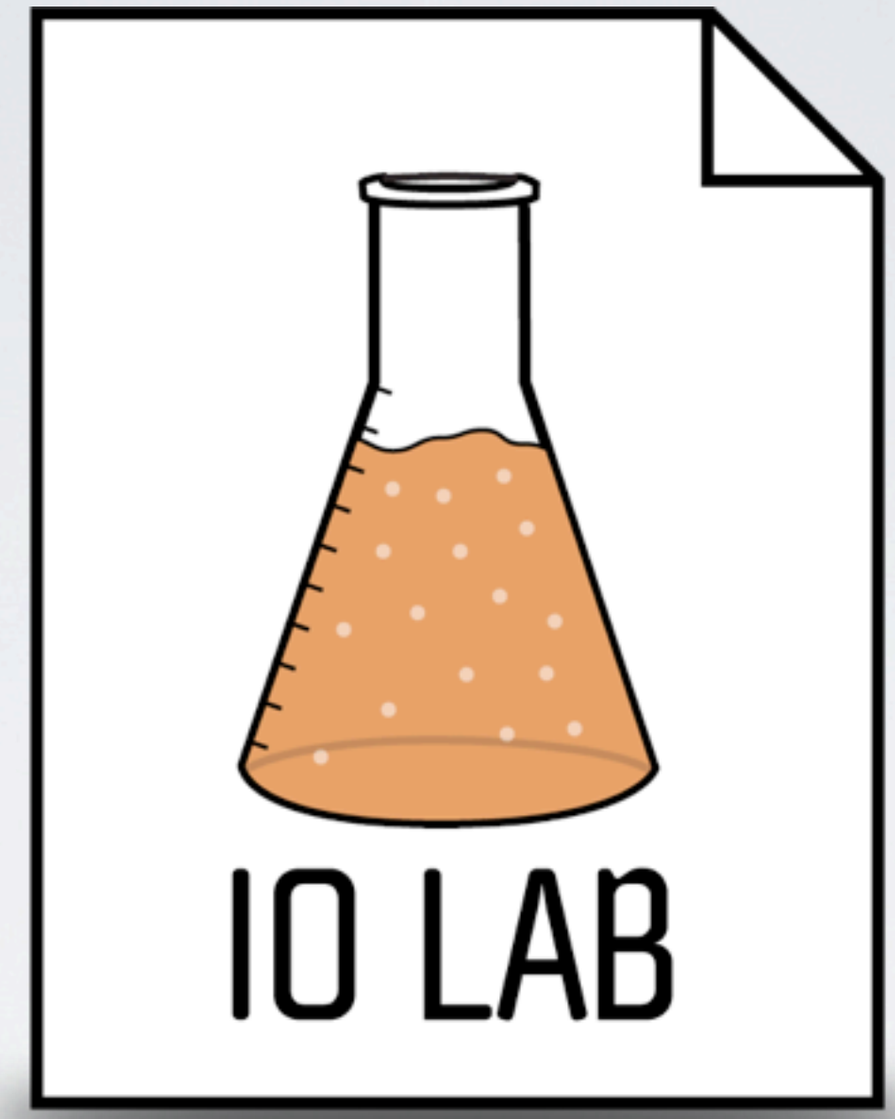
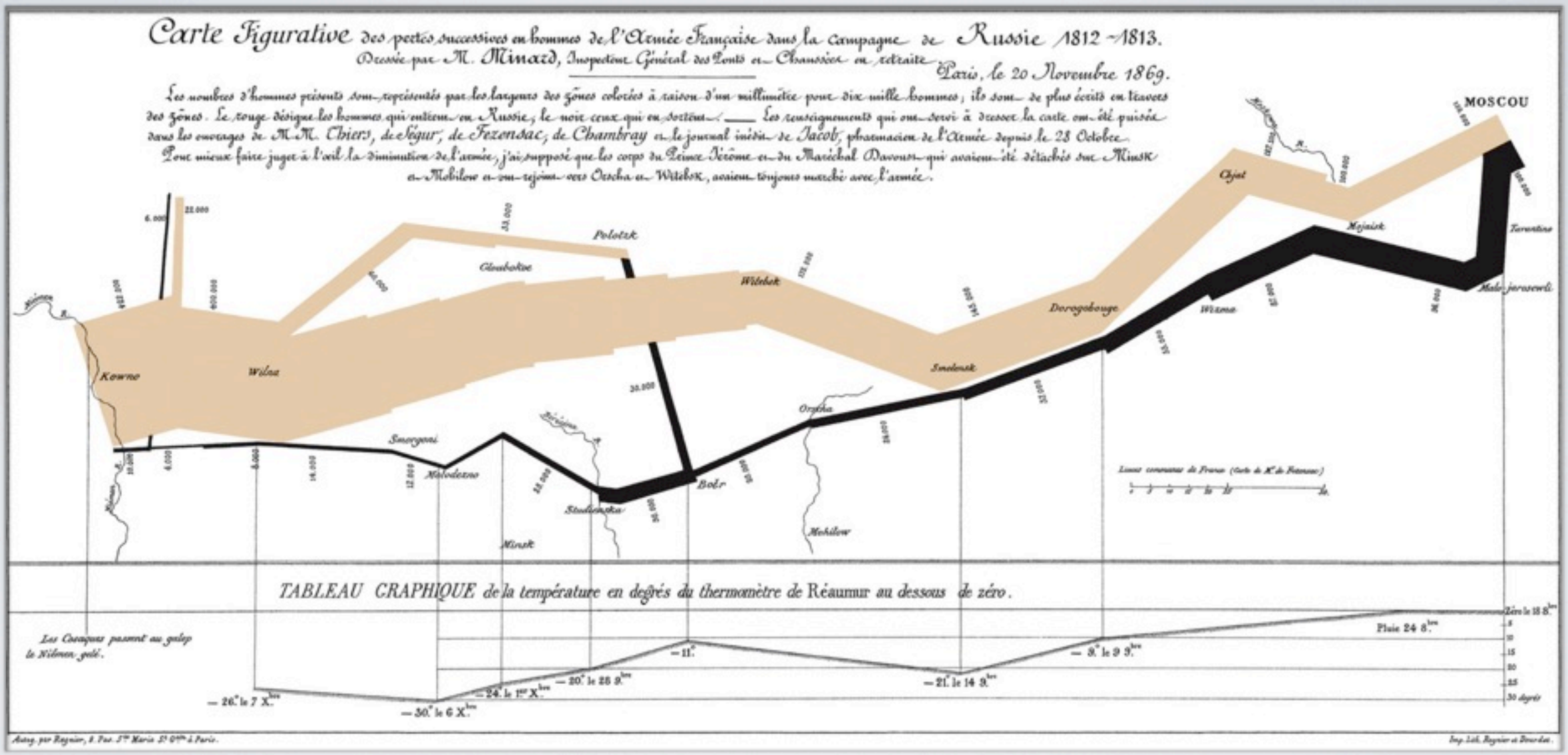


