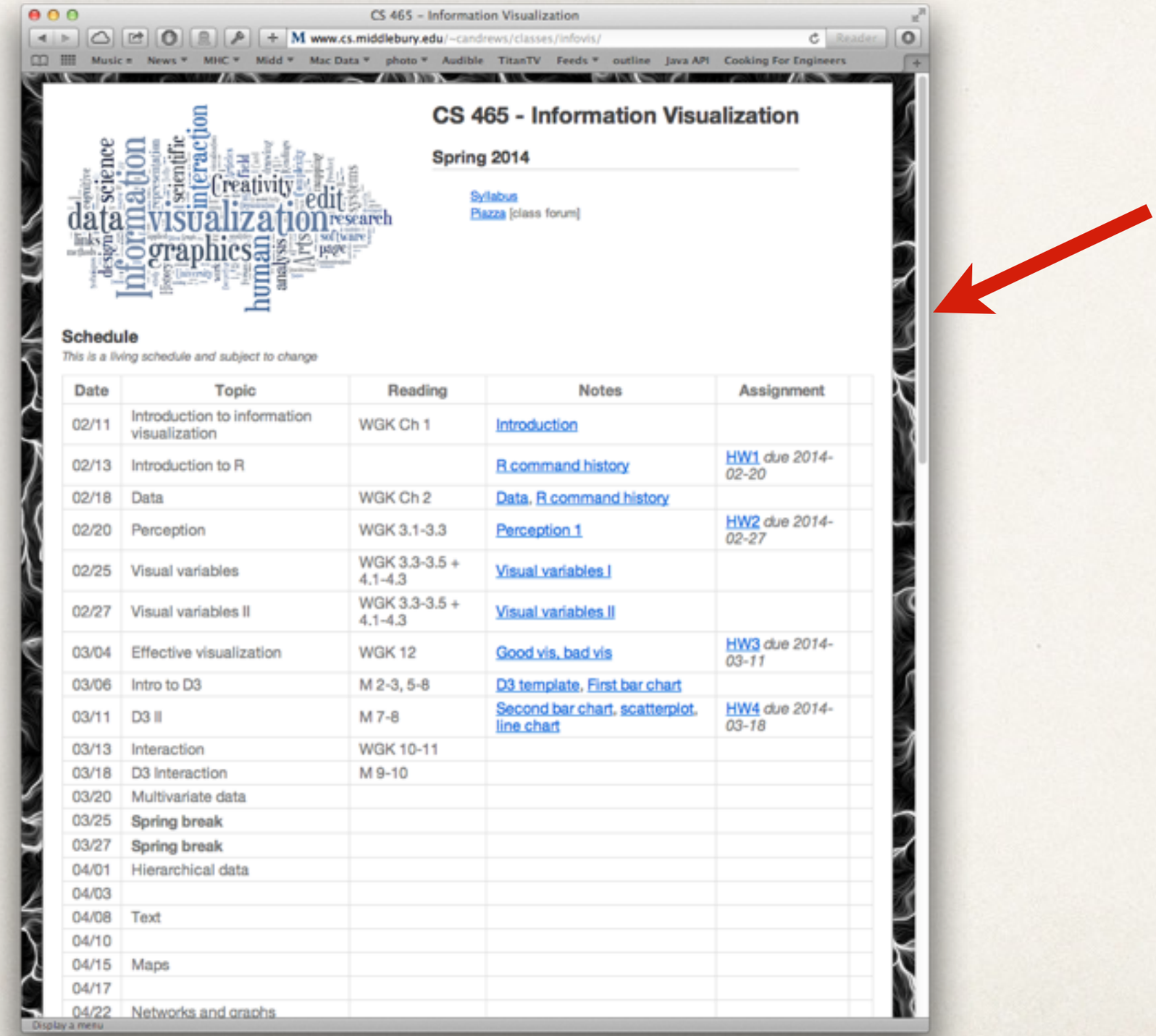
Navigation

C. Andrews

2016-03-23

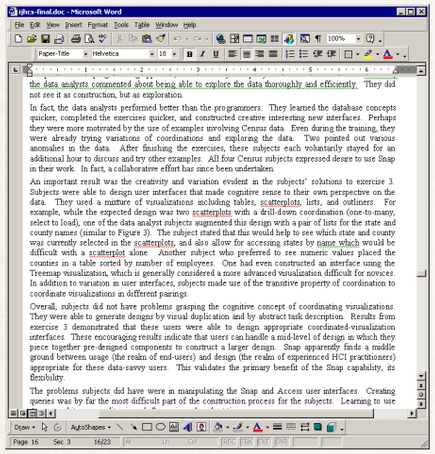
Show me the Navigation data!

