

IDN550-01
Communication Design Workshop
2018 Spring
Institute of Design

Ichikawa | Pino

Census+

**Data visualization of Census data and
beyond to create compelling stories**

Class 10: Narrative visualizations

Exploring

narrative visualizations

or telling stories with data graphics

Edward Segel and Jeffrey Heer, *Narrative
Visualization: Telling Stories with Data*,
IEEE Transactions on Visualization and Computer
Graphics 16(6) 2010

Narrative Visualization: Telling Stories with Data

Edward Segel & Jeffrey Heer / Univ of Washington

Analyzed 58 visualizations from online journalism, graphic design, comics, business, art, and visualization research resulting in three key aspects of narrative visualization:

- genres
- visual narrative
- narrative structure

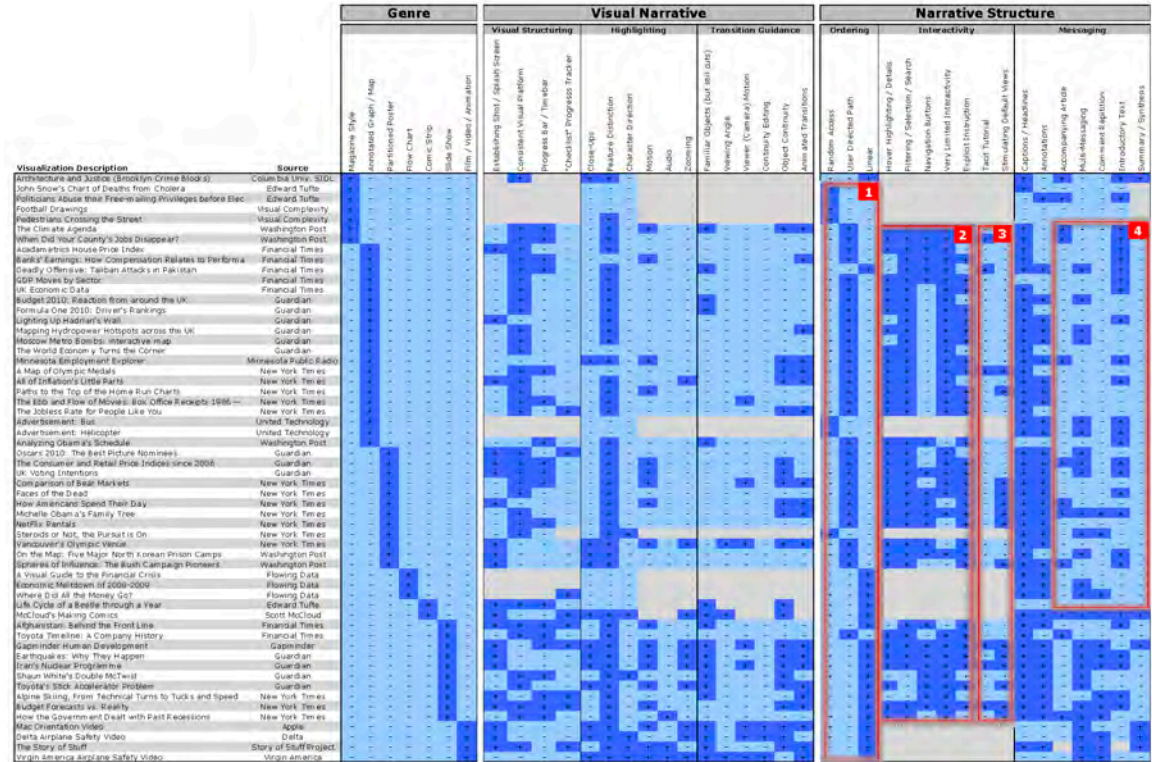


Fig. 7. Design space analysis of narrative visualization. Columns indicate recurring design elements and selected regions highlight patterns in the data. Region (1) shows clusters of ordering strategies that correspond to distinct genres of visual narration. Region (2) highlights the consistency of interactive designs used by visualizations. Region (3) shows the under-utilization of strategies to engage the user in the interactive functionality. Region (4) shows the under-utilization of common storytelling techniques across narrative visualizations.

Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*, IEEE Transactions on Visualization and Computer Graphics 16(6) 2010

Narrative Visualization: Telling Stories with Data

Edward Segel & Jeffrey Heer / Univ of Washington

Guide. Highlight. Interpret.



