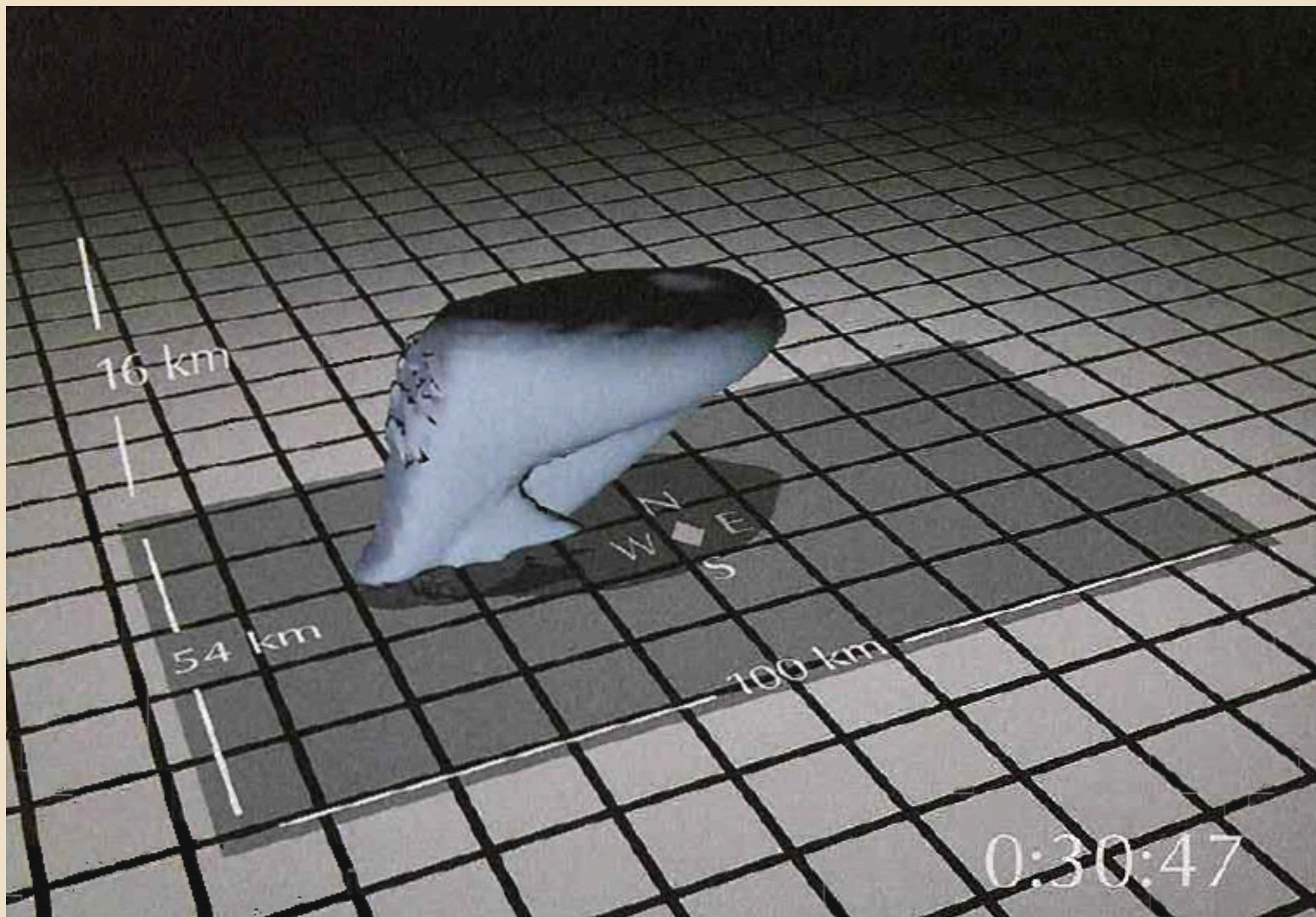
"Partial visual knowledge about size of a work can be conveyed by maintaining a consistent relative scale throughout an entire set of reproduced images..."

Tackling Dequantification—Adding Complete Scales and Labels



“Restoring quantitative order, my redesign above locates the storm within a three-dimesional tripod of scales and directional arrows.”