Conventional navigation

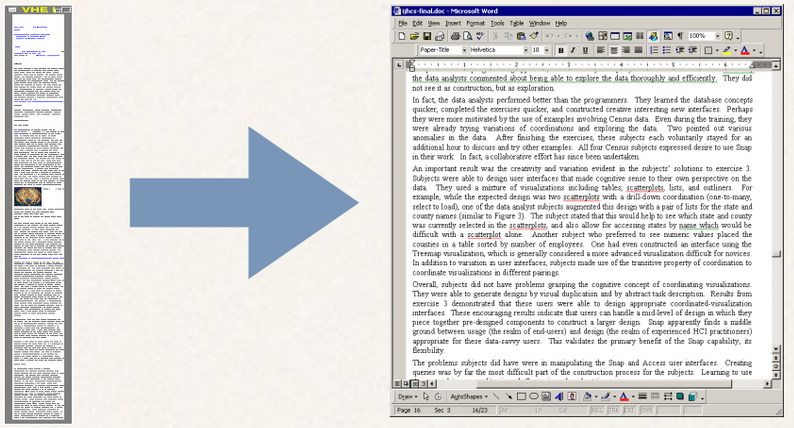


Navigation strategies

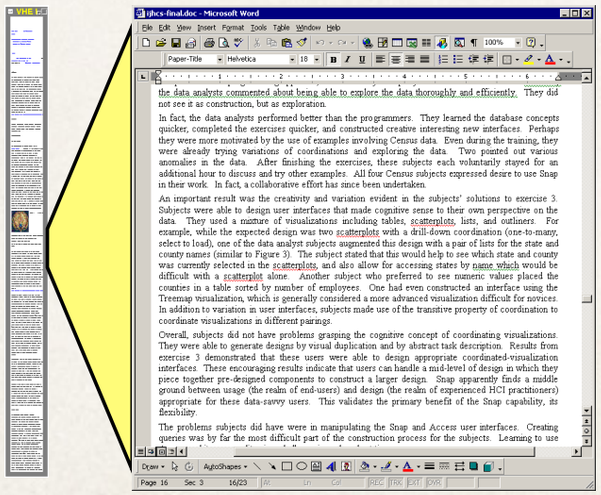
Detail only



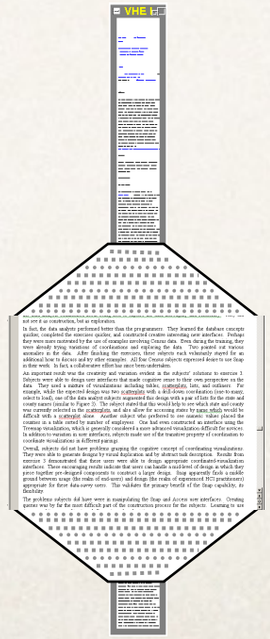
Zooming



Overview + Detail

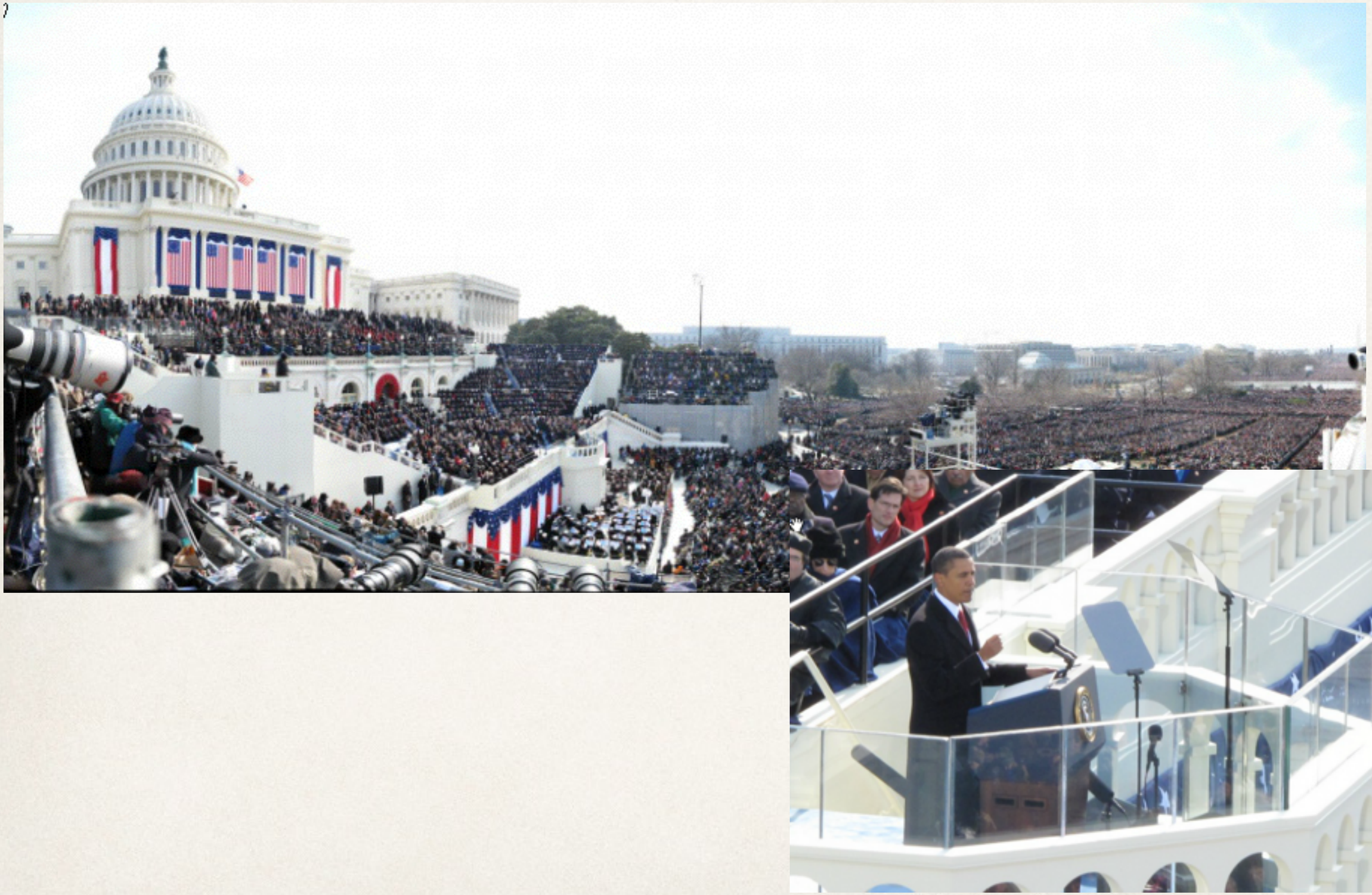


Focus + Context



borrowed from C. North

Pan and zoom

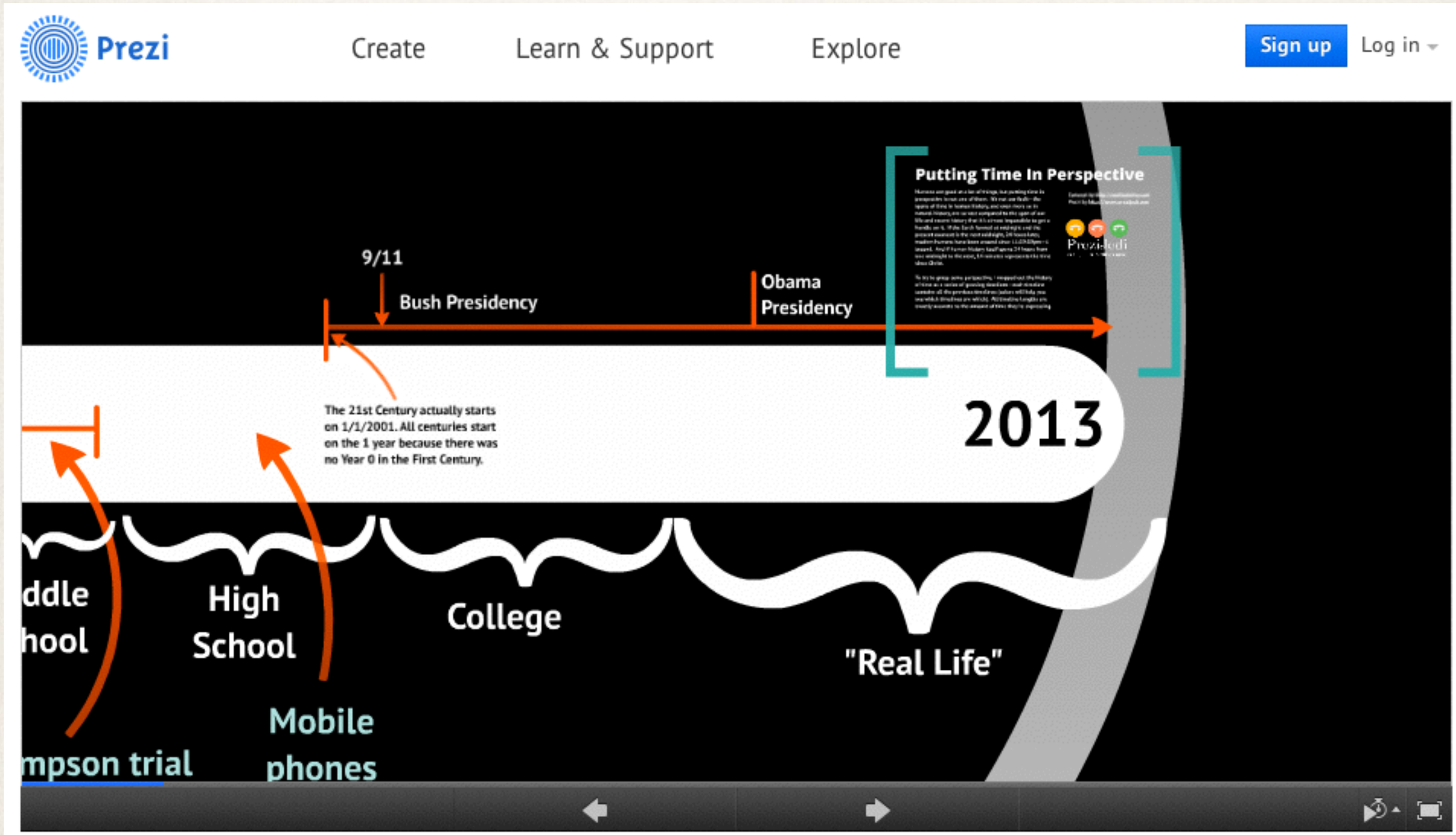


http://gigapan.com/

Pan and Zoom

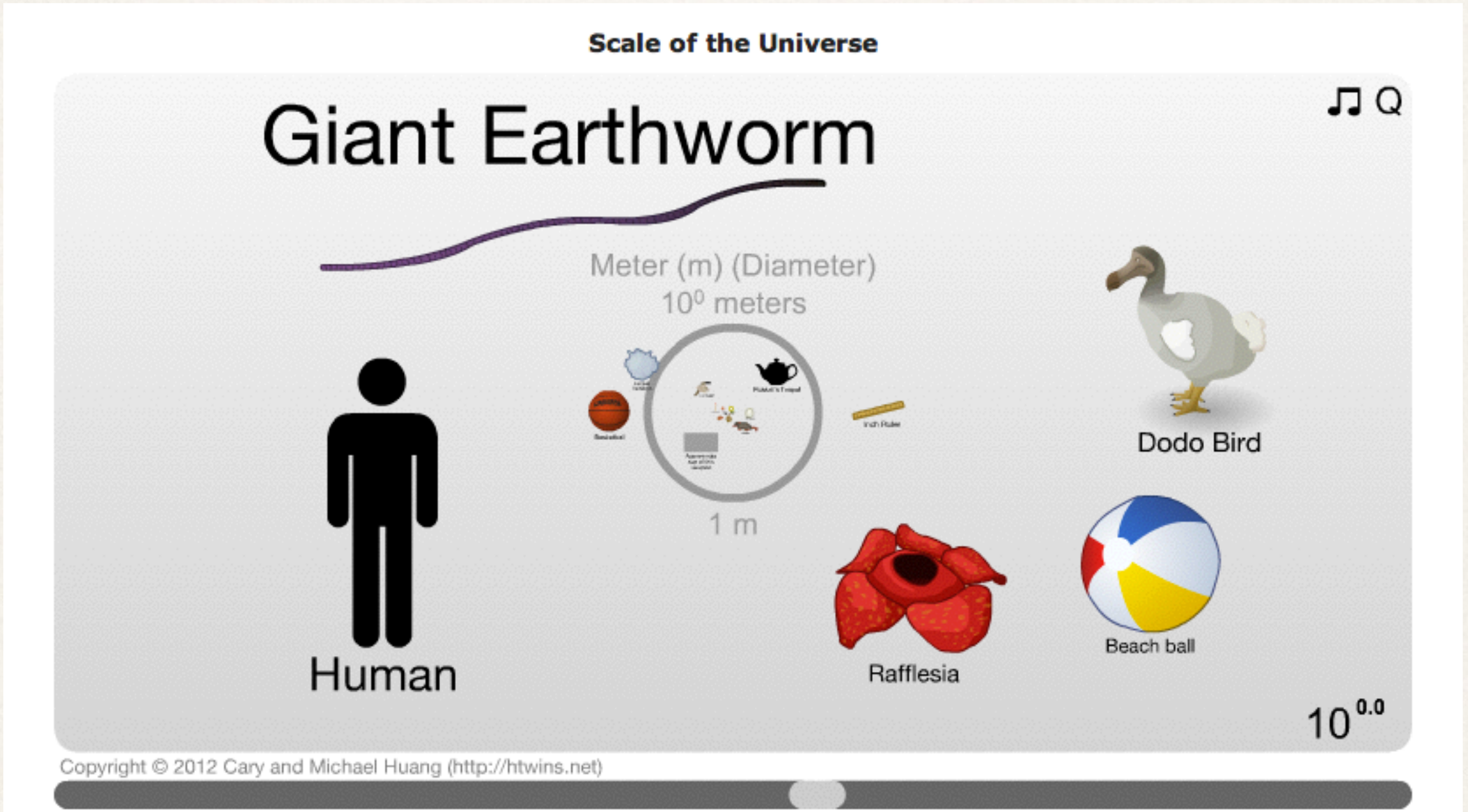

World • United States
N
Alberta
Manitoba
Saskatchewan
Ontario
Quebec
New Brunswick
P.E.I.
Nova Scotia
Maine
Vt.
N.H.
Montana
North Dakota
Minnesota
South Dakota
Wisconsin
Michigan
Idaho
Wyoming
Iowa
Nebraska
Illinois
Indiana
Ohio
Pennsylvania
N.J.
Utah
Colorado
Kansas
Missouri
West Virginia
Kentucky
Virginia
Oklahoma
Tennessee
North Carolina
Arizona
New Mexico
Arkansas
South Carolina
Alabama
Georgia
Texas
Mississippi
Louisiana
Florida
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Gulf of Maine
Atlantic Ocean
Sargasso Sea
Gulf of Mexico
Ottawa
Washington
Nassau
UNITED STATES
250 miles
500 km
© 2014 Microsoft Corporation © 2013 Nokia

Zoomable user interface



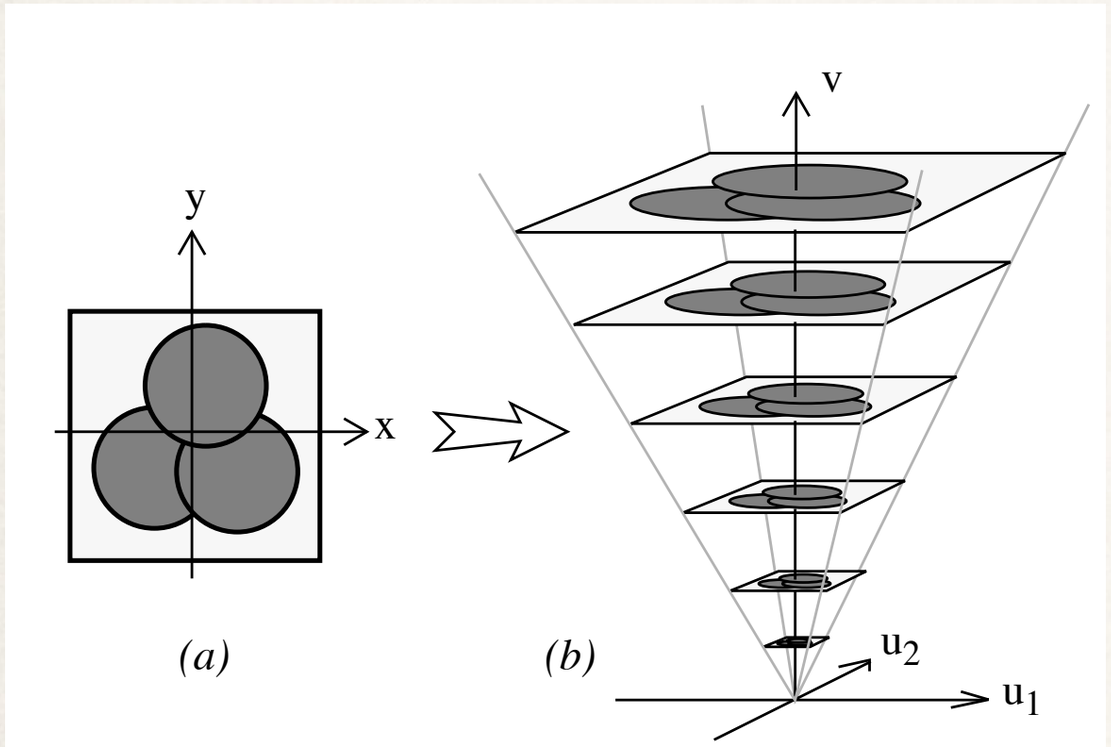
http://prezi.com/veychlhwrdgz/putting-time-in-perspective/