Edward Segel, *How to Tell Stories with Data (Really)*,
presentation given at Knight Digital Media Center at UC
Berkeley, Graduate School of Journalism, Jan 2012

Genre • Visual narrative • Narrative structure
‘A taxonomy of visual narrative types’

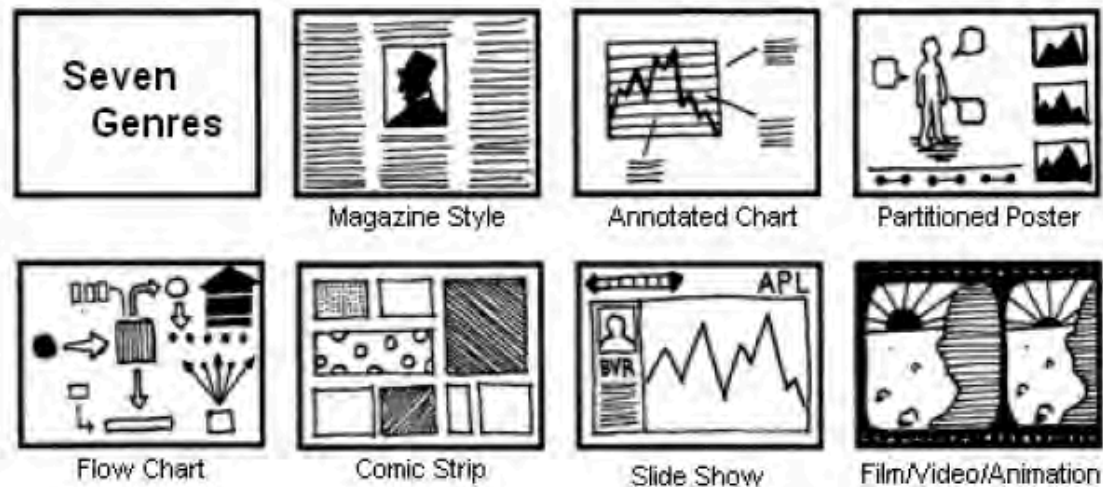


Fig. 8. Genres of Narrative Visualization.

Genre • Visual narrative • Narrative structure

Visual devices that assist and facilitate the narrative.

Visual structuring

“mechanisms that communicate the overall structure of the narrative to the viewer and allow him to identify his position within the larger organization of the visualization”

establishing shot, checklist, consistent visual platform, progress bar, timeline slider

Where are you in the story?

Highlighting

“visual mechanisms that help direct the viewer’s attention to particular elements in the display”

color, motion, framing, size, audio

Look here!

Transition guidance

“techniques for moving within or between visual scenes without disorienting the viewer”

continuity editing, animated transitions, object continuity, camera motion

Move through the story *this way*...

Genre • Visual narrative • Narrative structure

Tactics used by each visualization, or non-visual mechanisms that assist and facilitate the narrative.

Ordering

*“the ways of **arranging the path** viewers take through the visualization”*

Linear, random access, user-directed

Interactivity

*“the different ways a user can **manipulate the visualization** ... and also how the user learns those methods.”*

filtering, selecting, searching, navigating, explicit instruction, tacit tutorial, initial configuration

Messaging

*“the ways a visualization **communicates observations and commentary** to the viewer.”*

labels, captions, headlines, annotations, articles, introductions, summaries

Genre

1/7 Magazine Style



Magazine Style



Efforts to Rescue Migrants Caused Deadly, Unexpected Consequences

By STUART A. THOMPSON and ANJALI SINGHVI JUNE 14, 2017

Strategies to rescue migrants in the Mediterranean Sea and disrupt smuggling networks have had deadly, unexpected consequences, according to aid groups monitoring the

Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*, IEEE Transactions on Visualization and Computer Graphics 16(6) 2010

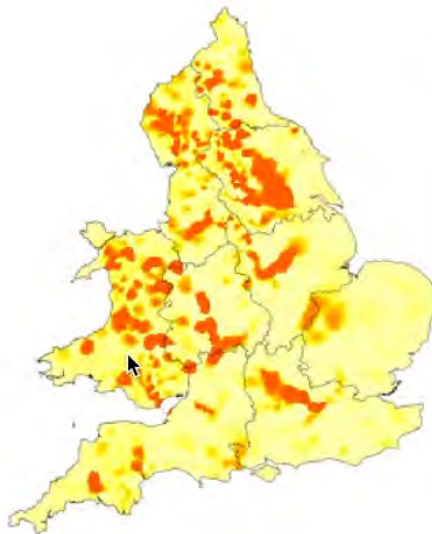
<https://www.nytimes.com/interactive/2017/06/14/world/europe/migrant-rescue-efforts-deadly.html>

Genre

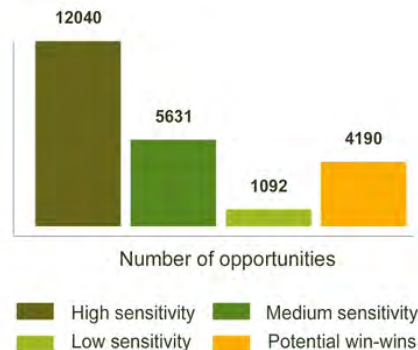
2/7 Annotated Graph / Map



Annotated Chart



England and Wales



Almost 26000 sites were identified within rivers in England and Wales. If all of these were used for hydropower the theoretical total power potential would be 1178MW - enough electricity for about 845,000 homes. In reality the practical potential will be a fraction of this due to practical and environmental constraints.

The average size of each opportunity is small, at only 45kW, and almost half were classified as highly sensitive, mostly due to the presence of migratory fish such as salmon. Over 4000 potential win-wins were identified, representing approximately half the total theoretical power potential.

