

# Matthew Brehmer

Information Visualization Researcher



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## ABOUT ME

I am a **postdoctoral researcher** at [Microsoft Research](#) in Redmond, Washington, where I specialize in information visualization for storytelling and journalism. I am a member of the [EPIC Research Group](#), [Project Steller](#), and the [Microsoft Data Journalism Team](#).

Prior to joining Microsoft in 2016, I completed my PhD in Computer Science at the [University of British Columbia](#), where I was a member of the [InfoVis group](#).

## EXPERTISE

### VISUALIZATION AND INTERFACE DESIGN

I design visualization tools and techniques for data analysis and communication: I write code, I sketch, and I explore and transform data.



### HUMAN-CENTRED QUANTITATIVE EVALUATION

I conduct controlled experiments as a way to understand human capabilities with respect to perception and attention (and sometimes these results have actionable implications for human-computer interface design).



### HUMAN-CENTRED QUALITATIVE EVALUATION

I evaluate current data analysis and communication processes, work-in-progress designs, and deployed visualization tools: I conduct work domain analyses, interview studies, chauffeured demos/walkthroughs, and field studies.

### DATA JOURNALISM AND STORYTELLING

In collaboration with the [Overview Project](#), I conducted six case studies of journalists who used *Overview* to investigate and report on large text document collections. Our findings provided transferable lessons for document visualization design.



My goal is to provide journalists and storytellers with tools and techniques for presenting information to readers, such as ways to present visual timelines.

### ENERGY MANAGEMENT AND CONSERVATION

I have collaborated with a company that develops enterprise energy analysis and reporting software and designed visualizations for analyzing and monitoring energy usage in large portfolios of buildings. I



consulted with various stakeholders and prospective users, envisioning ways to interactively locate patterns and anomalies.

## HEALTH AND FITNESS

My M.Sc research pertained to the design and evaluation of *C-TOC*, a computerized cognitive assessment tool intended for early detection of dementia. I studied the use of *C-TOC* prototypes by healthy older adults and by adults with diagnosed mild cognitive impairments.

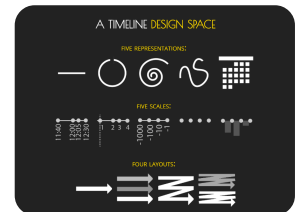
Prior to my M.Sc, I worked in the area of exercise video games (aka active games): I studied the role of physical exertion on cognitive task performance. I also designed *GAIM*, an XNA/C# toolkit which allowed players with different input peripherals to play active games together.



## TALKS

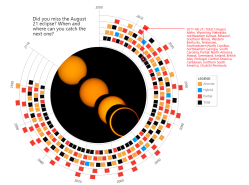
### Timelines Revisited: A Design Space and Considerations for Expressive Storytelling

IEEE InfoVis 2017 (Phoenix, USA)  
October 3, 2017



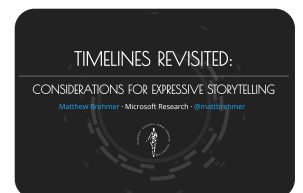
### Expressive Storytelling With Timelines

Uber Visualization Night: A Journey Through Space and Time (Seattle, USA)  
August 31, 2017



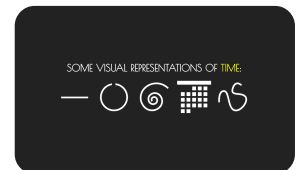
### Timelines Revisited: Considerations for Expressive Storytelling

King's College London Department of Informatics (London, UK)  
July 11, 2017



### Timelines Revisited: Considerations for Expressive Storytelling

City University London giCentre (London, UK)  
July 10, 2017



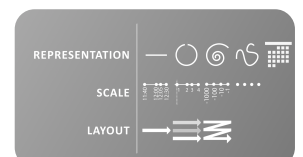
### The Timeline Storyteller Custom Visual for Power BI

