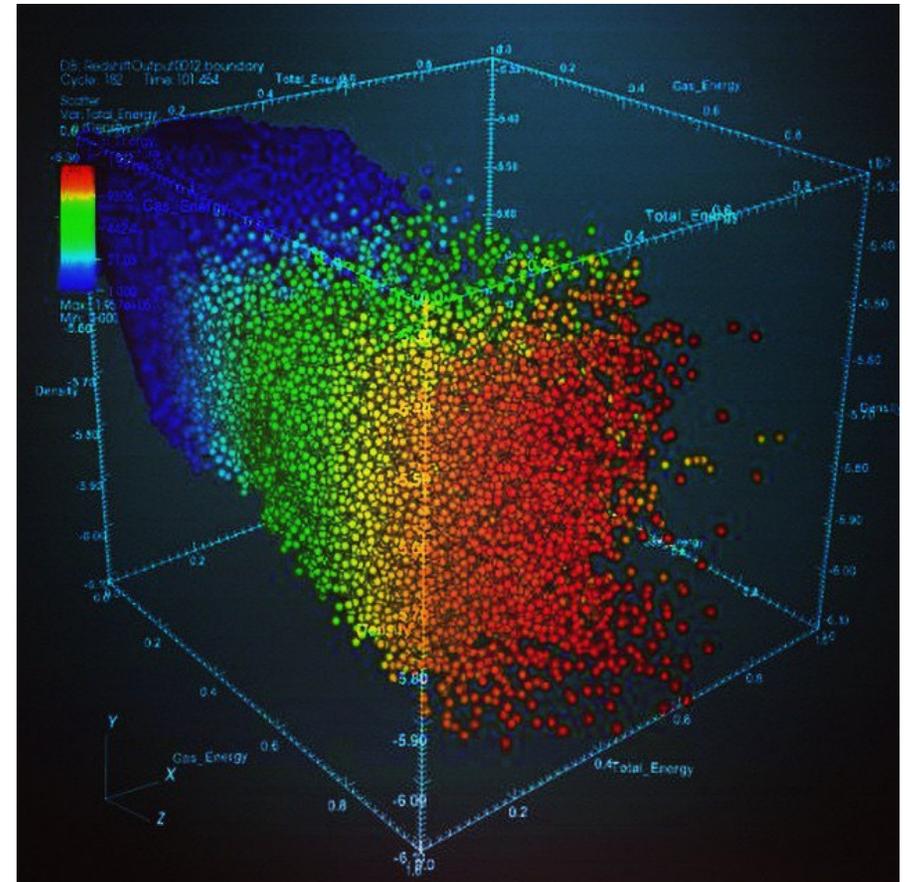
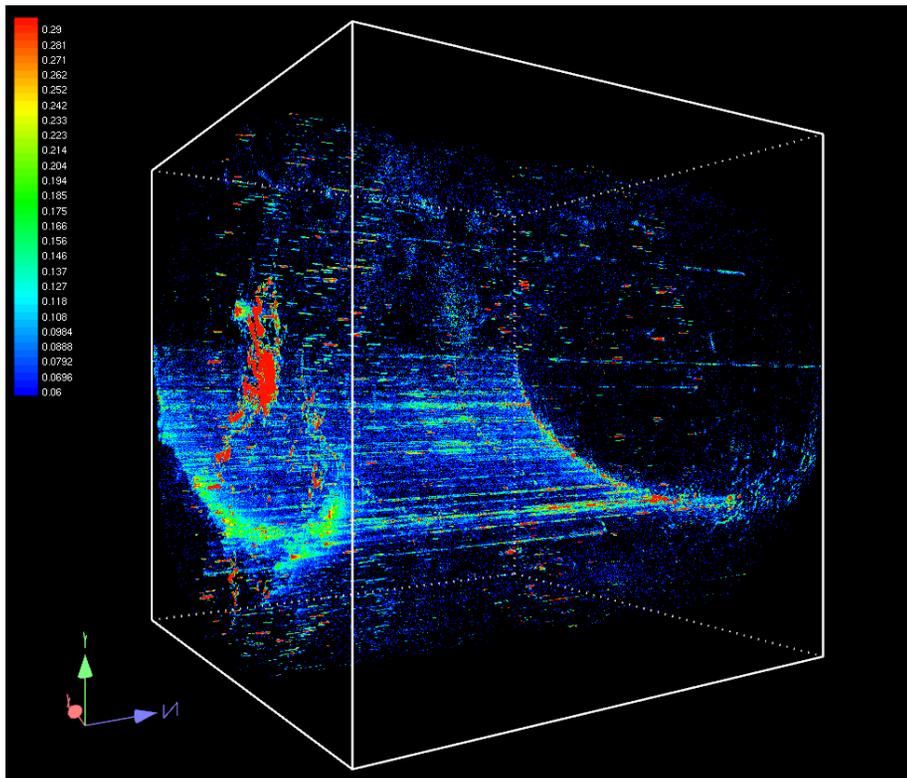