Genre

3/7 Partitioned Poster



Partitioned Poster

October 11, 2008

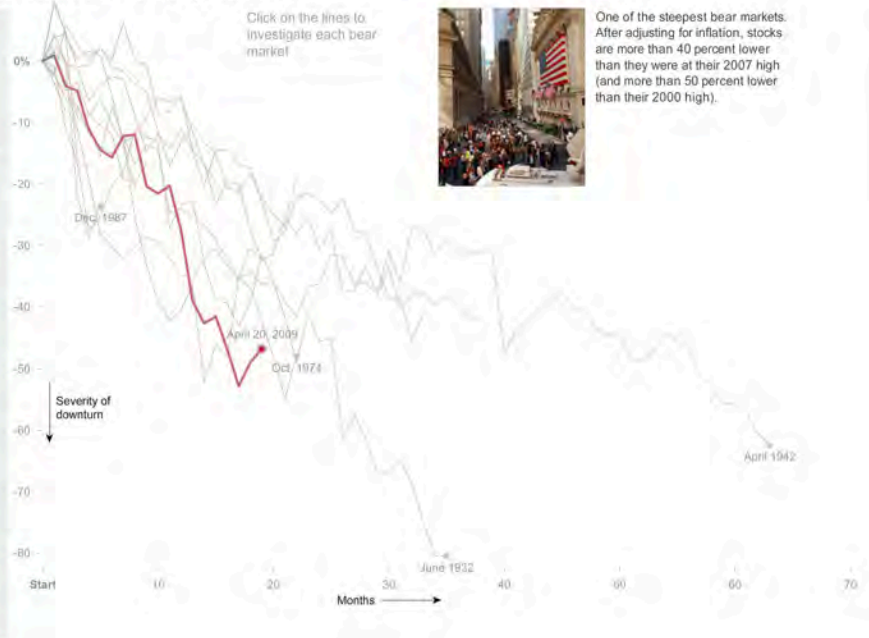
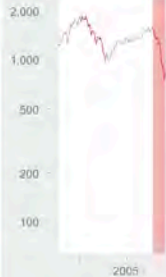
How This Bear Market Compares

E-MAIL | FEEDBACK

The current bear market is already among the worst in history. Here is how it lines up – in losses and length – with those of the last 80 years.

The S. & P. 500, adjusted for inflation, shown monthly during bear markets.

Real S. & P. 500
Shaded area at right



One of the steepest bear markets. After adjusting for inflation, stocks are more than 40 percent lower than they were at their 2007 high (and more than 50 percent lower than their 2000 high).

Sources: Standard and Poor's; Robert J. Shiller

Amanda Cox, Xaquín G.V. and David Leonhardt

http://www.nytimes.com/interactive/2008/10/11/business/20081011_BEAR_MARKETS.html

Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*, IEEE Transactions on Visualization and Computer Graphics 16(6) 2010

The New York Times
Published: January 4, 2014

Mapping Poverty in America

Data from the Census Bureau show where the poor live.

VIEW **Percentage below the poverty line** **Number living in poverty**

Pct. below the poverty line

0 10 20 30 40%

POVERTY THRESHOLDS in 2012

\$23,283 Family of four
\$11,945 Individual under 65

Chicago

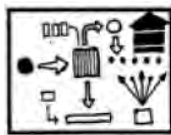
Map data ©2016 Google Terms of Use

New York **Washington** **Boston** **Philadelphia** **Los Angeles** **Atlanta** **Houston** **Dallas** **Chicago** **Minneapolis** **Denver** **Phoenix**

By **MATTHEW BLOCH**, **MATTHEW ERICSON** and **TOM GIRATIKANON**
Sources: Census tract-level data from the [2008-12 American Community Survey](#). County-level data from the 2012 Small Area Income and Poverty Estimates (SAIPE); [socialexplorer.com](#).