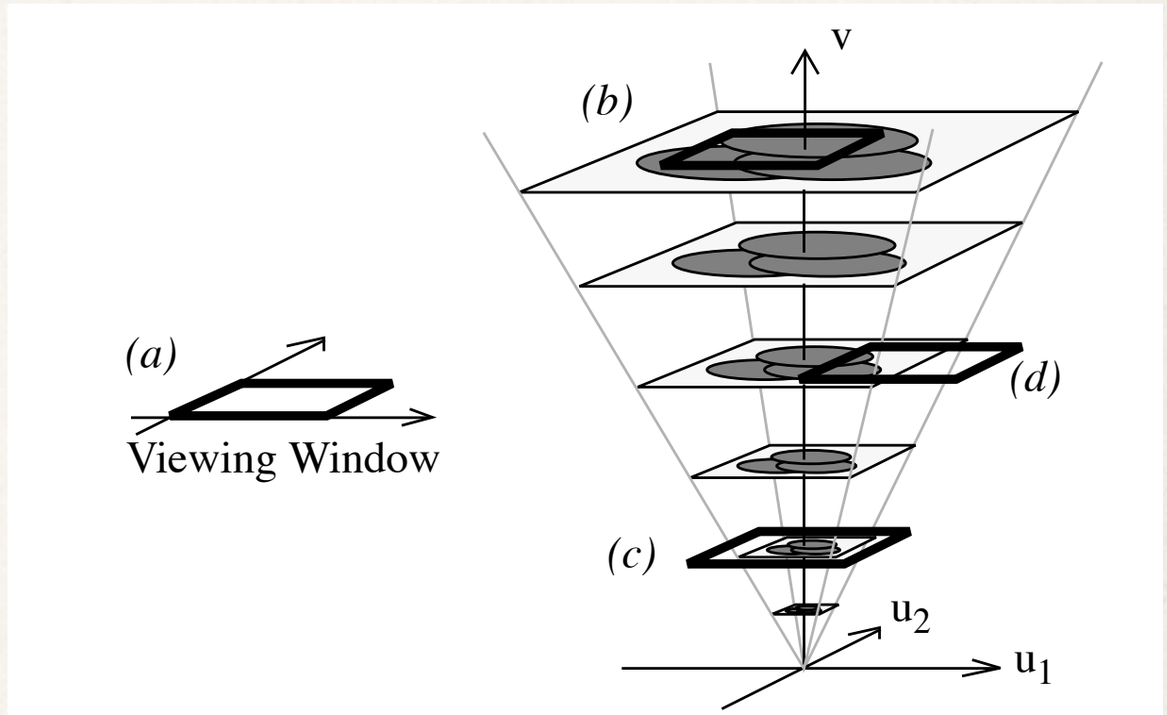
Zoomable user interface



http://htwins.net/scale2/

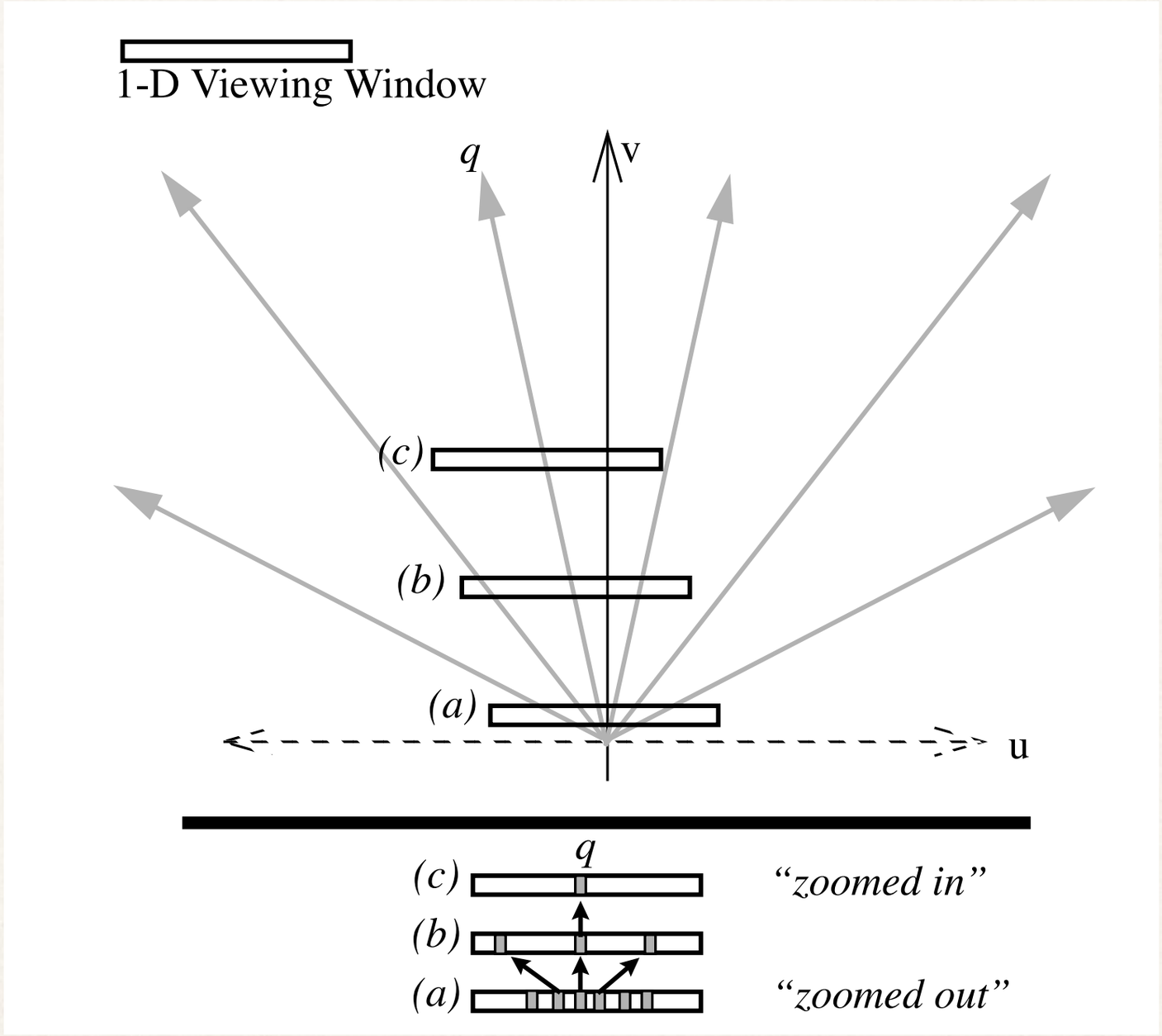
Space-scale diagrams





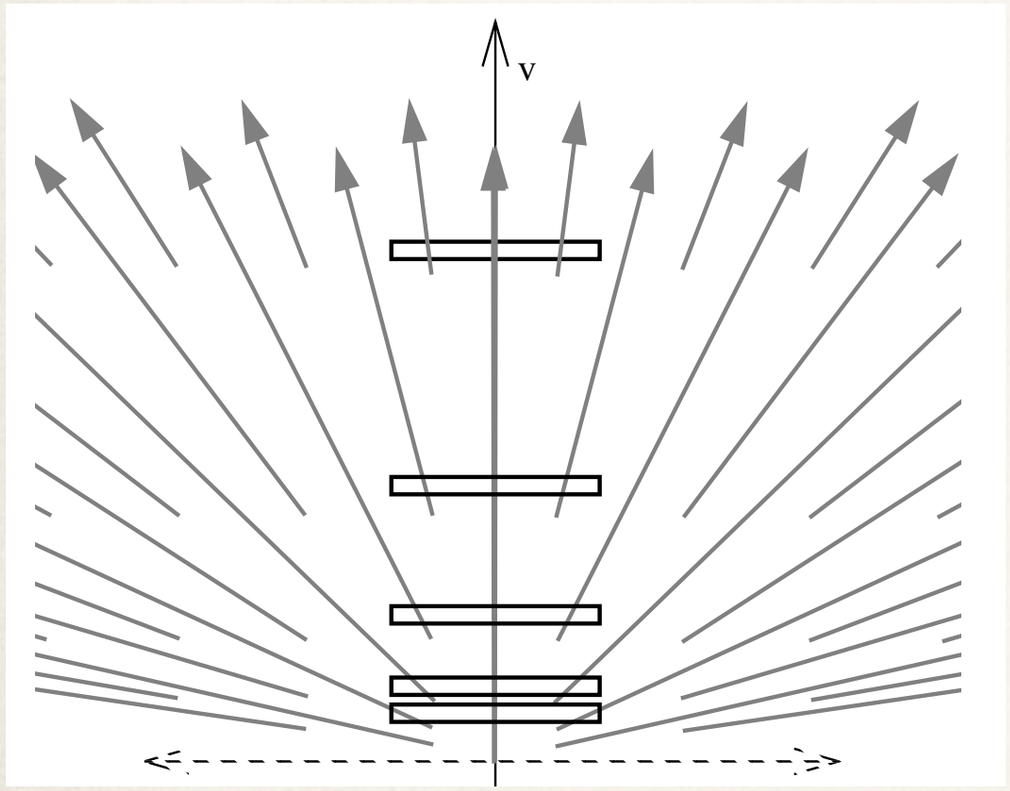
Furnas and Bederson, "Space-Scale Diagrams: Understanding Multiscale Interfaces"

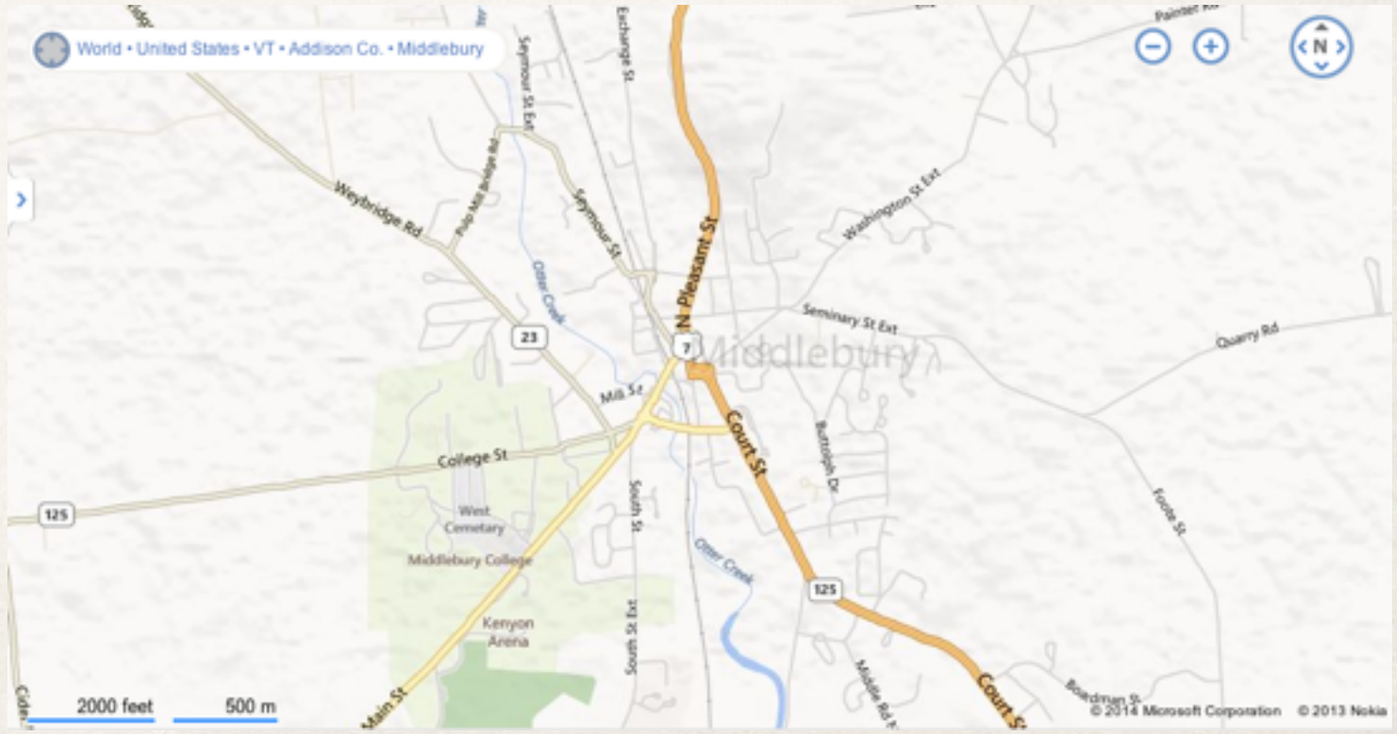
Space-scale diagrams



Furnas and Bederson, “Space-Scale Diagrams: Understanding Multiscale Interfaces”