Tackling Dequantification—Adding Complete Scales and Labels



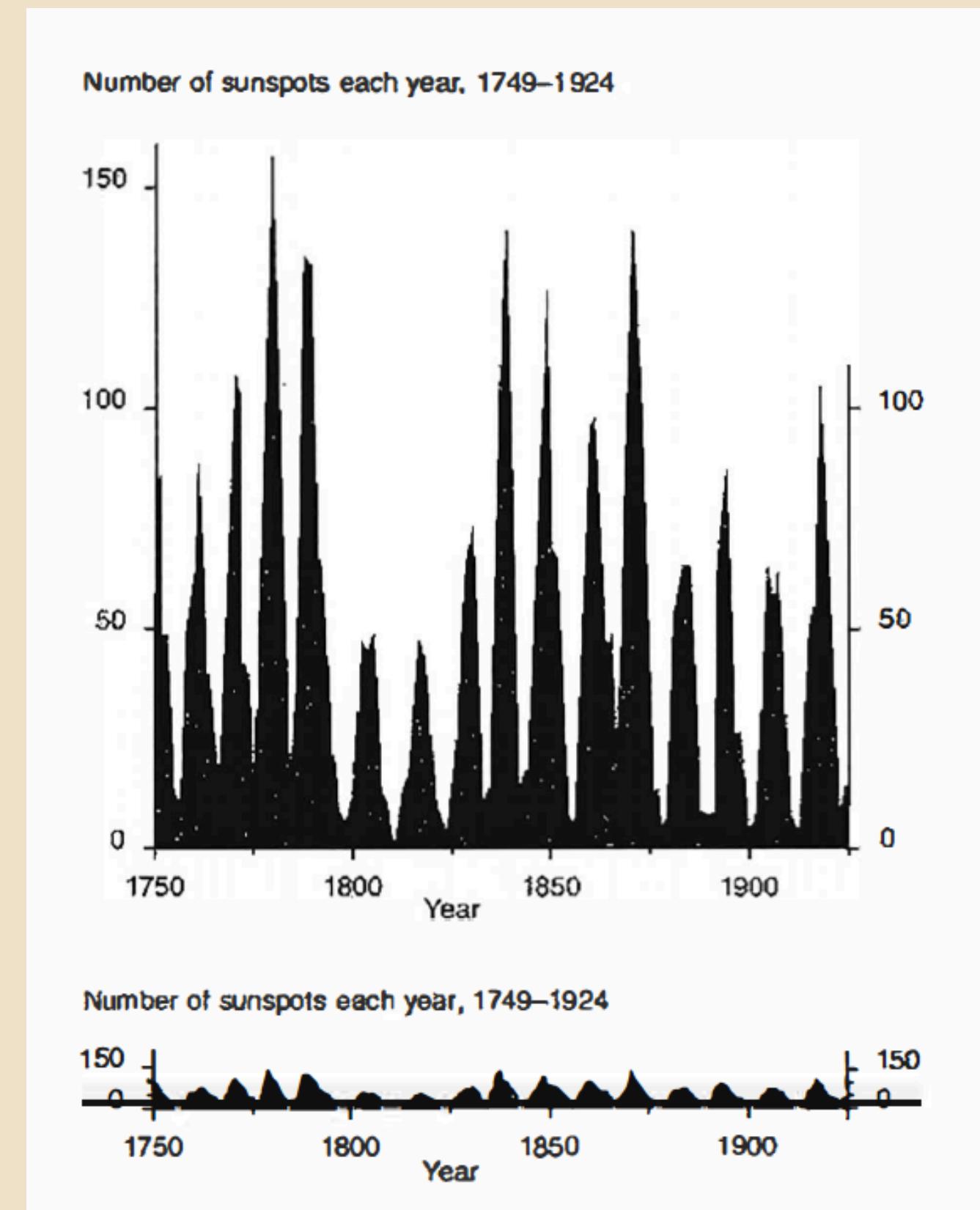
“Stretching the vertical sometimes helps to depict natural scenes, but such shifts in scaling should be persistently made clear to viewers.”

Terrific Television, Lousy Science



"One way to enforce some standard of truth-telling is to insist that the innocent, unprocessed, natural image be shown along with the manipulated image, and, further, that the manipulators and their methods be identified."

Tackling Dequantification—Transforming Scales



"And in both two-and three-dimensional design, it is often useful to see images and objects at approximately an order of magnitude smaller and larger than actual size"