Elision Based Text Zooming

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Basic Idea

• Add zoom control to web browser
• Zoom out to show more of document
• Focused on text, not images
• Instead of shrinking the text, hide pieces of it
• Indicate where things are hidden:
  – Looks similar to Eclipse but also shows how much is hidden
“Never put anything important in the middle of a paragraph.”
Quick Demo
Other Approaches

• Tie zooming to scrolling:
  – Shrink text as scroll speed increases

• Multi-Scale Table of Contents:
  – Replace lowest level text, by increasingly higher level structure (headings)

• Hidden annotations (e.g. definitions, explanations) that pop out of text

• Source code folding
Original Idea

• As zoom increases, chop lines off the end of every block of text (paragraph)
Modification

• Line lengths hard to determine
• Rate of zooming too great
• Instead, for each block of text
  – Hide words in groups of 6
Proportional Zooming

• Paragraph lengths differ greatly
• When hiding text, for each paragraph, rate of zooming proportional to paragraph length
• When showing previously hidden text, rate of zooming constant for all paragraphs
  – Sudden jump when zooming all the way in
Proportional Zooming Demo
Showing Specific Paragraphs

• Clicking a paragraph:
  – Zooms it in all the way
  – Draws a permanent box around it to make finding it again easier

• Moving mouse over indicators temporarily pops up paragraph in gold box, reduced font
  – To improve continuity, first hidden word highlighted
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Mouseover

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What to Show While Zooming

• When zooming, relative position of elements in page changes
  – Undesired, uncontrollable scrolling
• Solution: fix position of element vertically closest to location *initially* clicked
  – If element becomes hidden, find closest element that is still visible
• Zooming widget draws eyes to fixed location, changes appear smoother
Scrolling

- Originally intended to combine zooming with scrolling
- Result: very hard to follow
- Better to zoom and scroll in separate steps
- Perhaps possible to combine effectively, but:
  - Very complex interaction between zoom level, scroll position, content under the mouse, user’s focus
  - Not clear what should be hidden/shown
  - Might work if zooming restricted to off-screen elements while scrolling.
My Impressions

• Fun to play with
• Useful for getting context when reading:
  – Zoom out and quickly back in
• Zoom out, scroll, zoom in: much easier than just scrolling
• Effective on both structured and plain text
• First conceived as navigation aid, but also produces useful overview with details on demand
• Could use more fine tuning for smoothness
Future Work

• Better handle nested structures, e.g. lists, and lists within lists
  – For lists of many short items, hide one complete item at a time
  – Treat longer list items as paragraphs – don’t hide all at once
• Combine with traditional zooming (resizing)
• One control for both zooming and scrolling that prevents doing both at once
  – Smoothly switch between zooming and scrolling
Conclusions

• Zooming by elision is effective
• Smoothness is key
• Should be combined with details on demand
Questions?