Semantic zooming





Overview + detail

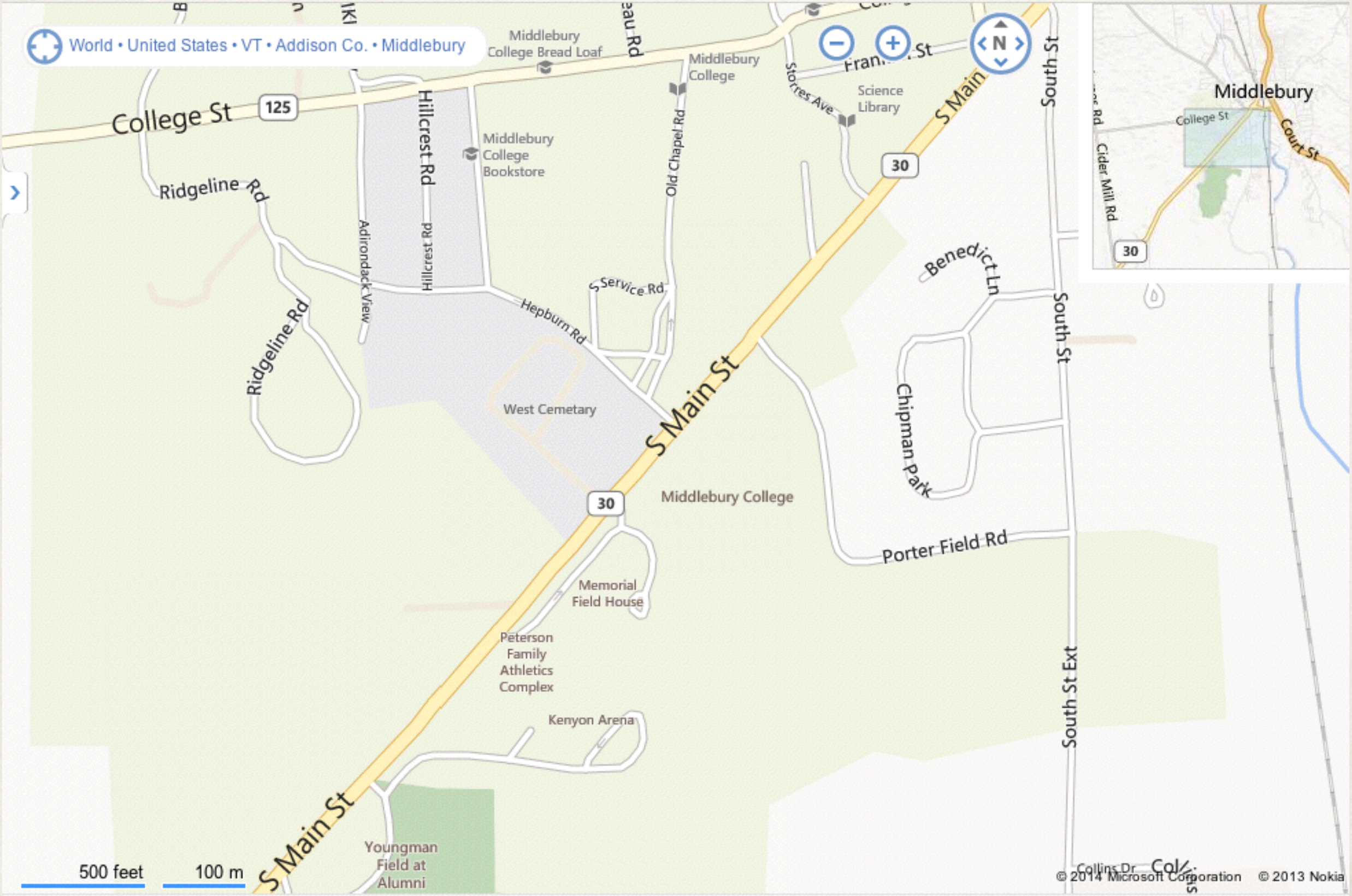
census1.html — UNREGISTERED

census1.html

```
32
33          function makeScatterplot(){
34              var margin = {top:20, bottom:20, left:60, right: 20};
35              var width = 500, height = 500;
36              var xValue = function(d){return d[0]};
37              var yValue = function(d){return d[1]};
38              var xScale = d3.scale.linear();
39              var yScale = d3.scale.linear();
40              var xAxis = d3.svg.axis().scale(xScale).orient("bottom");
41              var yAxis = d3.svg.axis().scale(yScale).orient("left");
42
43
44
45              function chart(selection){
46
47                  selection.each(function(data){
48
49                      xScale.range([0,width - margin.left - margin.right])
50                      .nice()
51                      .domain(d3.extent(data, xValue));
52
53
54                      yScale.range([height - margin.top - margin.bottom, 0])
55                      .nice()
56                      .domain(d3.extent(data, yValue));
57
58                      var svg = d3.select(this).append("svg")
59                      .attr({width:width, height:height});
60
61                      var canvas = svg.append("g")
62                      .attr("transform","translate("+margin.left +","+margin.top+")");
63
64                      // create the dots
65                      var dots = canvas.selectAll("circle")
66                      .data(data)
67                      .enter()
68                      .append("circle");
```