INFORMATION ORGANIZATION LAB

LAST TIME ON IOLAB



VISUALIZATION

Minard's Napoleon

VISUALIZATION GOALS

Exploration

Communication

KINDS OF DATA

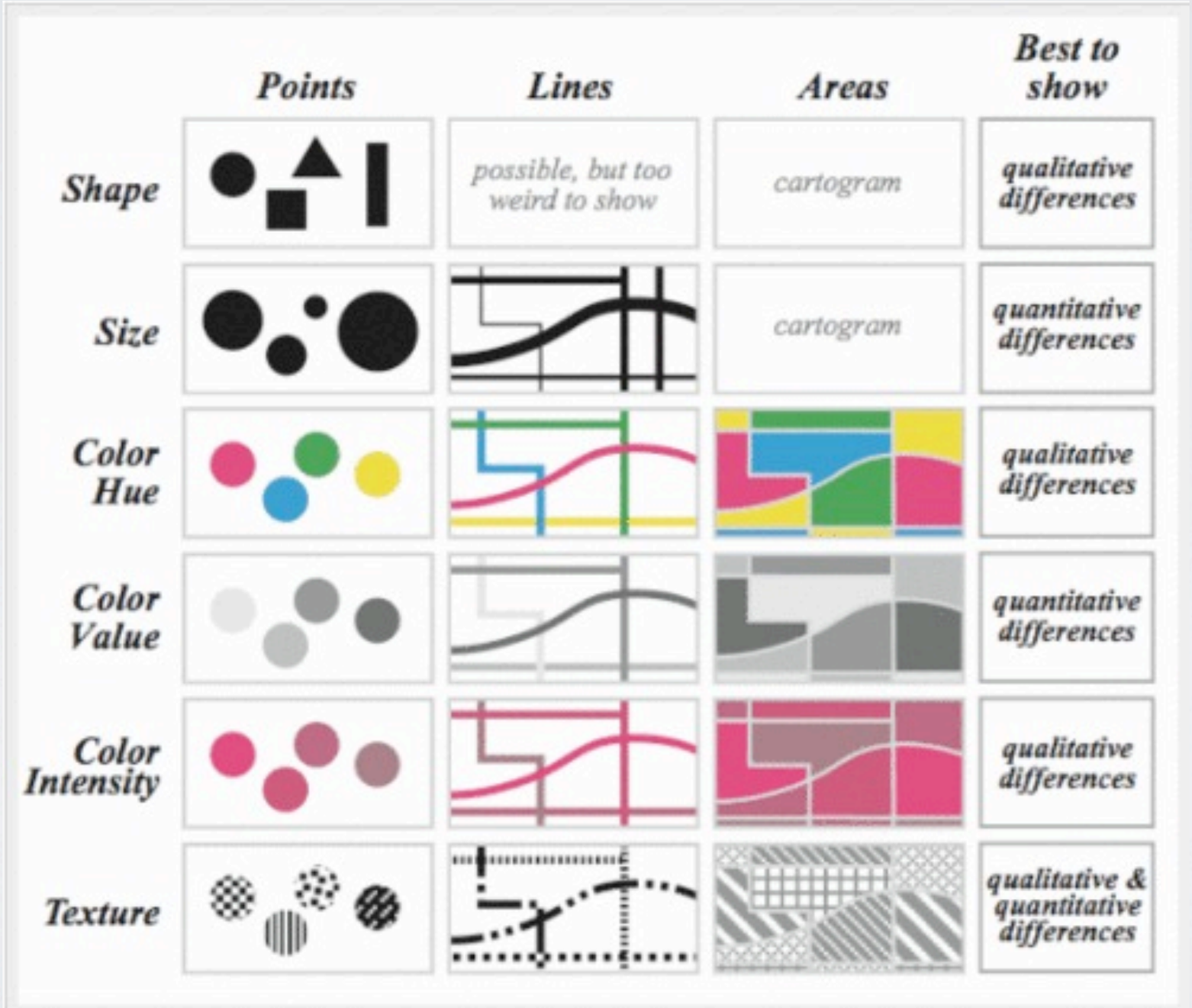
- Nominal (“single”, “married”, “divorced”, “widowed”)
- Ordered (“dislike strongly”, “dislike”, “neutral”, “agree”, “agree strongly”)
- Quantitative (64°, 32°, 18°, 105°)

VISUAL VARIABLES

position	length	area
value	color	shape
orientation	texture	

SEMIOLOGY OF DATA

Jacques Bertin, 1967



PRE-ATTENTIVE PROCESSING

"unconscious accumulation of information from the environment"

HOW MANY?

HOW MANY?