Genre

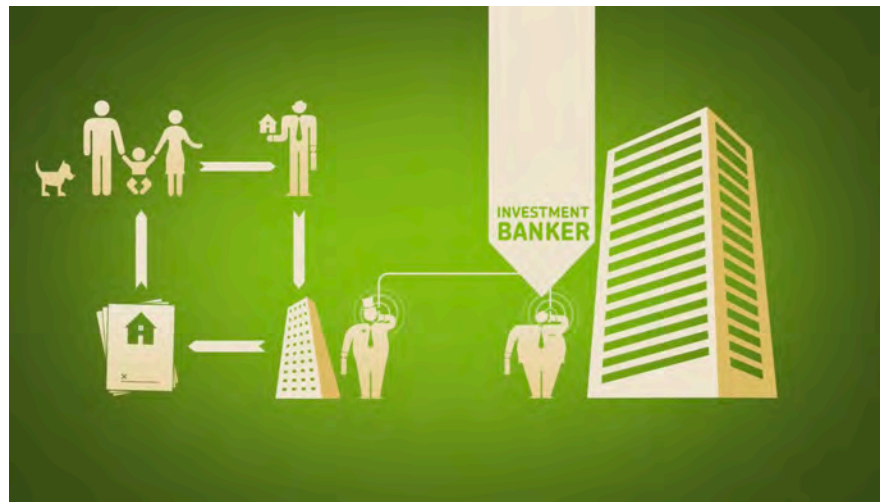
4/7 Flow Chart



Flow Chart



<http://blog.mint.com/blog/finance-core/a-visual-guide-to-the-financial-crisis/>

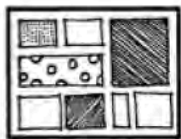


<http://crisisofcredit.com/>

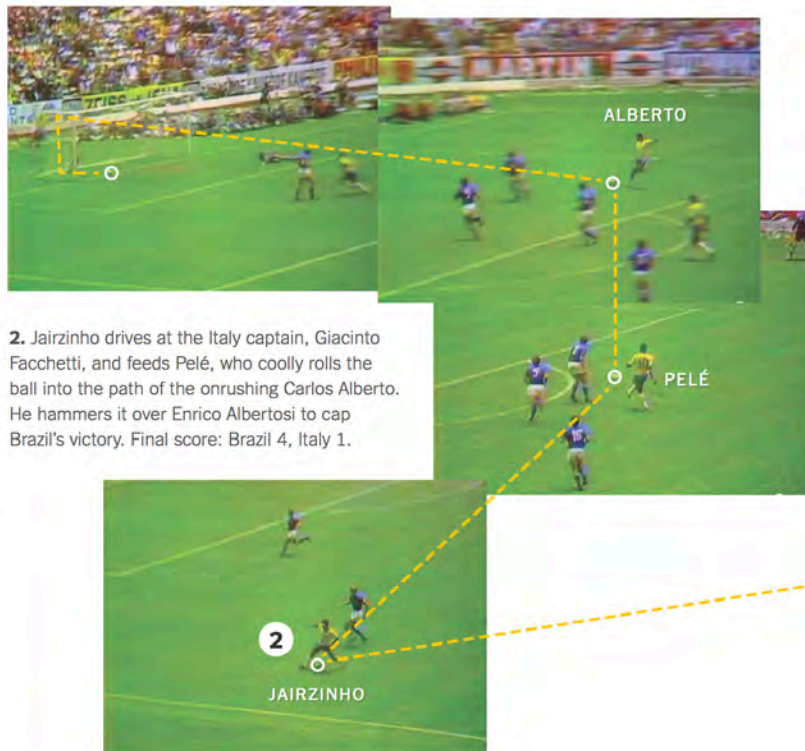
Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*, IEEE Transactions on Visualization and Computer Graphics 16(6) 2010

Genre

5/7 Comic Strip



Comic Strip

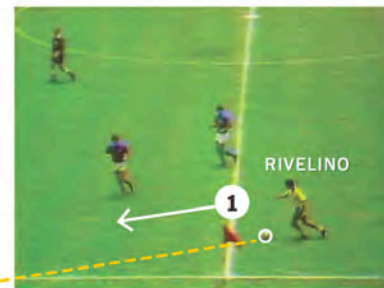


2. Jairzinho drives at the Italy captain, Giacinto Facchetti, and feeds Pelé, who coolly rolls the ball into the path of the onrushing Carlos Alberto. He hammers it over Enrico Albertosi to cap Brazil's victory. Final score: Brazil 4, Italy 1.

1970 CLASSIC GOAL

BRAZIL vs. ITALY

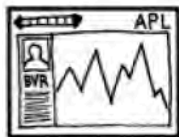
Brazil's last goal in the World Cup final, one of the most famous in the tournament's history, showcased the Seleção at its fluid best. ANDREW DAS



1. The nine-pass move is just a series of short exchanges until Roberto Rivelino's sharp pass to Jairzinho suddenly makes it dangerous.

Genre

6/7 Slide Show



Slide Show

Shaun White's Double McTwist

The 23-year-old American successfully defended his gold medal in the men's half-pipe event at the Winter Olympics with a move that requires immense technical skill

theguardian.com, Friday 19 February 2010 07.42 GMT

Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*, IEEE Transactions on Visualization and Computer Graphics 16(6) 2010

<http://www.theguardian.com/sport/interactive/2010/feb/19/winterolympics2010-vancouver>

