

Navigation

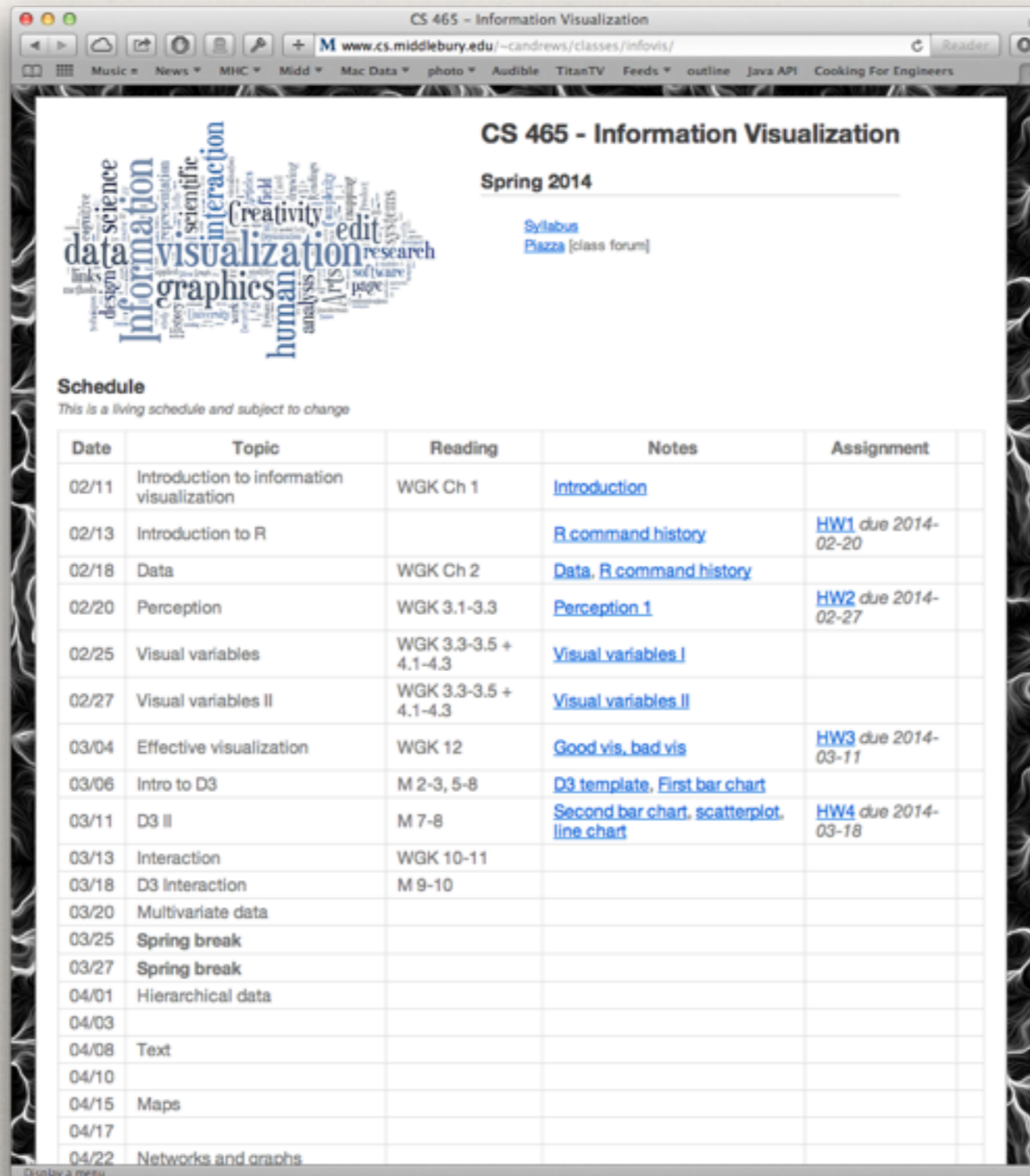
C. Andrews

2016-03-23

Show me the

Navigation
data!

Conventional navigation



CS 465 - Information Visualization

Spring 2014

[Syllabus](#)
[Plaza \[class forum\]](#)

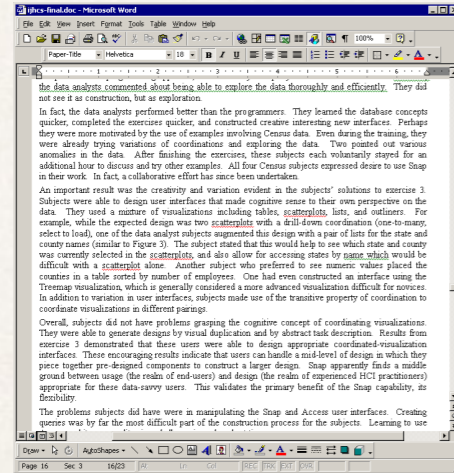
Schedule

This is a living schedule and subject to change

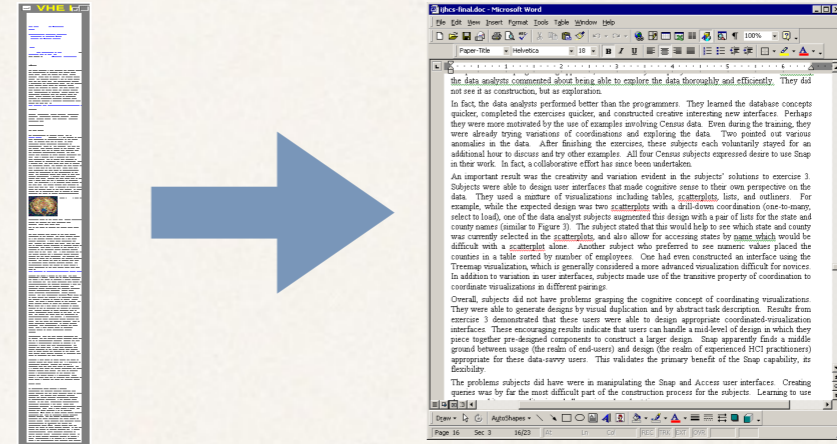
Date	Topic	Reading	Notes	Assignment
02/11	Introduction to information visualization	WGK Ch 1	Introduction	
02/13	Introduction to R		R command history	HW1 due 2014-02-20
02/18	Data	WGK Ch 2	Data, R command history	
02/20	Perception	WGK 3.1-3.3	Perception 1	HW2 due 2014-02-27
02/25	Visual variables	WGK 3.3-3.5 + 4.1-4.3	Visual variables I	
02/27	Visual variables II	WGK 3.3-3.5 + 4.1-4.3	Visual variables II	
03/04	Effective visualization	WGK 12	Good vis, bad vis	HW3 due 2014-03-11
03/06	Intro to D3	M 2-3, 5-8	D3 template, First bar chart	
03/11	D3 II	M 7-8	Second bar chart, scatterplot, line chart	HW4 due 2014-03-18
03/13	Interaction	WGK 10-11		
03/18	D3 Interaction	M 9-10		
03/20	Multivariate data			
03/25	Spring break			
03/27	Spring break			
04/01	Hierarchical data			
04/03				
04/08	Text			
04/10				
04/15	Maps			
04/17				
04/22	Networks and graphs			