24813481187116715541388198443771347915641531845305848641
23475789411484122388146916135480484078908770786787512 11
86584234044377134791564153184530584864123475789411484122
23881469161354804840789087707867875121186584234018874276

http://www.csc.ncsu.edu/faculty/healey/PP/index.html

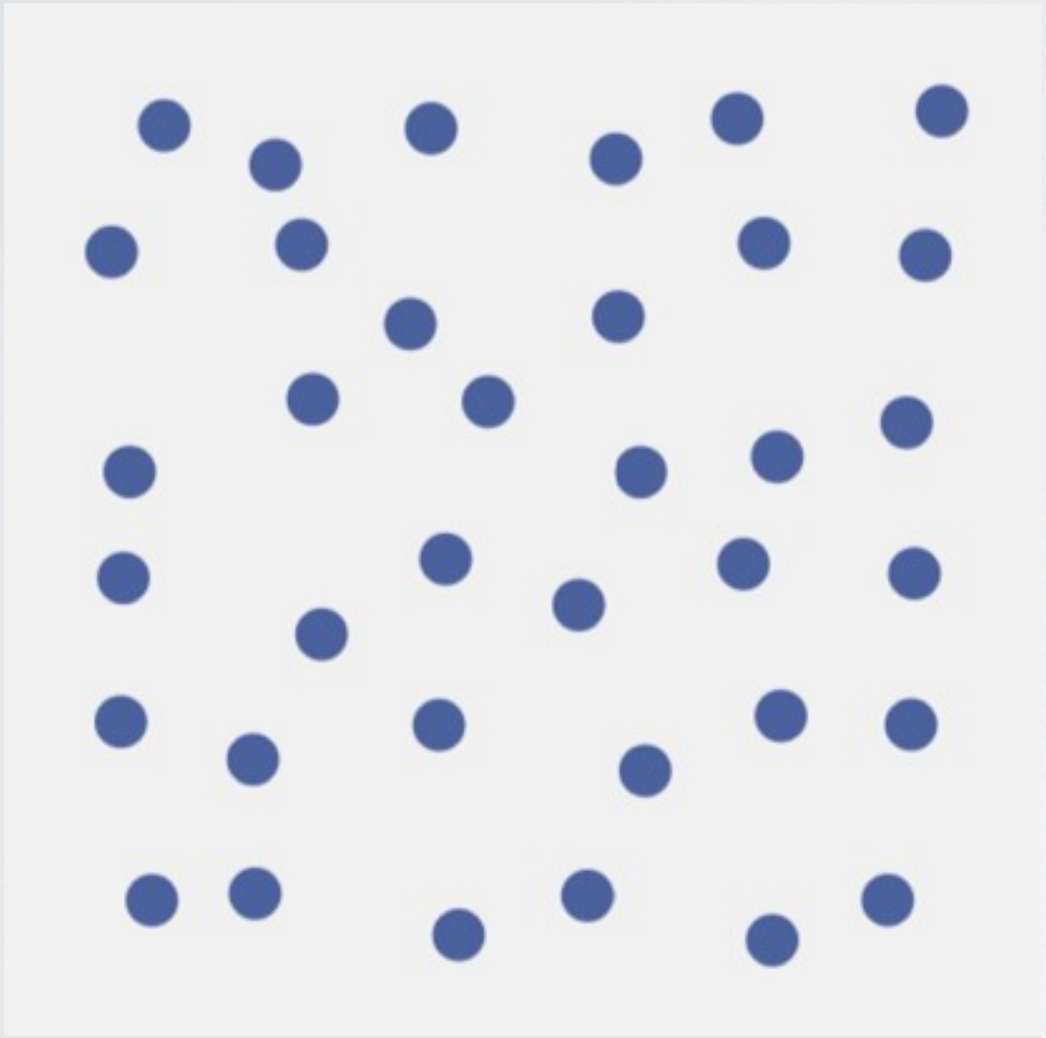
HOW MANY?

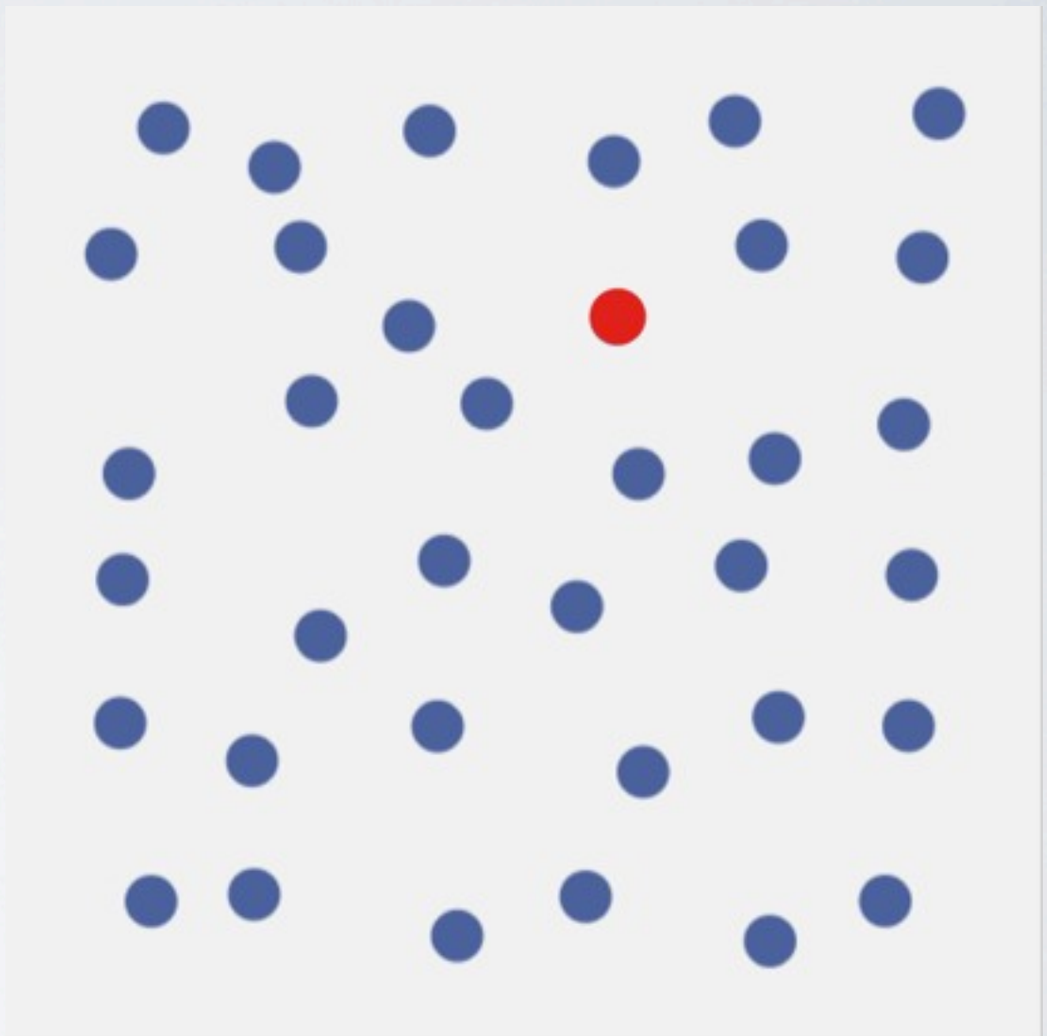
HOW MANY?