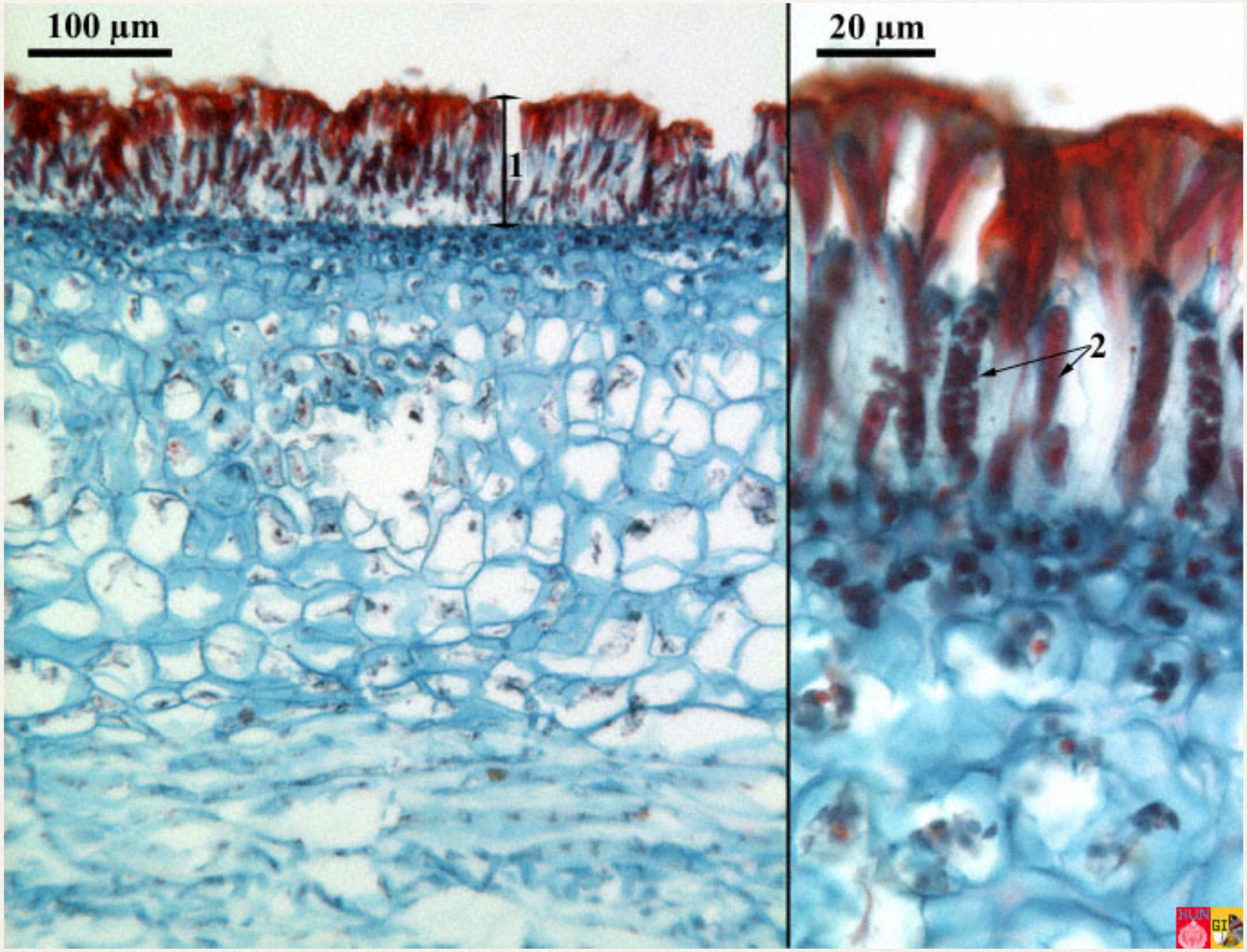
Line 1, Column 16 | Tab Size: 4 | HTML

Overview + detail



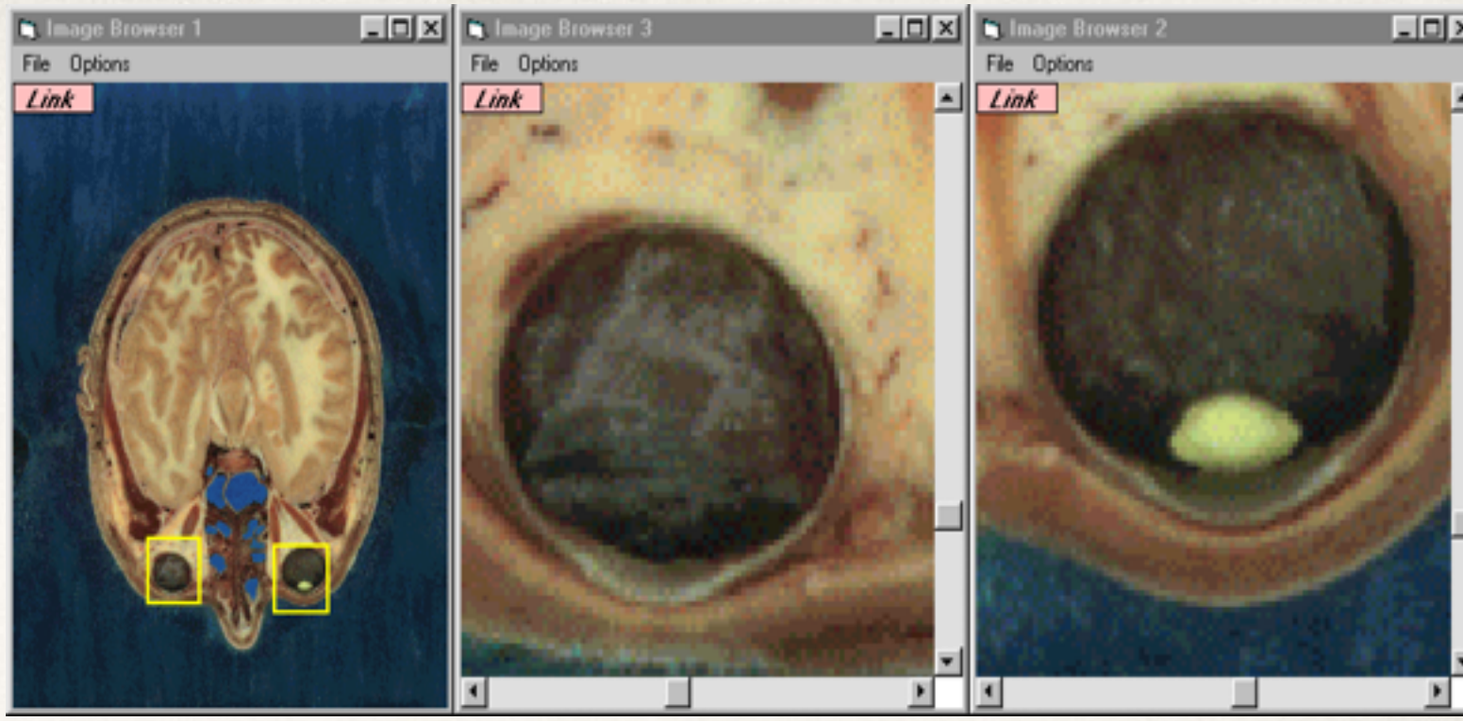
Overview + detail

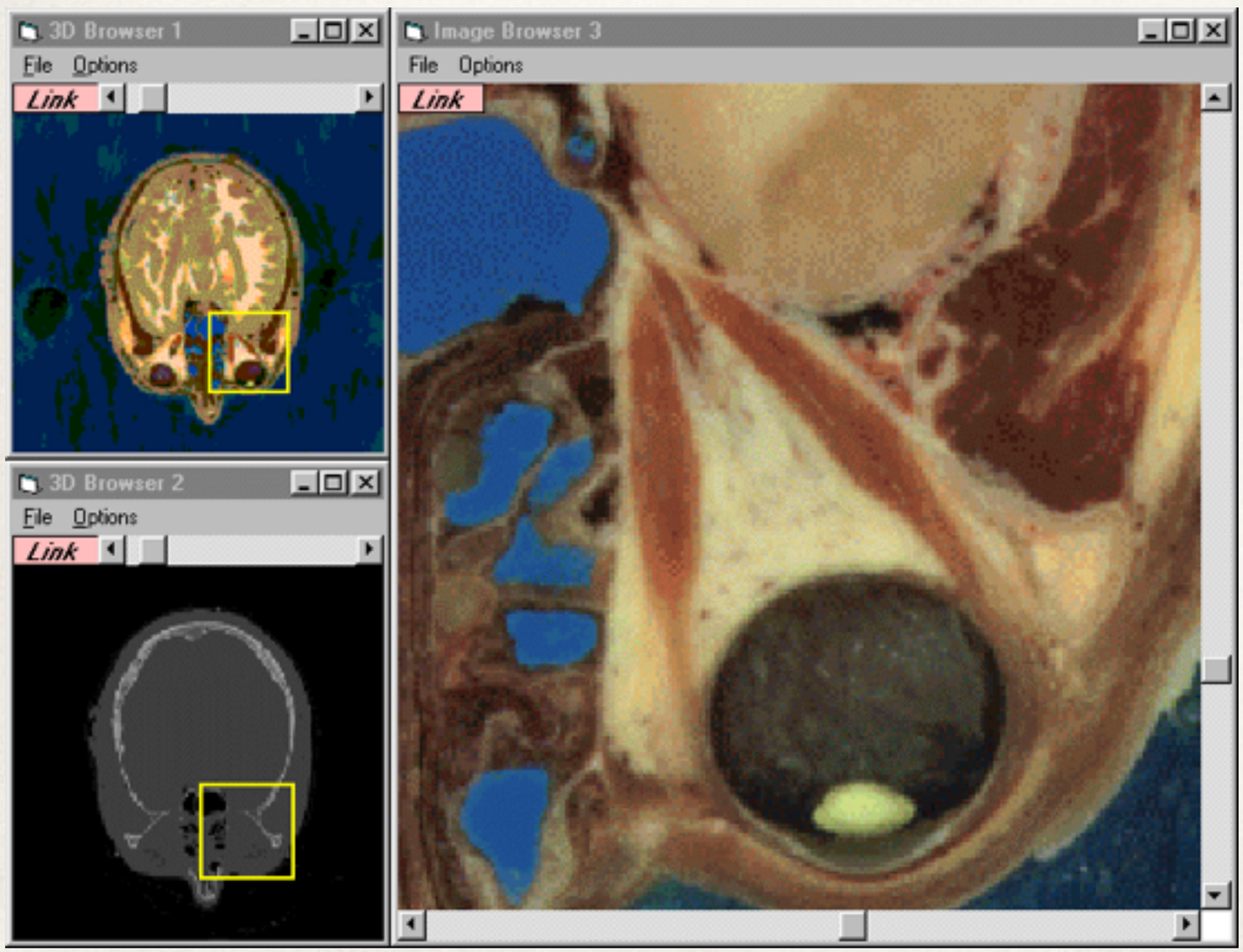
Overview + detail



http://www.vcbio.science.ru.nl/en/image-gallery/show/labels/print/PL0016/

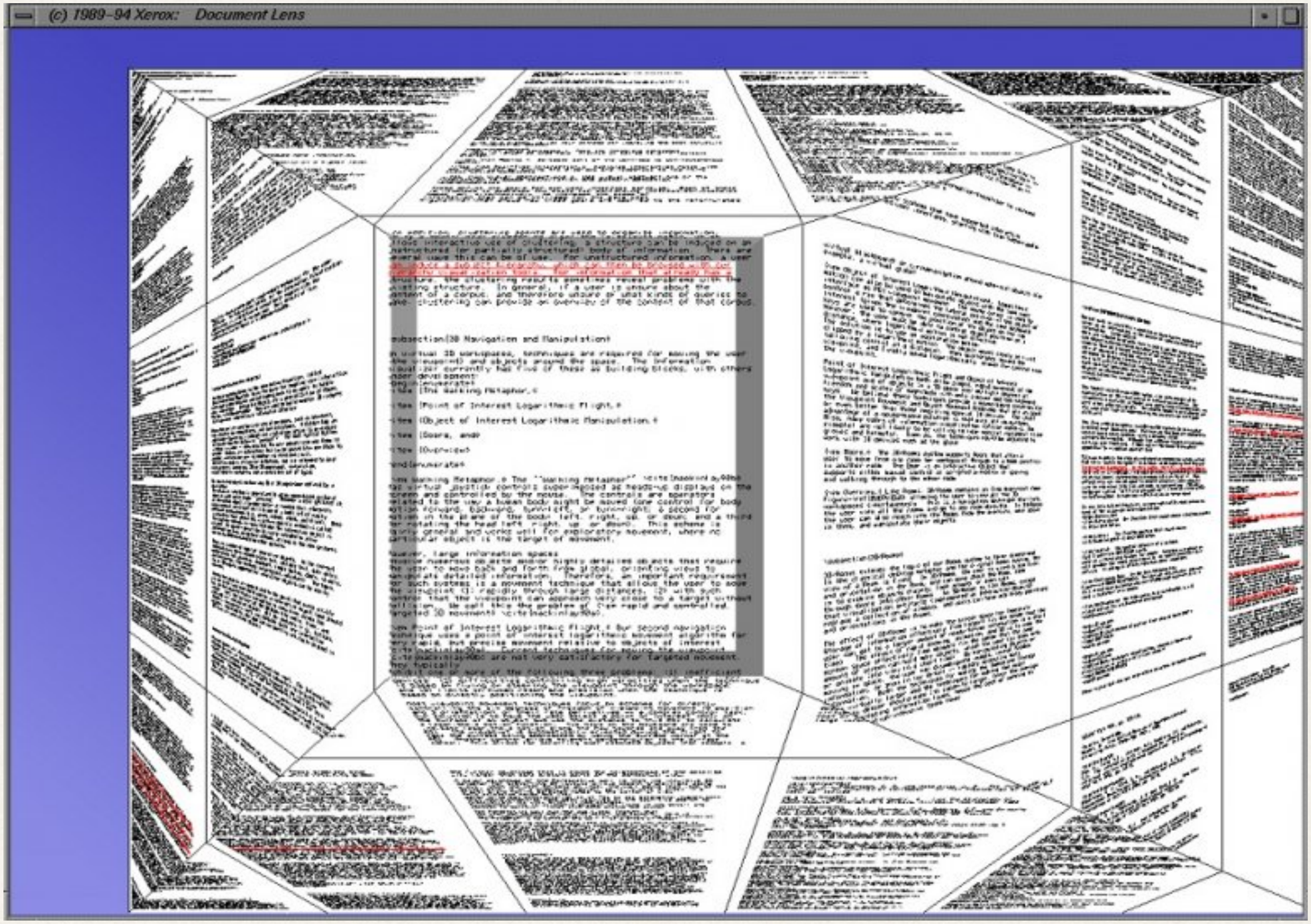
Overview + detail





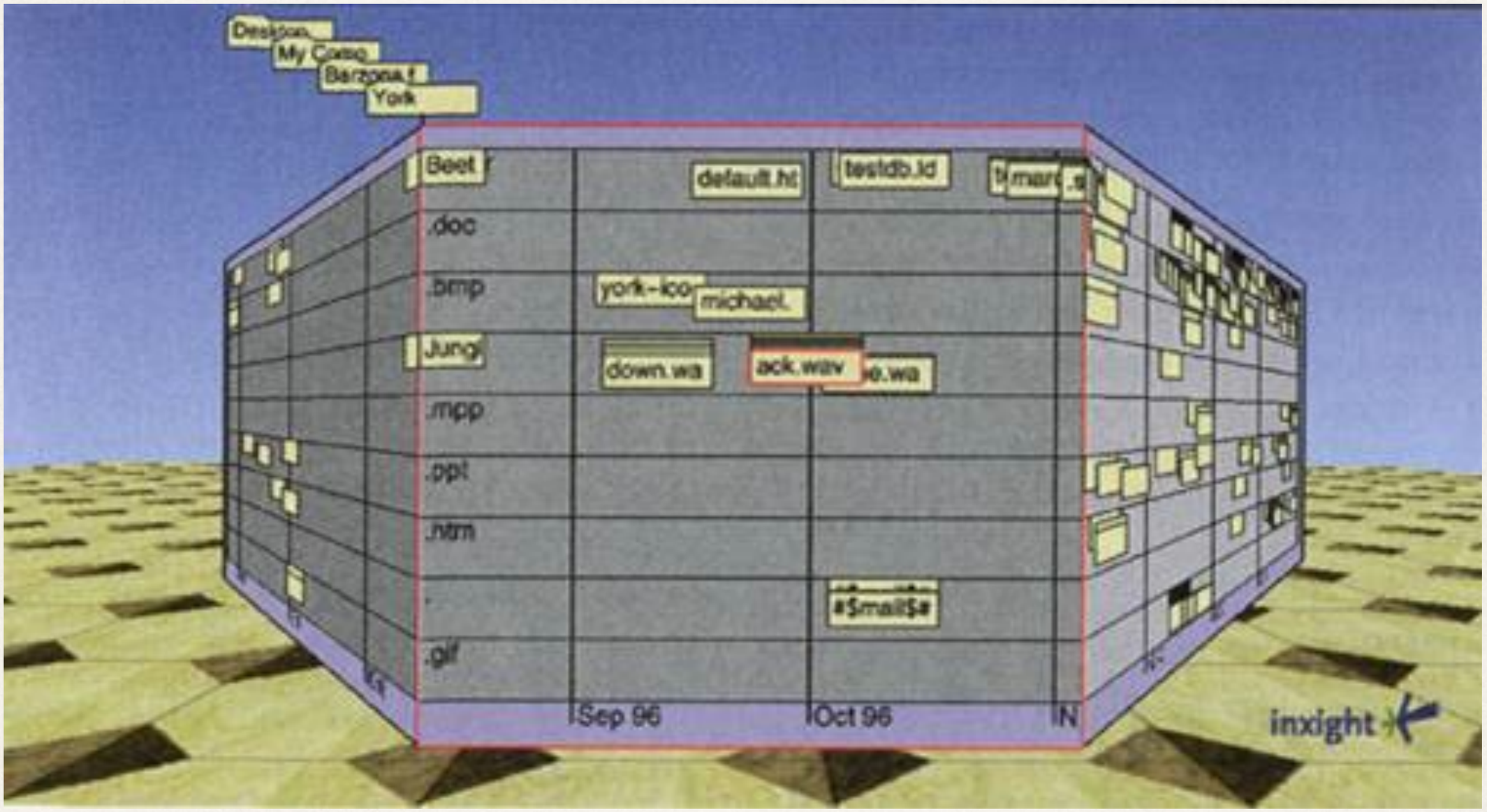
borrowed from C. North

Focus + context



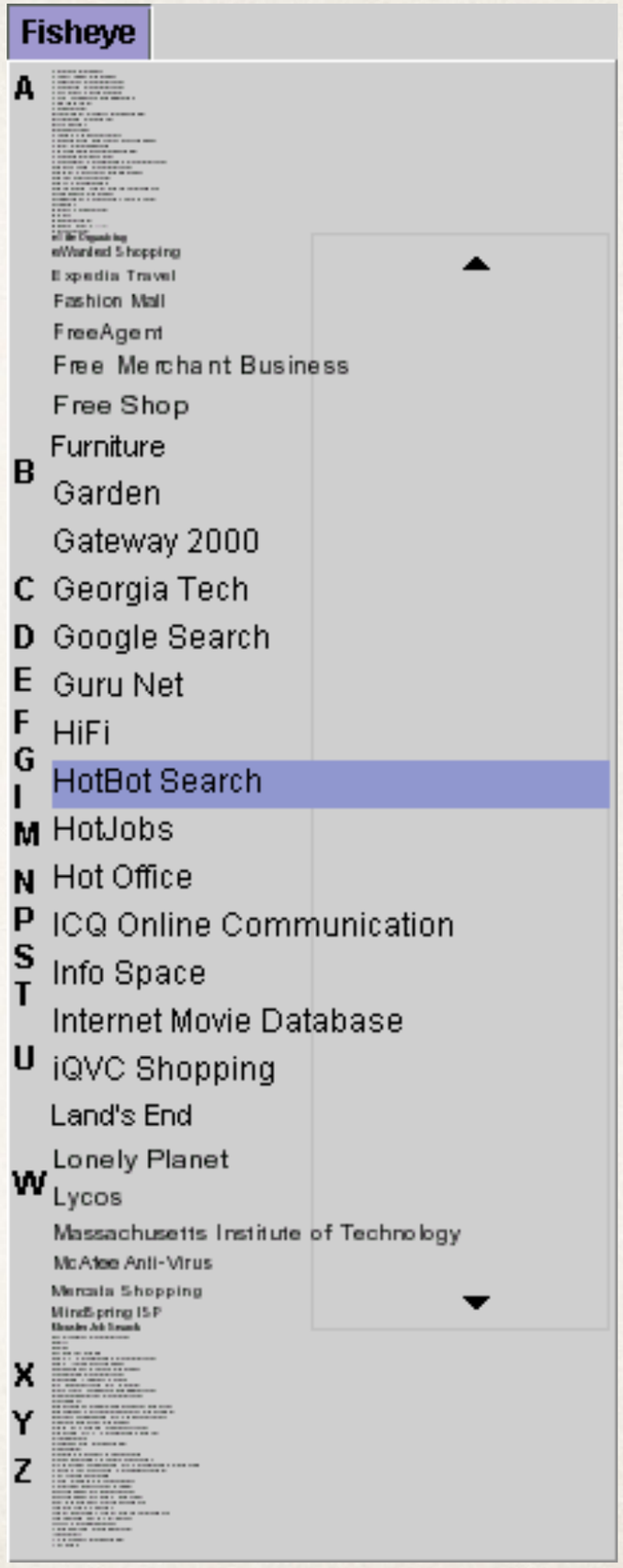
Robertson and MacKinlay, “Document Lens”