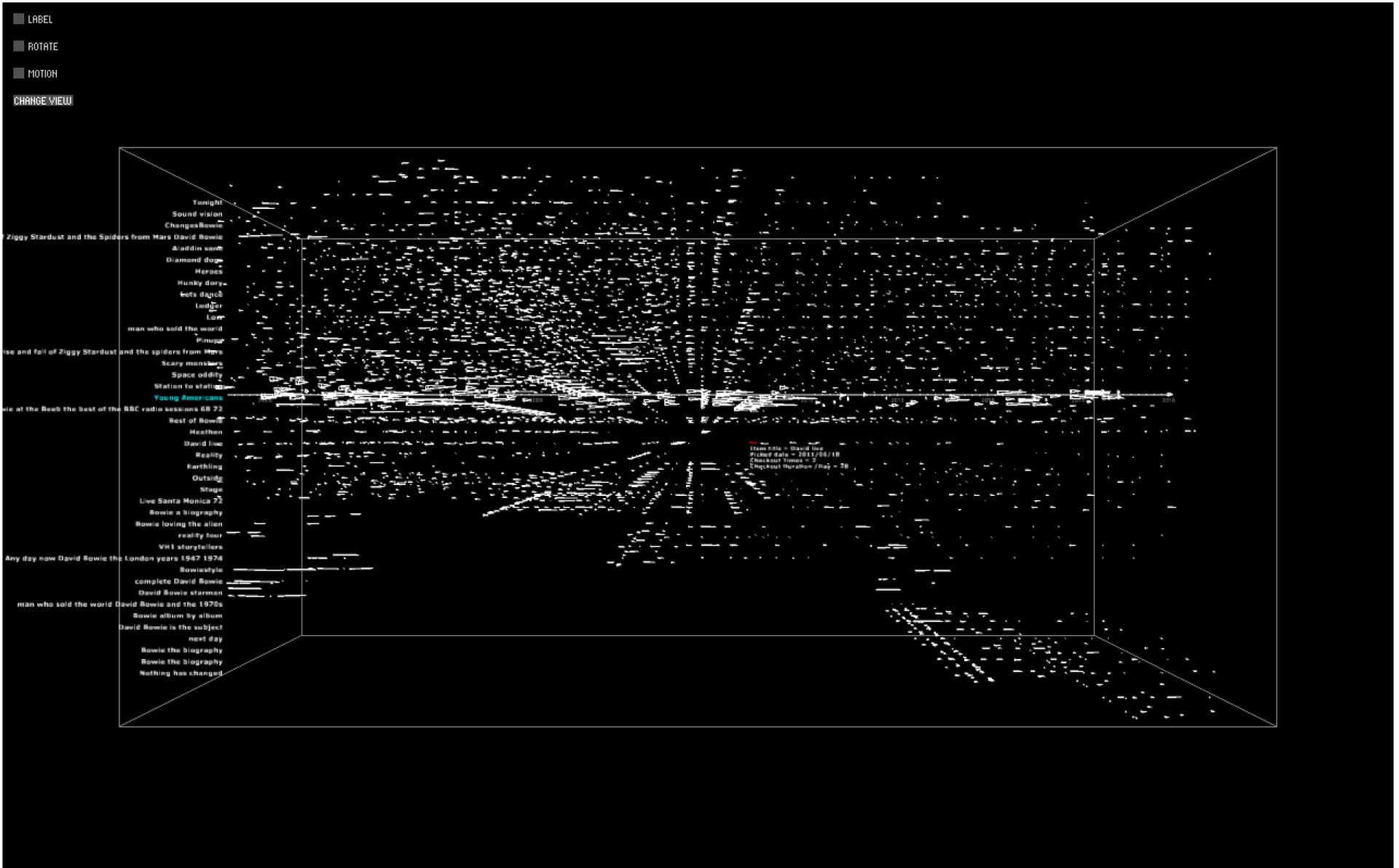
3D Visualization

M259 DataVis, MAT, 2017 winter

From overall form to detail / 3D scatter plot



Particles

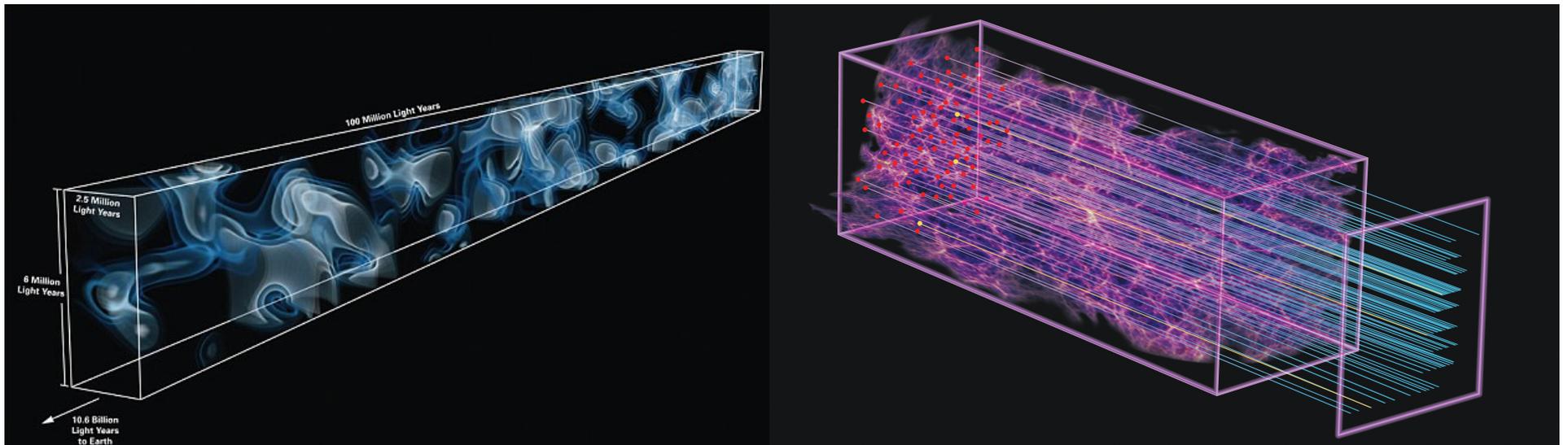


Particles

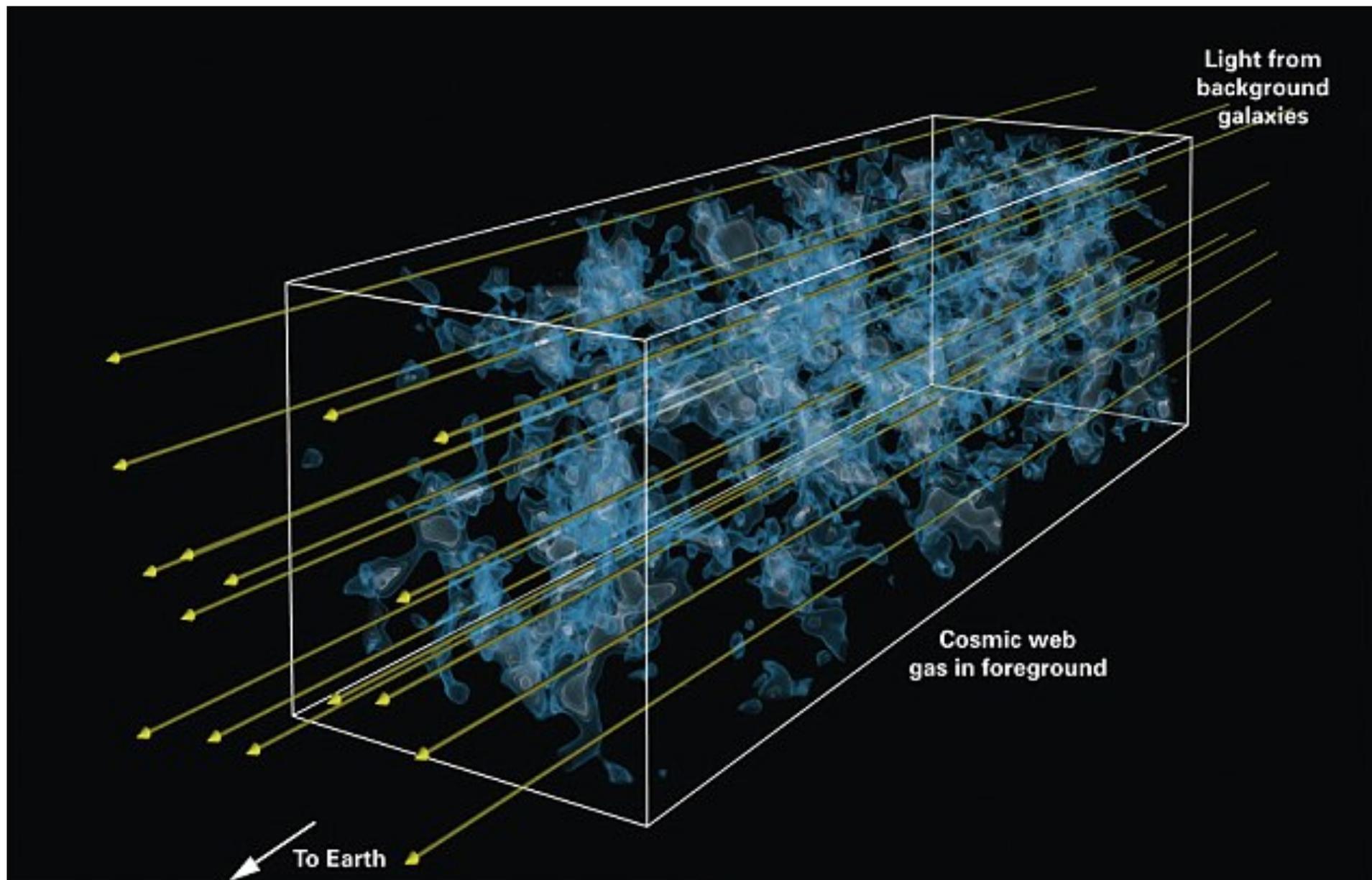


Directional: Change over time

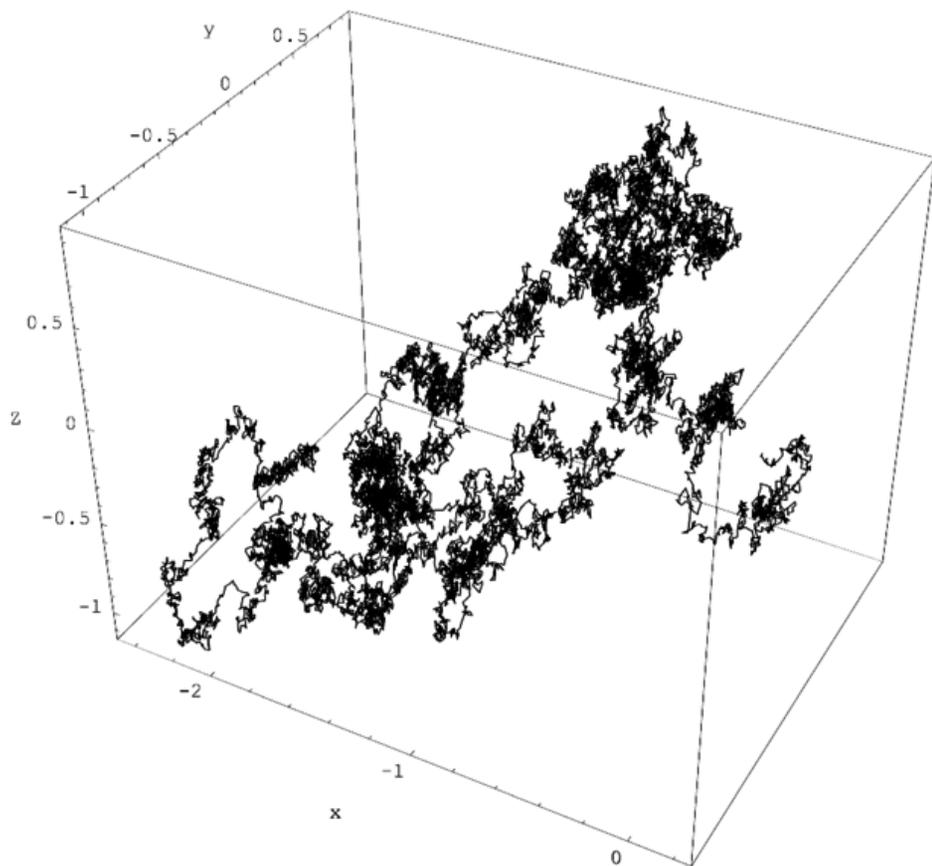
Change over time: how data may evolve represented linearly (diachronic) and meanwhile articulate its relation to other data in the same time (synchronic)