2481348118711671554138819844377134791564153184530584864123475789411484122
2347578941148412238814691613548048407890877078678751211865842340443771347915641531845305848641234757894114841222388146916135480484078908770786787512118658423401887427 6

http://www.csc.ncsu.edu/faculty/healey/PP/index.html

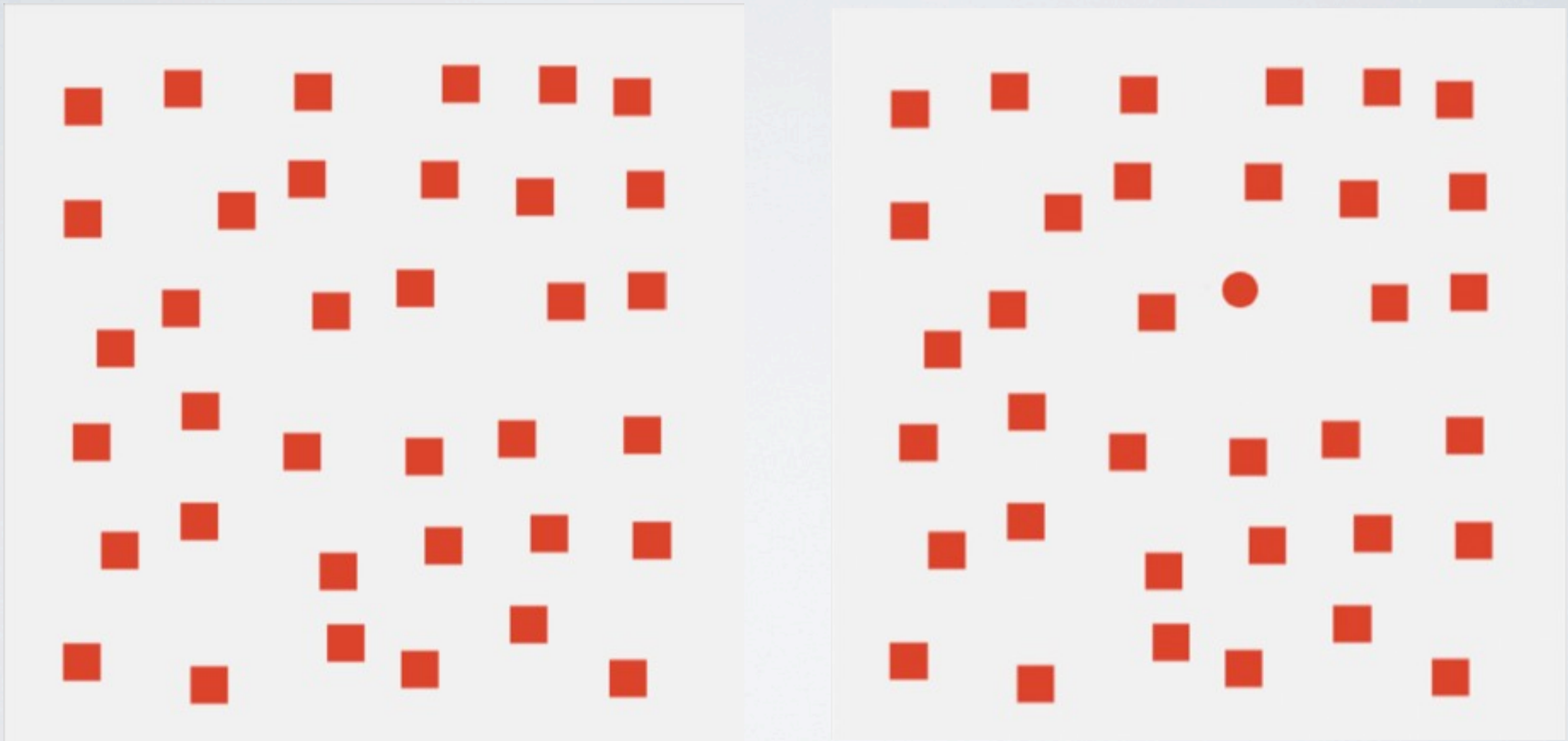
EXAMPLE: COLOR





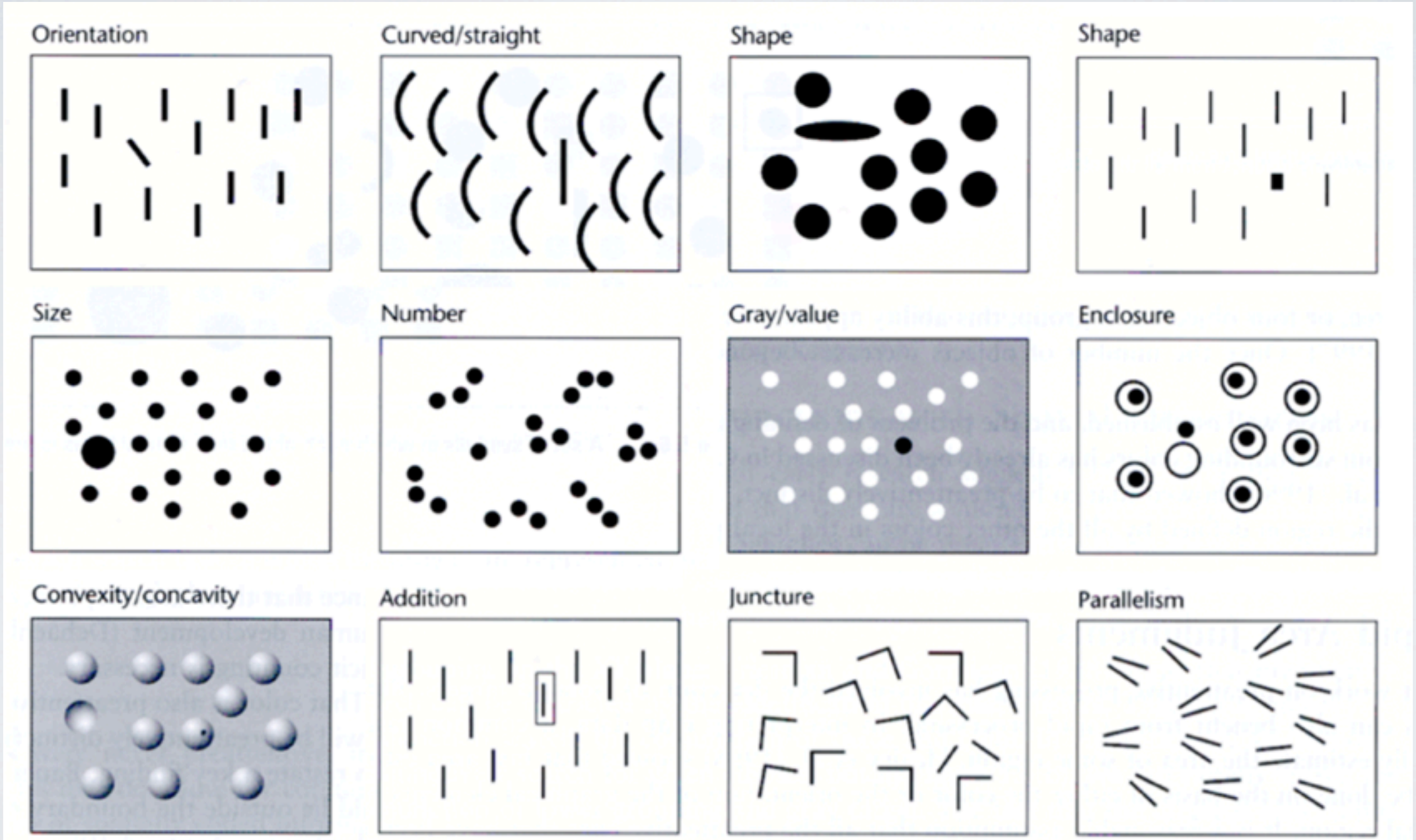
http://www.csc.ncsu.edu/faculty/healey/PP/index.html

EXAMPLE: SHAPE



http://www.csc.ncsu.edu/faculty/healey/PP/index.html

PRE-ATTENTIVE FEATURES



http://www.csc.ncsu.edu/faculty/healey/PP/index.html

PRE-ATTENTIVE FEATURES

- length
- width