Focus + context



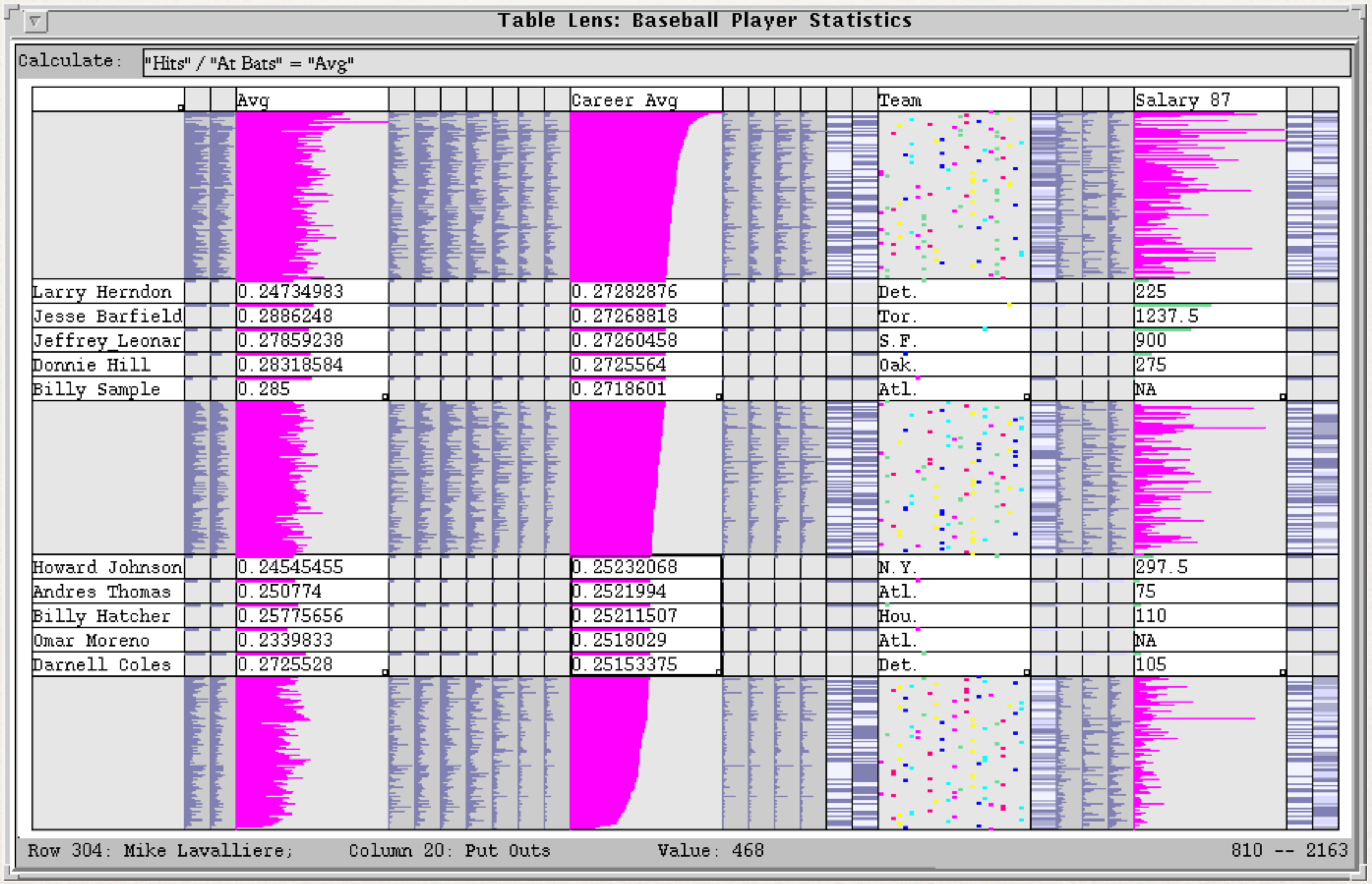
Robertson, MacKinlay, and Card, “Perspective Wall”

Focus + context



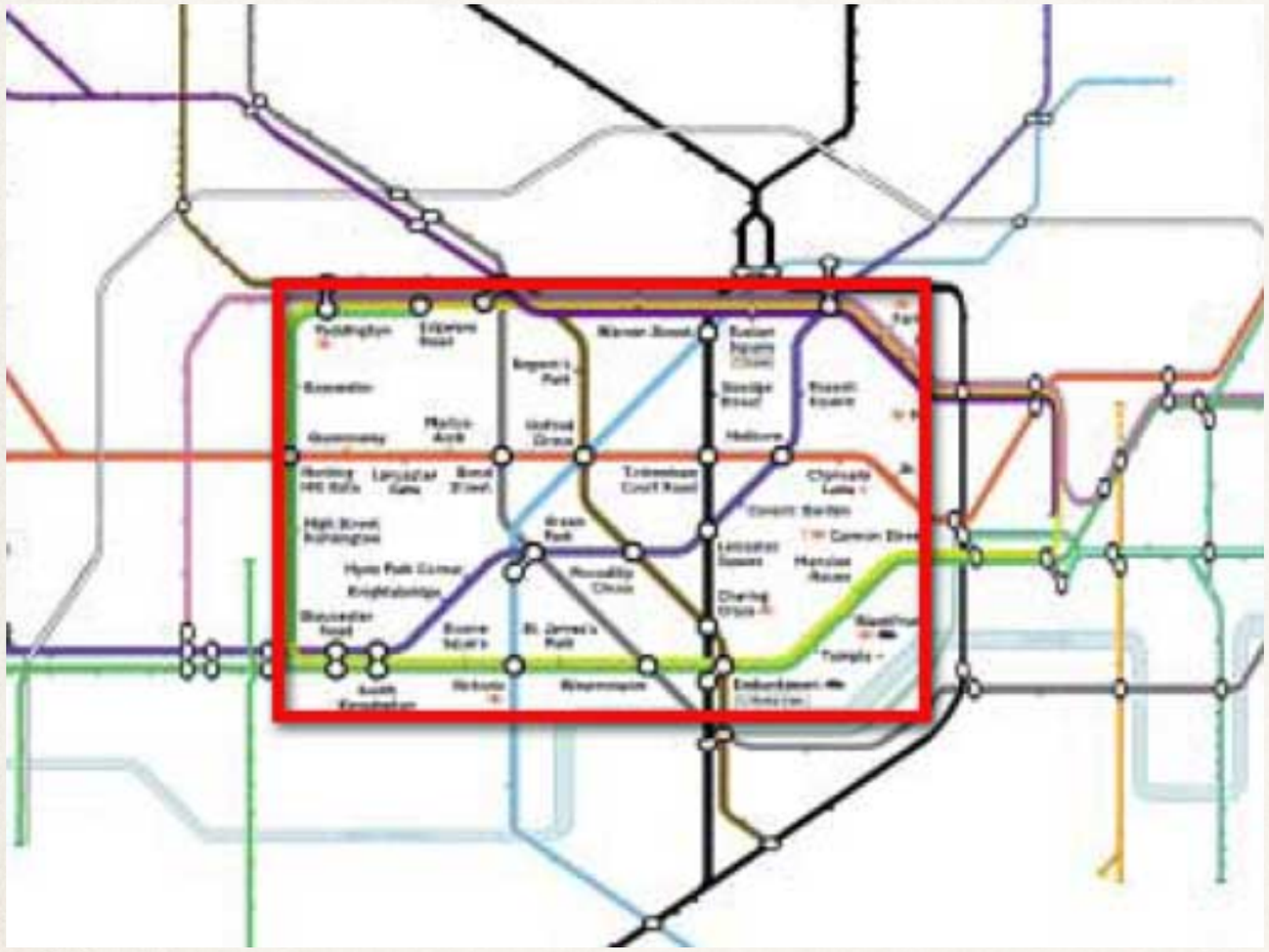
Bederson, "Fisheye menus"

Focus + context

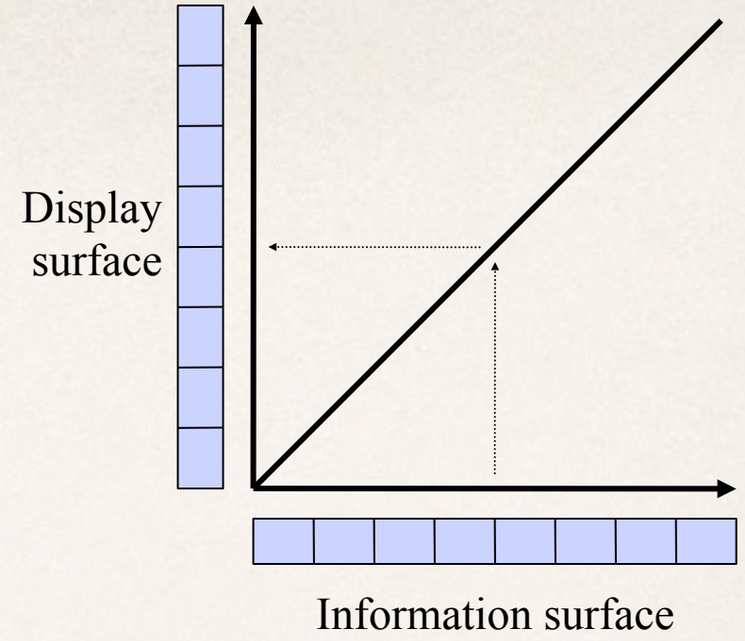


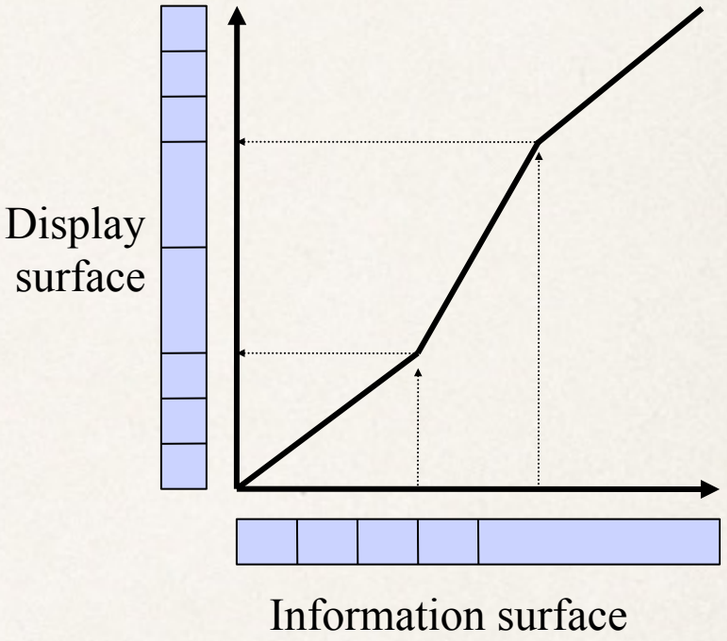
Rao and Card, "The Table Lens: Merging Graphical and Symbolic Representations in an Interactive Focus+Context Visualization for Tabular Information"