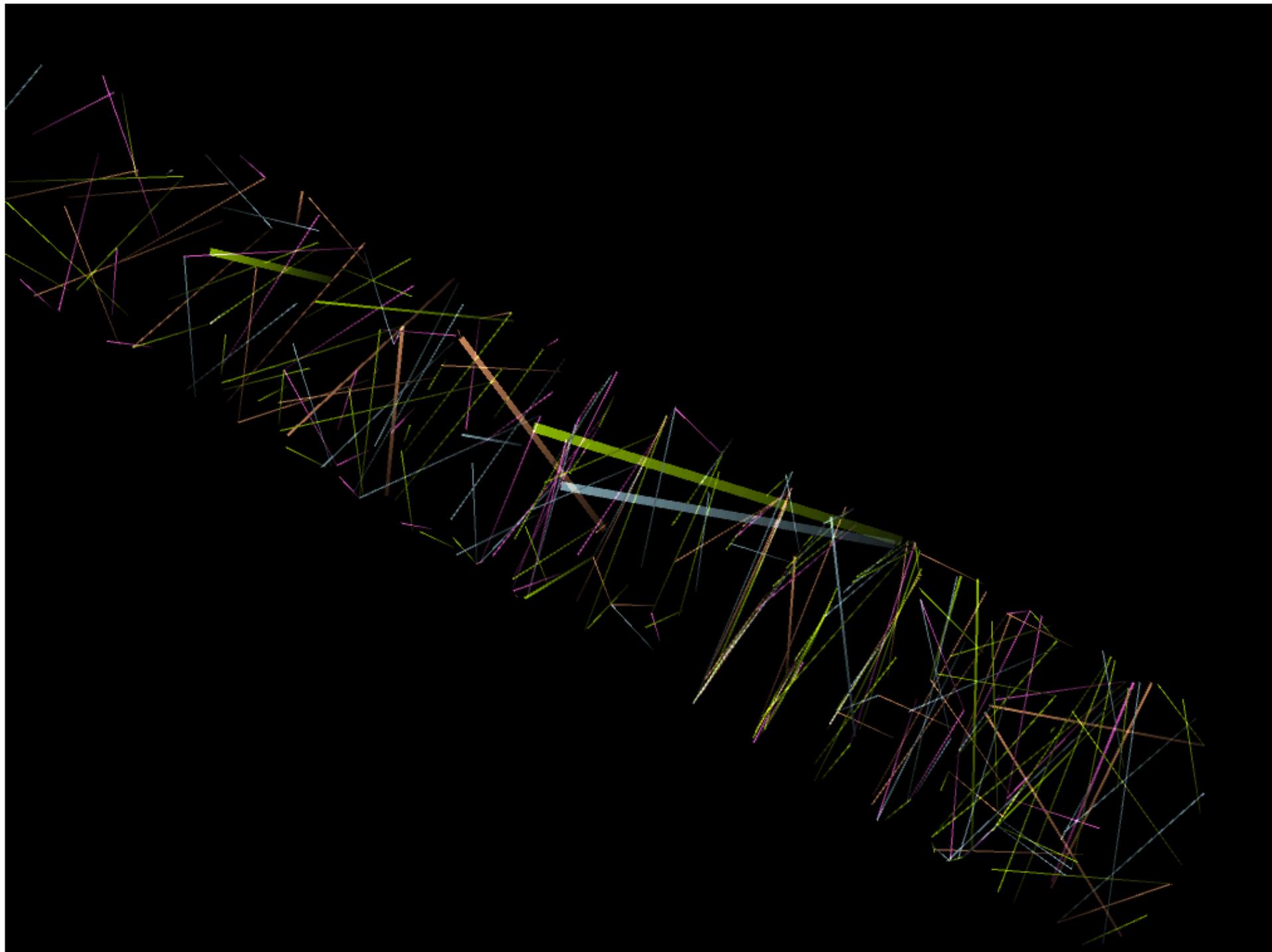


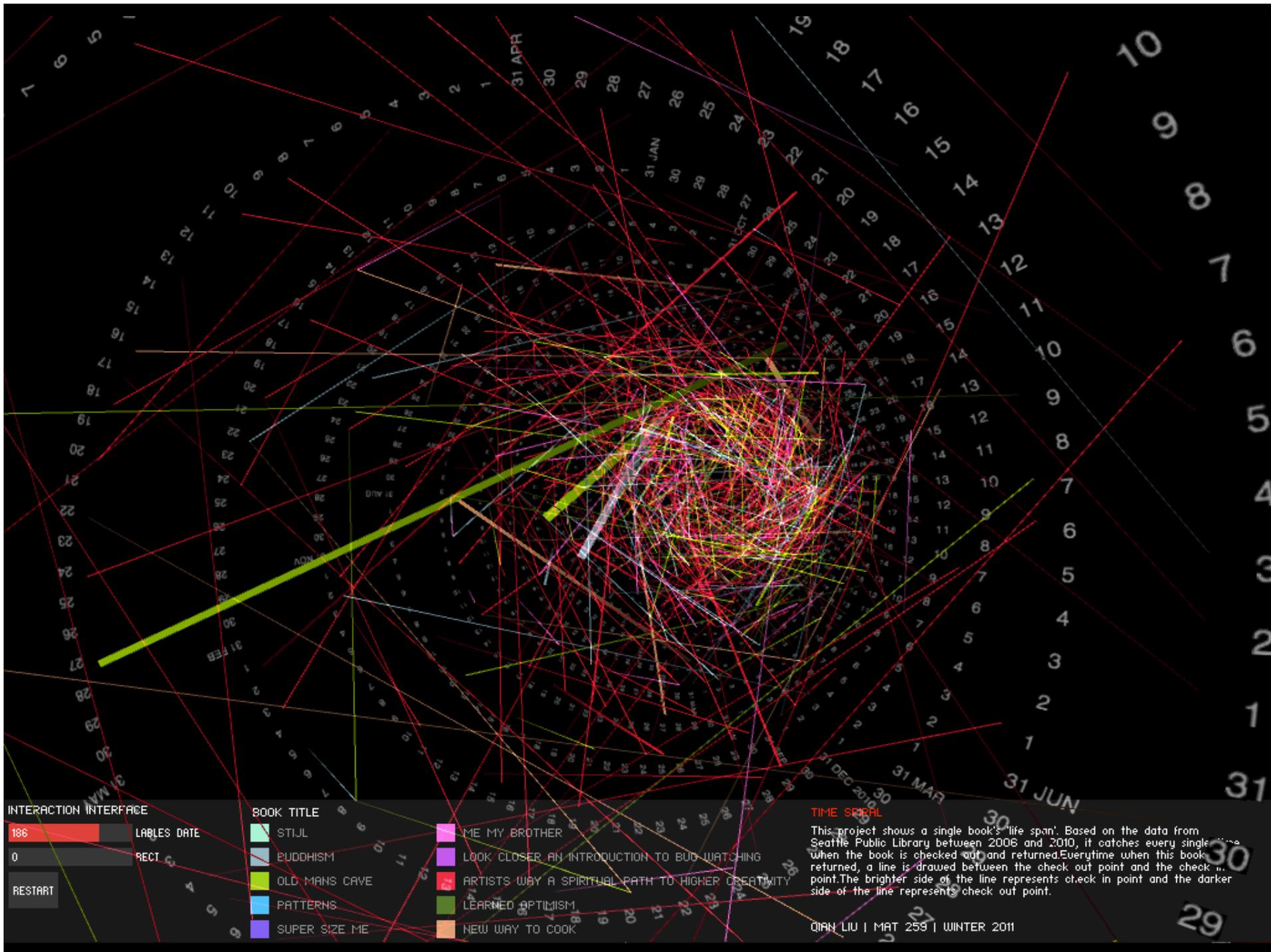
Directional: Change over time



From data to form







INTERACTION INTERFACE

186

LABELS DATE

0

RECT

RESTART

BOOK TITLE

STIJL

BUDDHISM

OLD MANS CAVE

PATTERNS

SUPER SIZE ME

ME MY BROTHER

LOOK CLOSER AN INTRODUCTION TO BUG WATCHING

ARTISTS WAY A SPIRITUAL PATH TO HIGHER CREATIVITY

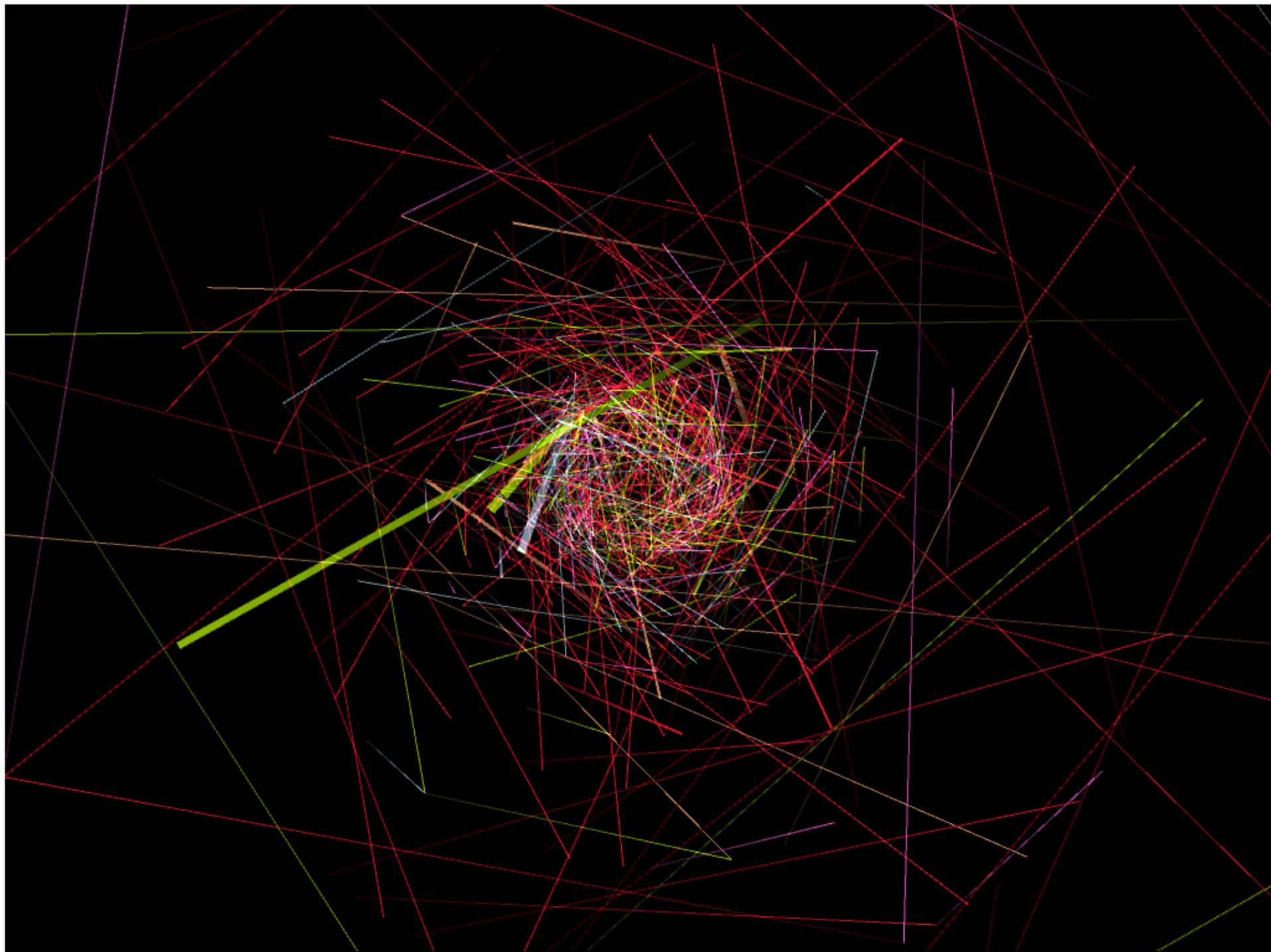
LEARNED OPTIMISM

NEW WAY TO COOK

TIME SERIAL

This project shows a single book's 'life span'. Based on the data from Seattle Public Library between 2006 and 2010, it catches every single time when the book is checked out and returned. Everytime when this book returned, a line is drawn between the check out point and the check in point. The brighter side of the line represents check in point and the darker side of the line represents check out point.

QIAN LIU | MAT 259 | WINTER 2011



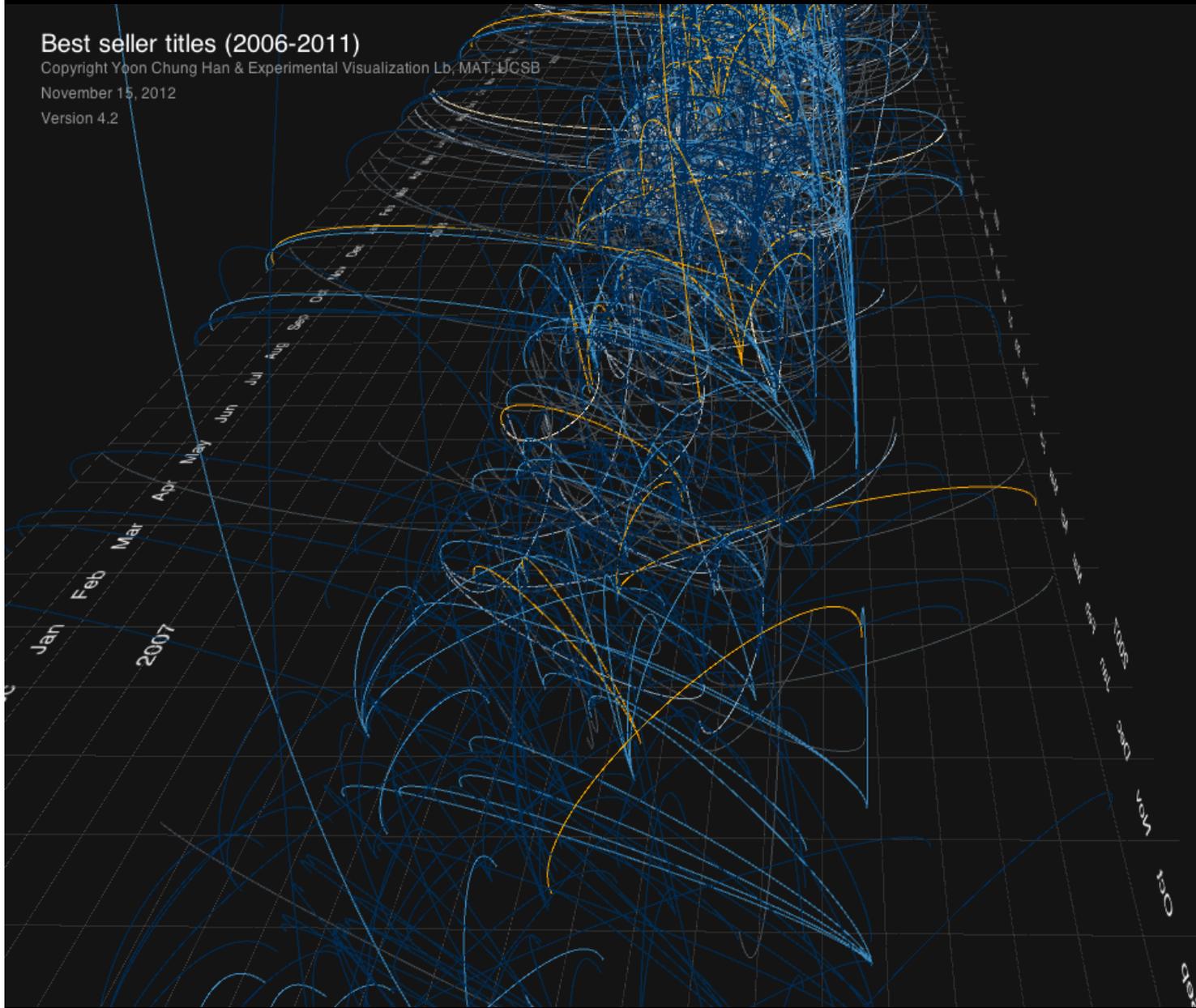
Best seller titles (2006-2011)

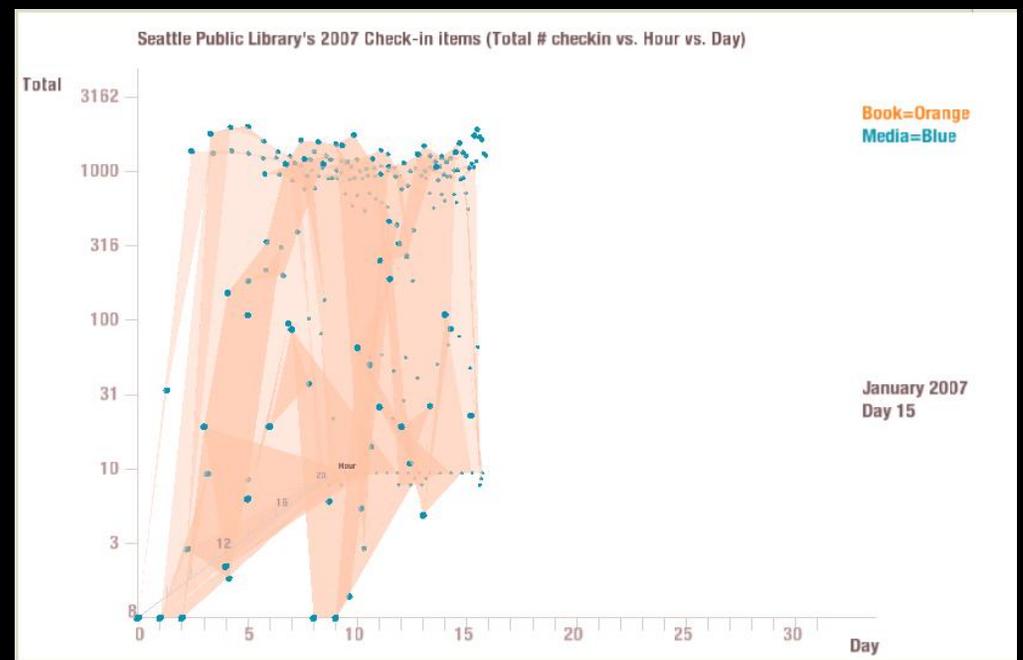
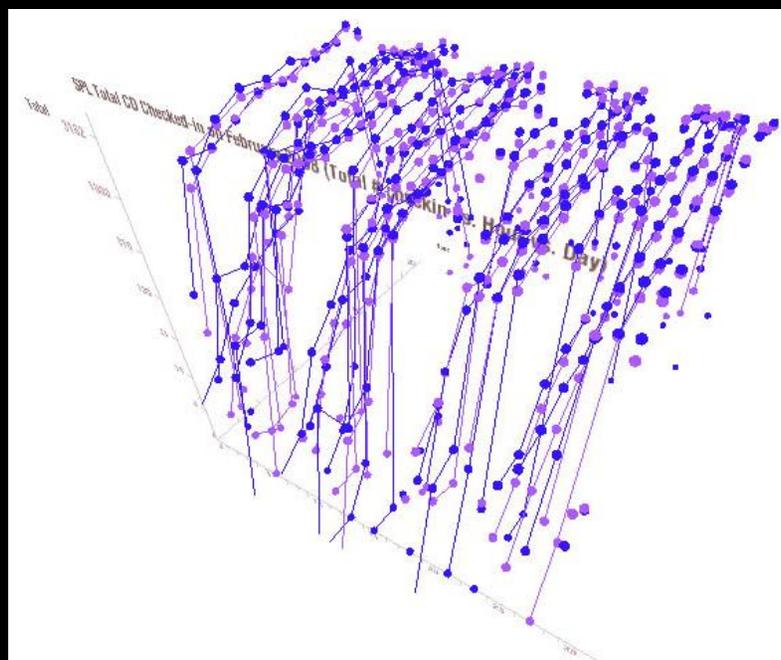
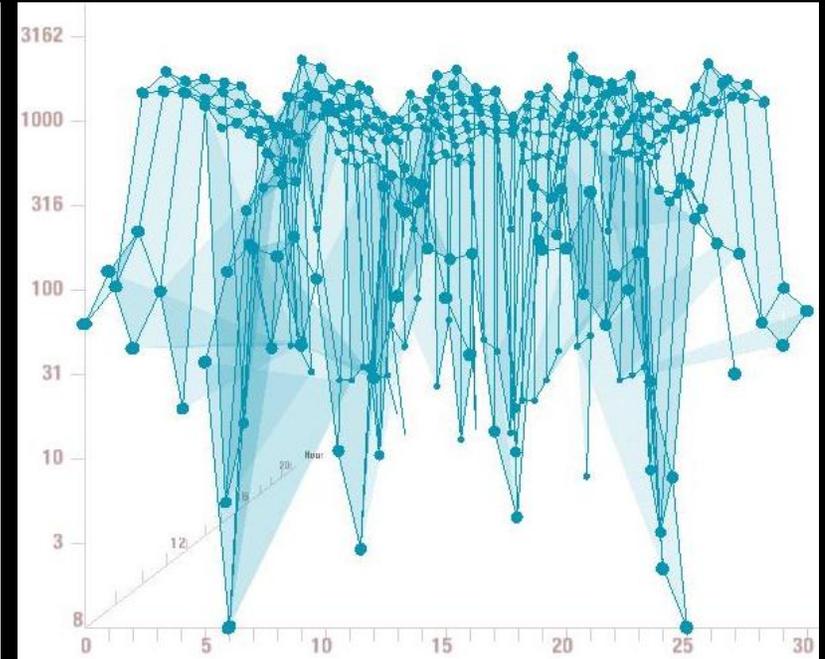
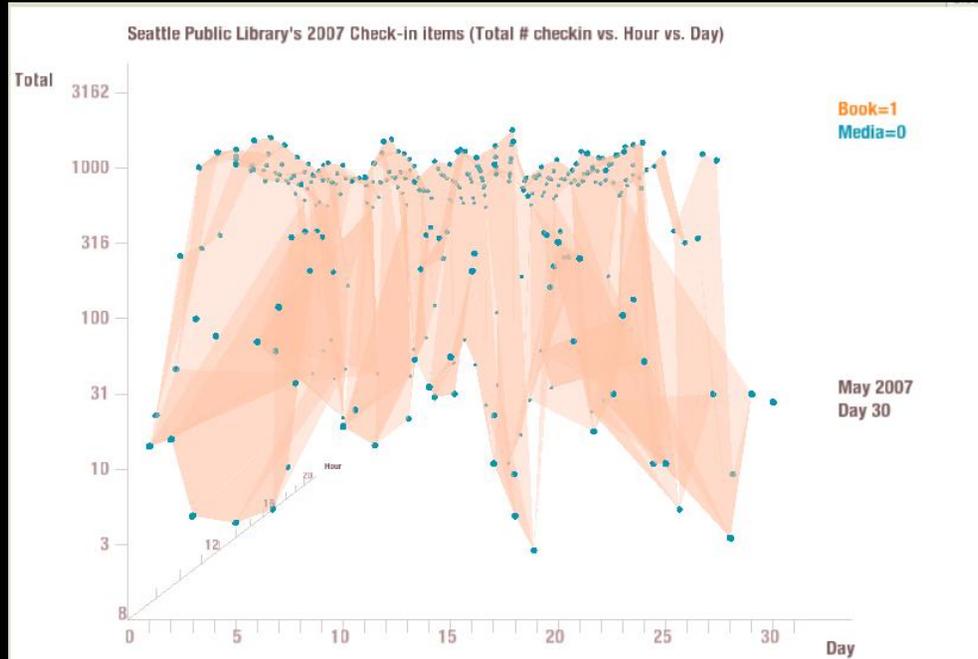
Copyright Yoon Chung Han & Experimental Visualization Lab, MAT, UCSB