Navigation strategies

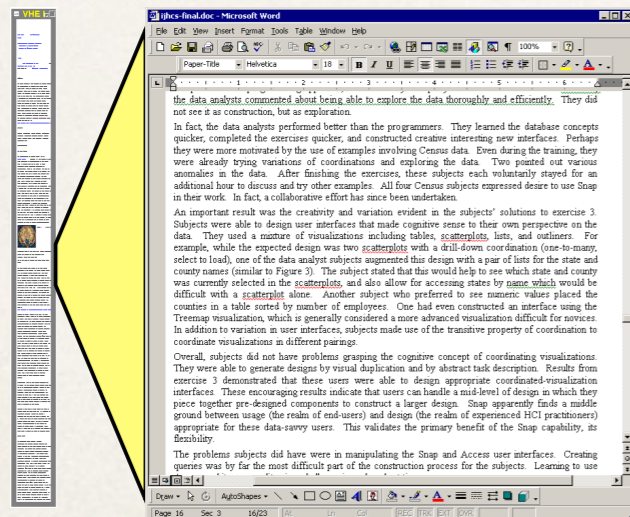
Detail only



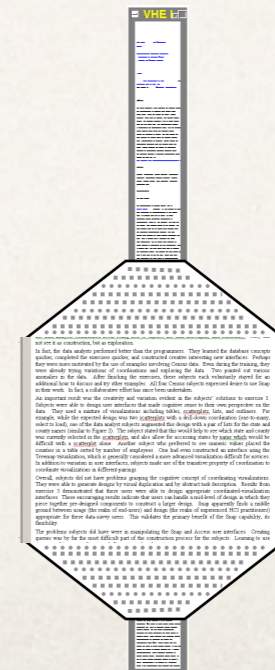
Zooming



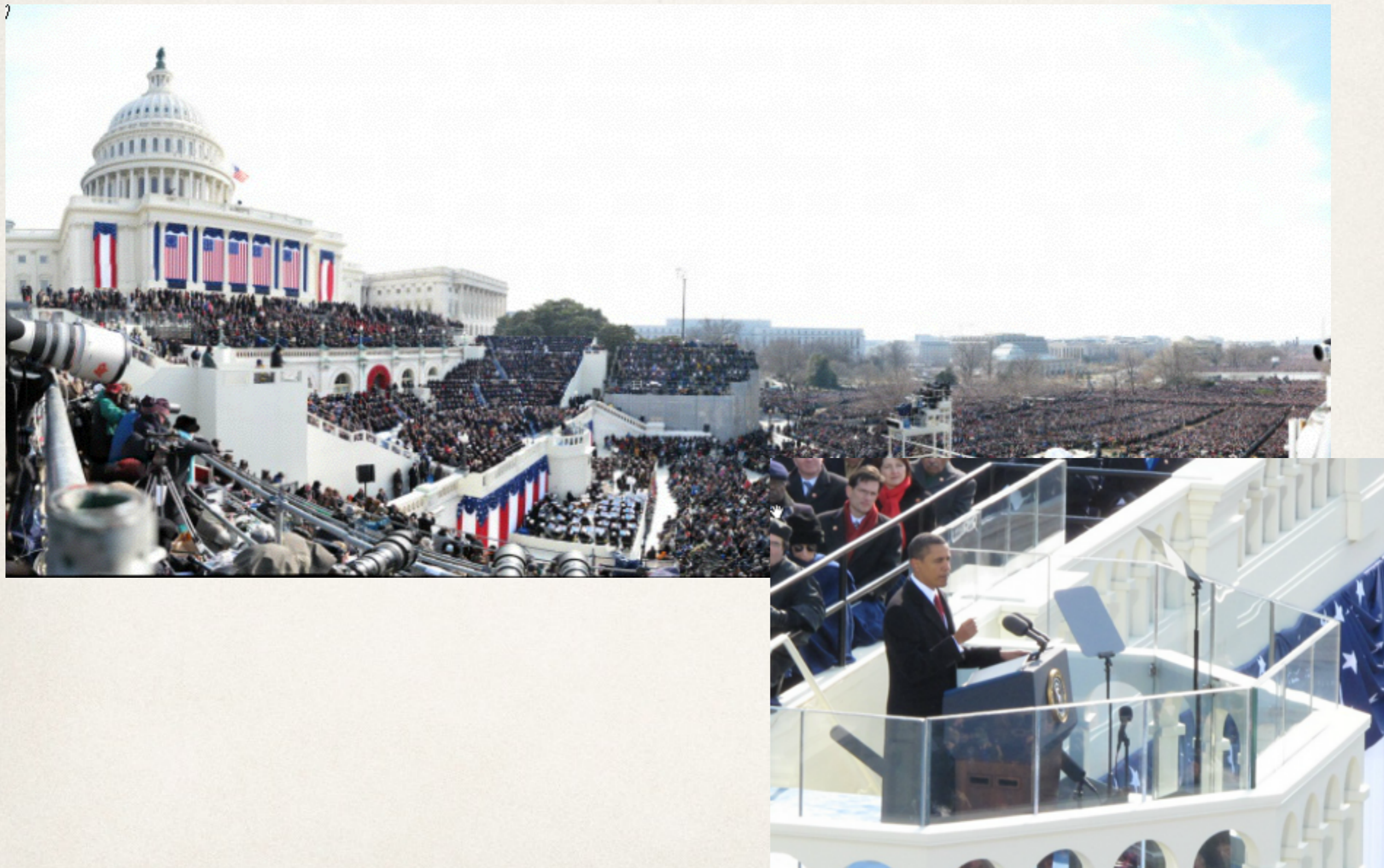
Overview + Detail



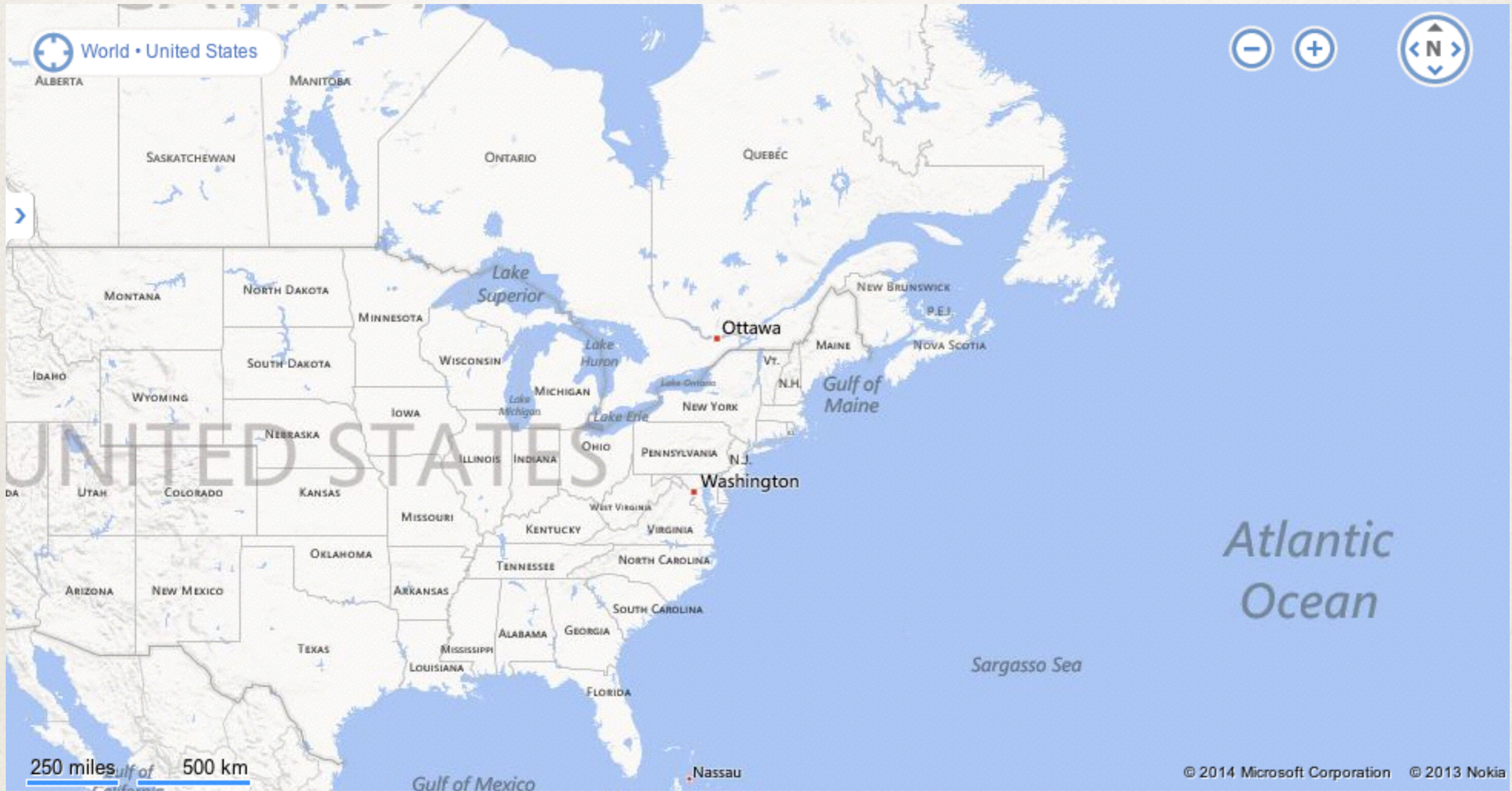
Focus + Context



Pan and zoom



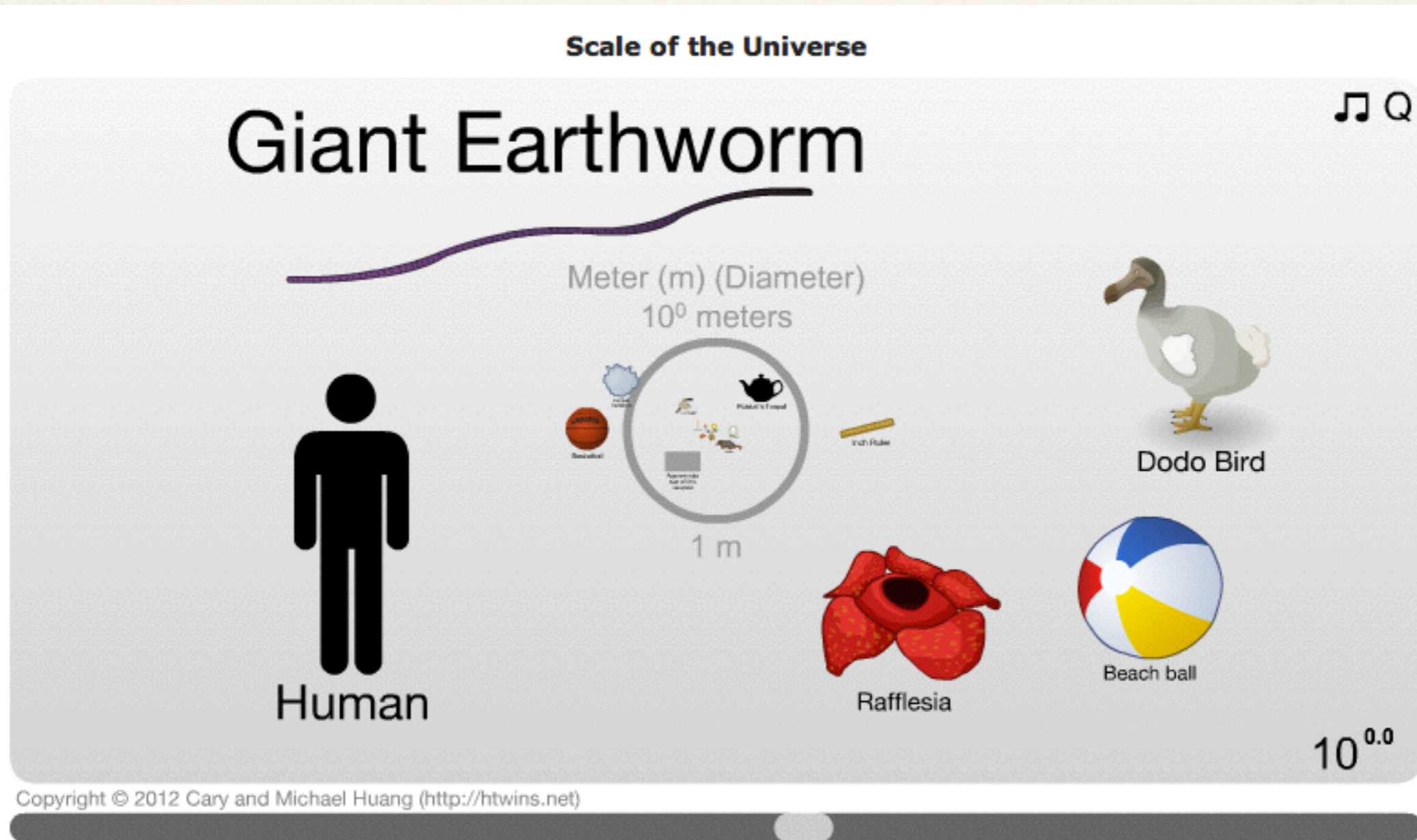
Pan and Zoom



Zoomable user interface

The screenshot shows a Prezi presentation interface. At the top, the Prezi logo is on the left, and navigation links for 'Create', 'Learn & Support', and 'Explore' are in the center. On the right, there are 'Sign up' and 'Log in' buttons. The main content area features a zoomable timeline. A large orange arrow points from the year '2013' on the right towards the left, indicating the direction of zoom. Key historical events are marked on the timeline: '9/11', 'Bush Presidency', and 'Obama Presidency'. A text box titled 'Putting Time In Perspective' is highlighted with a teal border, containing text about the scale of time and a Prezi logo. Below the timeline, a wavy white line represents educational stages: 'Middle school', 'High School', 'College', and 'Real Life'. Further down, 'Dred Scott trial' and 'Mobile phones' are also visible. At the bottom, there is a dark navigation bar with left and right arrows and a play button icon.

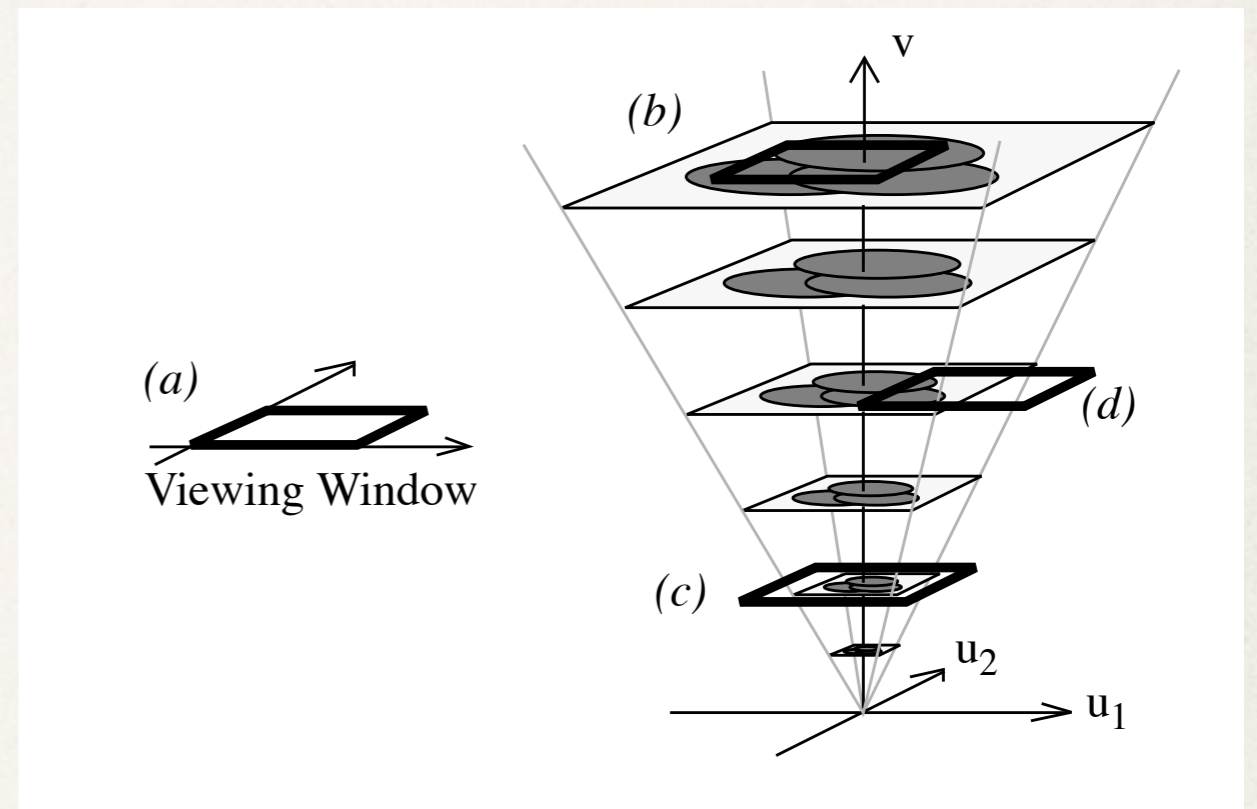
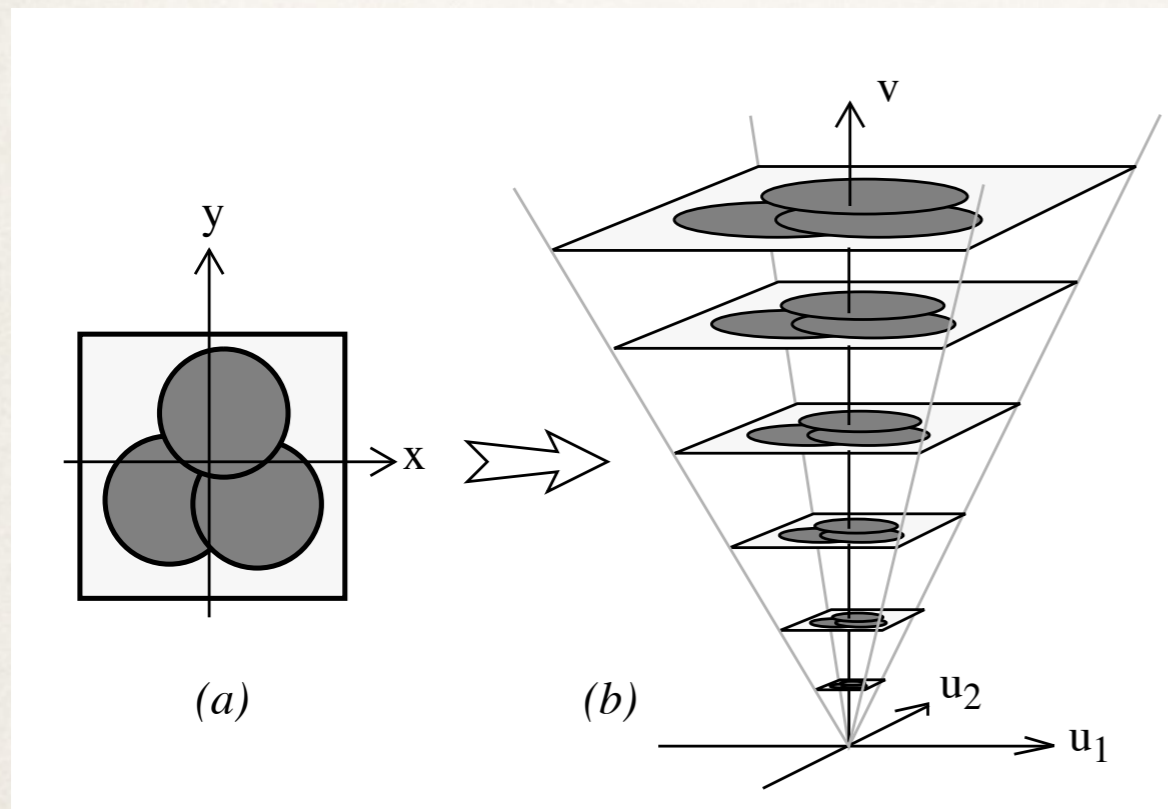
Zoomable user interface