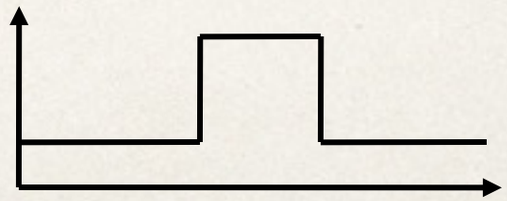
Visual transfer functions



Bifocal

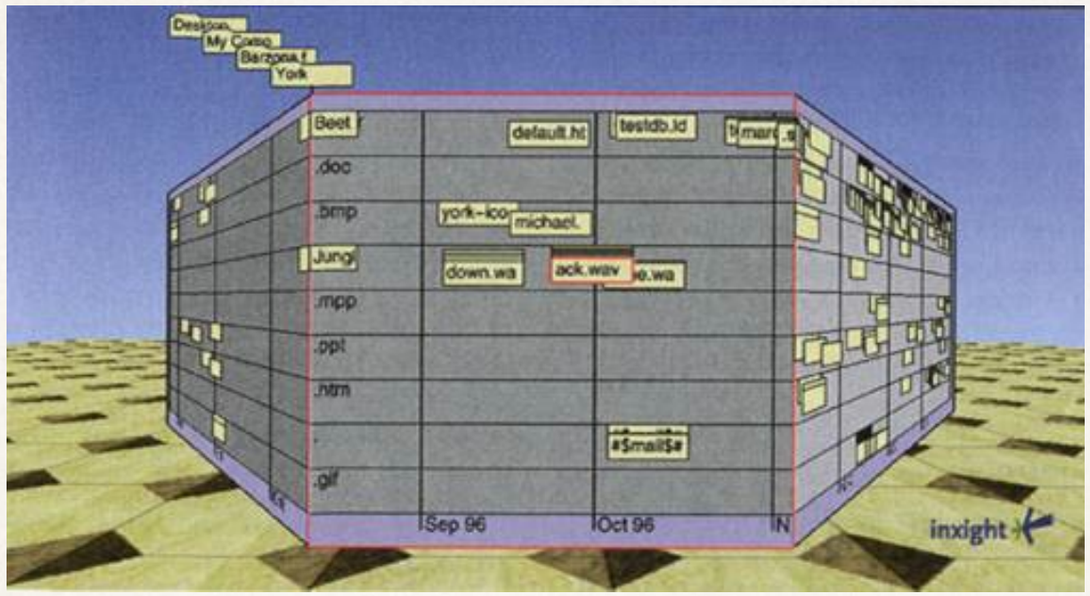


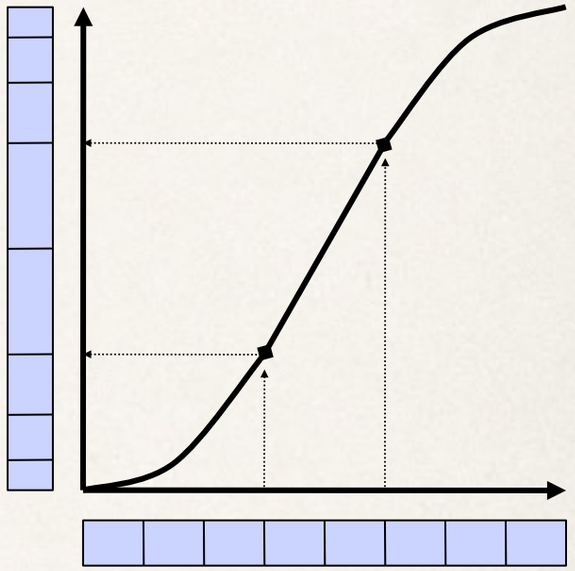


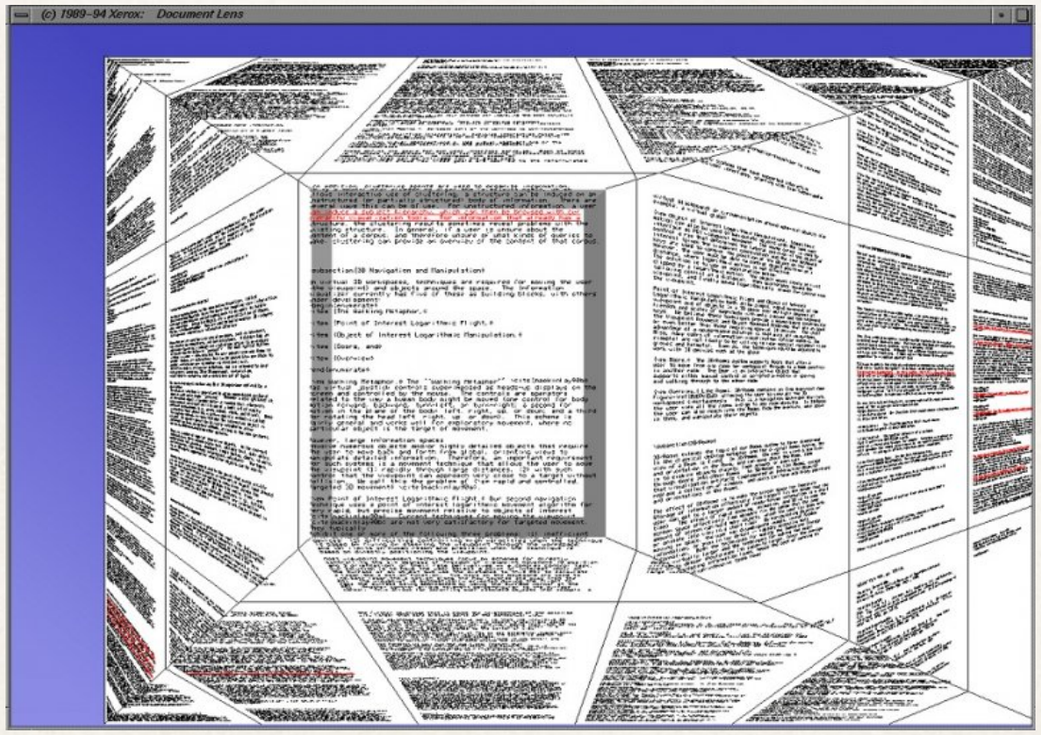


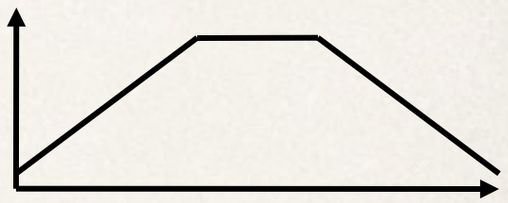
borrowed from C. North

Visual transfer functions





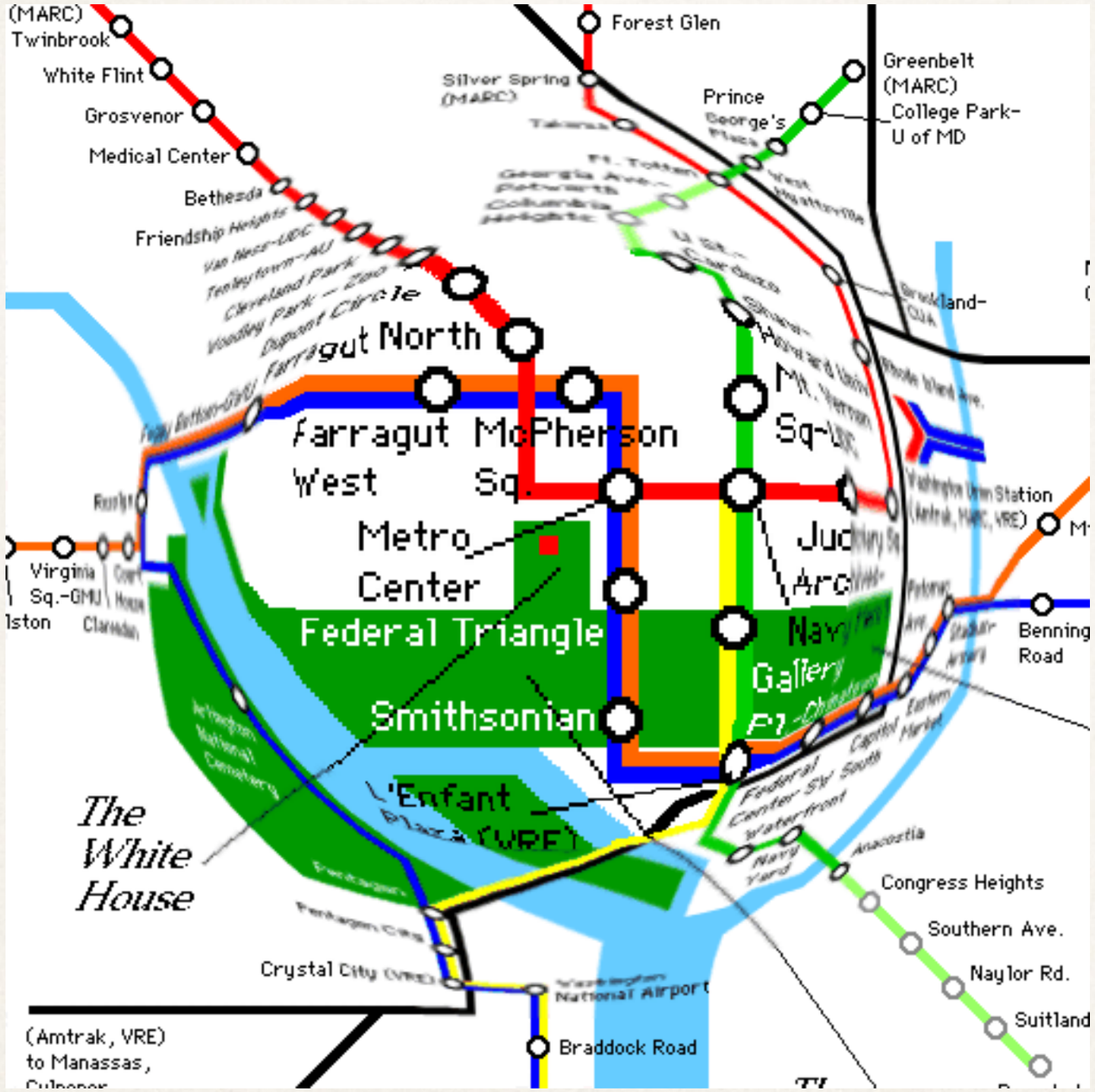


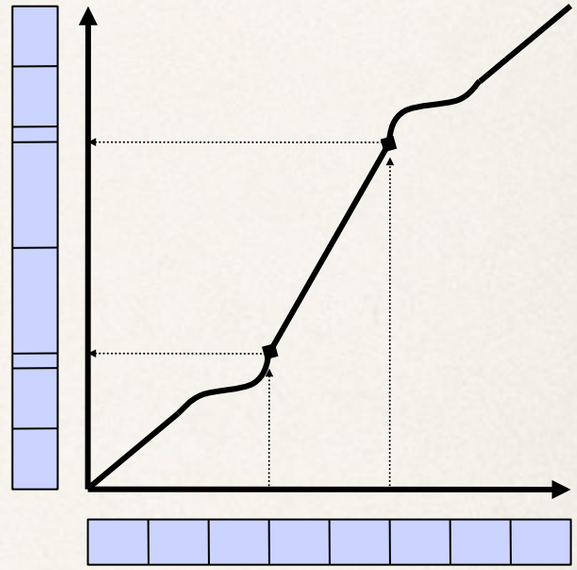


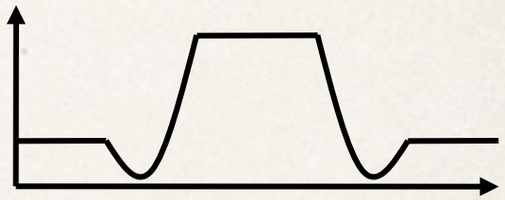
Perspective

borrowed from C. North

Visual transfer functions



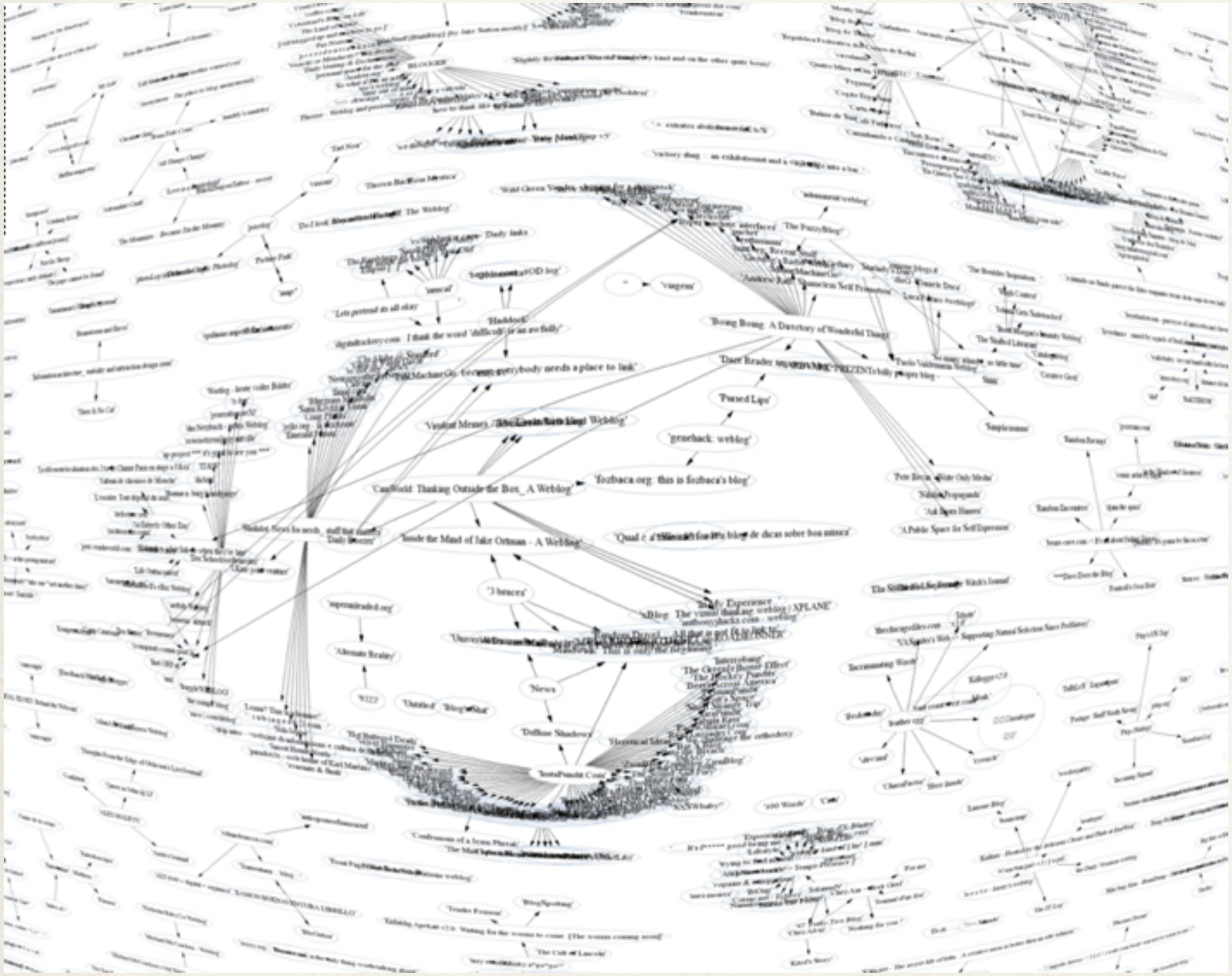


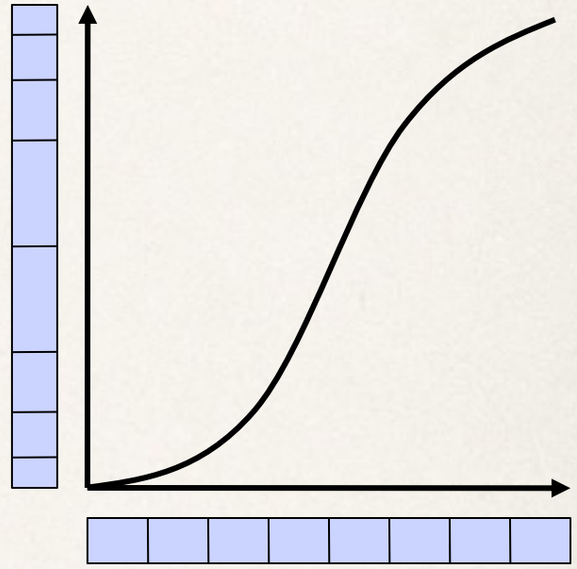


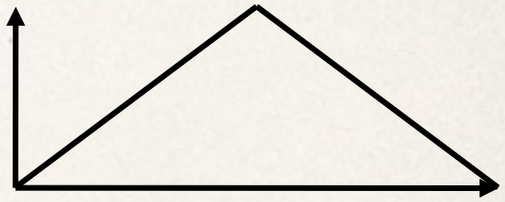
Bubble

borrowed from C. North

Visual transfer functions



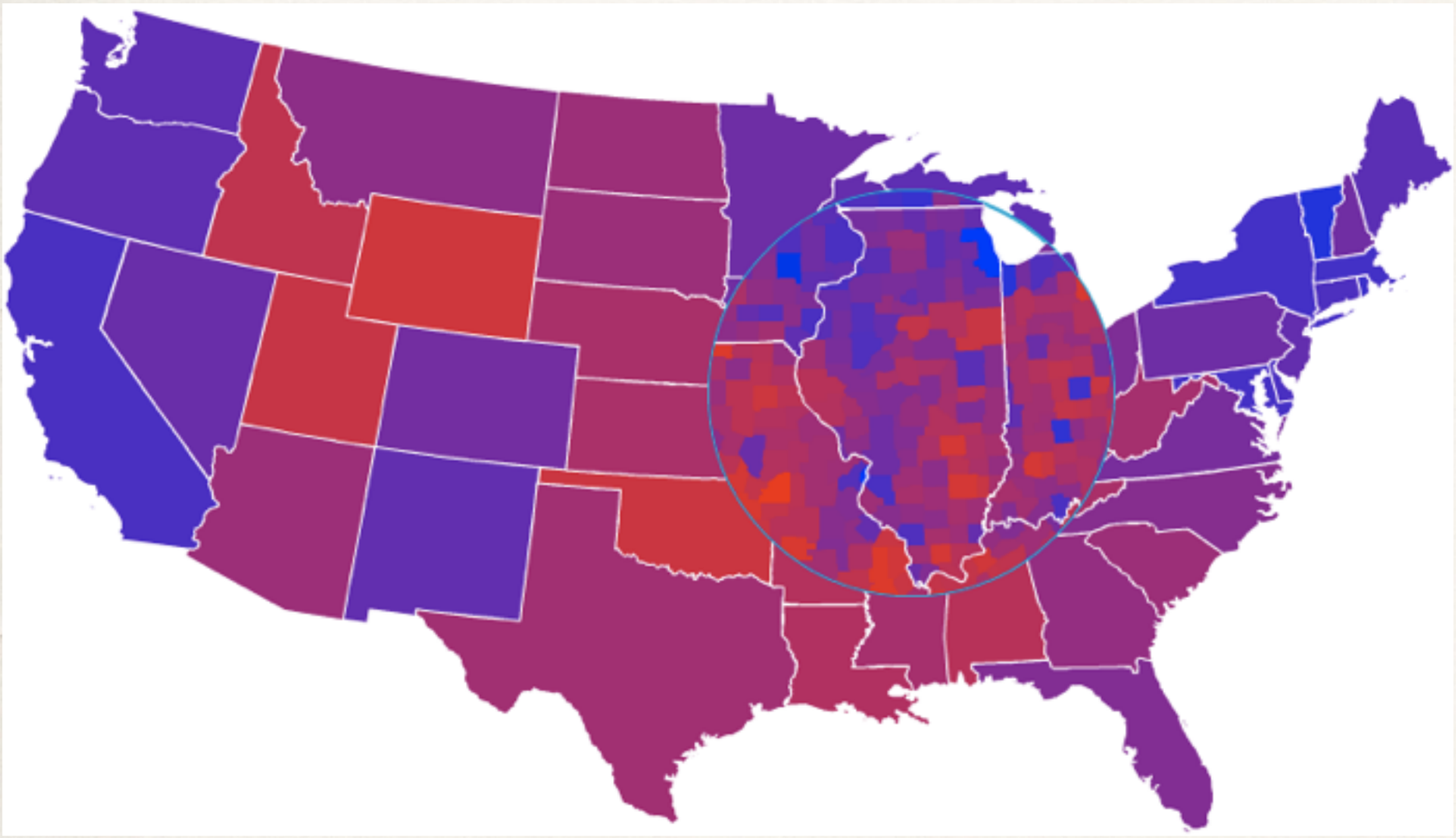


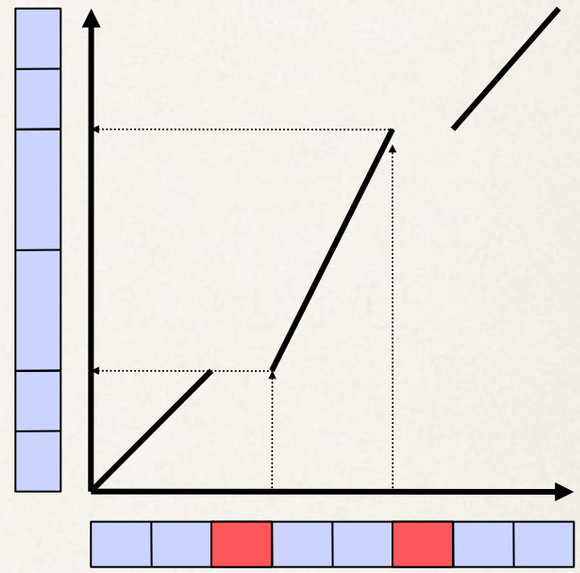


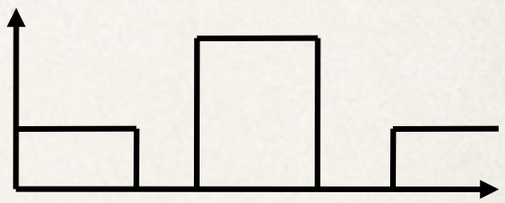
Fish-eye

borrowed from C. North