November 15, 2012

Version 4.2

- 0: Restart
- 1: Side View
- 2: Front View
- 3: Up View
- 4: Grid
- 5: Show ~~@c~~Show spheres
- t: Show Book Titles
- g: Show Grid





STAR WARS NEBULA

Using Data of Checkout Times and Duration Times of the Former 6 in This Movie Series in Seattle Public Library

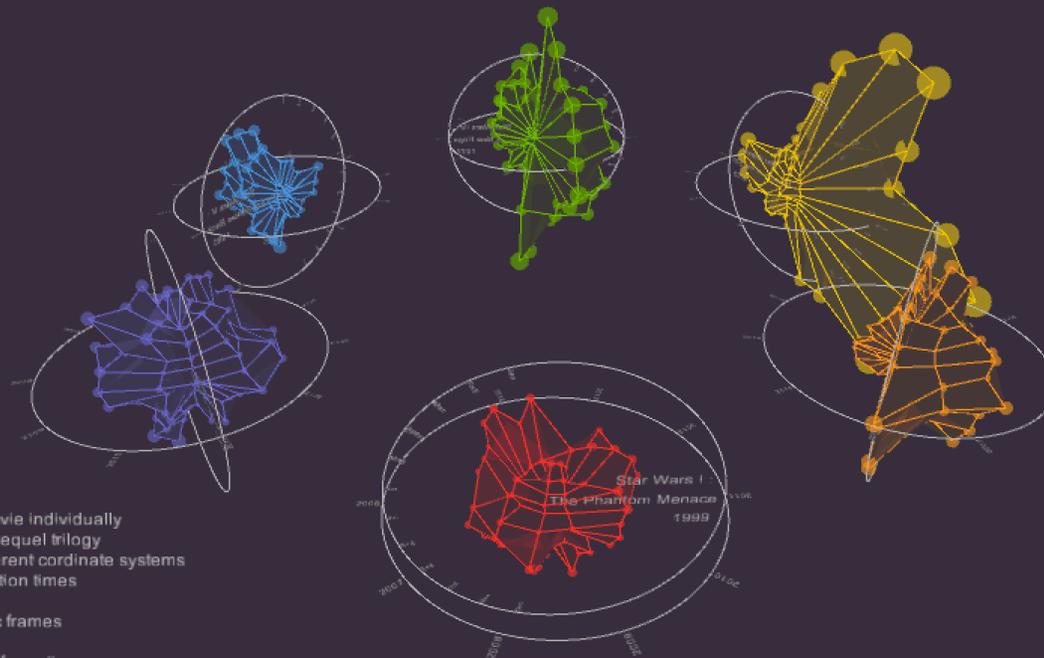
Year	Month
2006	January
2007	February
2008	March
2009	April
2010	May
2011	June
2012	July
2013	August
2014	September
2015	October
	November
	December

Reset

Years
Months
All

Keyboard Control

Press 1 / 2 / 3 / 4 / 5 / 6 to check movie individually
Press 7 / 8 to check the original / prequel trilogy
Press 9 / 0 to check all in one / different coordinate systems
Press D to show / hide dots of duration times
Press S to show / hide the solids
Press N to show / hide the chromatic frames
Press F to show / hide grey frames
Press T to show / hide the verbal information
Press L to show / hide the coordinate axis and labels

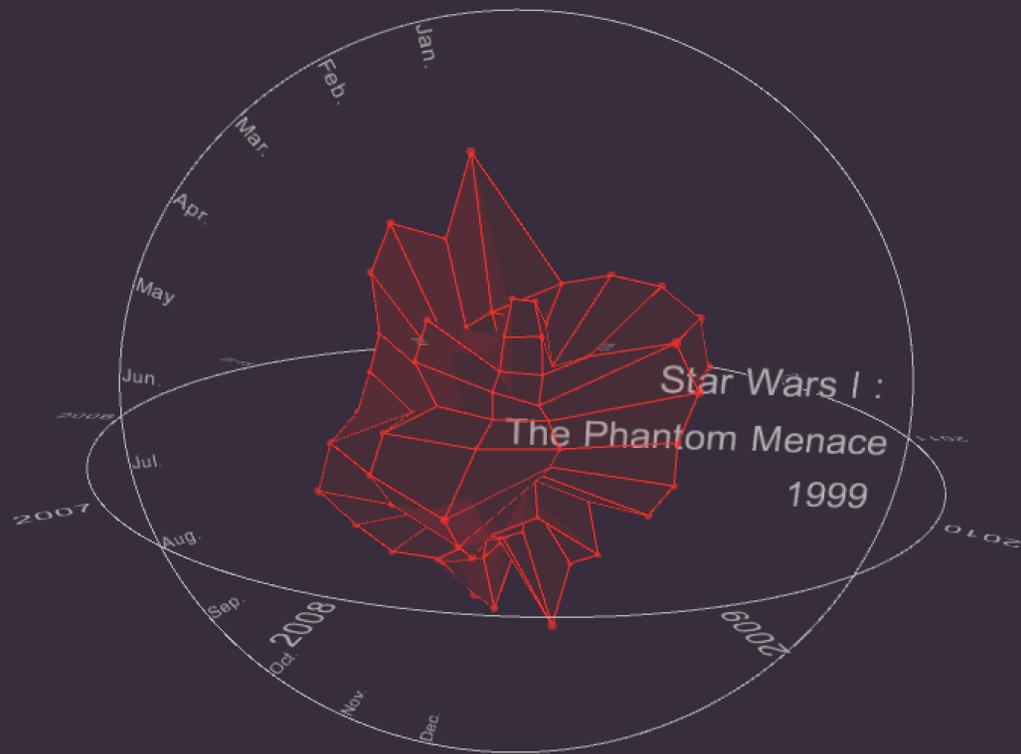


Junxiang Yao
MAT259 PROJ 2
3D Interaction & Change Over Time

The radius of the circular coordinate axis is 200 checkout times.

Duration time scaling:





STAR WARS NEBULA

Using Data of Checkout Times and Duration Times of the Former 6 in This Movie Series in Seattle Public Library

Year	Month
2006	January
2007	February
2008	March
2009	April
2010	May
2011	June
2012	July
2013	August
2014	September
2015	October
	November
	December

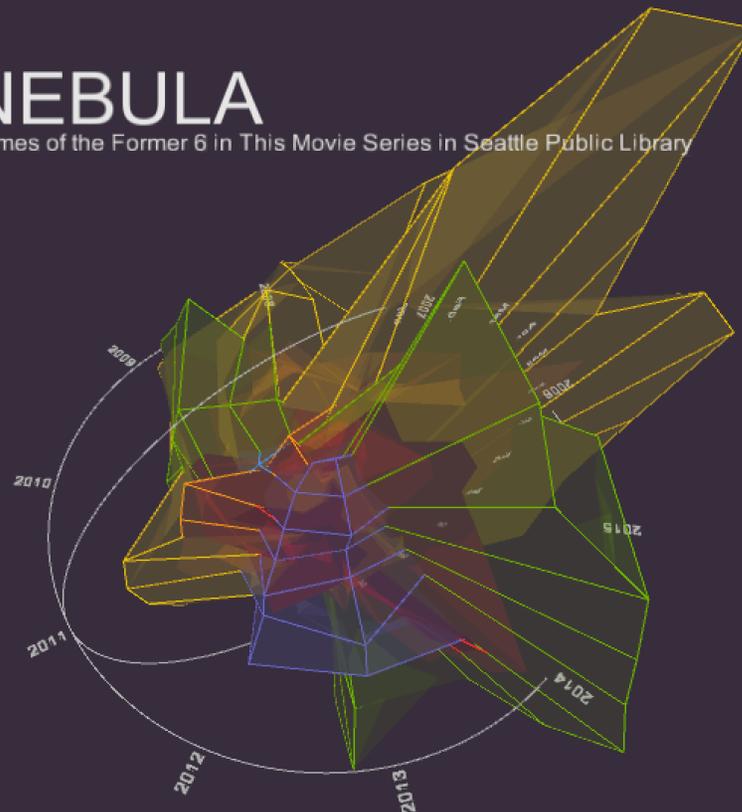
Reset

Years
Months
All

Star Wars IV (1977)	Star Wars I (1999)
Star Wars V (1980)	Star Wars II (2002)
Star Wars VI (1983)	Star Wars III (2005)

Keyboard Control

Press 1 / 2 / 3 / 4 / 5 / 6 to check movie individually
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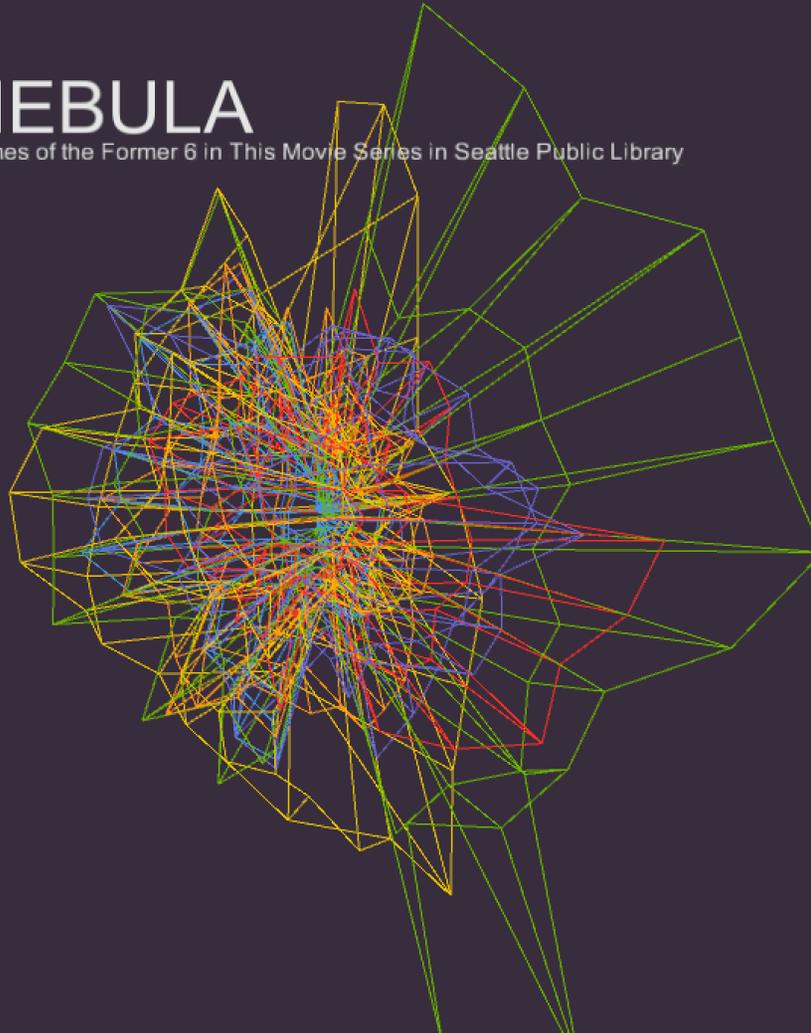
Year	Month
2006	January
2007	February
2008	March
2009	April
2010	May
2011	June
2012	July
2013	August
2014	September
2015	October
	November
	December