- size
- curvature
- number
- terminators
- intersection
- closure
- color (hue)
- intensity
- flicker
- direction of motion

http://www.csc.ncsu.edu/faculty/healey/PP/index.html

CREATION PROCESS

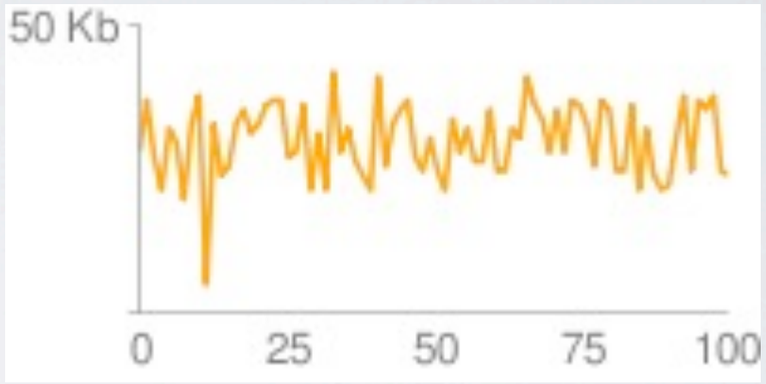
- What am I trying to show? If a visualization is a good way to show this, what visual variables will I use to show these this?
- What data do I need? How do I get it?
- Data transformation
- Display

Raster	Vector
Pixels	Formulas
Faster	Scalable
Faster	Smaller
Faster	Transformable
Faster	**Better**

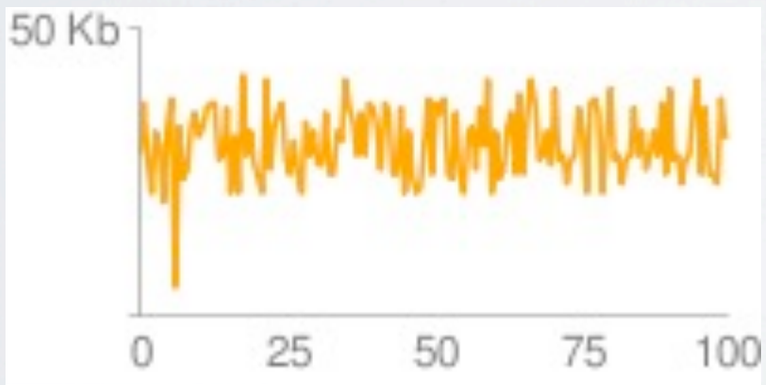
GRANULARITY

Don't store too many data points in too few pixels.

