

Visualizing links between sentences in asynchronous conversations: a new feature for ConVis



“How do you kill that which has no life?” – South Park

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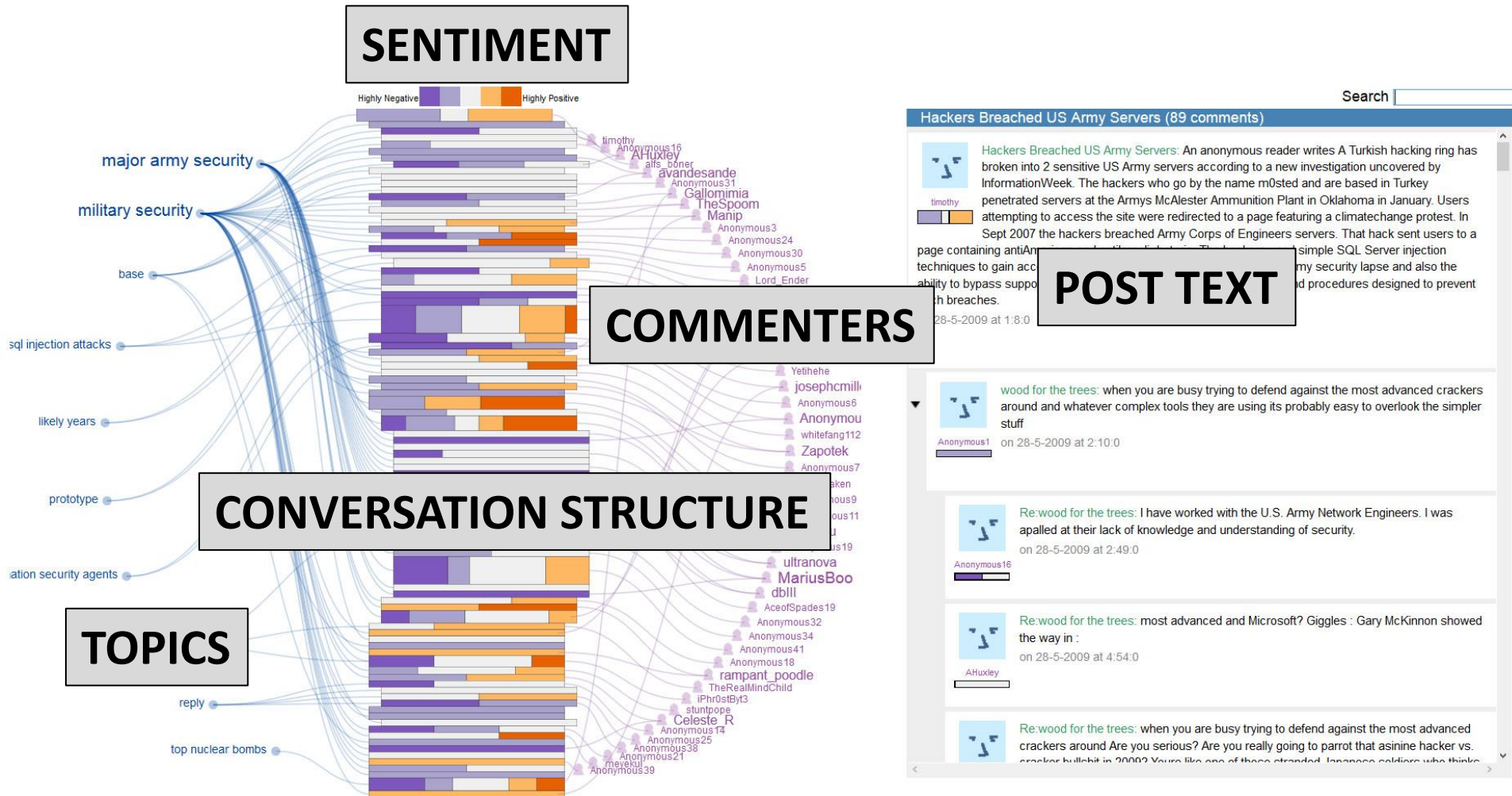
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Background: Asynchronous Conversations