Reset
Years
Months
All

- | Star Wars IV (1977)
- | Star Wars V (1980)
- | Star Wars VI (1983)
- | Star Wars I (1999)
- | Star Wars II (2002)
- | Star Wars III (2005)

Keyboard Control

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Press 9 / 0 to check all in one / different coordinate systems
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Press F to show / hide grey frames
Press T to show / hide the verbal information
Press L to show / hide the coordinate axis and tables



Junxiang Yao
MAT259 PROJ 2
3D Interaction & Change Over Time

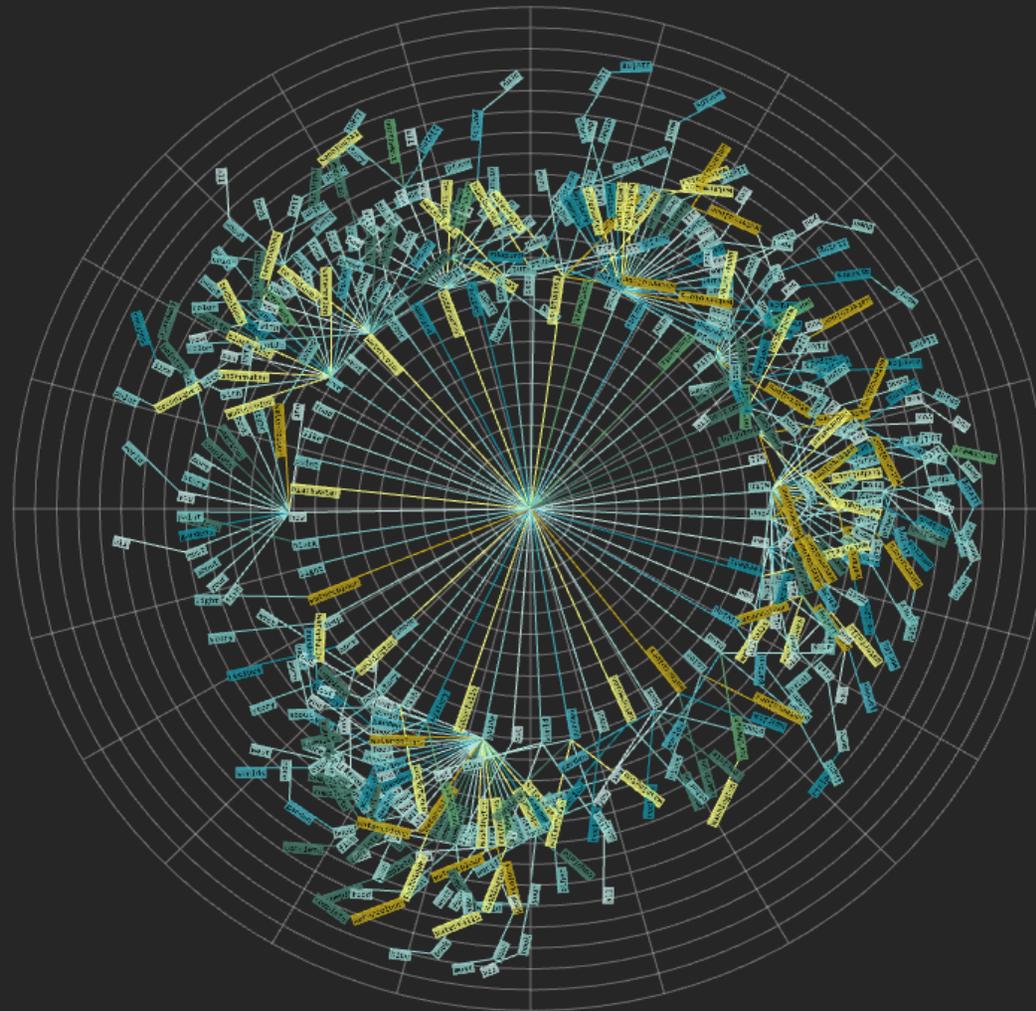
The radius of the circular coordinate axis is 200 checkout times.

Duration time scaling:



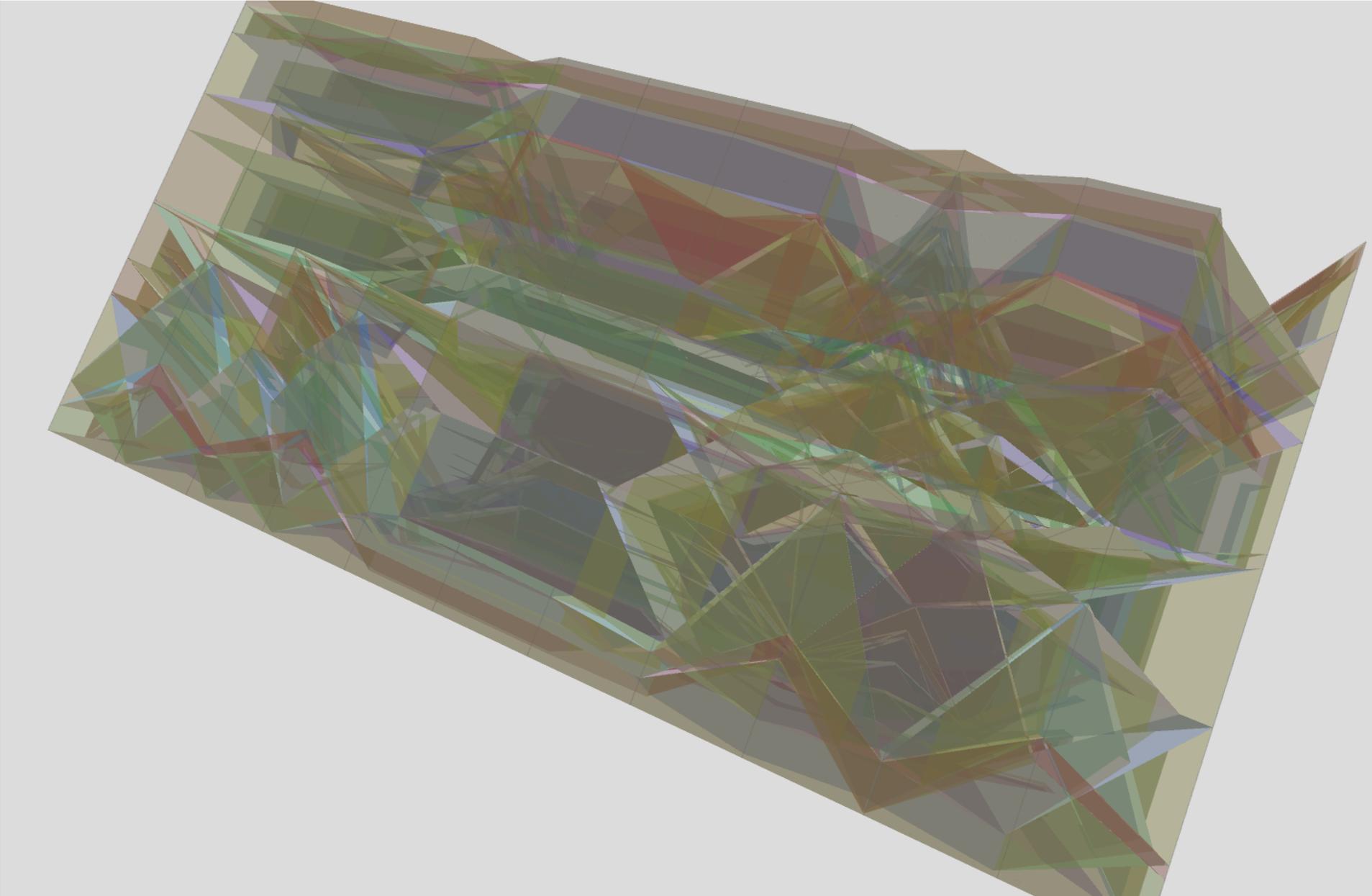
Associative (FPTree Algorithm)