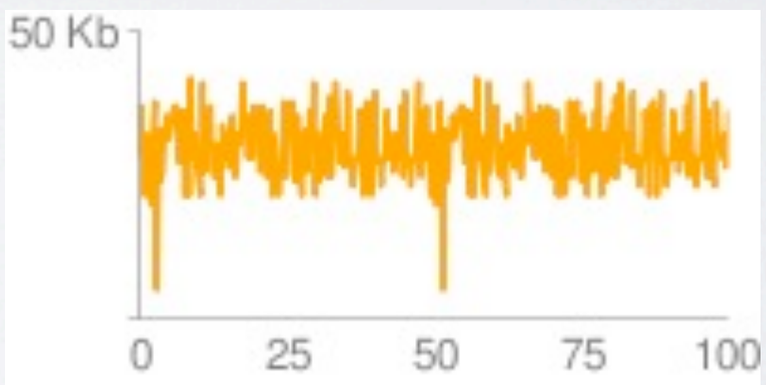
5 pixels per data point



2.5 pixels per data point



1.3 pixels per data point



less than 1 pixel per data point

Canvas

Raster

2004 (Apple)

IE requires a plugin

Scripted bitmaps

SVG

Vector

1999 (W3C)

IE requires a plugin

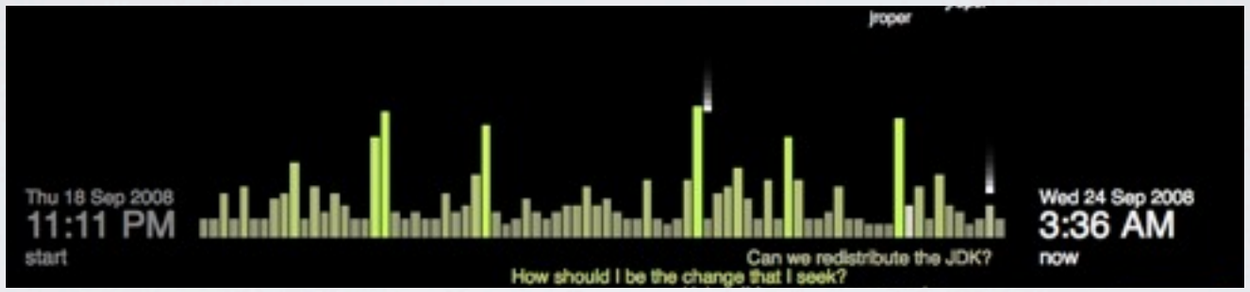
Declarative XML

INTERFACE OPTIONS

Write raw XML or canvas code

Use a visualization library

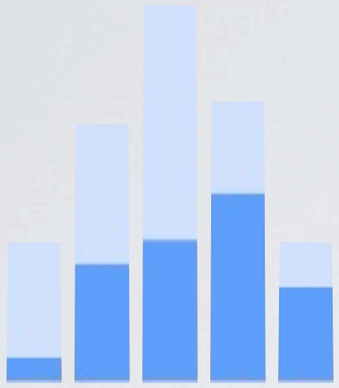
Use a chart and graph library

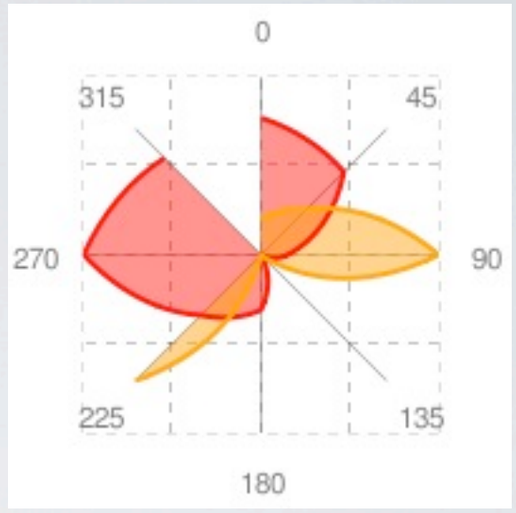


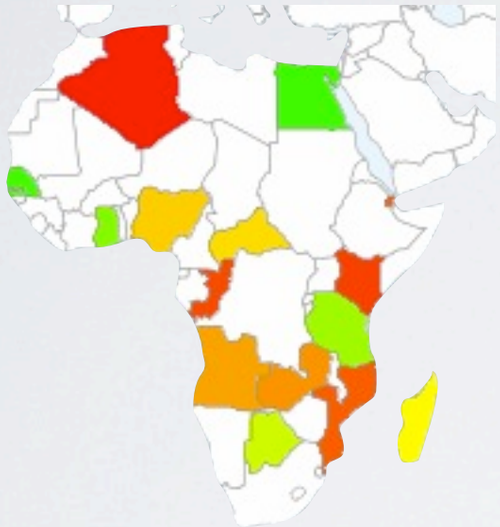
Processing.js

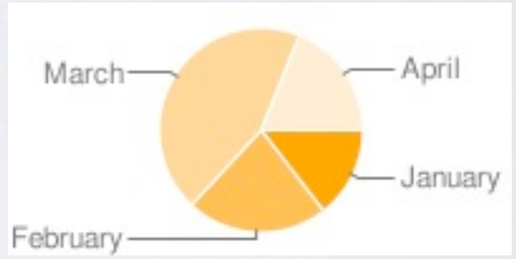

Raphaël Playground