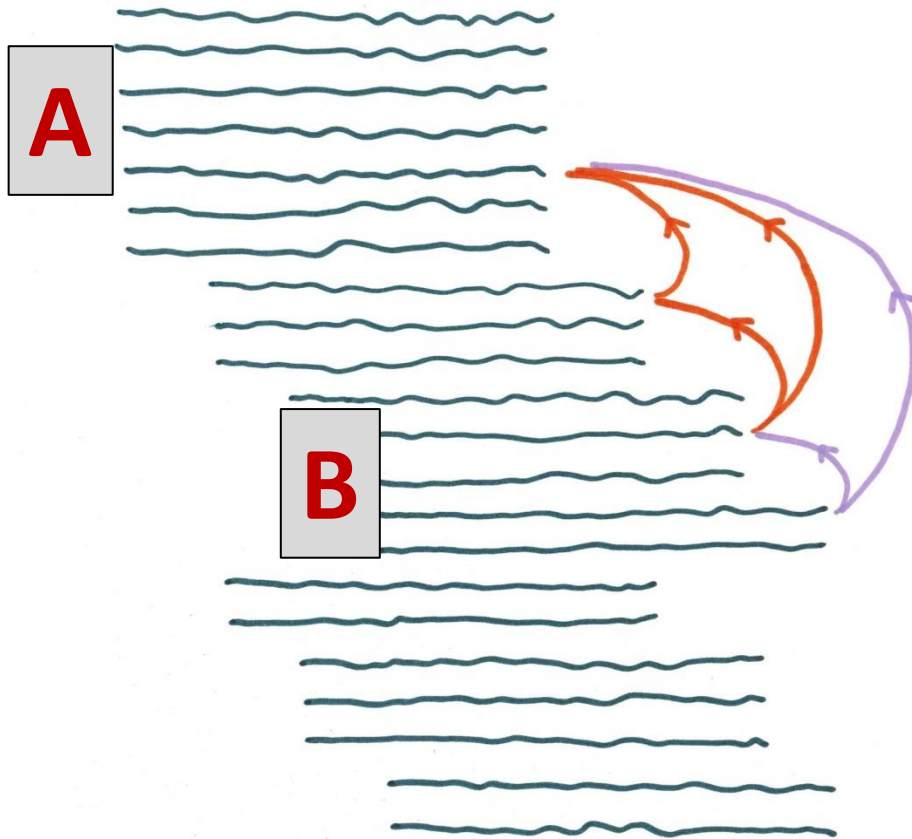
- Participants are not constrained to a common timeframe; **can insert a new reply at almost any point** in the existing discussion
- Examples:
 - email threads
 - blogs with comments and replies to comments
 - **reddit** posts with comment trees

Background: ConVis @ UBC



Background: Links Between Sentences

“Sentence **B** refers to sentence **A**”



Link Attributes:

- Linked sentences
- Agreement value
- Sentiment value

GOAL: extend ConVis
so users can
visualize/edit links

Data

- Online articles with comments, replies to comments, etc.

Handled by ConVis

- Sentences are indexed
- XML tags provide a “reply-to” tree structure
- **Links:** annotations by humans or algorithms
 - Currently using sets of “**gold standard**” links, annotated by humans



Image source: <http://www.zastavki.com/>

Task 1: Evaluate/Revise Links

- Some of the gold standard links have **issues**:
 - Incorrect sentiment/argument values
 - Same pairs of sentences, different sentiment/argument values
 - One sentence is a single word ("you?") or entirely punctuation ("?.")
 - Unlikely given positions in conversation
 - Pointed in the wrong direction



Image source: <http://www.wow247.co.uk/>

Task 1: Evaluate/Revise Links

- We'd like to be able to:
 - Improve the existing gold standard through revision
 - Add to the gold standard by evaluating/revising the output of candidate linking algorithms

Task 2: Evaluate Article Effectiveness

- Which parts of the article sparked the most commentary?