INFORMATION

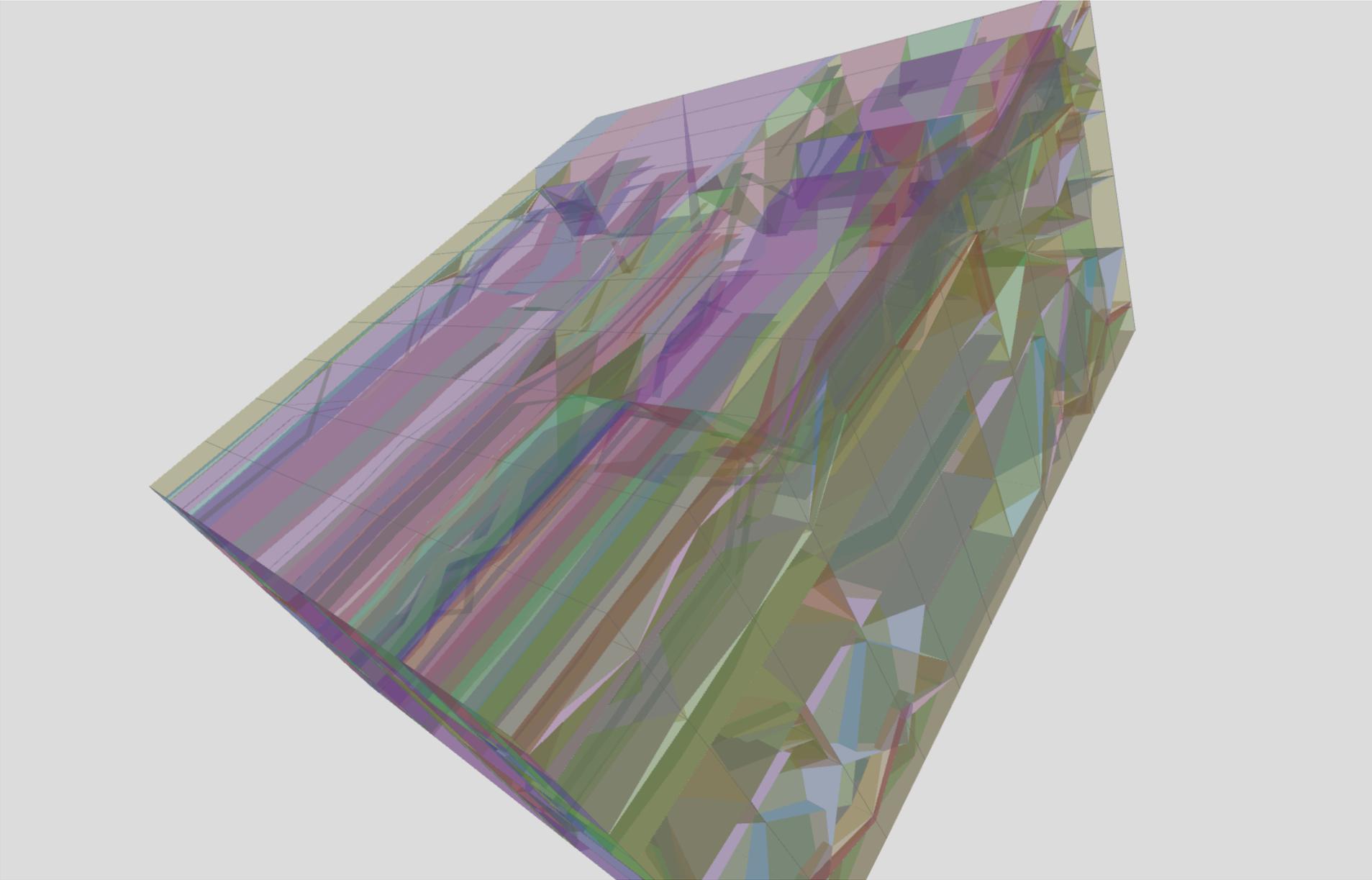


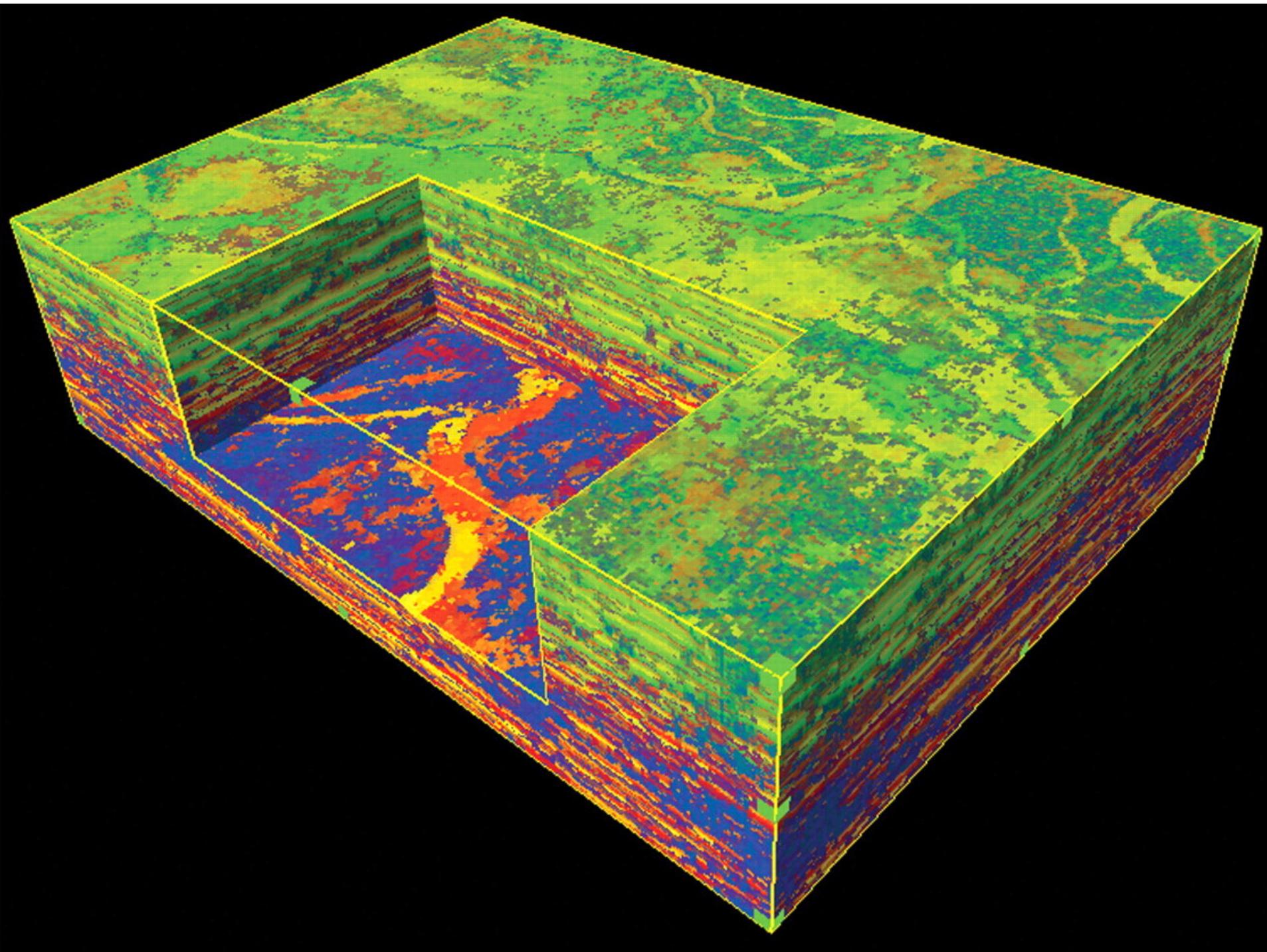
WATER

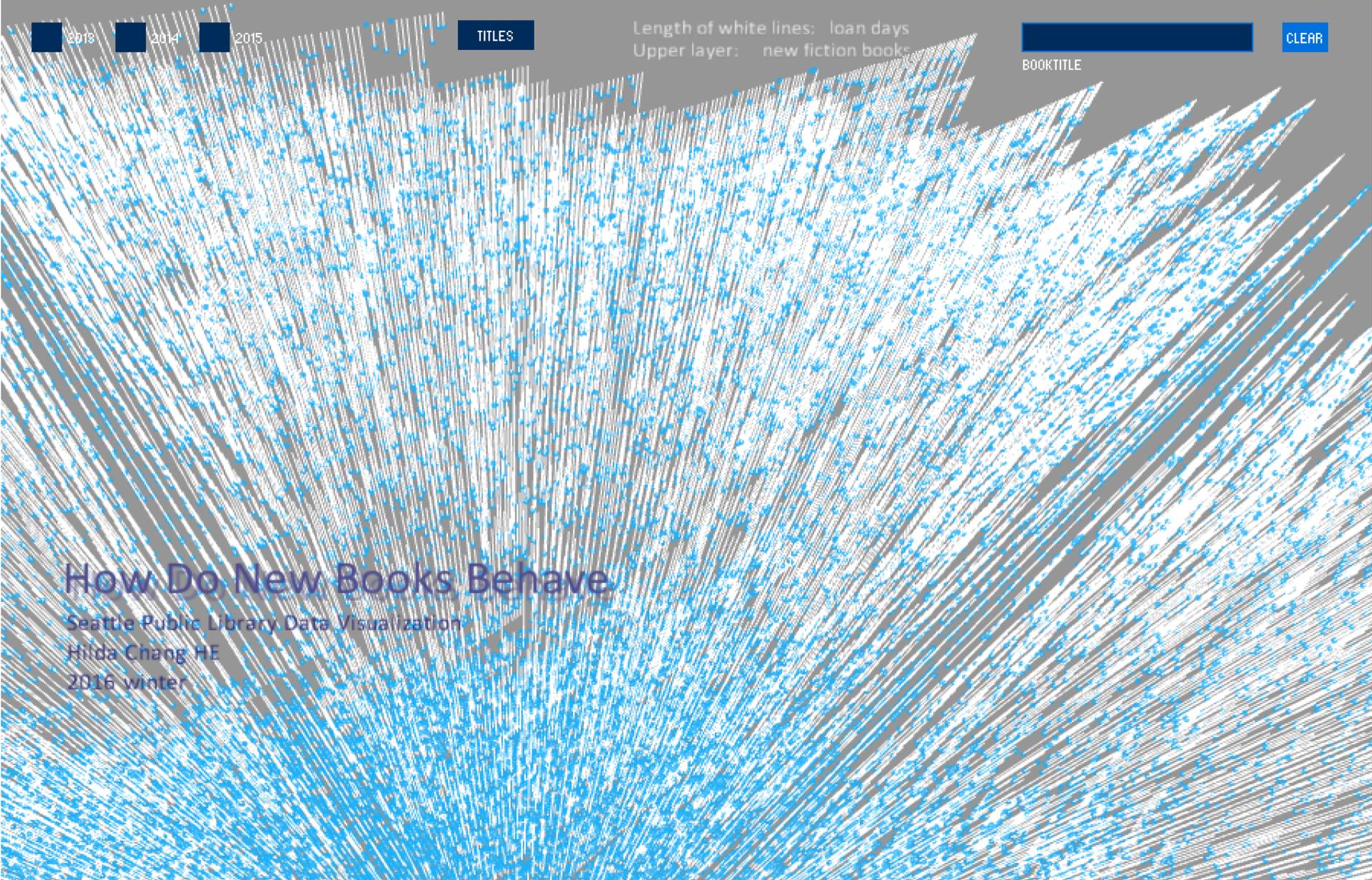
Data Density



Data Density







2013 2014 2015

TITLES

Length of white lines: loan days
Upper layer: new fiction books

BOOKTITLE

CLEAR

How Do New Books Behave

Seattle Public Library Data Visualization
Hilda Chang HE
2016 winter

2013 2014 2015

TITLES

Length of white lines: loan days
Upper layer: new fiction books
Lower layer: non-fiction books