More Than Just a Text
Yay!
Yay!
custom fonts
as easy as 123

Raphaël

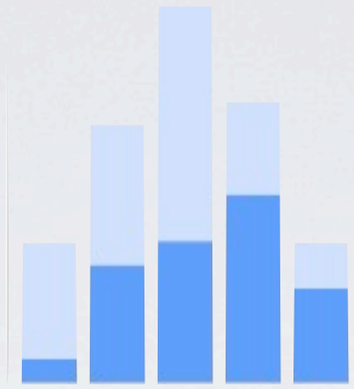








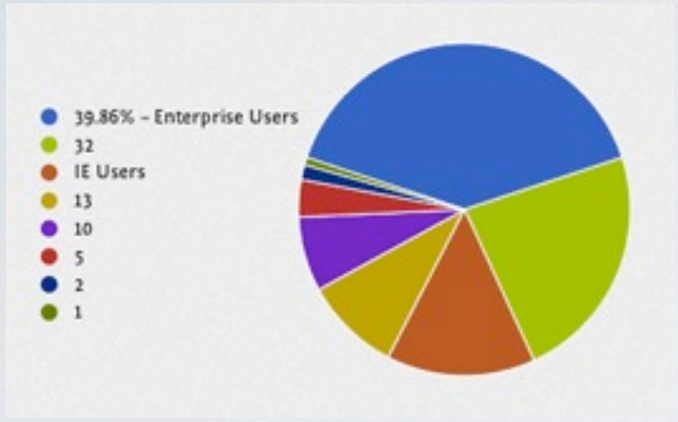
Google Chart API

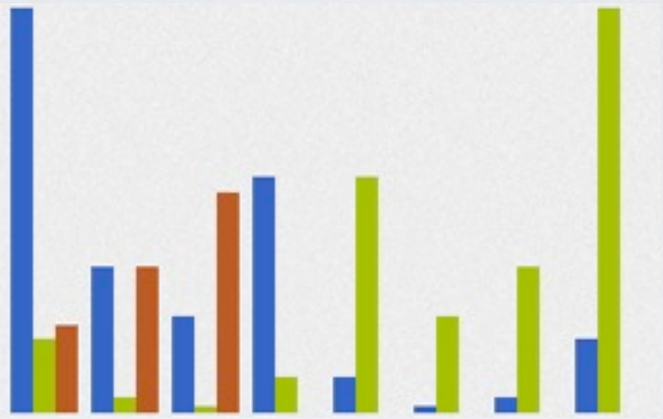


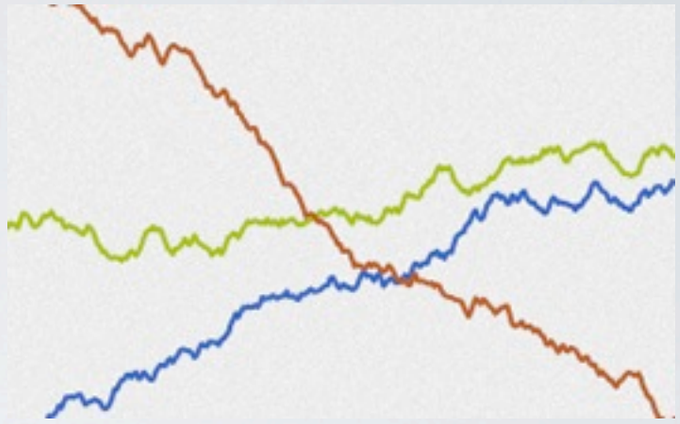
```
<img src="http://chart.apis.google.com/
chart?cht=bvs&chs=150x150
&chd=t:10,50,60,80,40|50,60,100,40,20
&chco=4d89f9,c6d9fd&chds=0,160" />
```

Google Chart API

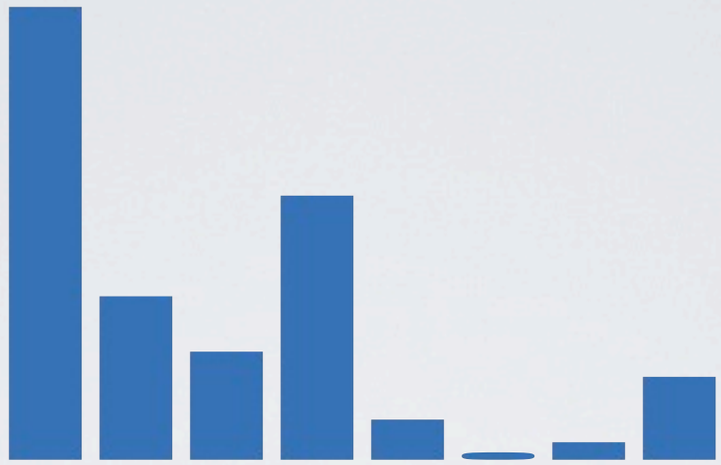
A simple bar chart







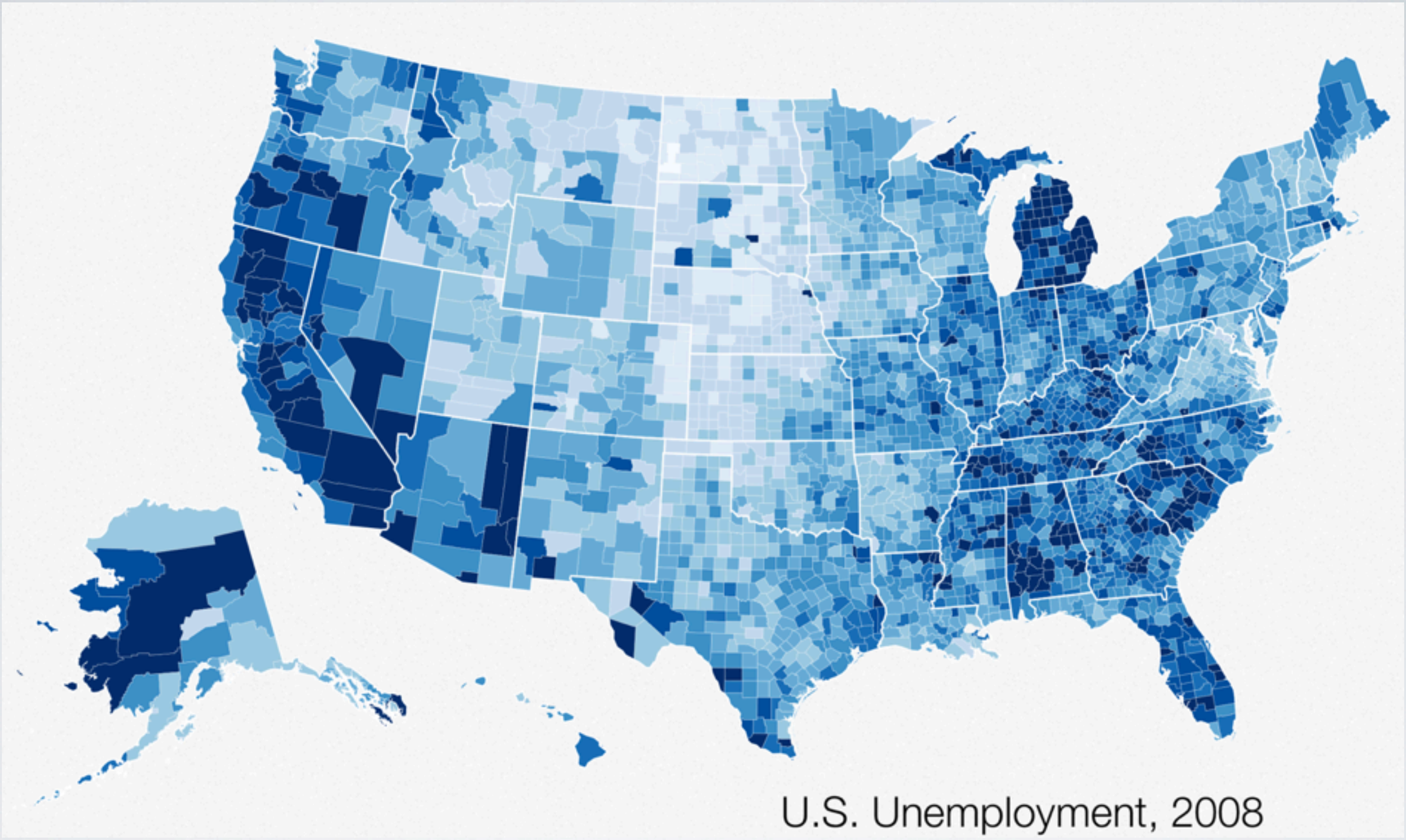
gRaphaël



```
r.g.barchart(10, 10, 300, 220,
[[55, 20, 13, 32, 5, 1, 2, 10]],
0,
{type: "sharp"});
```