Task 3: Explore Link Chains

- Can we learn something useful from chains of links?



Image source: <http://www.ksapr.com/>

Idiom: Arc Diagram

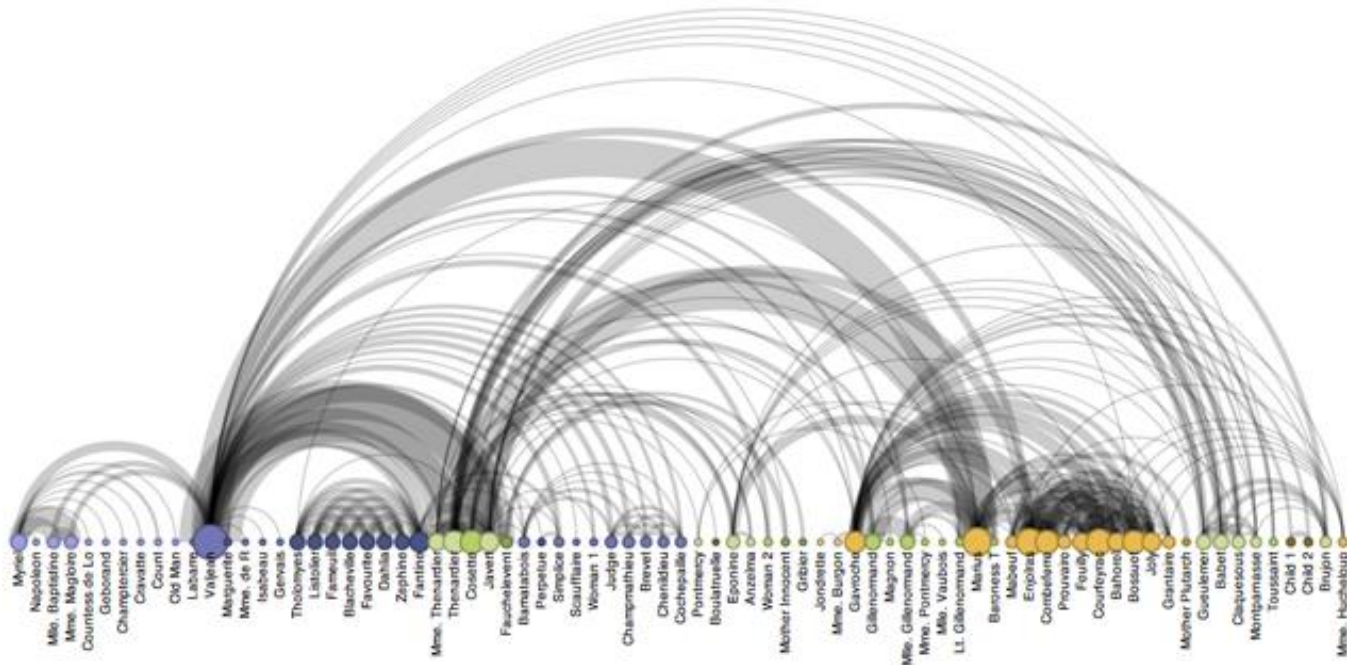
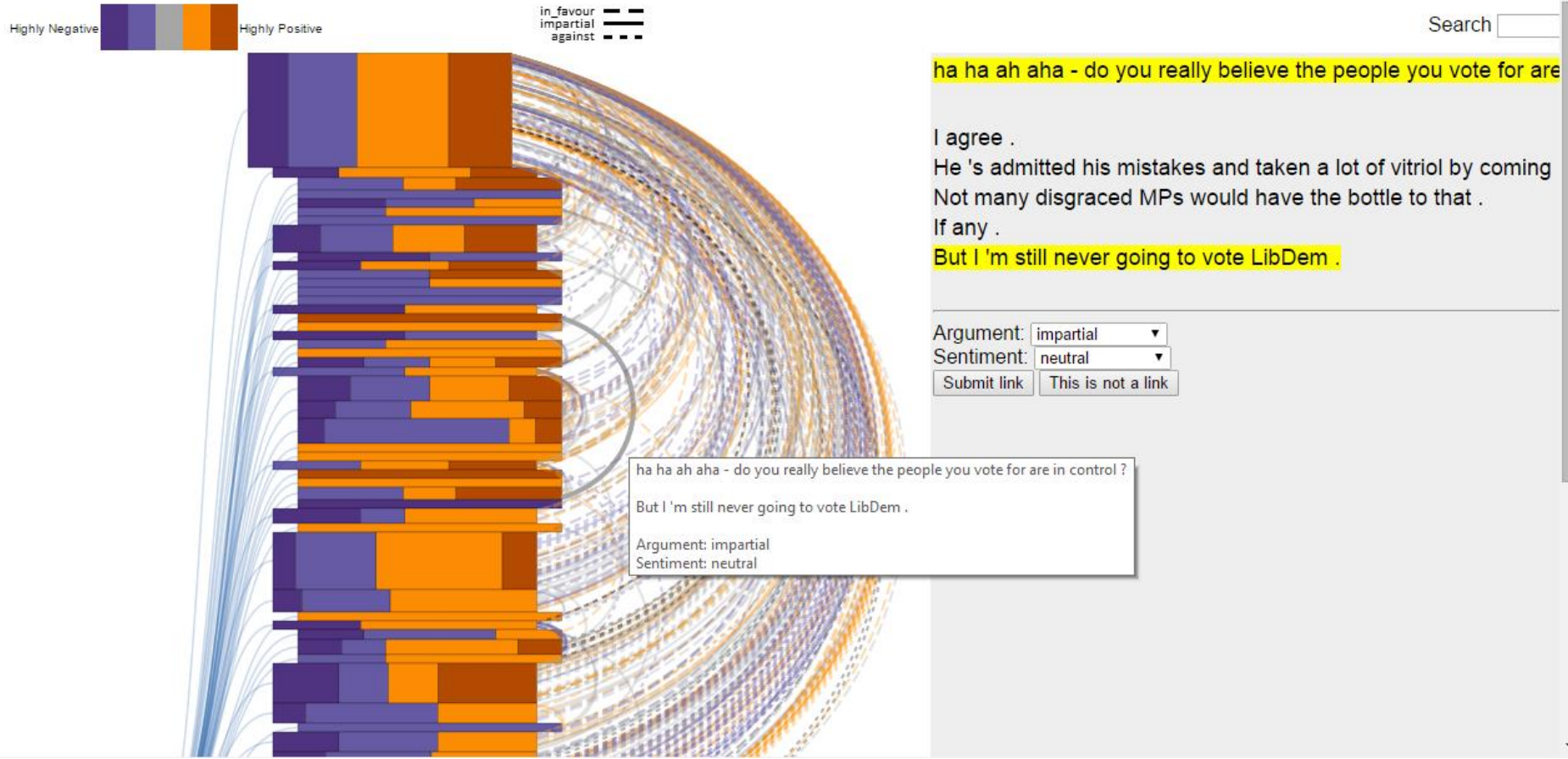