Genre

7/7 Film/Video/Animation



Film/Video/Animation

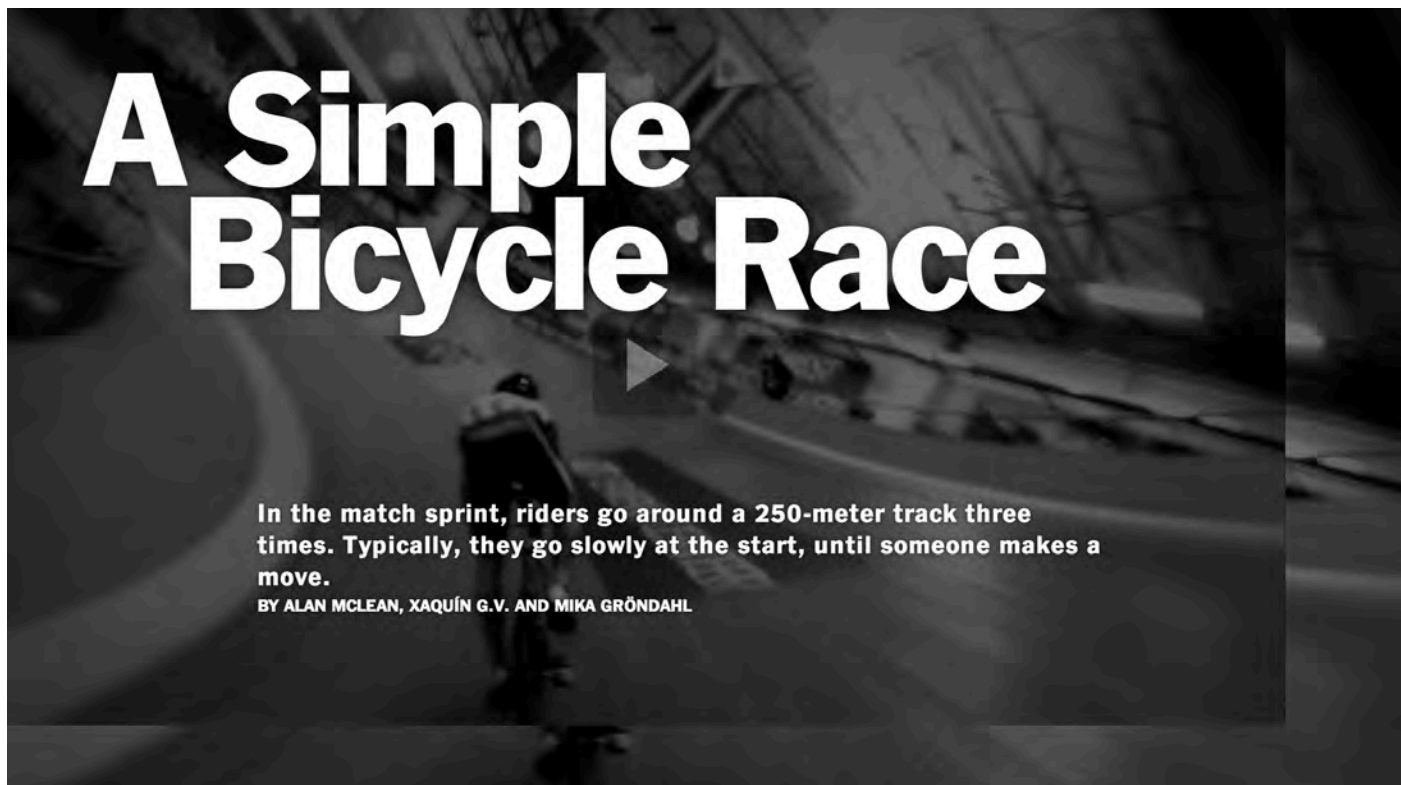


Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*, IEEE Transactions on Visualization and Computer Graphics 16(6) 2010

<http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-economic-essentials-of-digital-strategy>

Emerging genre

Layered annotated video



<http://www.nytimes.com/interactive/2012/08/03/sports/olympics/olympics-cycling-track-sprint-how-to-win.html>