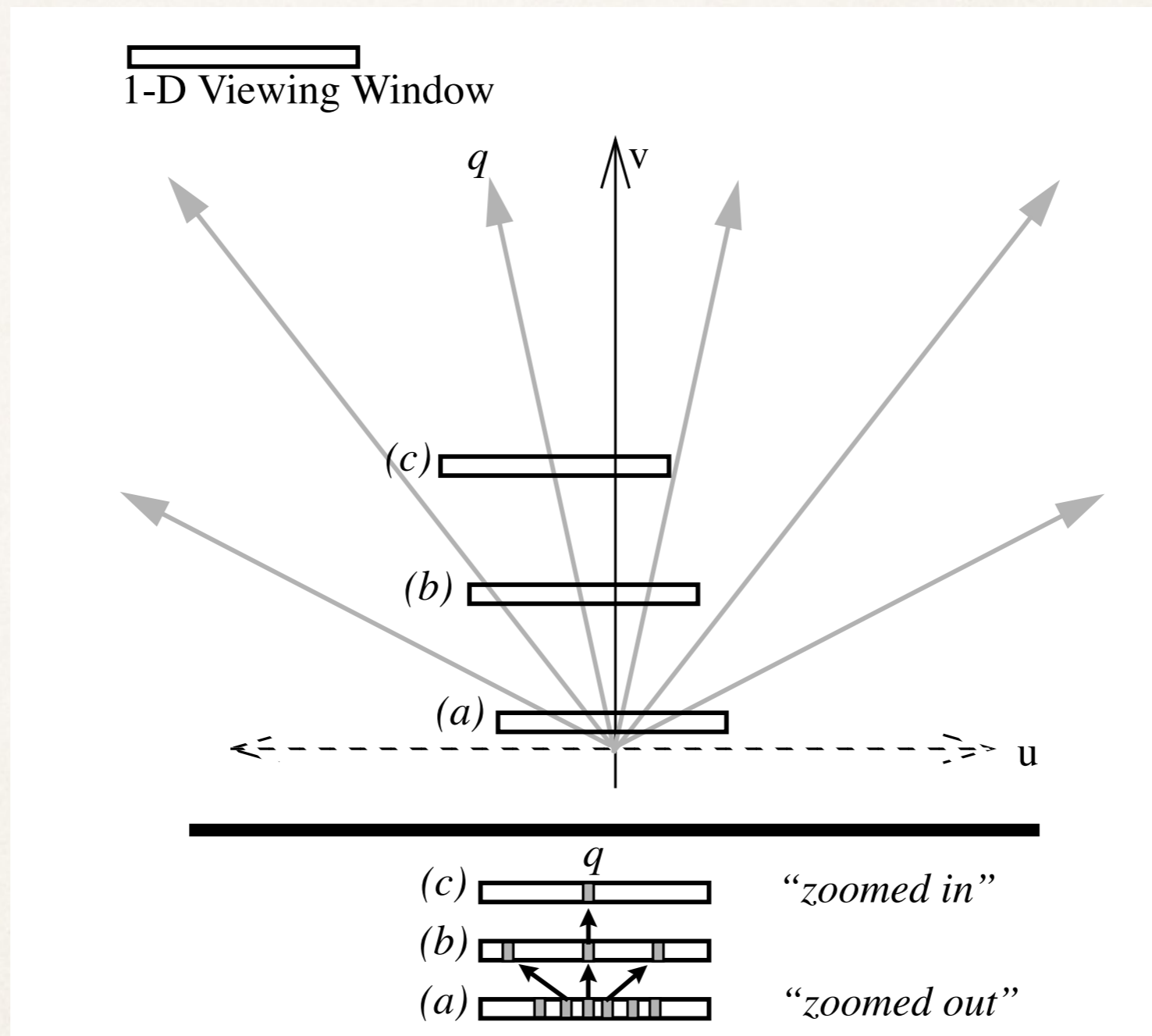
Developed by Cary Huang at [htwins](http://htwins.net)

<http://htwins.net/scale2/>

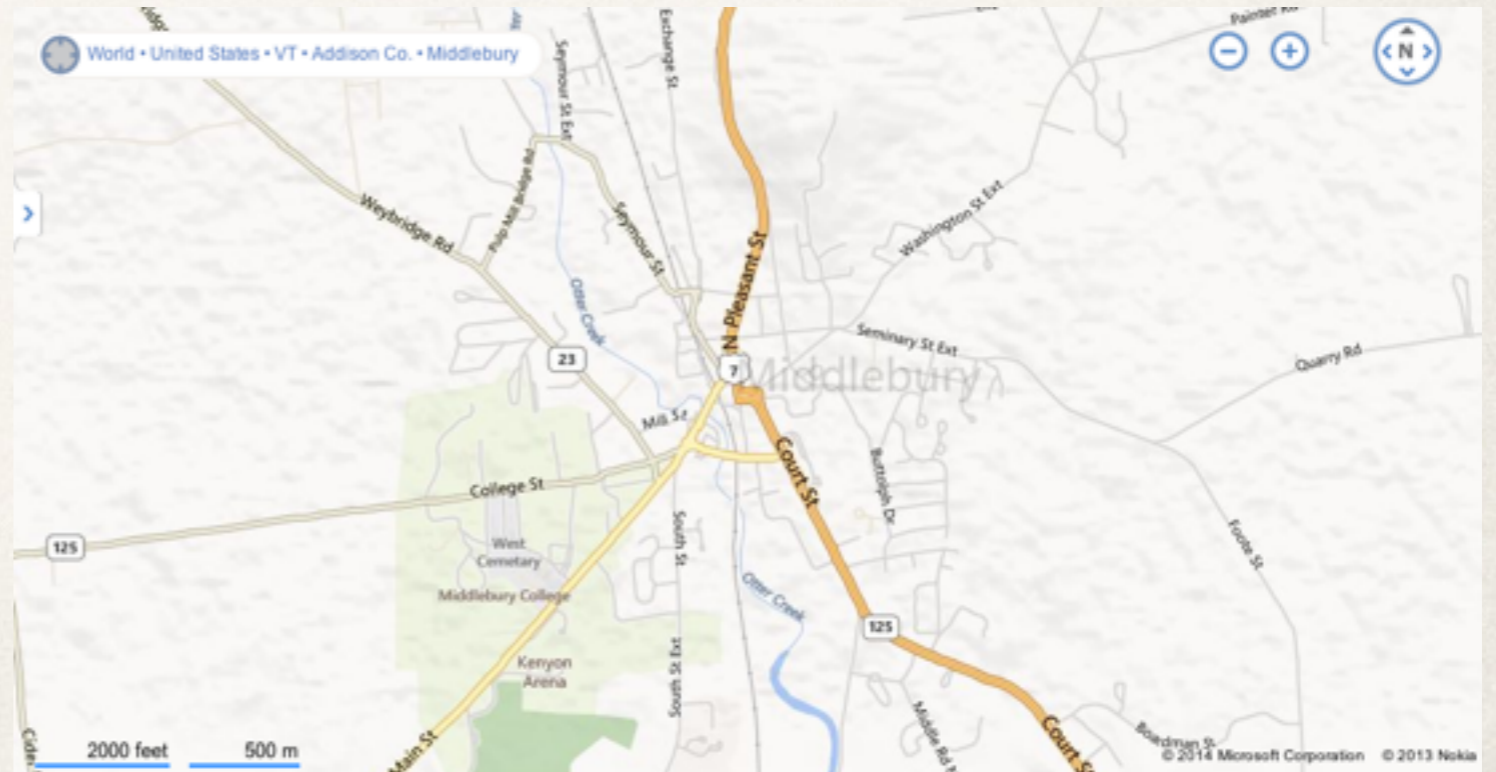
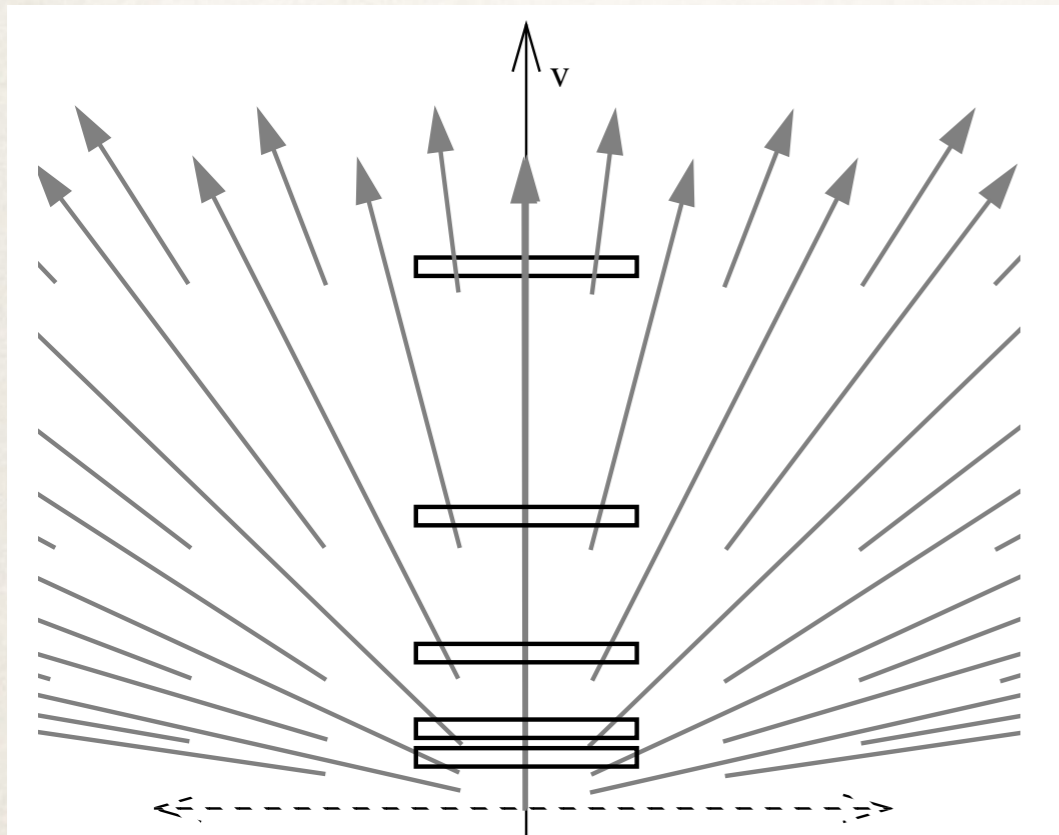
Space-scale diagrams