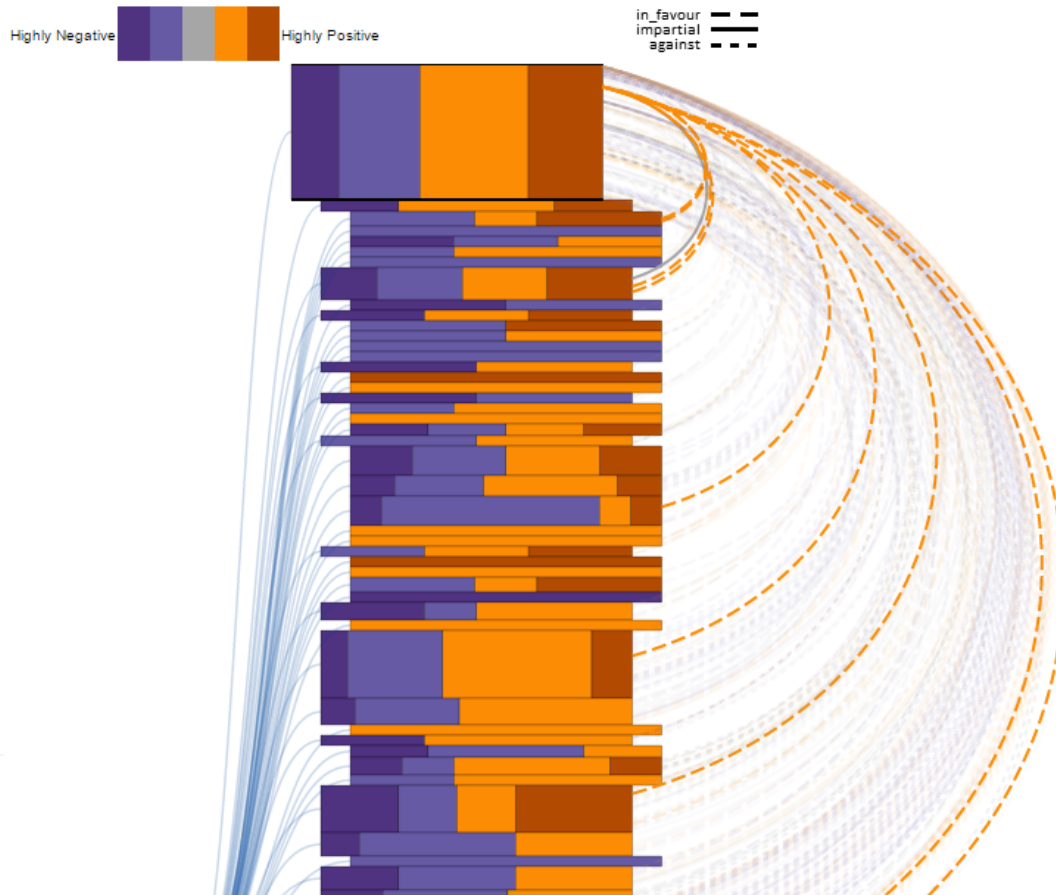
Image source: <http://homes.cs.washington.edu/>