Microsoft Data Insights Summit BI Power Hour (Seattle, USA)  
June 13, 2017



### Timelines Revisited: Considerations for Expressive Storytelling

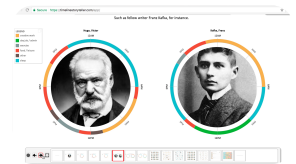
Northeastern University NUVis Visualization Consortium (Boston, USA)  
April 28, 2017



## Timelines Revisited: Considerations for Expressive Storytelling

Bentley University [RealViz talk series](#) (Waltham, USA)

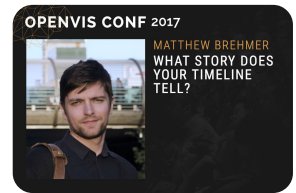
April 27, 2017



## What Story Does Your Timeline Tell?

[OpenVisConf 2017](#) (Boston, USA)

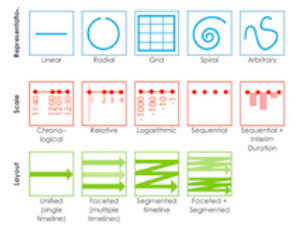
April 24, 2017



## Timelines Revisited: Considerations for Expressive Storytelling

Radcliffe Institute at Harvard University (Cambridge, USA)

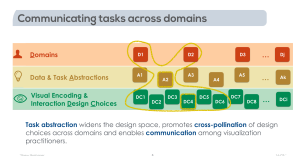
December 8, 2016



## Why Visualization? Task Abstraction for Analysis and Design

Dissertation Defence (Vancouver, Canada)

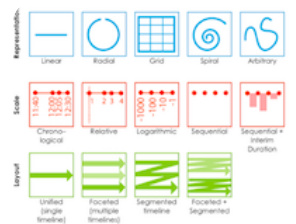
March 23, 2016



## Storytelling with Timeline Data

[Data-Driven Storytelling Dagstuhl Seminar](#) (Wadern, Germany)

February 2016



## Why Visualization? Task Abstraction for Analysis and Design

Microsoft Research (Redmond, USA)

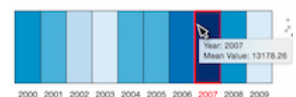
February 1, 2016



## Matches, Mismatches, and Methods: Multiple-View Workflows for Energy Portfolio Analysis

IEEE InfoVis 2015 (Chicago, USA)

October 28, 2015



## Matches, Mismatches, and Methods: Multiple-View Workflows for Energy Portfolio Analysis

University of Washington (Seattle, USA)

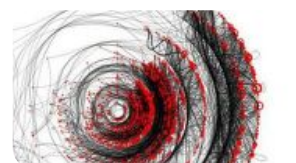
September 4, 2015



## The Future of Data and Design ... In Visualization Research

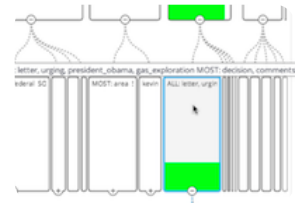
Vancouver Data Visualization Meetup (Vancouver, Canada)

May 19, 2015



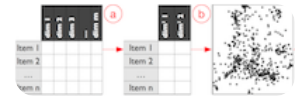
## Overview: The Design, Adoption, and Analysis of a Visual Document Mining Tool For Investigative Journalists