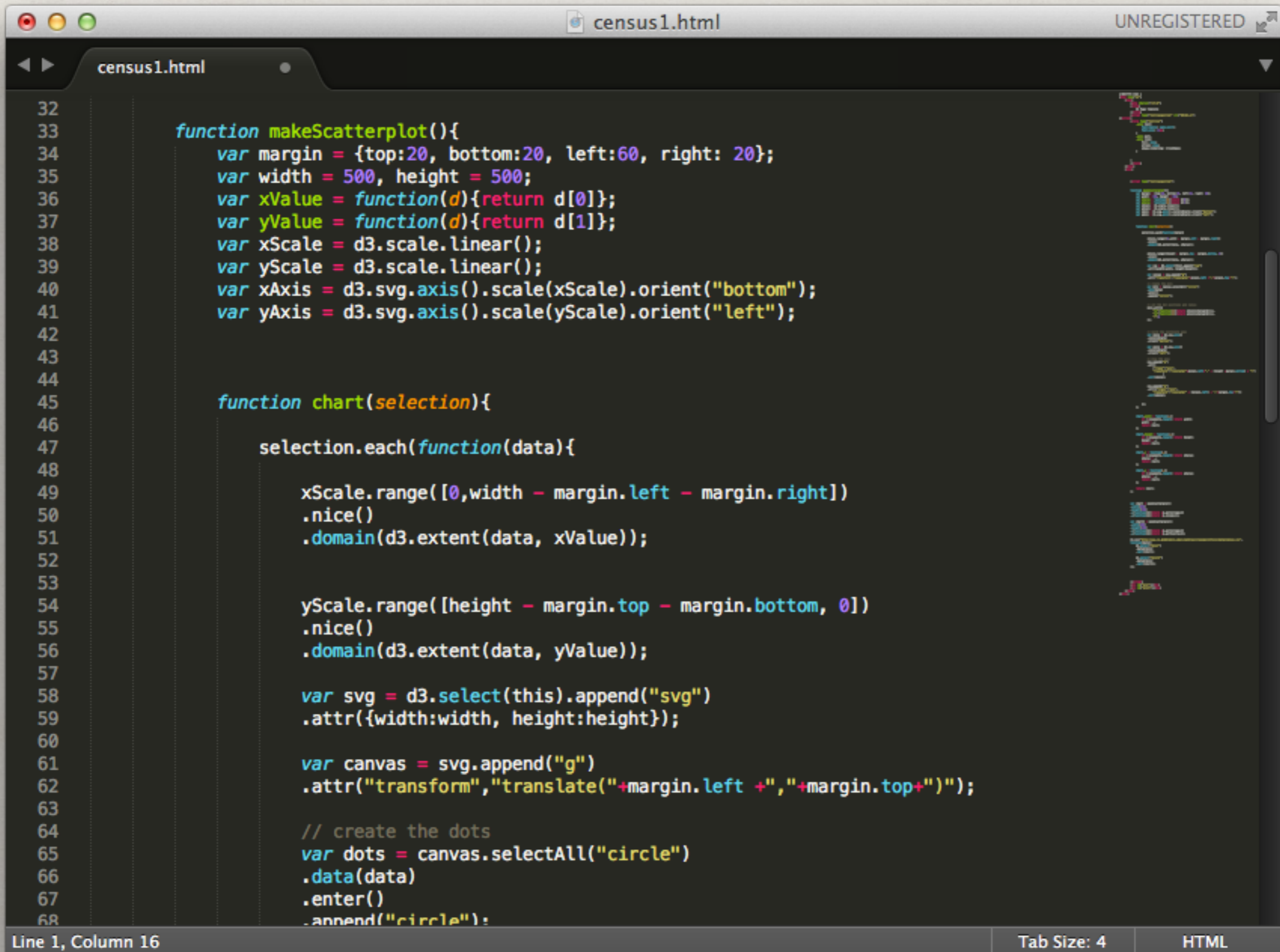
Space-scale diagrams



Semantic zooming



Overview + detail

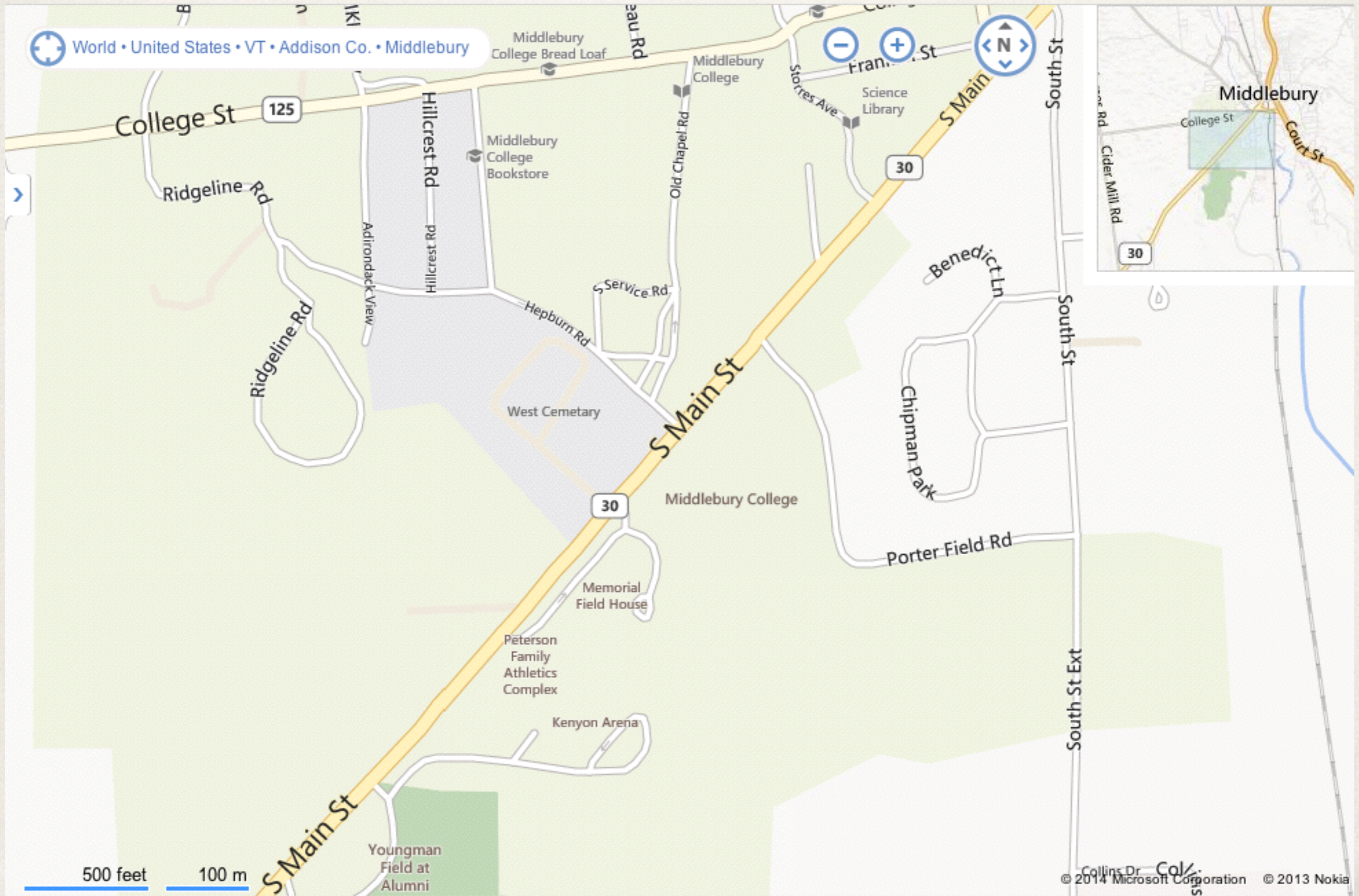


The image shows a code editor window titled 'census1.html' with a 'UNREGISTERED' watermark in the top right corner. The editor displays JavaScript code for creating a scatter plot. The code is organized into two main functions: 'makeScatterplot()' and 'chart(selection)'. The 'makeScatterplot()' function defines variables for margin, width, height, and scaling functions for x and y axes. The 'chart(selection)' function uses D3.js to create an SVG element, append a canvas, and generate data points as circles. The code is syntax-highlighted, and a right-hand sidebar shows a preview of the resulting scatter plot.