I employ a modified version by using the ConVis glyphs as the spine

Murphy's Law Slides: Task 1



Murphy's Law Slides: Task 2



Search

Cabinet was told nothing about GCHQ spying programmes, says Chris Huhne. Cabinet ministers and members of the national security council were told nothing about the existence and scale of the vast data-gathering programmes run by British and American intelligence agencies, a former member of the government has revealed. Chris Huhne, who was in the cabinet for two years until 2012, said ministers showed "utter ignorance" of the two biggest covert operations, Prism and Tempora. The former Liberal Democrat MP admitted he was shocked and mystified by the surveillance capabilities disclosed by the Guardian from files leaked by the whistleblower Edward Snowden.

"The revelations put a giant question mark into the middle of our surveillance strategy," Huhne said.

"The state should not feel itself entitled to know, see and memorise everything that every private citizen communicates.

The state is our servant.

"Writing in Monday's Guardian, Huhne also questioned whether the Home Office had deliberately misled parliament about the need for the communications data programmes. GCHQ, the government's eavesdropping headquarters, already had remained hidden from the public for years, and its extensive snooping capabilities.

He said this lack of information and accountability showed "the supervisory arrangements for our intelligence services need as much updating as their technical techniques".

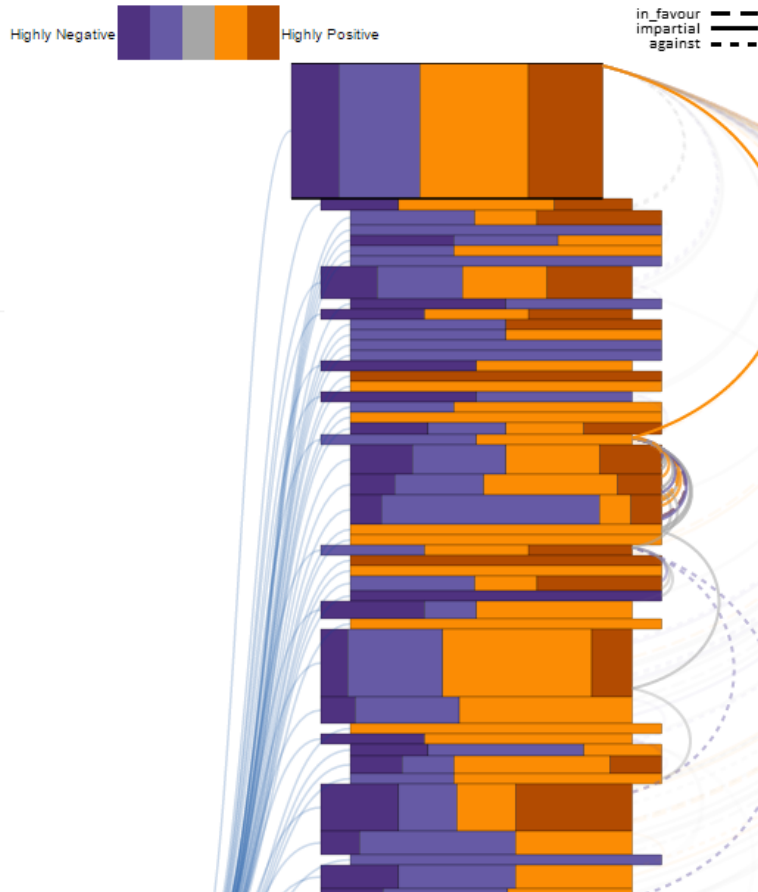
Over the past three months the Guardian has made a series of disclosures about the activities of GCHQ and its much bigger American counterpart, the National Security Agency.

Two of the most significant programmes uncovered in the Snowden files were Prism, run by the NSA, and Tempora, which was set up by GCHQ.

Between them, they allow the agencies to harvest, store and analyse data from hundreds of millions of phone calls, emails and search engine queries.

As a cabinet minister and member of the national security council (NSC), Huhne said he would have expected to be told about these operations, particularly as the

Murphy's Law Slides: Task 3



Search

Cabinet was told nothing about GCHQ spying programmes, says Chris Huhne

If Obama is n't really in control of the US and Cameron is n't really in control then who the fuck is ?

Whoever it is , they certainly were n't democratically elected to those positions .
If I do n't know what they propose to do , then my MP cannot raise any objection (on behalf of any other constituent) may have , which seems very undemocratic .

There seems to be an arrogance about this - it 's as if they know what 's best for the country and nobody could possibly point out any flaws in their thinking , or highlight any weaknesses with their proposal .

I think this snooping will be found to be illegal by the ECHR.

Have Labour pledged to stop the mass snooping ?

No, did n't think so .

How can a Cabinet & NSC member not have known about Prism & Temporal ?

Who is governing us ?

Why would the security services inform the Cabinet ?

When we have seen a Minister for Defence travelling around the world with a security vetted 'friend ' and observe that umpteen MPs are members of ' Friends of the US wherever', the last people you 'd tip off are the subjects of the surveillance .

Because democracy depends on an informed public , that happens to include the members of the security services .