gRaphaël

A simple bar chart



D3

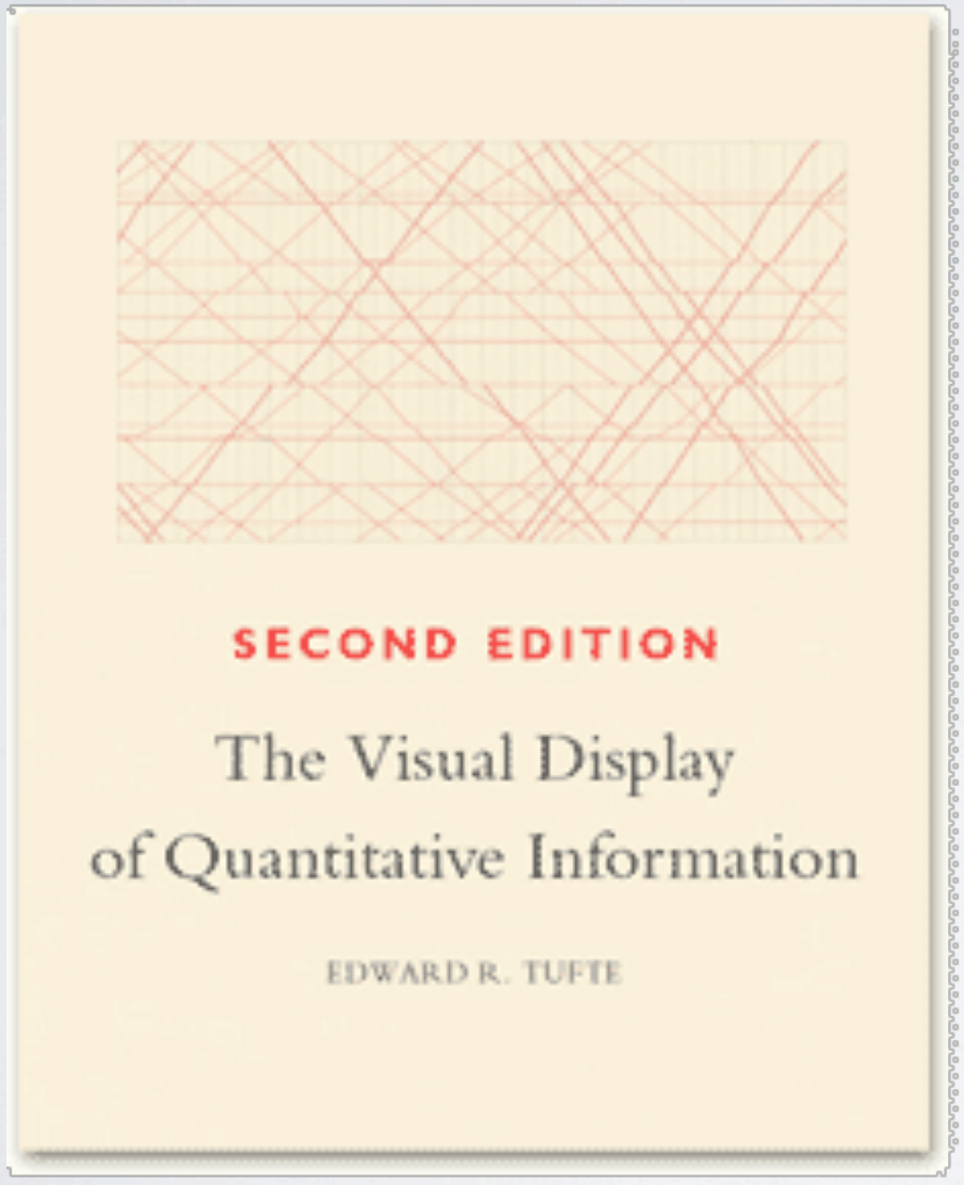
Choropleth Map of U.S. Unemployment

```
//Width and height
var w = 500, h = 100, barPadding = 1,
   dataset = [ 5, 10, 13, 19, 21, 25, 22, 18, 15, 13,
               11, 12, 15, 20, 18, 17, 16, 18, 23, 25 ];

//Create SVG element
var svg = d3.select("body").append("svg").attr("width",
w).attr("height", h);

svg.selectAll("rect")
   .data(dataset)
   .enter()
   .append("rect")
   .attr("x", function(d, i) {return i * (w / dataset.length);})
   .attr("y", function(d) {return h - (d * 4);})
   .attr("width", w / dataset.length - barPadding)
   .attr("height", function(d) {return d * 4;})
   .attr("fill", "teal");
```

D3

A bar chart

MORE ON VISUALIZATION



Edward Tufte

Stephen Few

Info 247

OPEN LAB

Project 2 Group Time

NEXT TIME

Data Visualization Lab

HW3 & Project 2 due on Monday

You can find links to help with all of these on the course website at
http://courses.ischool.berkeley.edu/290ta-iol/f12