husband list CLEAR

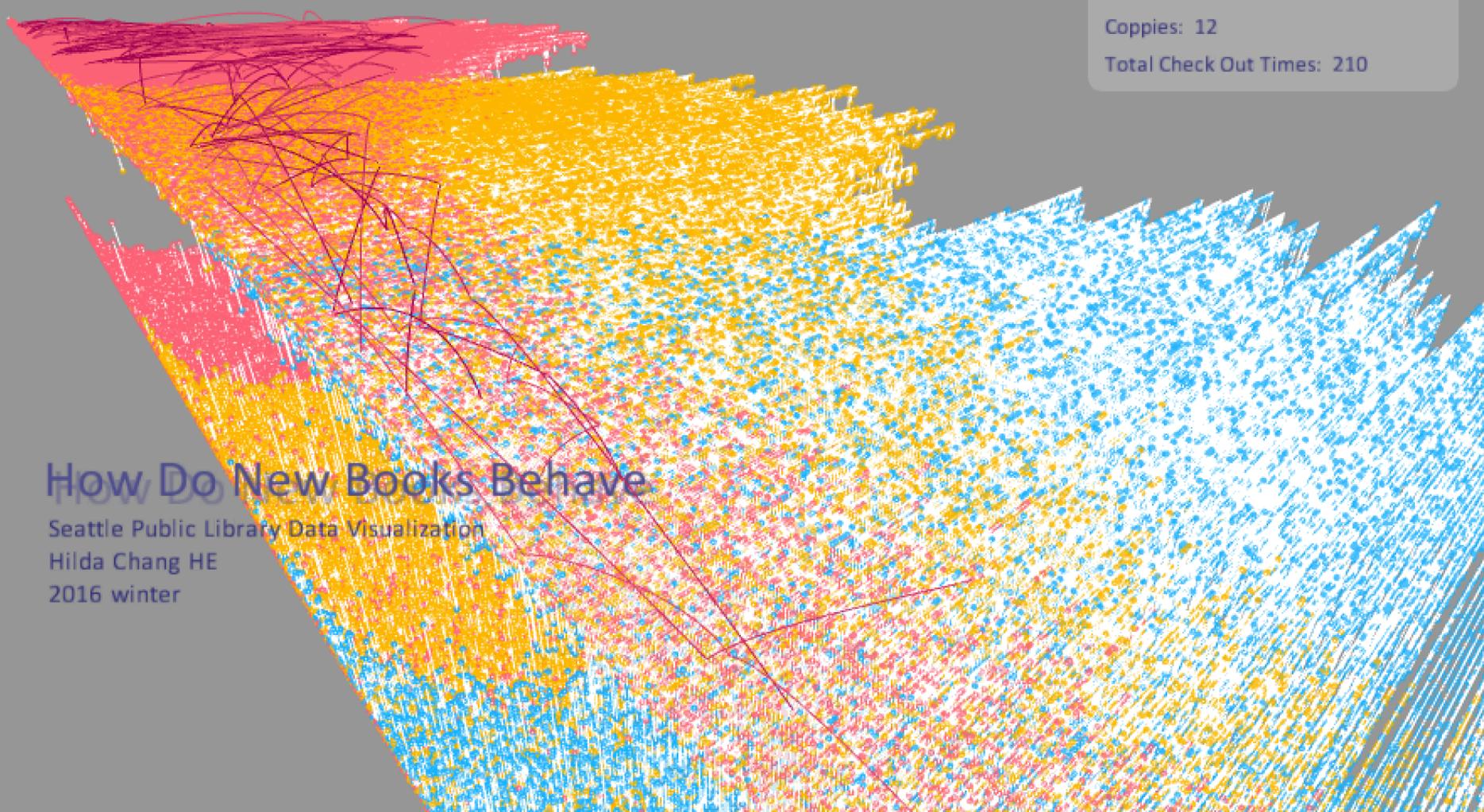
BOOKTITLE

Book: husband list

Published in: 2013

Copies: 12

Total Check Out Times: 210



How Do New Books Behave

Seattle Public Library Data Visualization

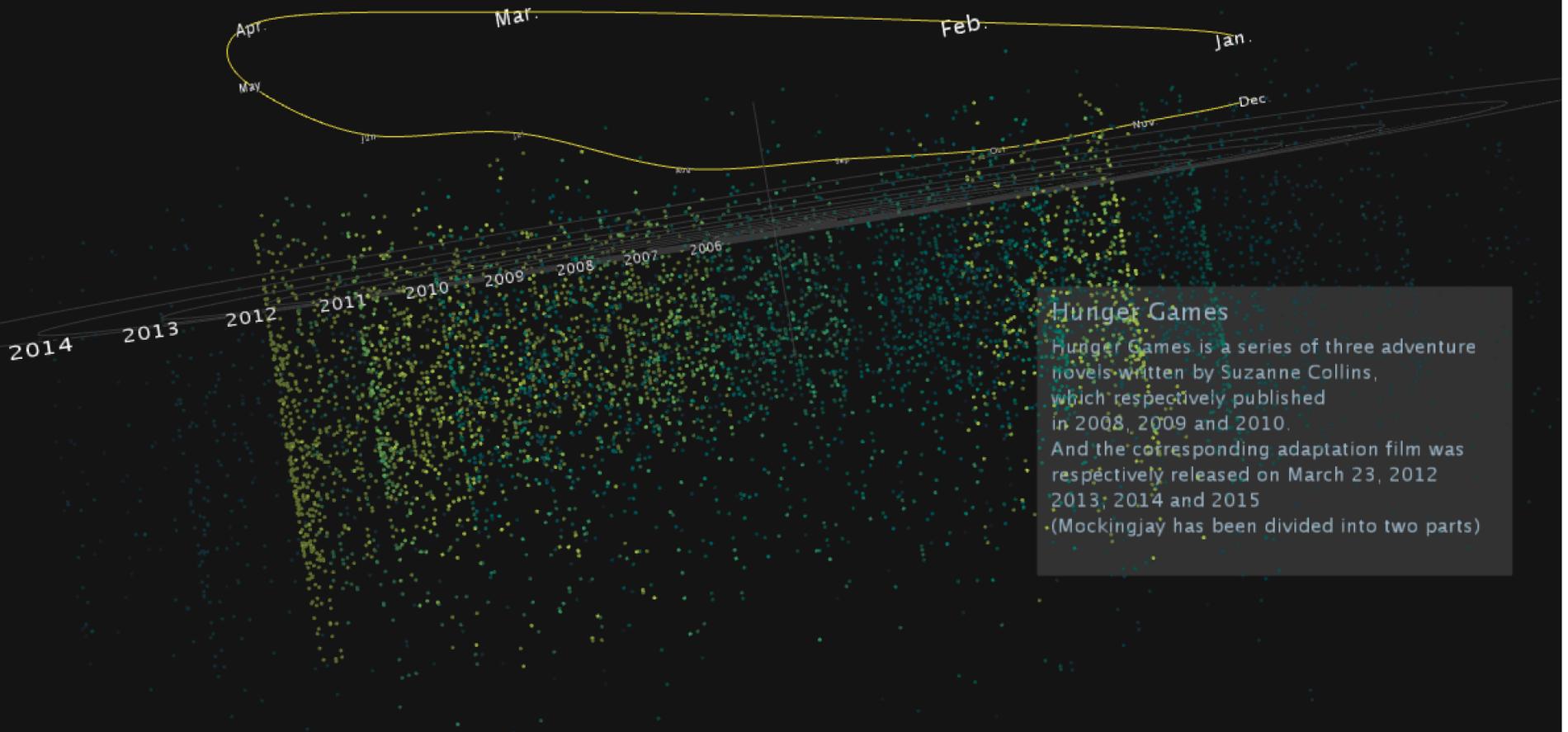
Hilda Chang HE

2016 winter

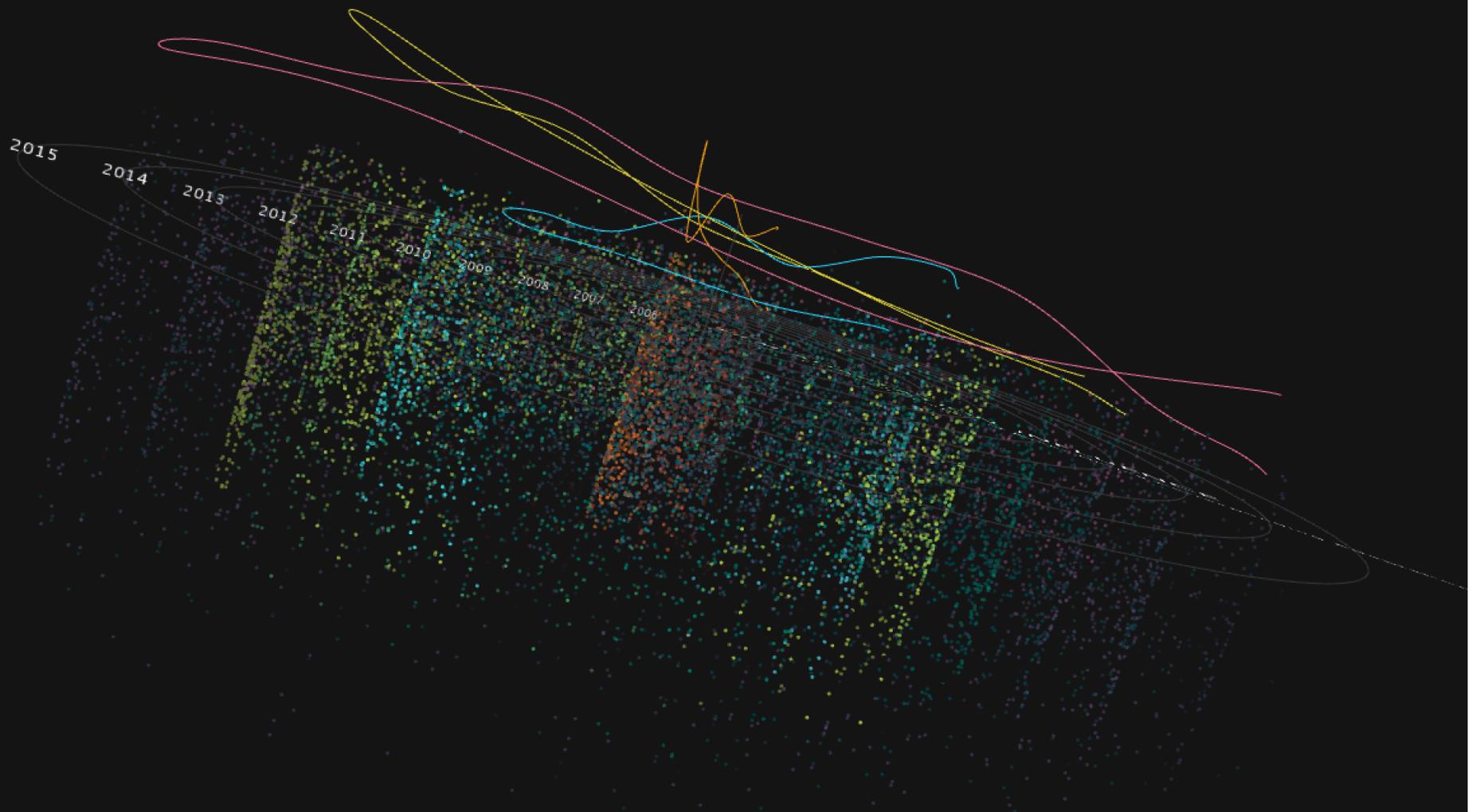
Cultural Trends

Search Details

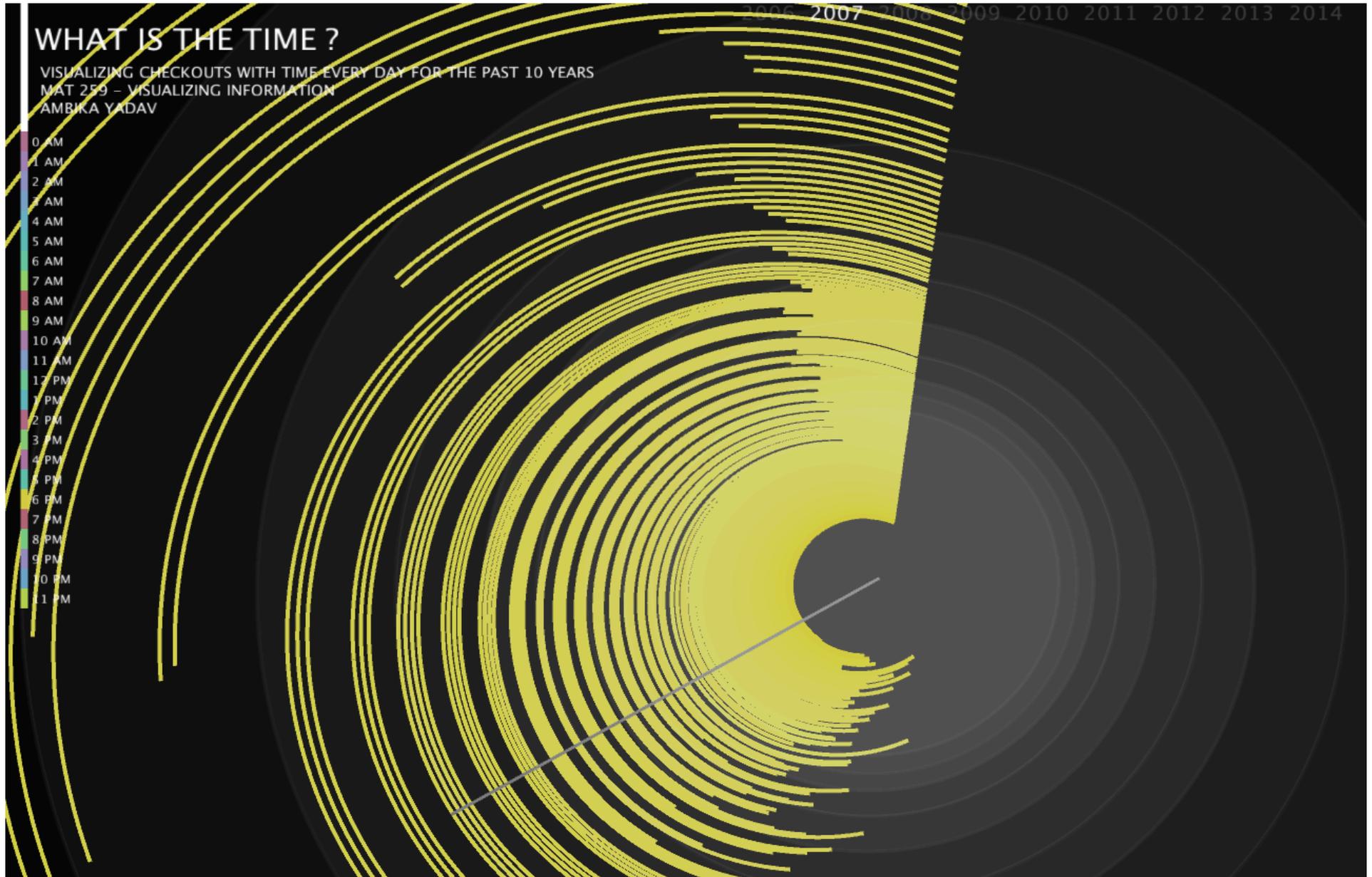
- The Da Vinci Code
- The Time Traveler's Wife
- Hunger Games
- Fault in Our Stars



Cultural Trends



Circular Examples

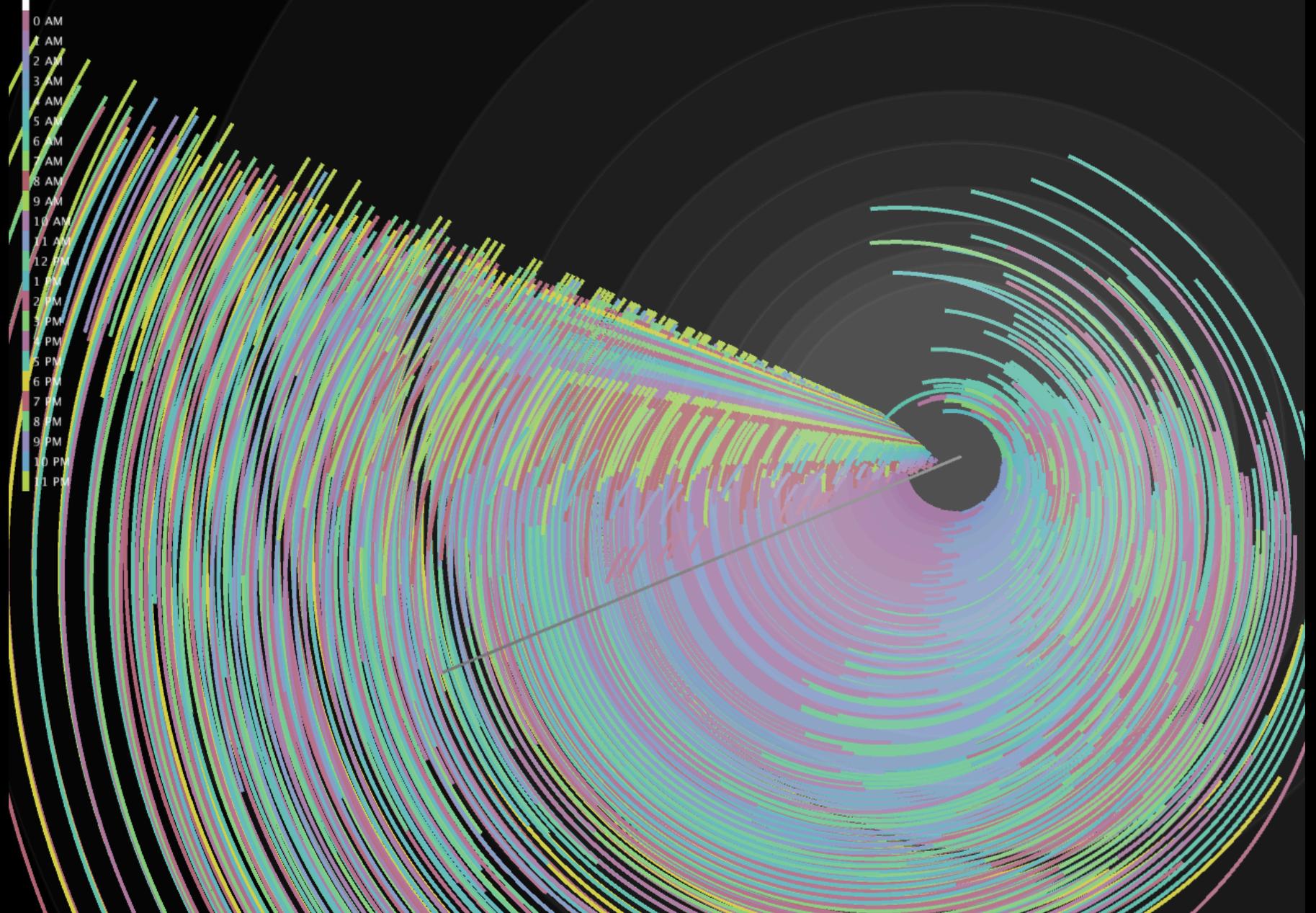


2006 2007 2008 2009 2010 2011 2012 2013 2014

WHAT IS THE TIME ?