IEEE InfoVis 2014 (Paris, France)  
November 14, 2014



## Visualizing Dimensionally-Reduced Data: Interviews with Analysts and a Characterization of Task Sequences

ACM BELIV 2014 (Paris, France)  
November 10, 2014

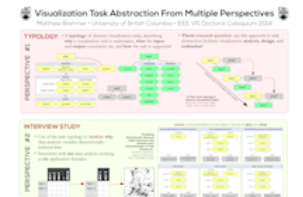


## Pre-Design Empiricism for Information Visualization: Scenarios, Methods, and Challenges

ACM BELIV 2014 (Paris, France)  
November 10, 2014

## Visualization Task Abstraction from Multiple Perspectives

IEEE VIS Doctoral Colloquium 2014 (Paris, France)  
November 8, 2014



## A Multi-Level Typology of Abstract Visualization Tasks

IEEE InfoVis 2013 (Atlanta, USA)  
October 15, 2013



## Investigating Interruptions in the Context of Computerised Cognitive Testing for Older Adults

ACM CHI 2012 (Austin, USA)  
May 10, 2012



## A Tale of Two Studies: Investigating the Impact of Interruptions on Task Performance in Older Adults

GRAND NCE AGM 2011 (Vancouver, Canada)  
May 2011



## PUBLICATIONS

### Evaluating Data-Driven Stories & Storytelling Tools

Fereshteh Amini\*, **Matthew Brehmer\***, Gordon Bolduan, Christina Elmer, and Benjamin Wiederkehr  
( \* equal contribution )

Chapter to appear in *Data-Driven Storytelling*, a forthcoming book edited by Sheelagh Carpendale, Nicholas Diakopoulos, Christophe Hurter, and Nathalie Henry Riche, 2017.

### **Demonstrating the Value of Visualization: Highlights from the 2017 PacificVis Visual Data Storytelling Contest**

**Matthew Brehmer**, Kyungwon Lee, Ivan Viola, Jinwook Seo, and Bongshin Lee.  
Poster to appear at the 2017 *IEEE VIS Conference*.

### **Timelines Revisited: A Design Space and Considerations for Expressive Storytelling**

**Matthew Brehmer**, Bongshin Lee, Benjamin Bach, Nathalie Henry Riche, and Tamara Munzner  
In Volume 23, Issue 9 (Sept. 2017) of *IEEE Transactions on Visualization and Computer Graphics*.

### **ChartAccent: Annotation for Data-Driven Storytelling**

Donghao Ren, **Matthew Brehmer**, Bongshin Lee, Tobias Höllerer, and Eun Kyoung Choe  
In proceedings of the 2017 *IEEE PacificVis Symposium*.

### **Why Visualization? Task Abstraction for Analysis and Design**

**Matthew Brehmer**  
University of British Columbia PhD Dissertation (April, 2016).

### **Matches, Mismatches, and Methods: Multiple-View Workflows for Energy Portfolio Analysis**

**Matthew Brehmer**, Jocelyn Ng, Kevin Tate, and Tamara Munzner  
In Volume 22, Issue 1 (Jan. 2016) of *IEEE Transactions on Visualization and Computer Graphics (InfoVis 2015)*.

### **TimeLineCurator: Interactive Authoring of Visual Timelines from Unstructured Text**

Johanna Fulda, **Matthew Brehmer**, and Tamara Munzner  
In Volume 22, Issue 1 (Jan. 2016) of *IEEE Transactions on Visualization and Computer Graphics (VAST 2015)*.

### **C-TOC (Cognitive Testing on Computer): Investigating the Usability and Validity of a Novel Self-administered Cognitive Assessment Tool in Aging and Early Dementia**

Claudia Jacova, Joanna McGrenere, Hyunsoo S. Lee, William Wang, Sarah Le Huray, Emily F. Corenblith, **Matthew Brehmer**, Charlotte Tang, Sherri Hayden, B. Lynn Beattie, and Ging-Yuek R. Hsiung  
In Volume 29, Issue 3 (July 2015) of *Alzheimer Disease and Associated Disorders*.

### **Overview: The Design, Adoption, and Analysis of a Visual Document Mining Tool For Investigative Journalists**

**Matthew Brehmer**, Stephen Ingram, Jonathan Stray, and Tamara Munzner.  
In Volume 20, Issue 12 (Dec. 2014) of *IEEE Transactions on Visualization and Computer Graphics (InfoVis 2014)*.

