

5 Minute Guide: Graphic Design Principles for Information Visualization

Lev Manovich

softwarestudies.com

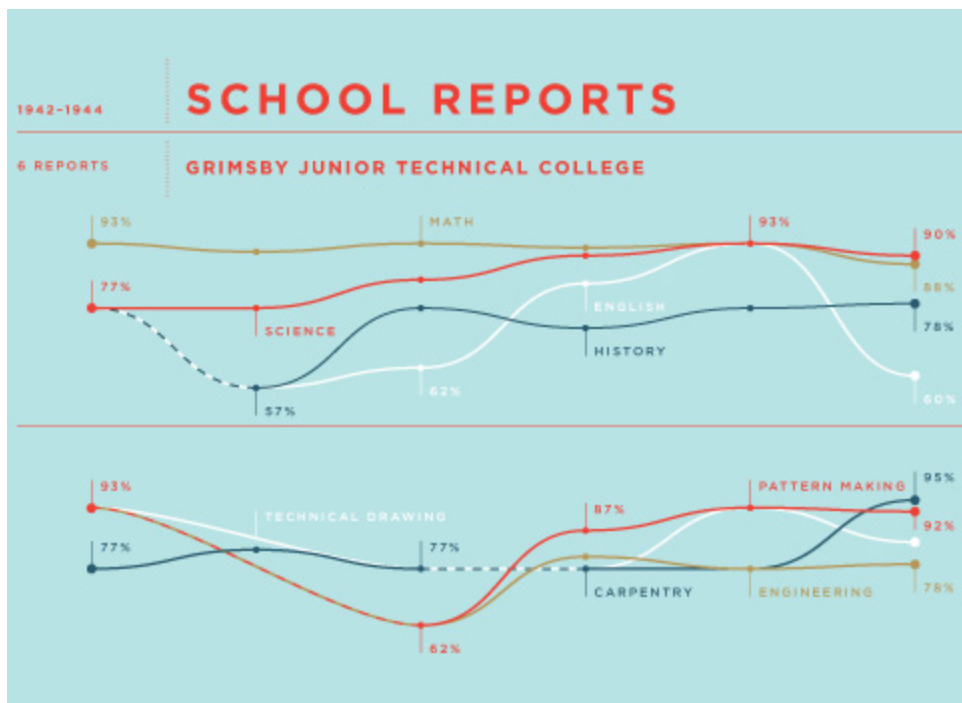
Version: 2/26/2012.

Over last few years, Information visualization has become of the key contemporary communication mediums and research techniques. But unless you went to design school, how can you create good looking designs such as the ones on these sites?

www.visualizing.org

feltron.com

(Note that I am not talking about visualization part itself - how to effectively translate data into visual representations, which visualization techniques to use when etc. - but about graphic design part, i.e. how to “style” your visualizations.)



A visualization from [2010 Annual Report](#) by Nicholas Feltron.

There are endless books and guides to graphic design, but they only work if you spend years practicing.

The purpose of this guide is to **reduce modern design** common sense to **a few essential algorithms**: mechanical principles which you should meticulously follow to arrive at a decent looking visualization design. Chances are you will not immediately come up with something as good as examples above right away, but at least you will start in the right direction.

I came up with these “algorithms” while teaching classes in visualizations to undergraduate students at UCSD during last four years. I noticed that every time we look at their homework, same problems come over and over, and I would give the same advice. So I decided to write it all down.

Here are my 7 algorithms for designing good-looking visualizations:

(If you study the visualization above which comes from [2010 Annual Report](#) by celebrated designer Michael Feltron, you will see all these principles at work)

1. Modern Design = systematic use of only a few options for each visual attribute:

Every information visualization design has a number of visual attributes. Common attributes include point, colors, line widths, font family, font sizes, locations of text blocks, etc. The single most important design principle is this: use only a few options for each attribute. For example, for your lines, use only maximum of two line widths. For font size, similarly use only two sizes: one for the title, one for the labels (for example). For color, use a palette of three or four colors; and so on.

2. Connect visual attributes with the semantics:

Connect these choices of attributes with the semantics of the visualization (i.e. what these visuals represent.) Each distinct visual option - a different line width, font size, a color, a position in a spatial grid, etc. - has to indicate different type of content. Don't simply introduce more options to make your design “pretty.”

3. Color:

Unless you are professionally trained, go ahead and use one of the numerous web sites which contain professional color palettes and color palette generators. Choose the one you like for your visualization and stick to it. Search for “**color palette**” or “**color palette generator**” to get to these sites.

4. Fonts:

Use no more than one [typeface](#) in your design, with only a few variations in size or style (two is better than three). Although this is just an example of algorithm 1, it's probably number 1 mistake beginners make - so I made it into a separate principle.

5. Grid:

Another key principle of modern design is the use of [grids](#). While they are less relevant when you create a single visualization, they become important when you start combining a number of visualizations together in a single design. Also use a grid when you are adding blocks of descriptive text to a visualization. (This is also a particular case of algorithm 1.)

6. Take away everything which is not essential:

A famous Japanese product designer said: “When I design, I take away until there is nothing left to take out.” When you design your graphs, ask yourself: do I really need to include labels in this graph? or grid lines? or axis lines? or ticks? Simplify, simplify, and simplify again.

7. Find an a well-designed visualization and apply its design to your own visualization:

For centuries young artists were learning craft by copying works of older masters.. Use this proven principles to both make well-designed visualizations while at the same time learning design. Find a visualization which contains graph(s) or other elements you need to design (for example, text legend) and apply its design to your own visualization.

Want to make sure that visualization you want to copy style from is actually well designed? Most of the visualizations collected at these well-known galleries/blogs is “good design”, so use them :

www.visualizing.org
infosthetics.com

Other key galleries/blogs with lots of good examples:

www.visualcomplexity.com
flowingdata.com
datavisualization.ch

Do not search Google for “best visualizations” or similar phrases - in my experiences often the “best” lists contain not well-designed visualizations.

Examples of great web site designs (for your own project or portfolio web site):

Once you made your good looking visualizations, you want to show them to the world. Check the design of the web sites of well-known visualization designer Ben Fry, software artist Casey Reas, or product/space designer Tokujin Yoshioka for excellent examples of modern design aesthetics:

Casey Reas <http://benfry.com/>
Ben Fry <http://reas.com/>
Tokujin Yoshioka <http://www.tokujin.com>