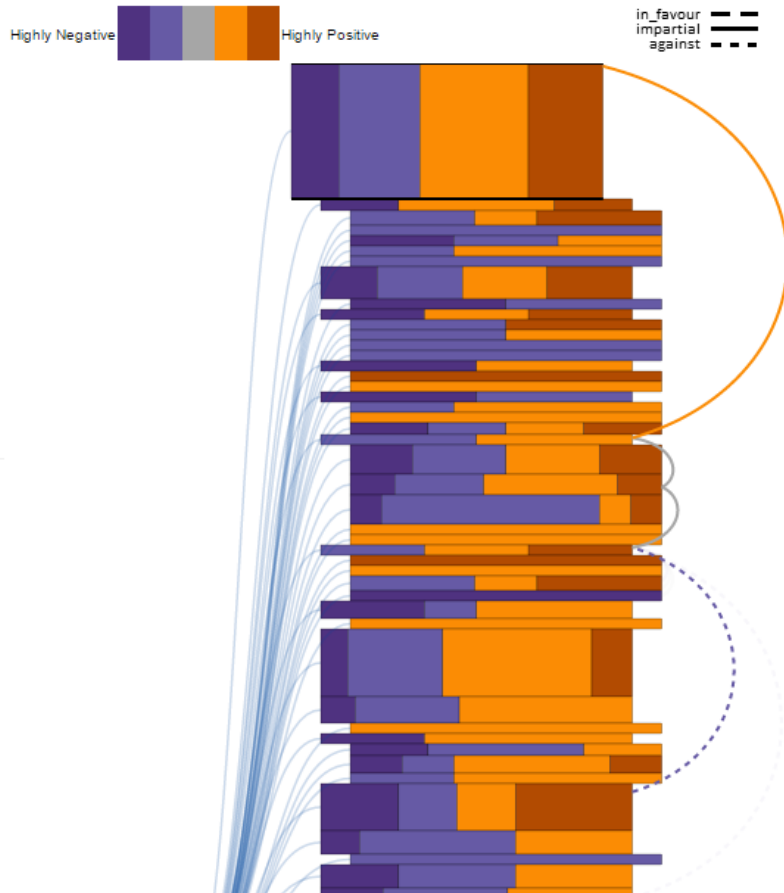
Well I 'd like to move on from Huhne 's past. And

course everyone has a right to keep throwing the past at the man ,but if you do that you will lose the opportunity to see if the person has changed .

Mi5/6 , FBI/CIA , The MOSSAD , and most secret services , are all totally outside the remit of governments .

I discovered the next day that it had happened to other people involved with the service specifically at NUS (sea-men) offices .

Murphy's Law Slides: Task 3



Search

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Why would the security services inform the Cabinet ?

Huhne would have been vetted as a matter of course .

Well I 'd like to move on from Huhne 's past.And

He 's admitted his mistakes and taken a lot of vitriol by coming BTL on CiF.

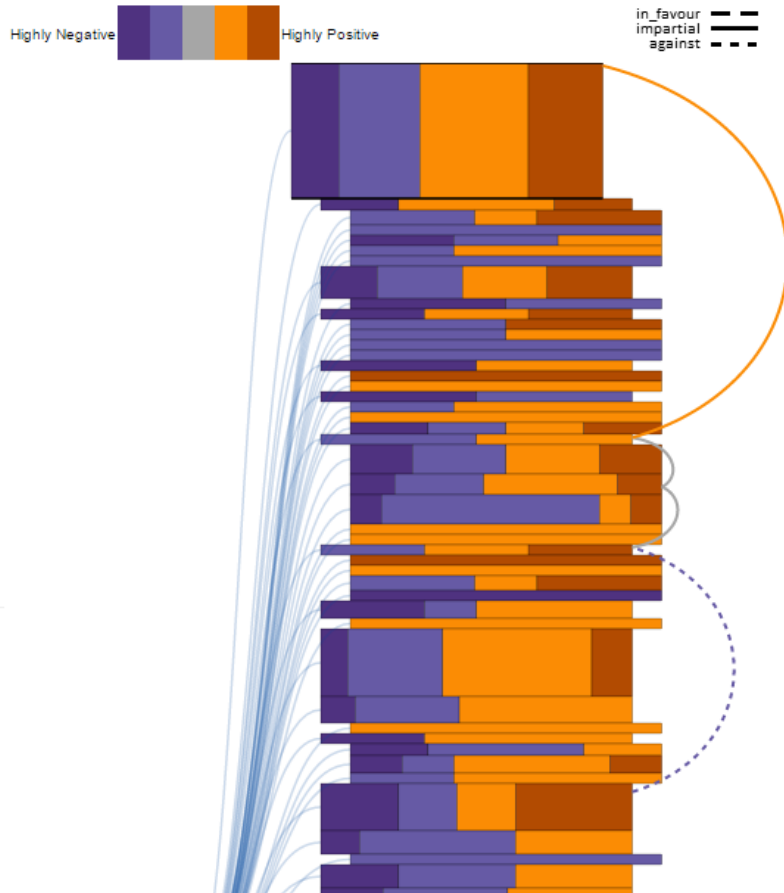
But I 'm still never going to vote LibDem .