### **Visualizing Dimensionally-Reduced Data: Interviews with Analysts and a Characterization of Task Sequences**

**Matthew Brehmer**, Michael Sedlmair, Stephen Ingram, and Tamara Munzner  
In proceedings of the 2014 *ACM BELIV Workshop (Beyond Time and Errors: Novel Evaluation Methods for Visualization)*.

### **Pre-Design Empiricism for Information Visualization: Scenarios, Methods, and Challenges**

**Matthew Brehmer**, Sheelagh Carpendale, Bongshin Lee, and Melanie Tory.  
In proceedings of the 2014 *ACM BELIV Workshop (Beyond Time and Errors: Novel Evaluation*

*Methods for Visualization).*

### [A Multi-Level Typology of Abstract Visualization Tasks](#)

**Matthew Brehmer** and Tamara Munzner

In Volume 19, Issue 12 (Dec. 2013) of *IEEE Transactions on Visualization and Computer Graphics (InfoVis 2013)*.

### [Dimensionality Reduction in the Wild: Gaps and Guidance](#)

Michael Sedlmair, **Matthew Brehmer**, Stephen Ingram, and Tamara Munzner

University of British Columbia Technical Report TR-2012-03 (2012).

### [Investigating Interruptions in the Context of Computerised Cognitive Testing for Older Adults](#)

**Matthew Brehmer**, Joanna McGrenere, Charlotte Tang, and Claudia Jacova

In proceedings of the 2012 *ACM Conference on Human Factors in Computing Systems (CHI)*.

### [Usability and the Effects of Interruption in C-TOC: Self-Administered Cognitive Testing on a Computer](#)

**Matthew Brehmer**

University of British Columbia MSc Thesis (2011).

### [A Tale of Two Studies: Investigating the Impact of Interruptions on Task Performance in Older Adults](#)

**Matthew Brehmer**, Charlotte Tang, Joanna McGrenere, and Claudia Jacova

In the work-in-progress proceedings of the the 2011 *GRAND NCE AGM*.

### [The Haptic Crayola Effect: Exploring the Role of Naming in Learning Haptic Stimuli](#)

Inwook Hwang, Karon MacLean, **Matthew Brehmer**, Jeff Hendy, Andreas Sotirkopoulos, and Seungmoon Choi

In proceedings of the 2011 *IEEE World Haptics Conference*.

### [Activate Your GAIM: A Toolkit for Input in Active Games](#)

**Matthew Brehmer**, T.C. Nicholas Graham, and Tadeusz Stach

In proceedings of the 2010 *ACM Future Play Conference*.

### [Classifying Input for Active Games](#)

Tadeusz Stach, T.C. Nicholas Graham, **Matthew Brehmer**, and Andreas Hollatz

In proceedings of the 2009 *ACM Advances in Computer Entertainment Technology (ACE) Conference*.

### [Assessing the Effect of Exercise Intensity on Cognitive Task Performance in an Exercise Video Game](#)

**Matthew Brehmer**

Queen's University B.Comp Thesis (2009).

## SERVICE

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**Program Committee:** [IEEE InfoVis \(2017\)](#), [EuroVis State of the Art Reports \(2017\)](#), [IEEE PacifiVis \(2018\)](#), [IEEE PacifiVis \(Notes: 2017, 2018\)](#), [FAT\\*](#): [Conference on Fairness, Accountability, and](#)

Transparency (2018)

**Contest Co-Chair:** [IEEE PacificVis Visual Data Storytelling Contest \(2017, 2018\)](#)

**Reviewer:** IEEE InfoVis (2013, 2014, 2015, 2016), IEEE VAST (2015), IEEE PacificVis (2017), IEEE TVCG (2015, 2016, 2017), EuroVis (2014, 2015, 2017), ACM CHI (2013, 2014, 2015, 2016, 2017), ACM TOCHI (2013), Sage Information Visualization Journal (2015, 2016), ACM SIGGRAPH Asia (2012), GRAND NCE ACM (2012)

**Student Volunteer:** ACM CHI Conference (2011, 2013, 2015, 2016)