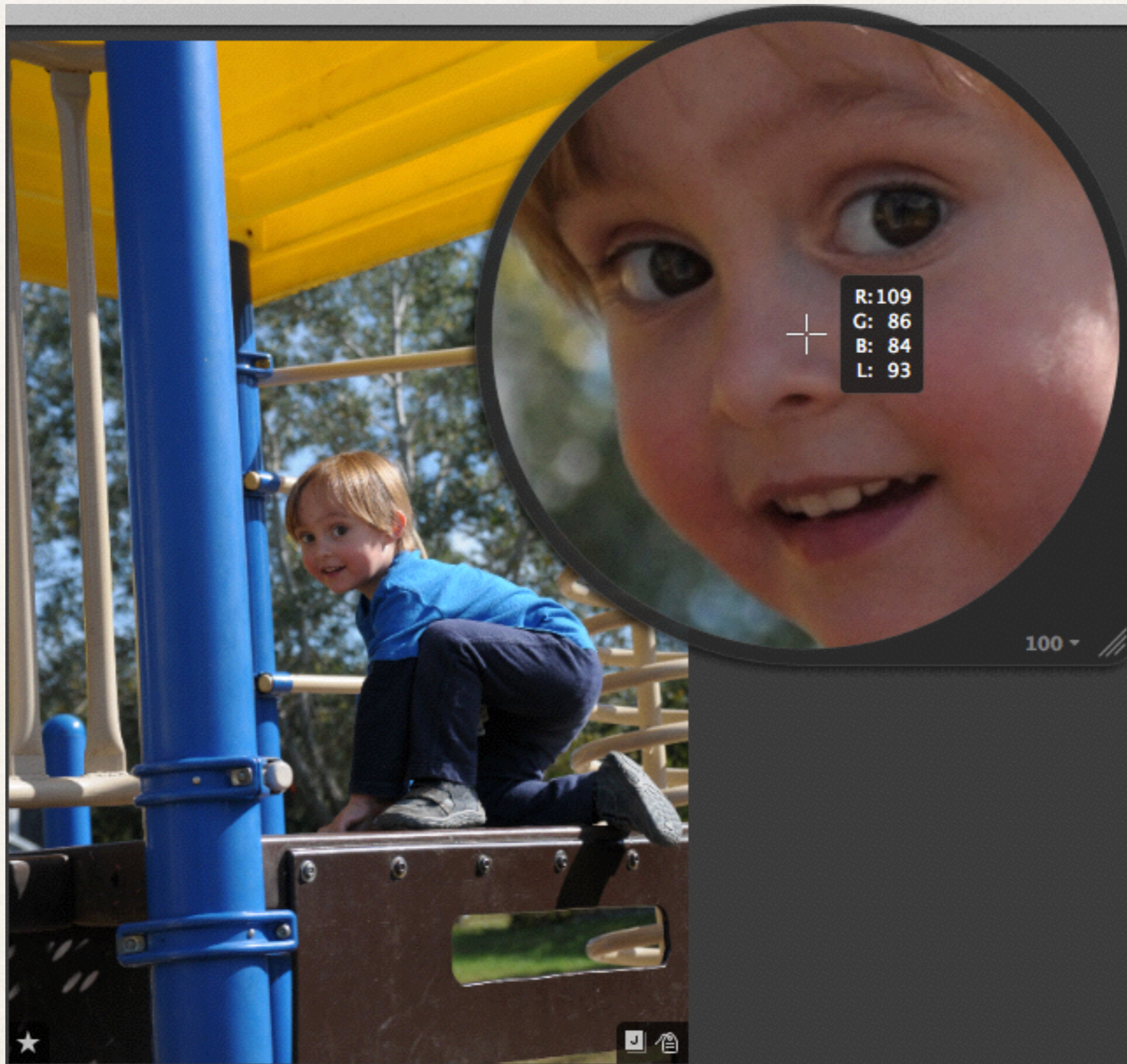
```
32
33  function makeScatterplot(){
34      var margin = {top:20, bottom:20, left:60, right: 20};
35      var width = 500, height = 500;
36      var xValue = function(d){return d[0]};
37      var yValue = function(d){return d[1]};
38      var xScale = d3.scale.linear();
39      var yScale = d3.scale.linear();
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

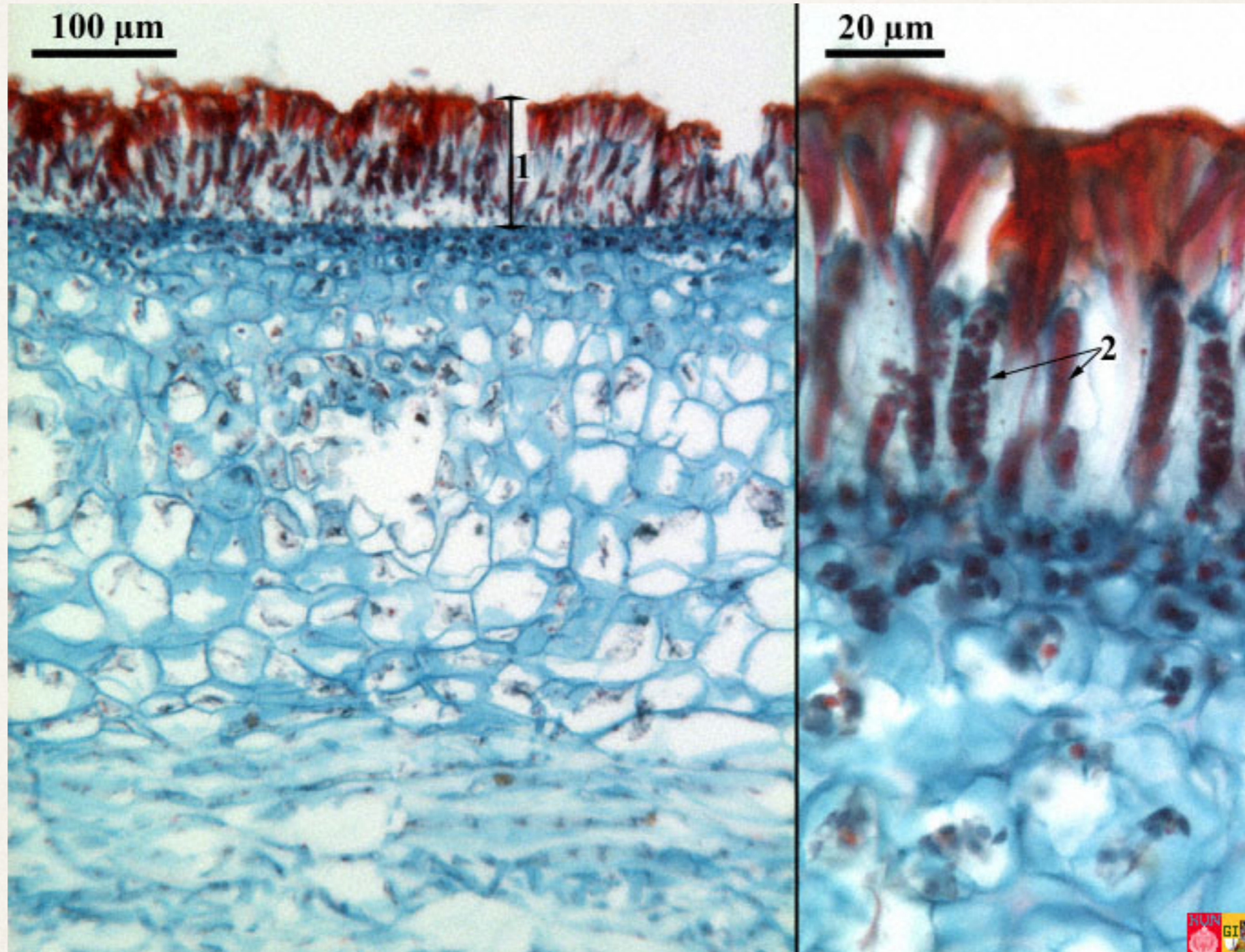
Overview + detail



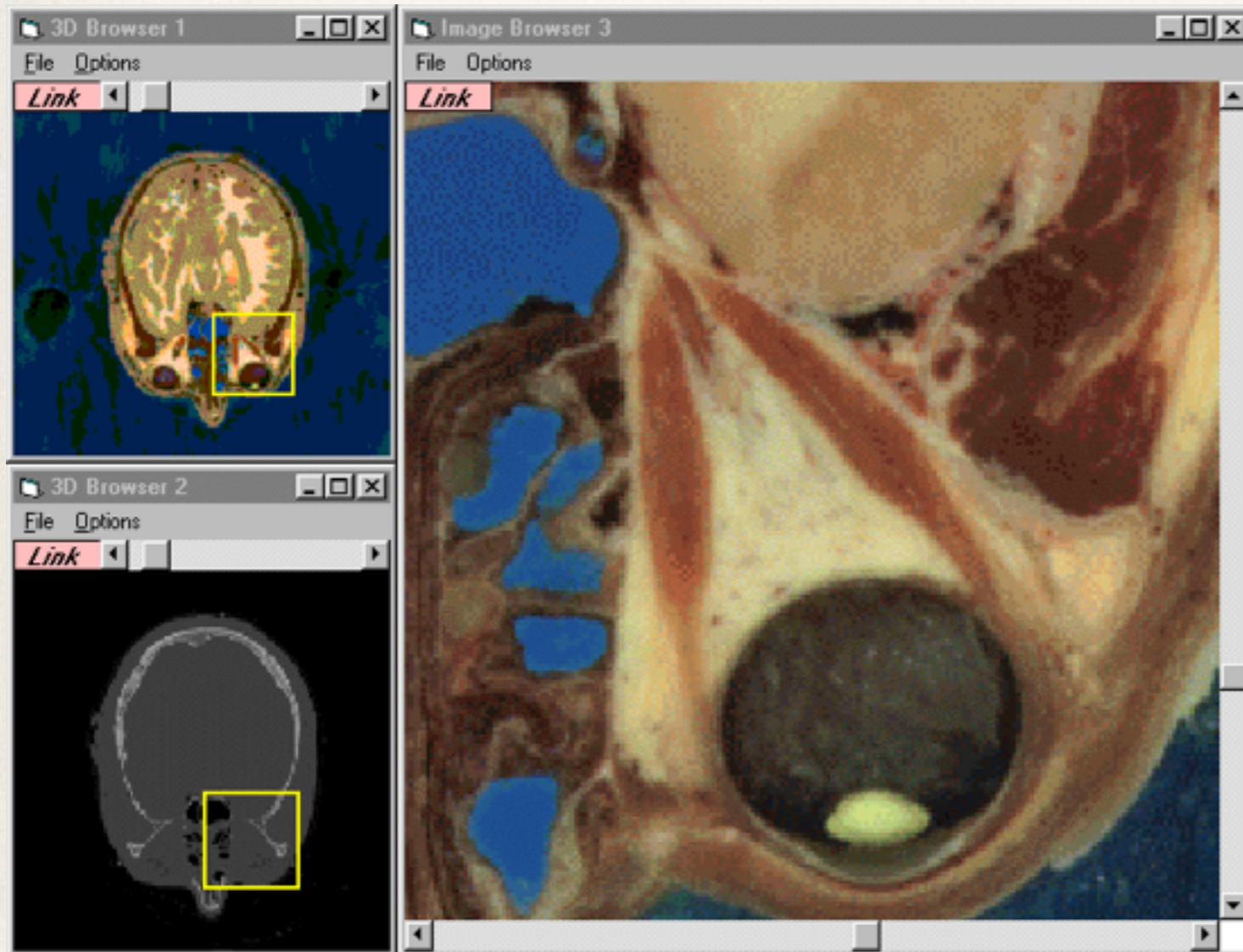