Emerging genre

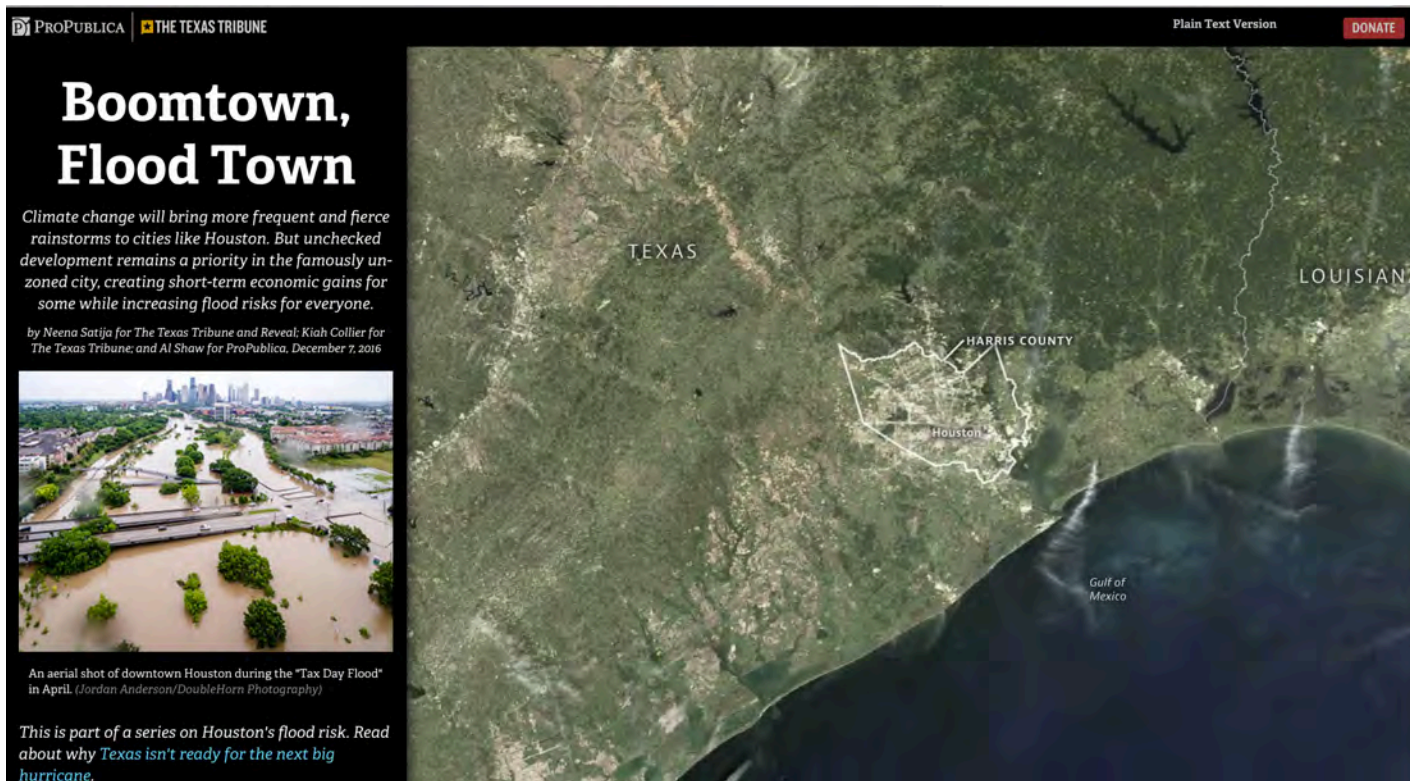
Layered annotated video



<http://www.nytimes.com/newsgraphics/2014/sochi-olympics/giant-slalom.html>

Emerging genre

Dynamic magazine style



<https://projects.propublica.org/houston-cypress/>

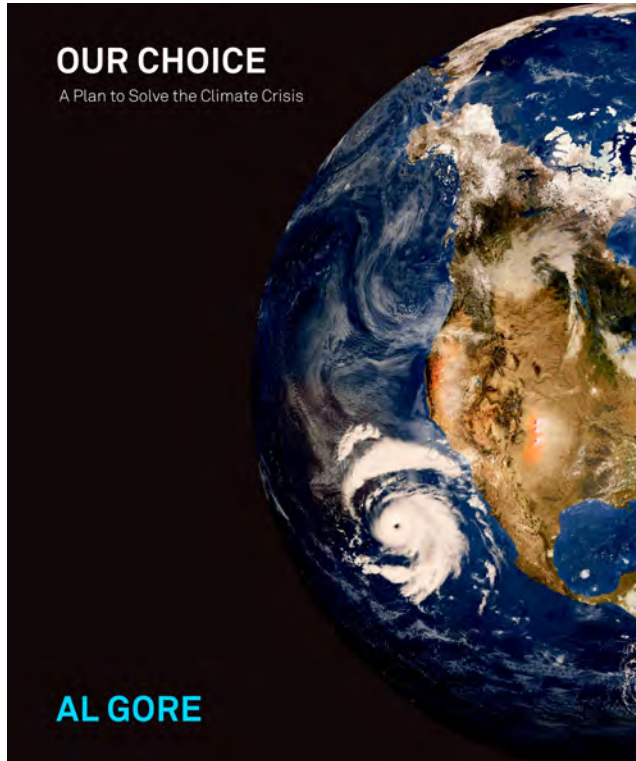
Author-driven and reader-driven stories

Author-Driven	Reader-Driven
Linear ordering of scenes	No prescribed ordering
Heavy messaging	No messaging
No interactivity	Free interactivity

Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*,
IEEE Transactions on Visualization and
Computer Graphics 16(6) 2010

