Tufte's principles of excellence and integrity

In Chapter 1 of *The Visual Display of Quantitative Information*, Tufte discusses Graphical Excellence. He opens with the following list of what graphical displays should do:

- Show the data
- Induce the viewer to think about the substance, rather than about methodology, graphic design, the technology of graphic productions, or something else.
- Avoid distorting what the data have to say
- Present many numbers in a small space
- Make large data sets coherent
- Encourage the eye to compare different pieces of data
- Reveal the data at several levels of detail
- Serve a reasonably clear purpose: description, exploration, tabulation, or decoration
- Be closely integrated with the statistical and verbal descriptions of a data set.

He concludes with the following *Principles of Graphical Excellence*:

> Graphical excellence is the well-designed presentation of interesting data—a matter of substance, of statistics, and of design.
>
> Graphical excellence consists of complex ideas communicated with clarity, precision and efficiency.
>
> Graphical excellence is that which gives to the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space.
>
> Graphical excellence is nearly always multivariate.
>
> And graphical excellence requires telling the truth.

In Chapter 2, he presents the following *Principles of Graphical Integrity*:

> The representation of numbers as physically measured on the surface of the graphic itself, should be directly proportional to the numerical quantities represented.
>
> Clear, detailed and thorough labeling should be used to defeat graphical distortion and ambiguity. Write out explanations of the data on the graphic itself. Label important events in the data.
>
> Show data variation, not design variation.
>
> In time-series displays of money, deflated and standardized units of monetary measurement are nearly always better than nominal units.

> The number of information-carrying (variable) dimensions depicted should not exceed the number of dimensions in the data.
>
> Graphics must not quote data out of context.

He also introduces the Lie Factor, which is a ratio:

> (Size of the effect shown in graphic)/(size of effect in data)

In chapter 1 of Stephen Few's *Show Me the Numbers*, he states the following key purpose of quantitative displays:

> *To provide the reader with important, meaningful and useful insight*

And then quotes Tufte:

> *...above all else, show the data*