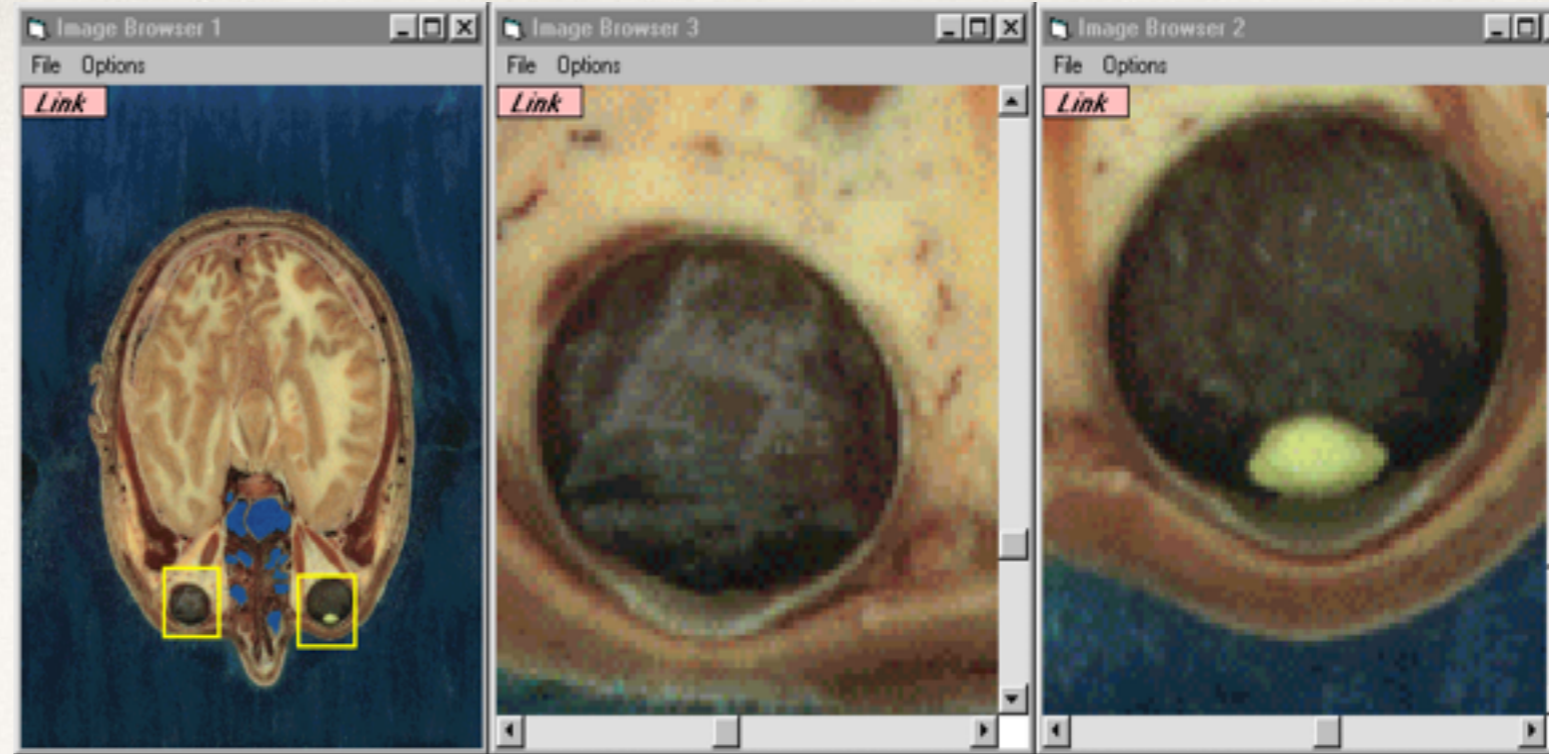
Overview + detail



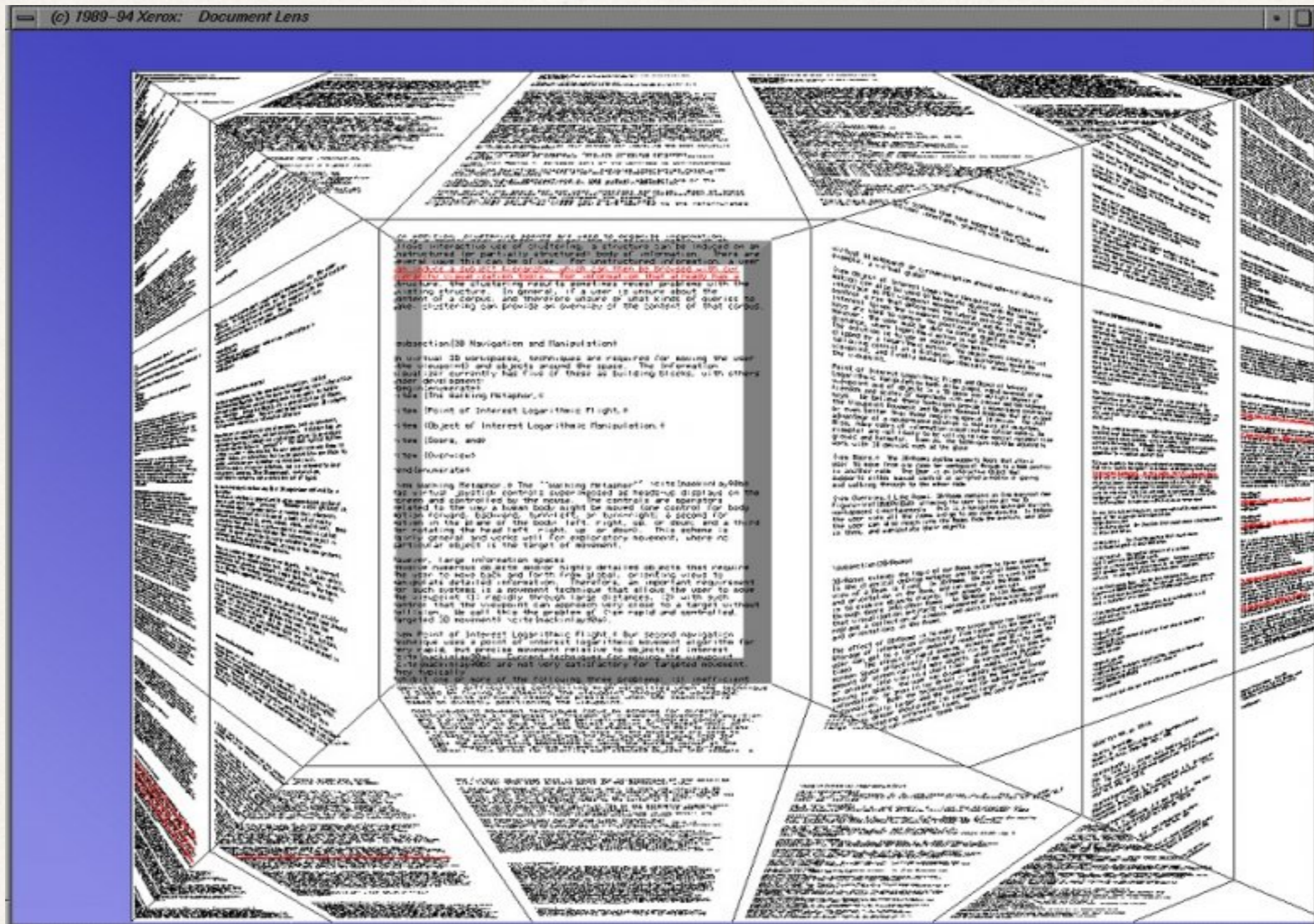
Overview + detail



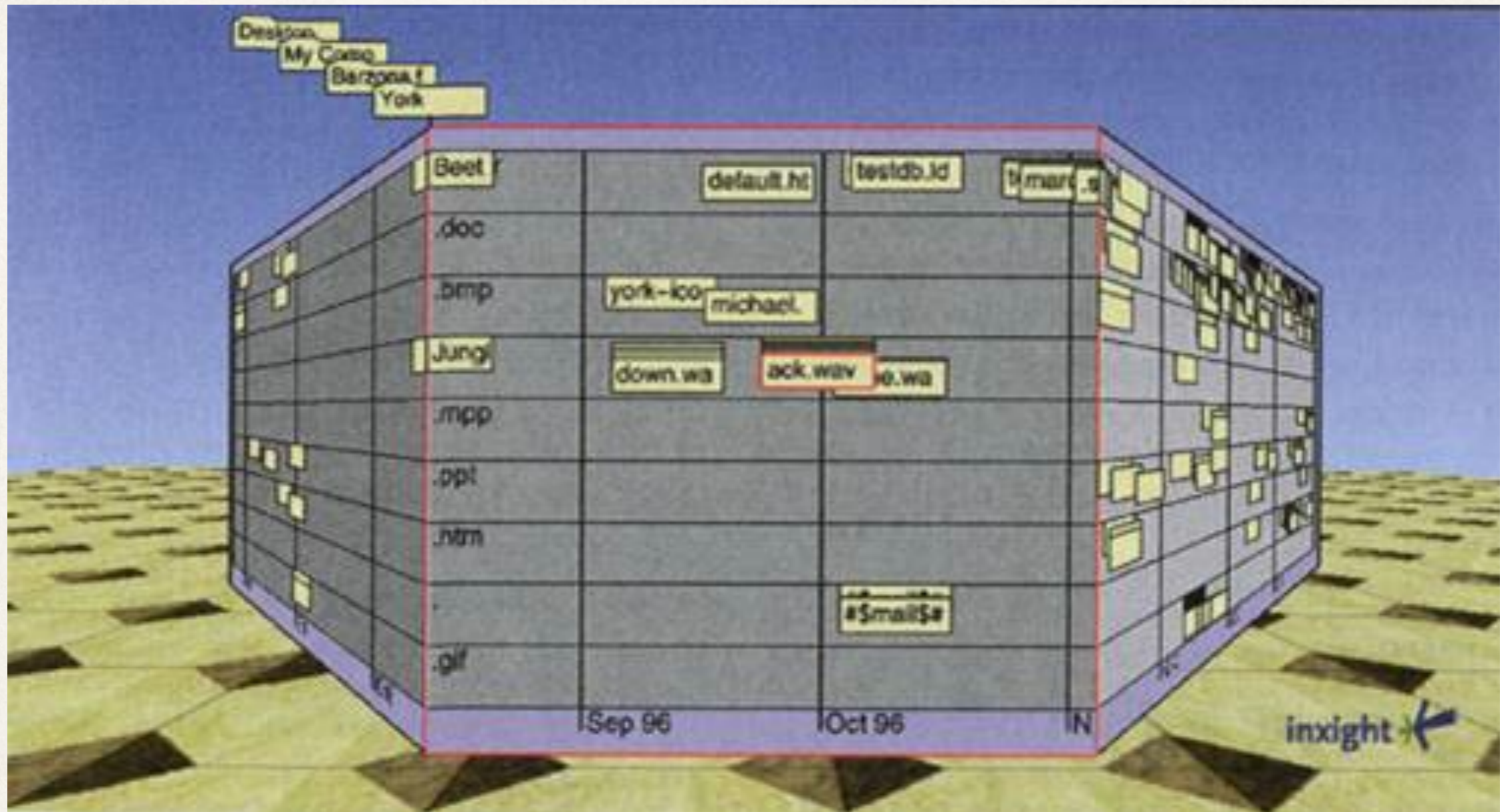
Overview + detail



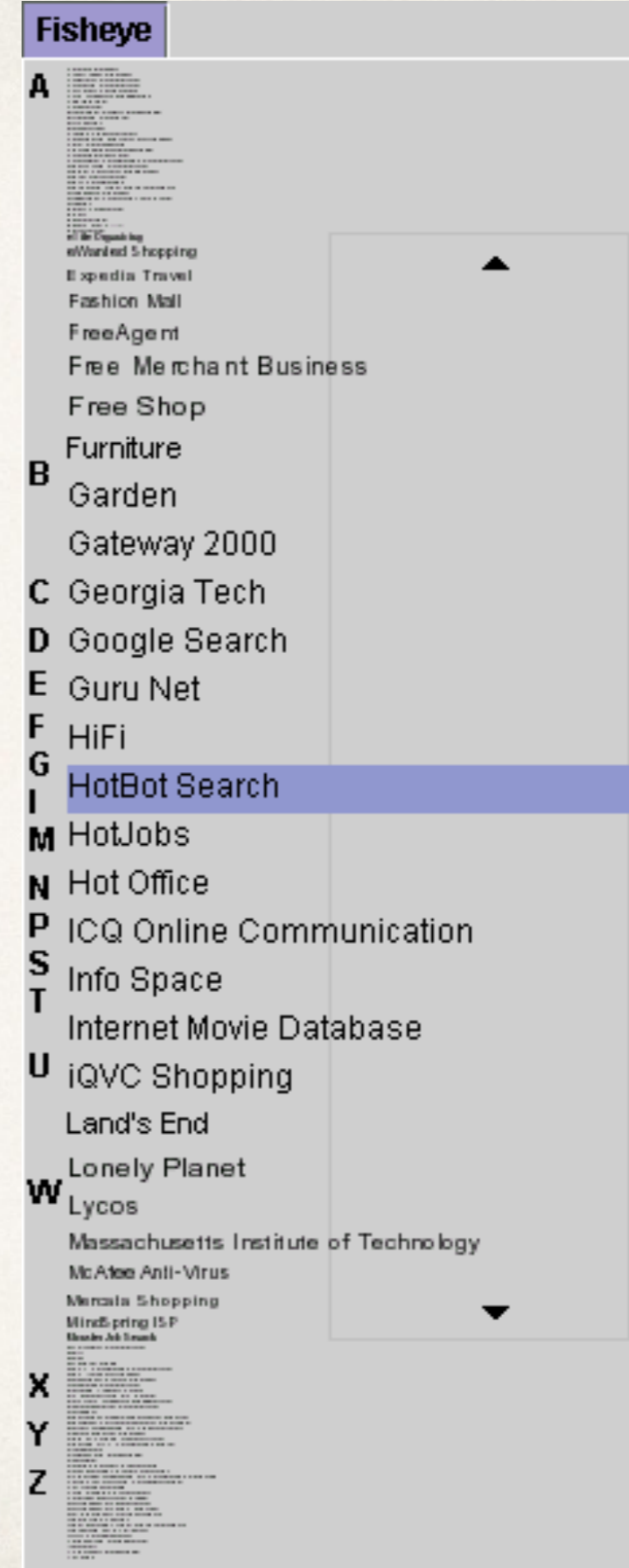
Focus + context



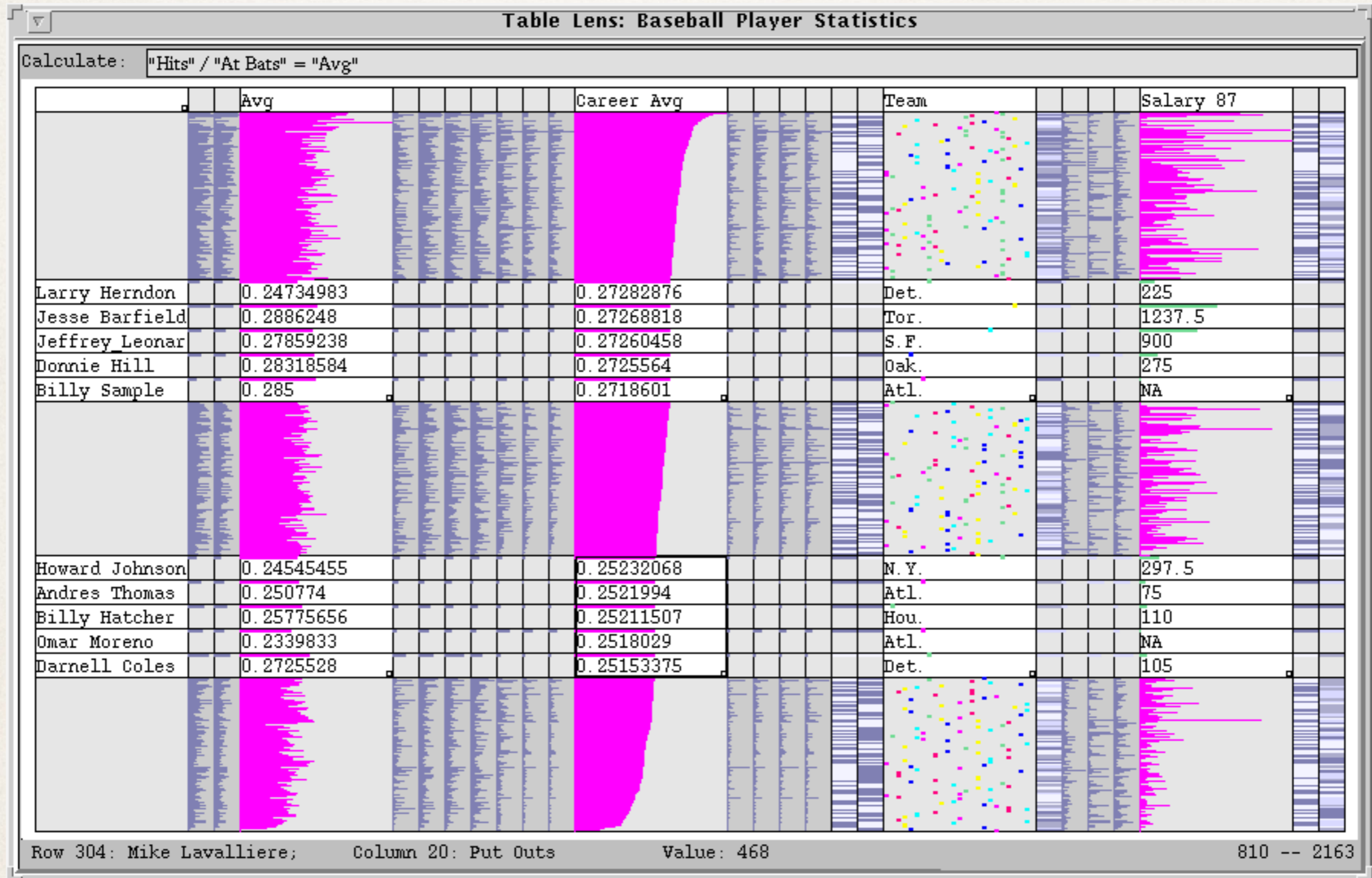
Focus + context



Focus + context



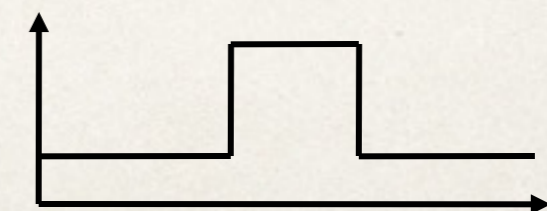
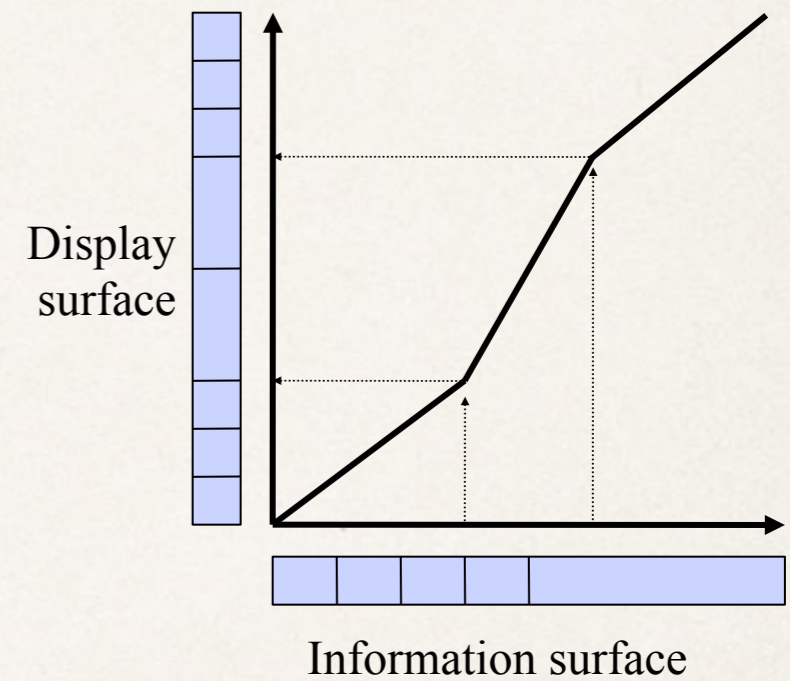
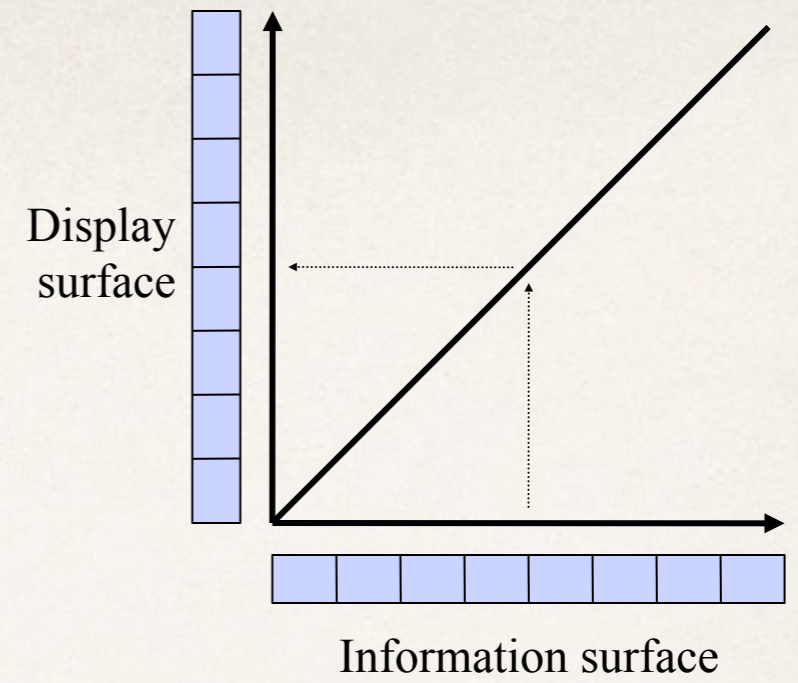
Focus + context