Author-driven stories

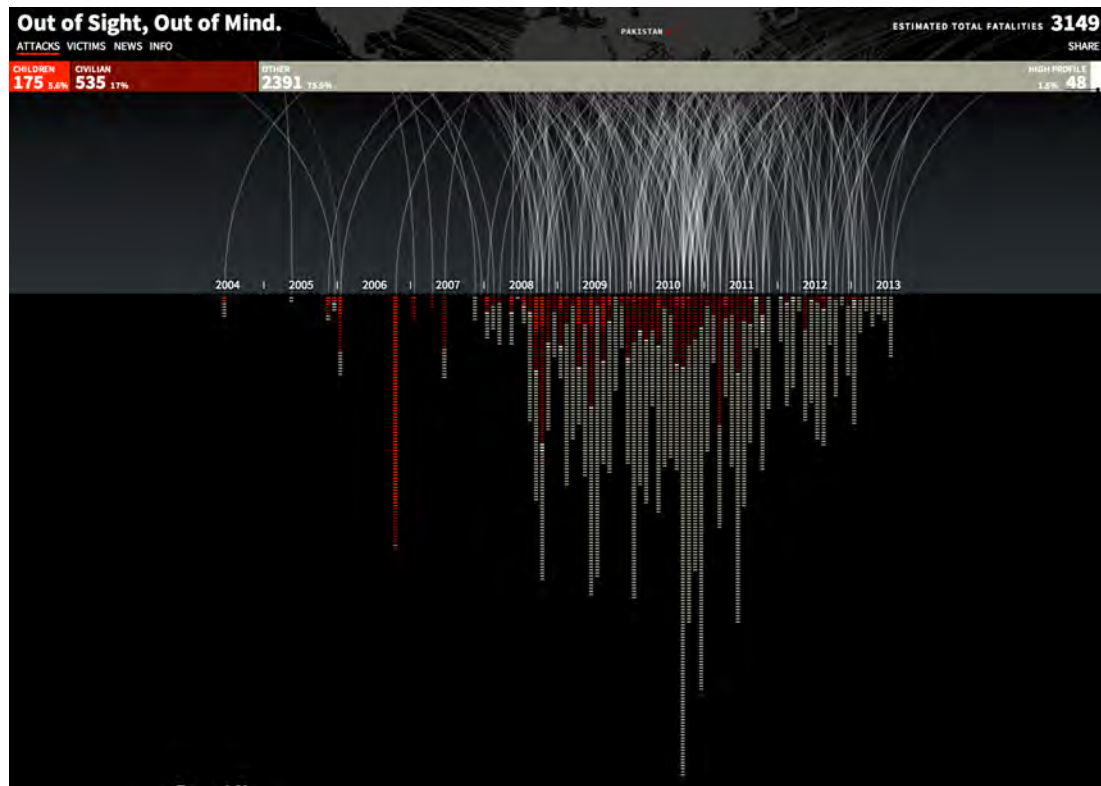
Traditional book structure in new media



Hybrid structures balancing author- and reader-driven approaches

Martini glass structure

Initially author-driven with strong linearity, then opens to reader exploration



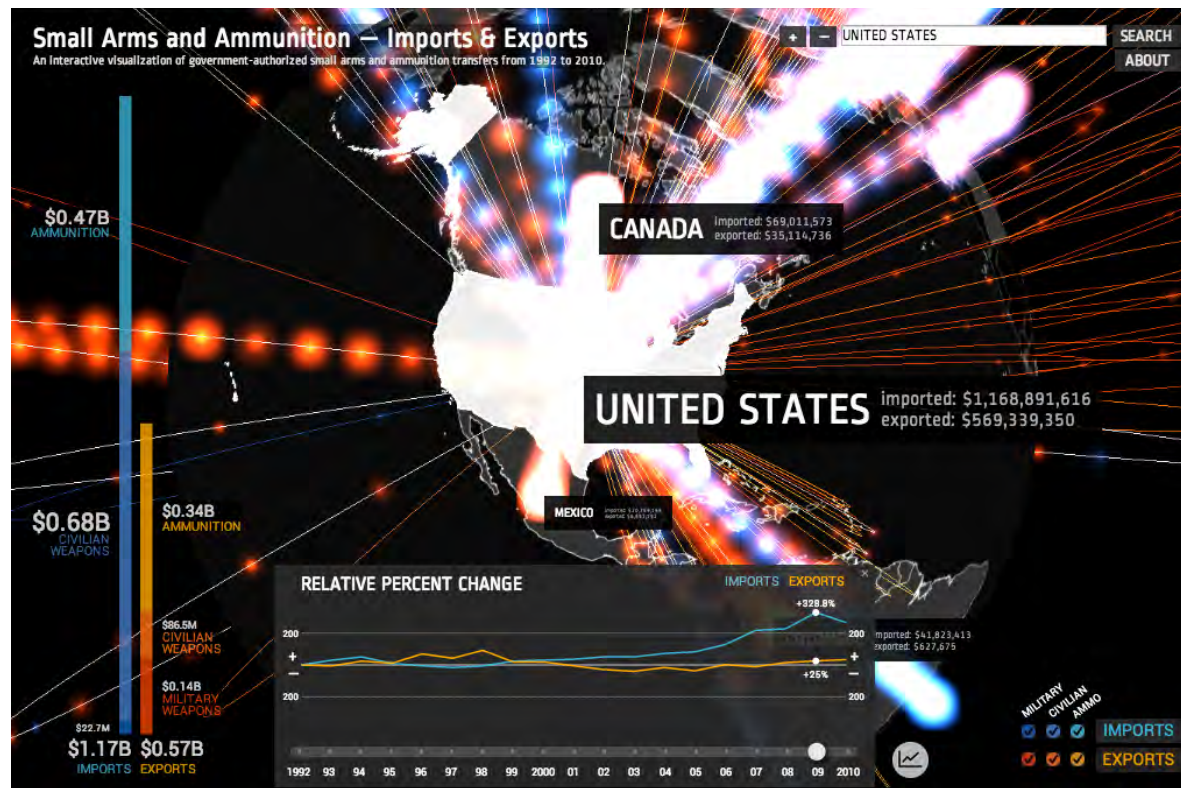
<http://drones.pitchinteractive.com/>

Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*, IEEE Transactions on Visualization and Computer Graphics 16(6) 2010