Leopard .Spots .

Mr Huhne 's revelations should prove vital in helping to move this unhealthy surrounding GCHQ further out into the open .

Huhne and his cohorts should bury their faces in their hands with shame and embarrassment at how stupid they 've been to trust the Tories and how , as a result , they have all but destroyed their party .

Murphy's Law Slides: Task 3



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Summary

Idiom	Modified Arc Diagram (using ConVis glyphs as a spine)
What: Data	Indexed sentences, grouped into article/comments (tree) Links with attributes: <ul style="list-style-type: none">- Indices of linked sentences (ordered)- Sentiment (ordered, diverging)- Argument (ordered, diverging)
What: Derived	Relative positions of sentences in article/comments (ordered)
How: Encode	Curved line marks connecting relative positions of linked sentences in their respective article/comments <ul style="list-style-type: none">- Relative positions in article/comments: vertical positions on corresponding ConVis glyph- Sentiment: line color- Argument: line stroke pattern
How: Facet	Use ConVis comment view to display sentences related to selected links
How: Manipulate	Highlight selections; use animated transitions between different highlighted states
How: Reduce	Filter links displayed based on selected article/comment or sentence(s)
Why: Tasks	Annotate: Revise or delete existing links Browse: View number and types of links from article/comment/sentence of interest Explore: Find and examine chains of links Discover Features: Examine attribute patterns in chains of links
Scale	Hundreds of sentences in the article and comments; hundreds of links between sentences

The **Good**, the **Bad** and the **Ugly**

- Allows users to accomplish all three tasks
- Seems to work well within ConVis constraints
- Current interactions are limited
- Current interactions are inconsistent; makes the vis less intuitive
- No aggregation or filtering based on link type
- Doesn't currently fit on a laptop screen
- Links between nearby sentences are hidden in some cases
- “Hairy” clutter not always well handled yet
- Text view looks like a 6-year-old learning HTML

// TODO Future Work

- REFACTOR/IMPROVE (optimization, quality-of-life improvements)
 - Make interactions more consistent for the users
 - Make links between nearby sentences less likely to pass through comment glyphs
 - Improve contrast between selected link and other links in some cases
 - Attempt scaling algorithms to fit entire vis on standard laptop screen

// TODO Future Work

- Further integration with other ConVis features to allow additional tasks
- Aggregation/filtering by link type
- Zoom capabilities
- Additional ways of filtering links to facilitate studying link chains
- Implement saving link revisions to file
- Add sliders to text view for amount of context to be shown
- **USER STUDIES**

Acknowledgements Matrix

	Design feedback	Debugging assistance	Language reference (D3, JavaScript, etc.)
Giuseppe Carenini			
Enamul Hoque			
Tamara Munzner			
Vaden Masrani			

Thank you!
Any questions?