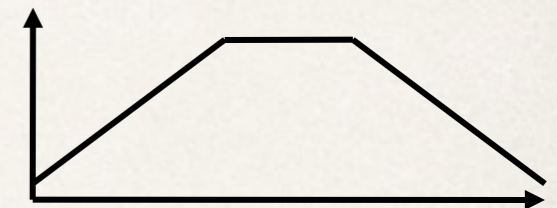
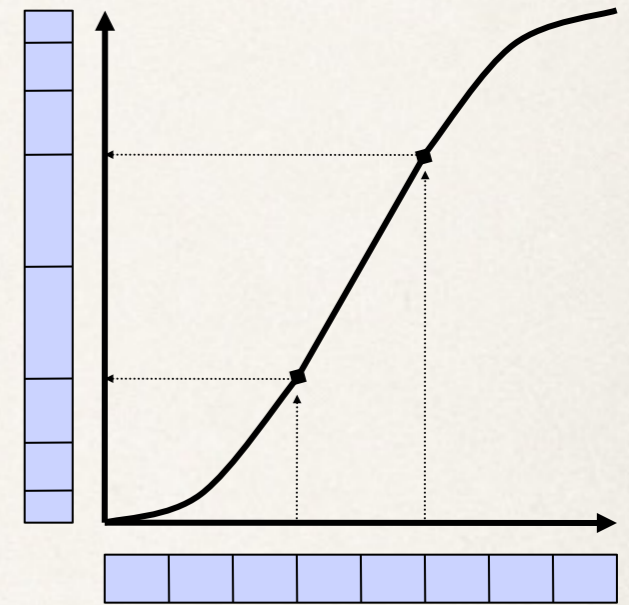
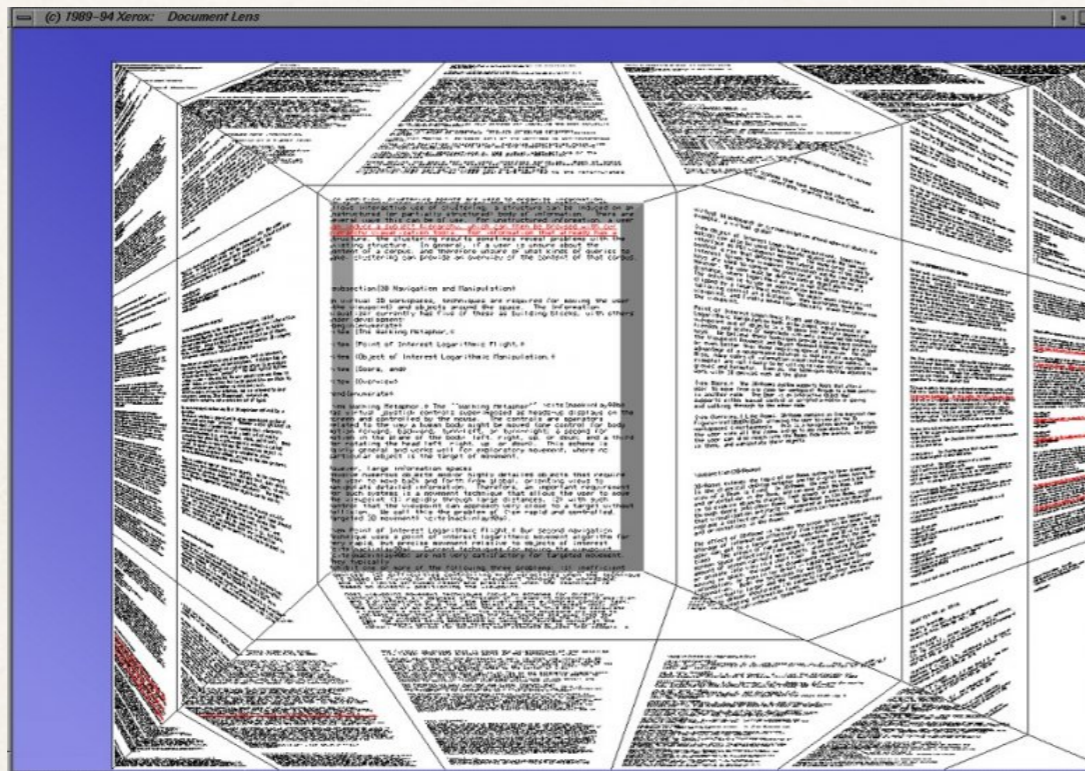
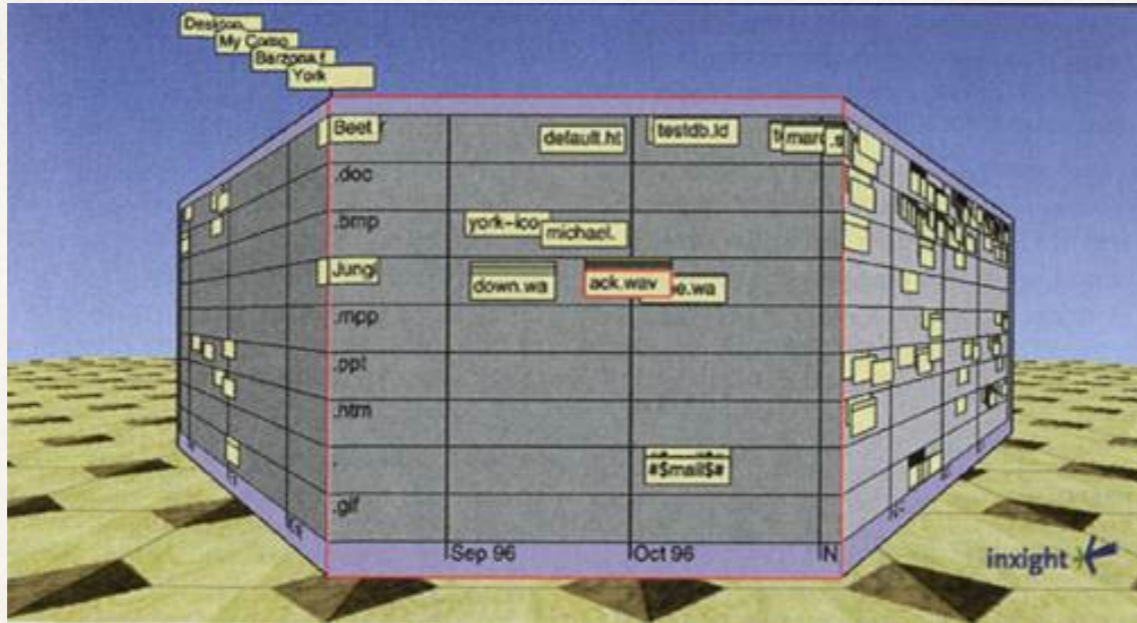
Visual transfer functions



Bifocal

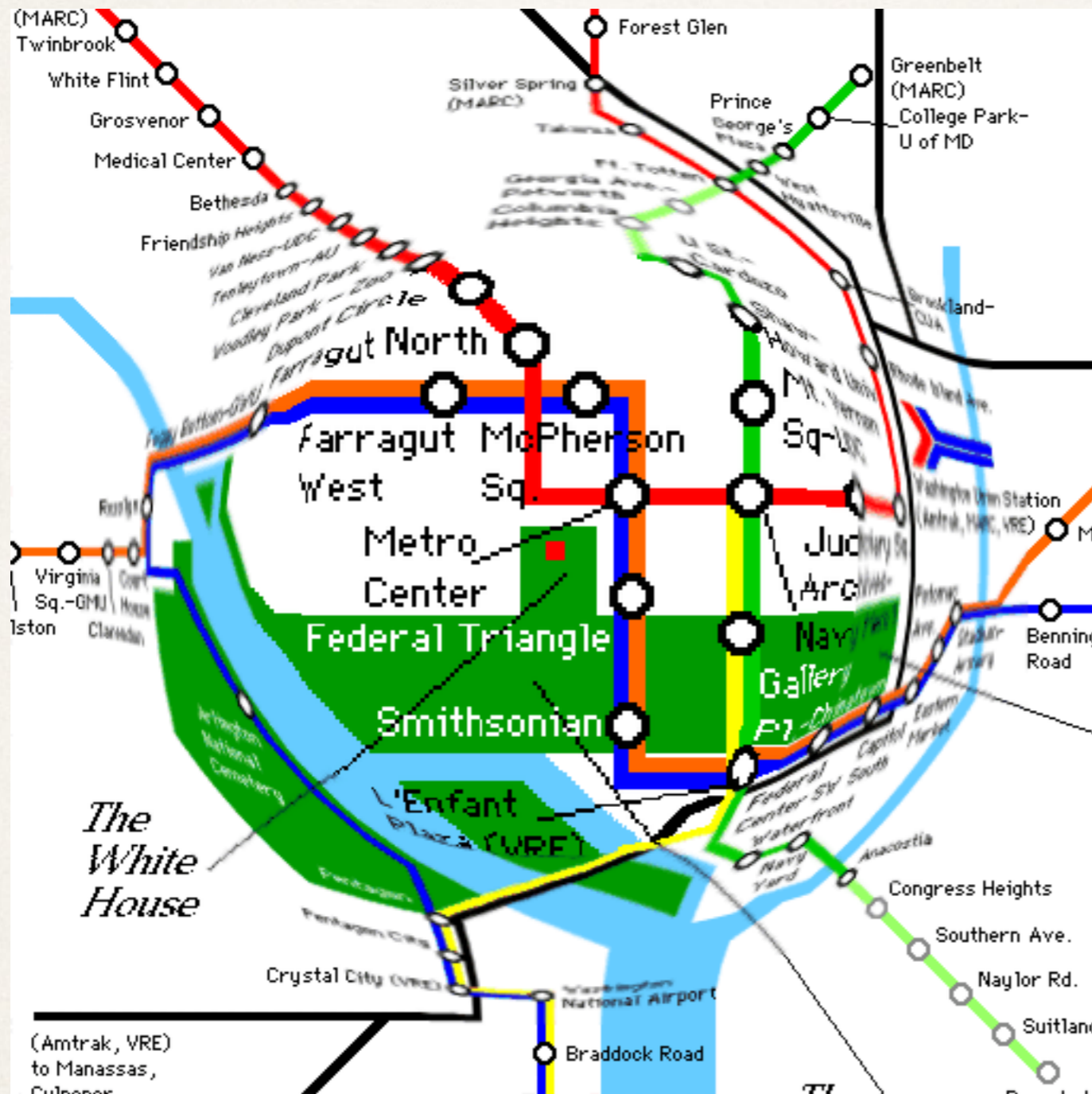


Visual transfer functions

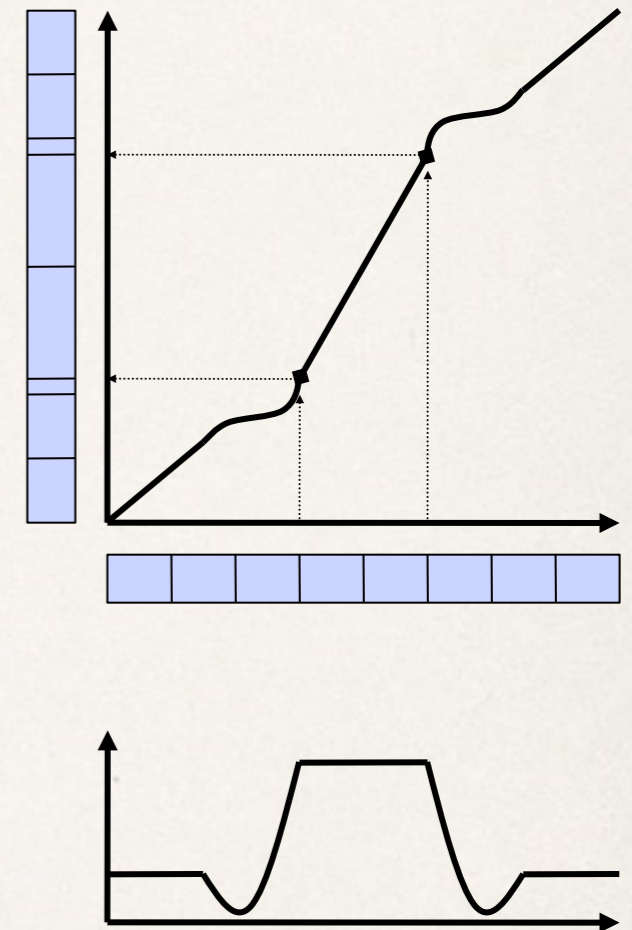


Perspective

Visual transfer functions

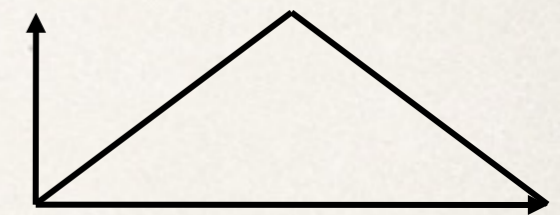
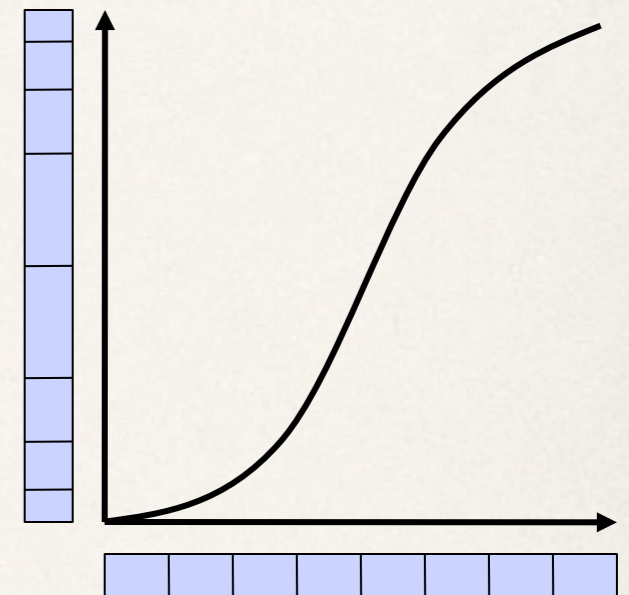
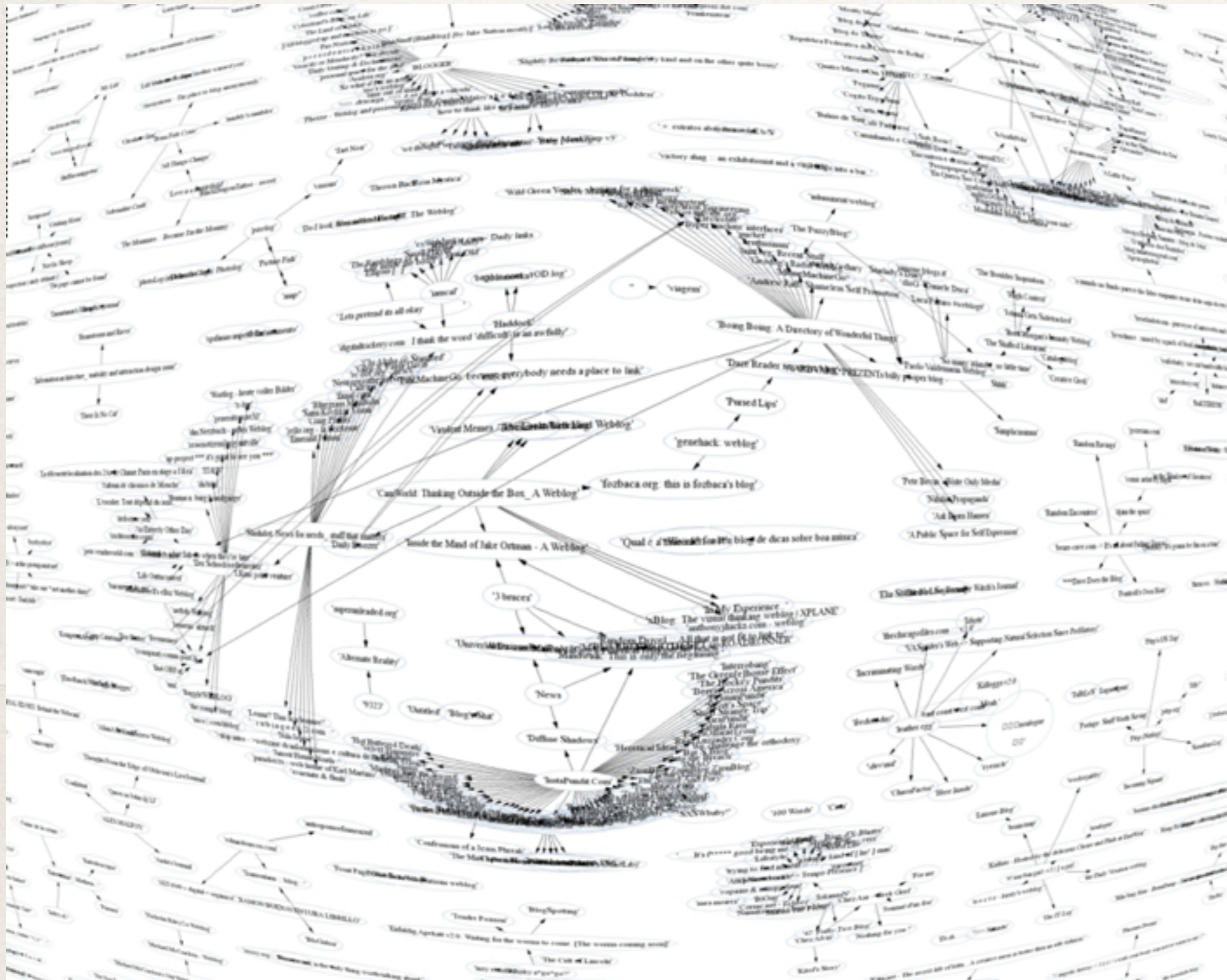


Bubble



borrowed from C. North