Hybrid structures that balance author- and reader-driven approaches

Interactive slideshow

Interlaces mid-narrative interactions with slideshow-like linear structure



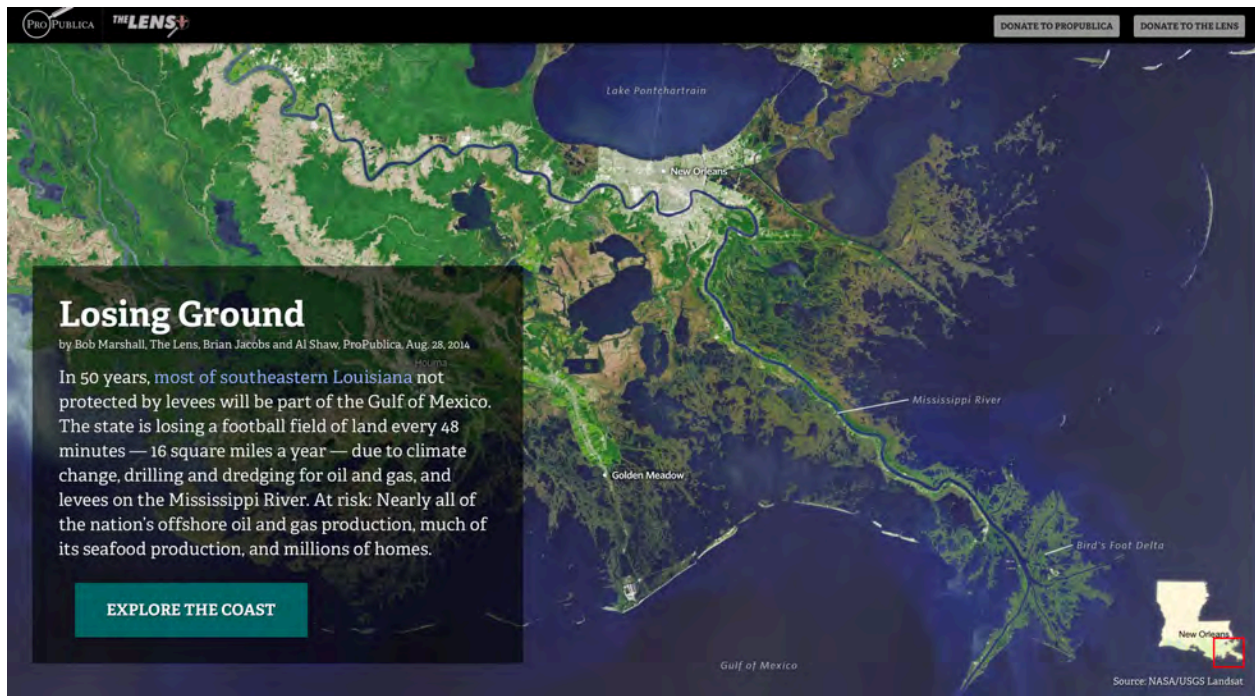
<http://armsglobe.chromeexperiments.com/>

Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*, IEEE Transactions on Visualization and Computer Graphics 16(6) 2010

Hybrid structures that balance author- and reader-driven approaches

Drill-down story

General theme presentation,
then reader decides path for
additional details



Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*, IEEE Transactions on Visualization and Computer Graphics 16(6) 2010

<http://projects.propublica.org/louisiana/>

Additional reference by Edward Segel

How to Tell Stories with Data (Really)

Presentation for Knight Digital Media Center at UC Berkeley,
Graduate School of Journalism, Jan 2012

<https://vimeo.com/34876955>

Interesting visualizations

The Next America

<http://www.pewresearch.org/next-america/#Two-Dramas-in-Slow-Motion>

Boom town, Floodtown

<https://projects.propublica.org/houston-cypress/>

How Harvey Hurt Houston, in 10 Maps

<https://projects.propublica.org/graphics/harvey-maps>

Daily routines of creative people

<https://podio.com/site/creative-routines>

What's warming the world?

<https://www.bloomberg.com/graphics/2015-whats-warming-the-world/>

How the Recession Reshaped the Economy, in 255 Charts

<https://www.nytimes.com/interactive/2014/06/05/upshot/how-the-recession-reshaped-the-economy-in-255-charts.html>

Thanksgiving flights

<https://bit.ly/1XsL1JO>

Wall Street messaging on climate activism

<https://www.axios.com/wall-street-asset-management-climate-change-activism-19fe3b28-eab2-4b1c-951b-1c1c2ebe8f33.html>

Every Men's Figure Skating Jump, on One Page

<https://www.nytimes.com/interactive/2014/02/14/sports/olympics/mens-figure-skating-jumps.html>

References

Edward Segel and Jeffrey Heer, *Narrative Visualization: Telling Stories with Data*, IEEE Transactions on Visualization and Computer Graphics 16(6) 2010