Visual transfer functions



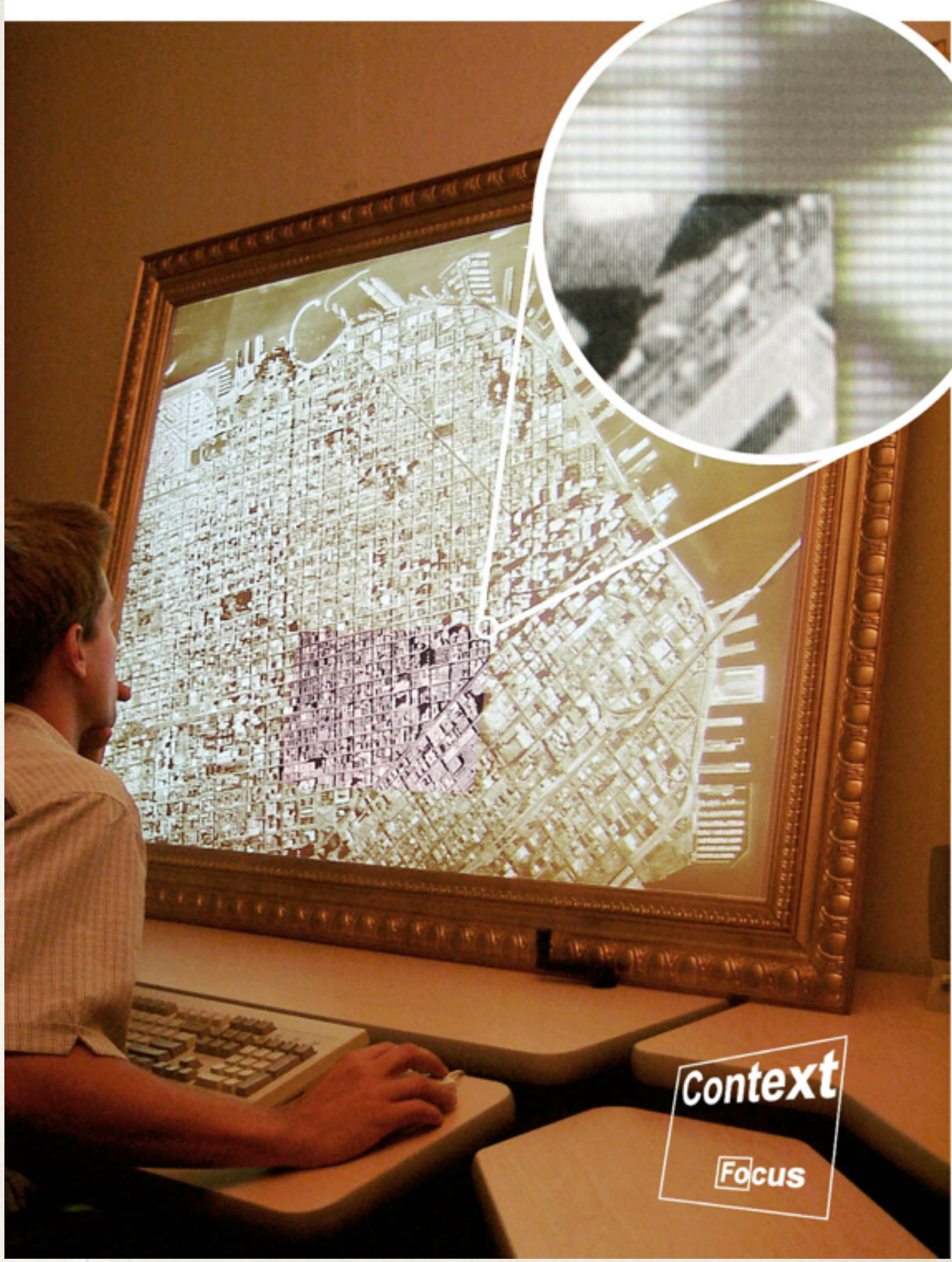




Magnifying glass

borrowed from C. North

Focus + Context Screen



Baudish, “Keeping things in context...”

F+C versus O+D

Focus + Context

+ space efficient
+ smooth transition between detail and context

- distorts the view
- content moves differently than the mouse
- zoom factors are usually small (otherwise the distortion is large)

Overview + Detail

+ scales up to much larger data
+ multiple overviews possible
+ easier to implement

- detail and overview are disconnected
- replicates data
- takes up more screen real estate

borrowed from C. North

Navigation strategies

detail only

pan and zoom

overview + detail

focus + context

detail *without* overview

detail *or* overview

detail *next* to overview

detail *with* overview

borrowed from C. North