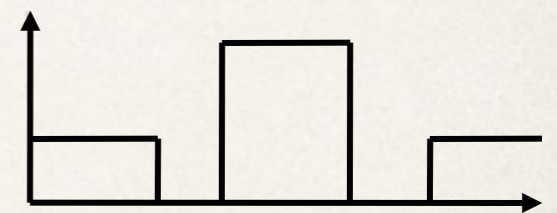
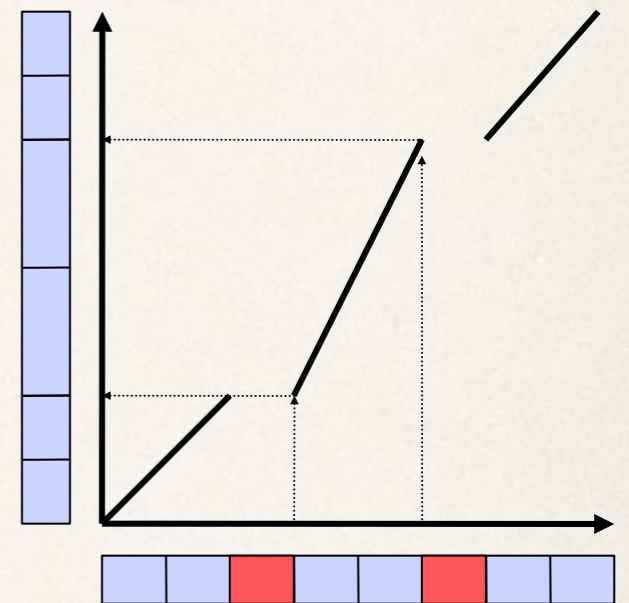
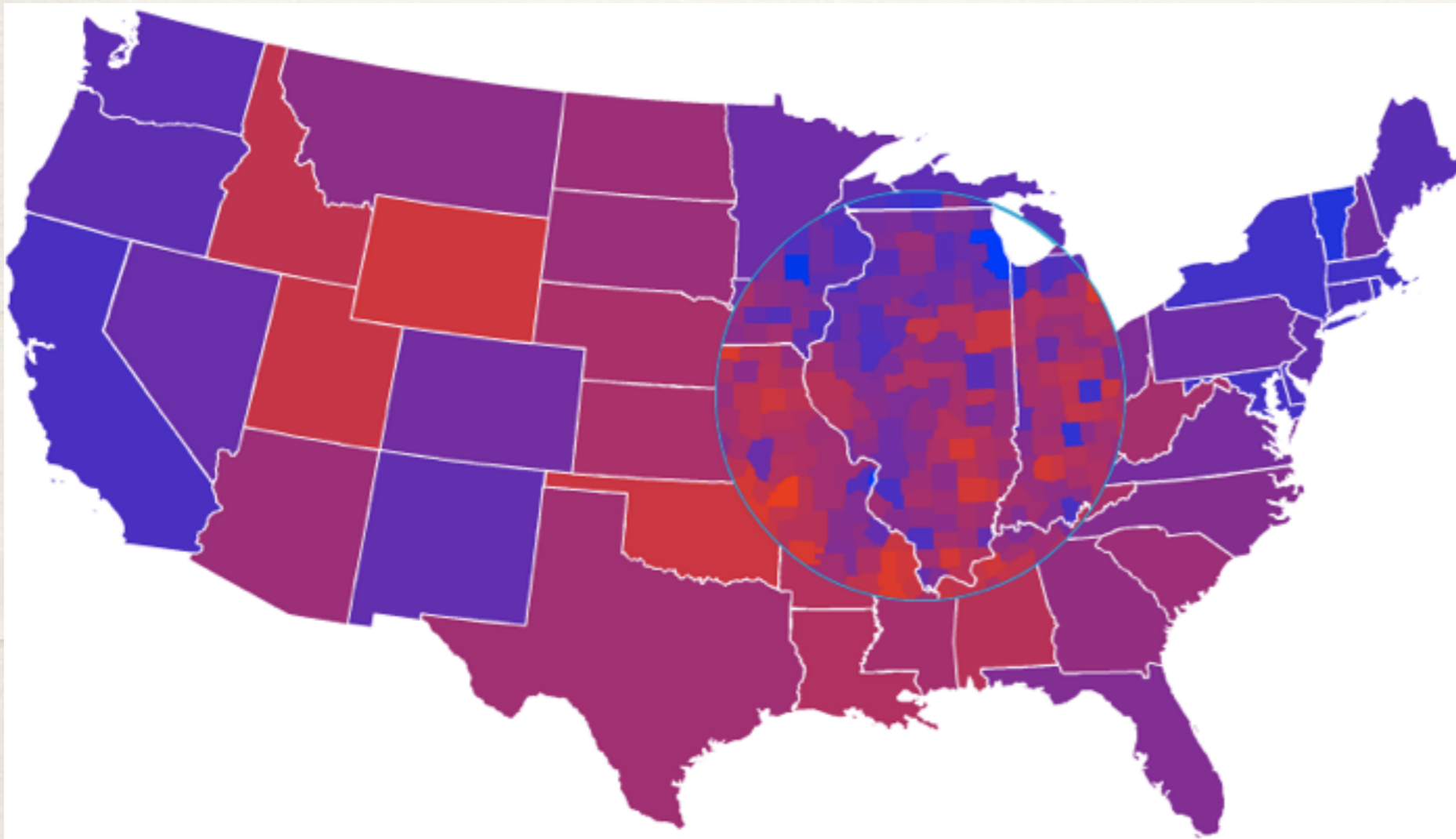
Visual transfer functions



Fish-eye

borrowed from C. North

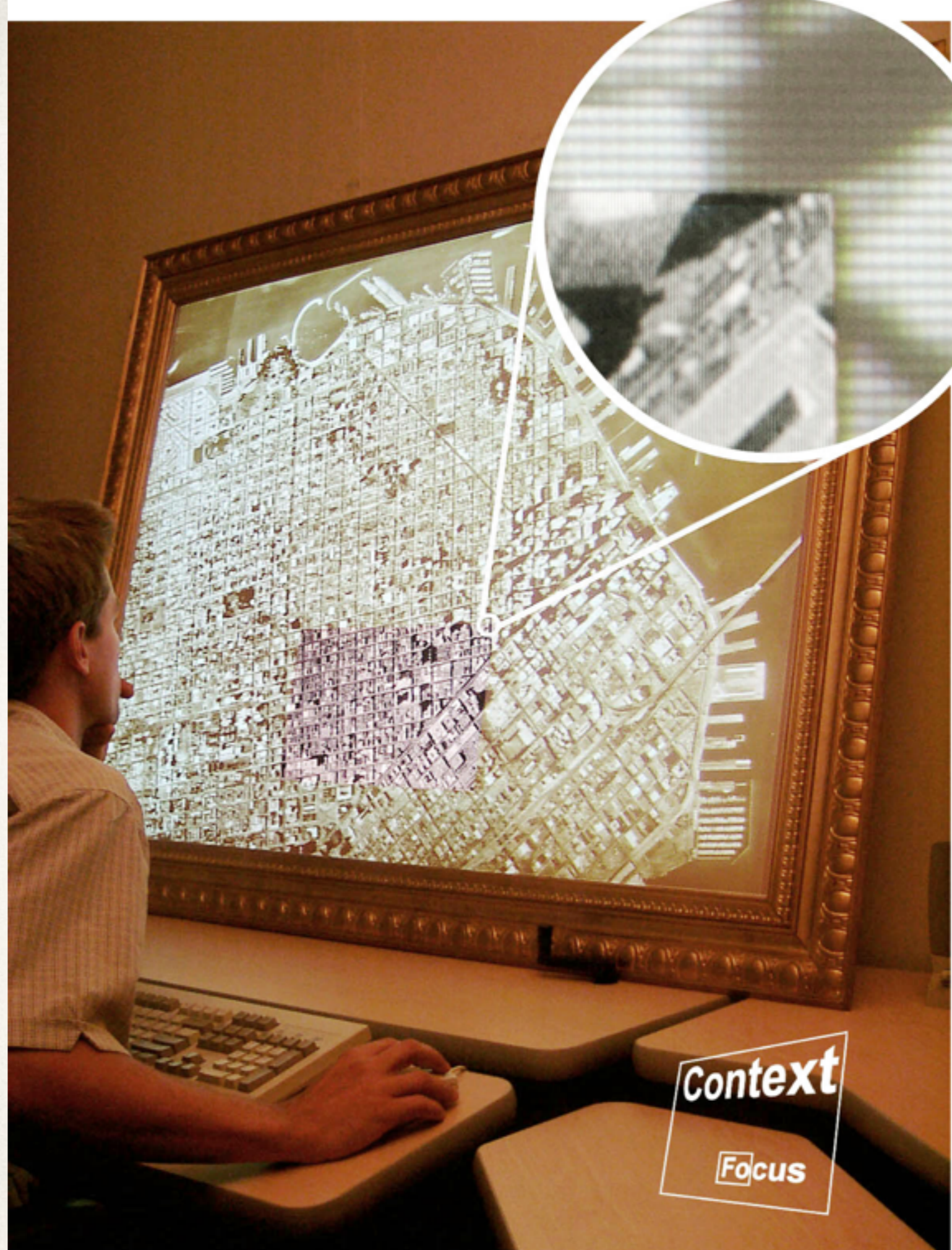
Visual transfer functions



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

Navigation strategies

detail only

detail *without* overview

pan and zoom

detail *or* overview

overview + detail

detail *next* to overview

focus + context

detail *with* overview