VISUALIZING CHECKOUTS WITH TIME EVERY DAY FOR THE PAST 10 YEARS
MAT 259 - VISUALIZING INFORMATION
AMBIKA YADAV

0 AM
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM

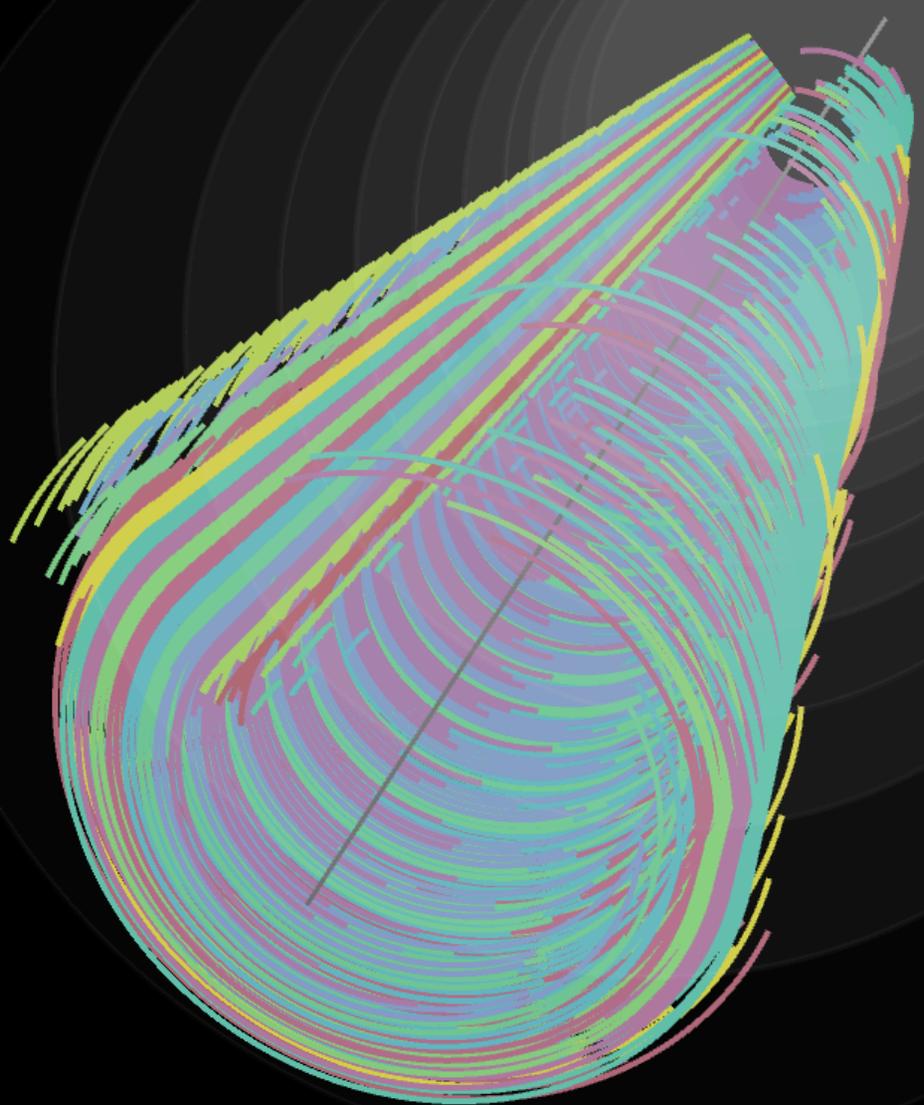


2006 2007 2008 2009 2010 2011 2012 2013 2014

WHAT IS THE TIME ?

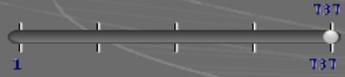
VISUALIZING CHECKOUTS WITH TIME EVERY DAY FOR THE PAST 10 YEARS
MAT 259 – VISUALIZING INFORMATION
AMBIKA YADAV

- 0 AM
- 1 AM
- 2 AM
- 3 AM
- 4 AM
- 5 AM
- 6 AM
- 7 AM
- 8 AM
- 9 AM
- 10 AM
- 11 AM
- 12 PM
- 1 PM
- 2 PM
- 3 PM
- 4 PM
- 5 PM
- 6 PM
- 7 PM
- 8 PM
- 9 PM
- 10 PM
- 11 PM



bar code histories

No. of item paths to display



Interactive mode disabled. Display fewer items to enable.

Home

Location

Central

Other

Item Type

Book

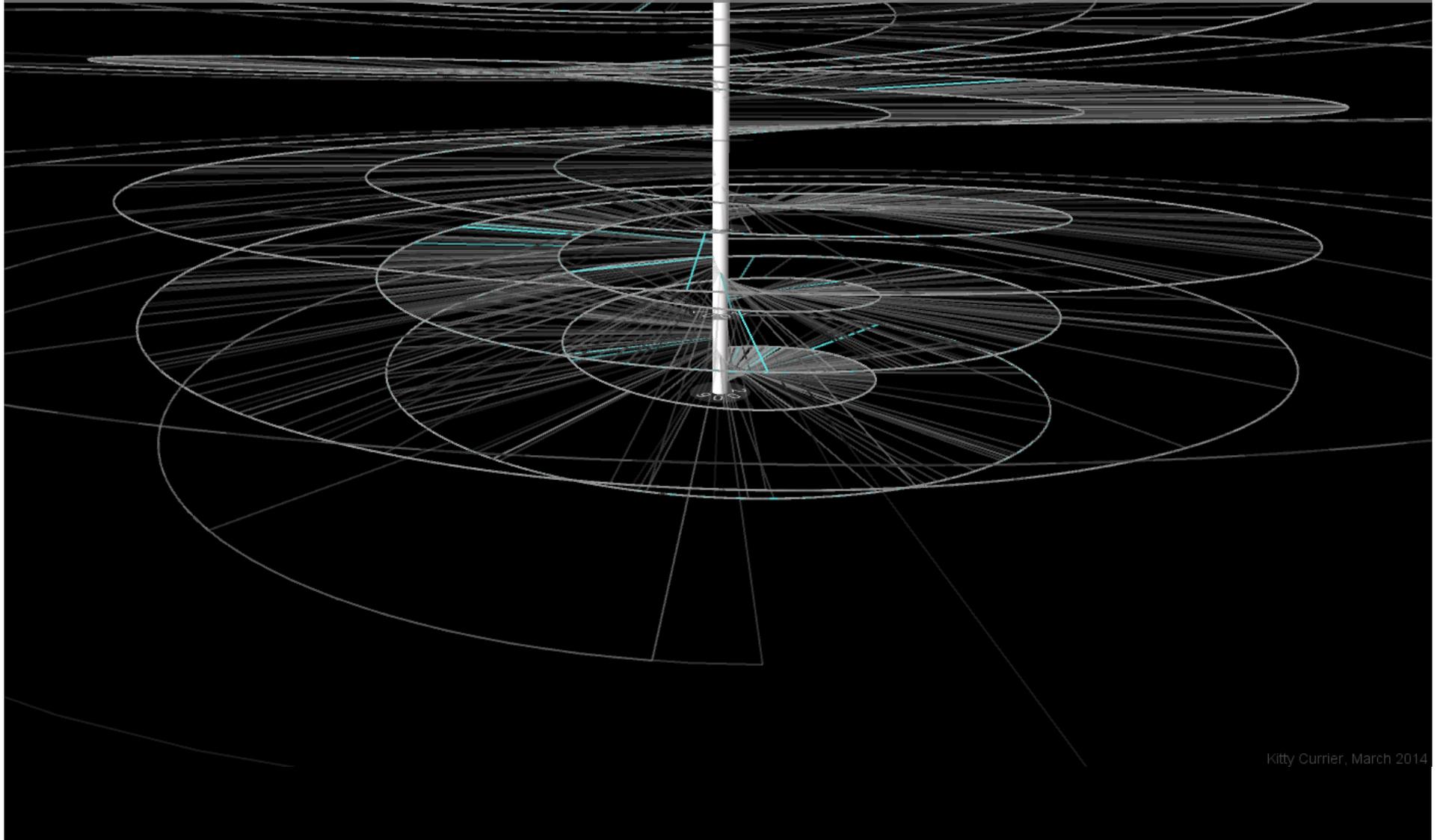
CD

DVD

Kit

Other

This polar graph tracks the bar code history of individual items in the SPL's collection. All items start in the center and 'jump' outward as they acquire a new bar code. The items' trajectories spiral upward, representing years 2006 - 2013.



bar code histories

No. of item paths to display



Home

Location

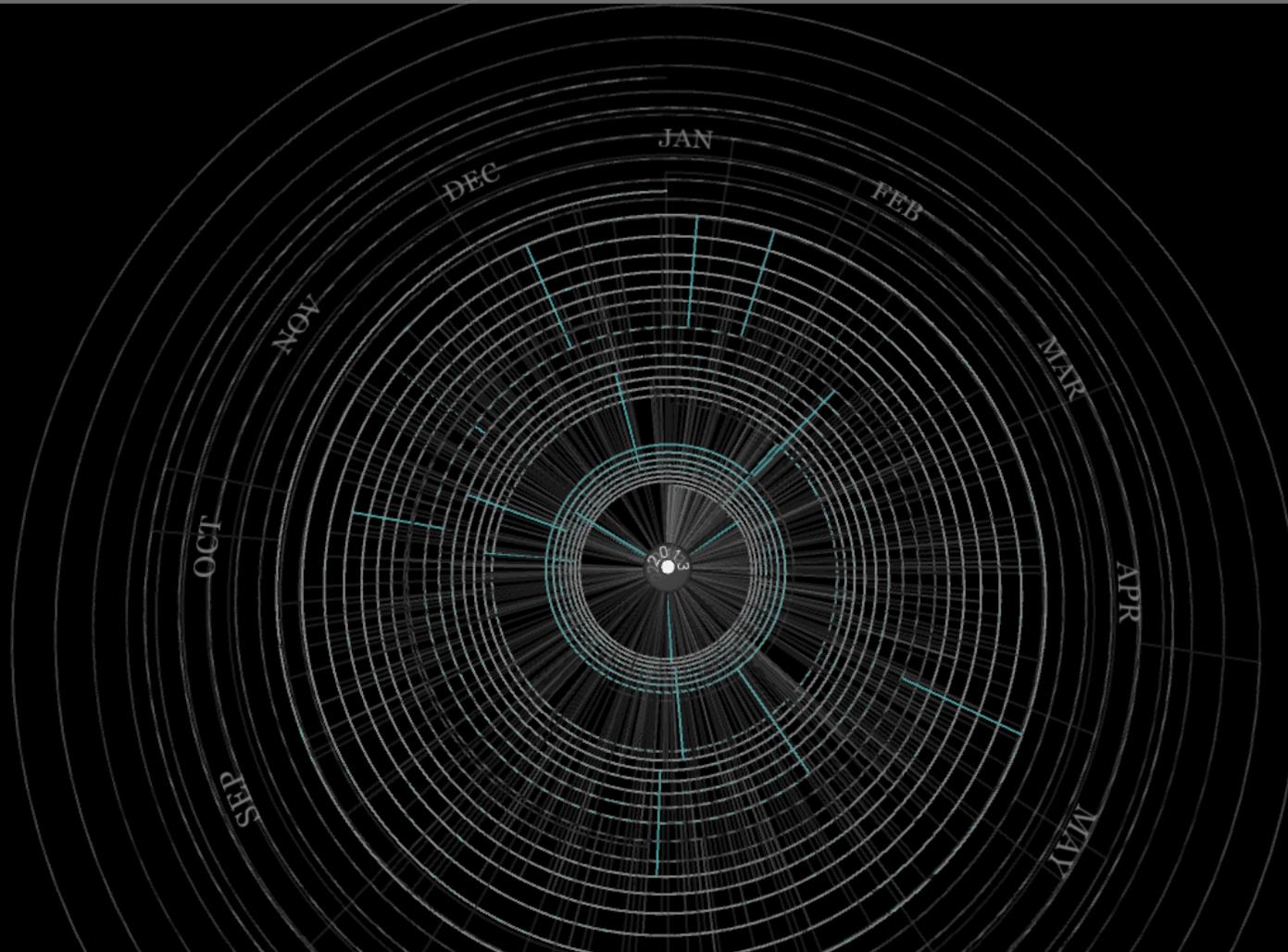
- Central
- Other

Item Type

- Book
- Kit
- CD
- Other
- DVD

Interactive mode disabled. Display fewer items to enable.

This polar graph tracks the bar code history of individual items in the SPL's collection. All items start in the center and 'jump' outward as they acquire a new bar code. The items' trajectories spiral upward, representing years 2006 - 2013.



Home

No. of item paths to display

701

1 737

Location

Central

Other

Item Type

Book

CD

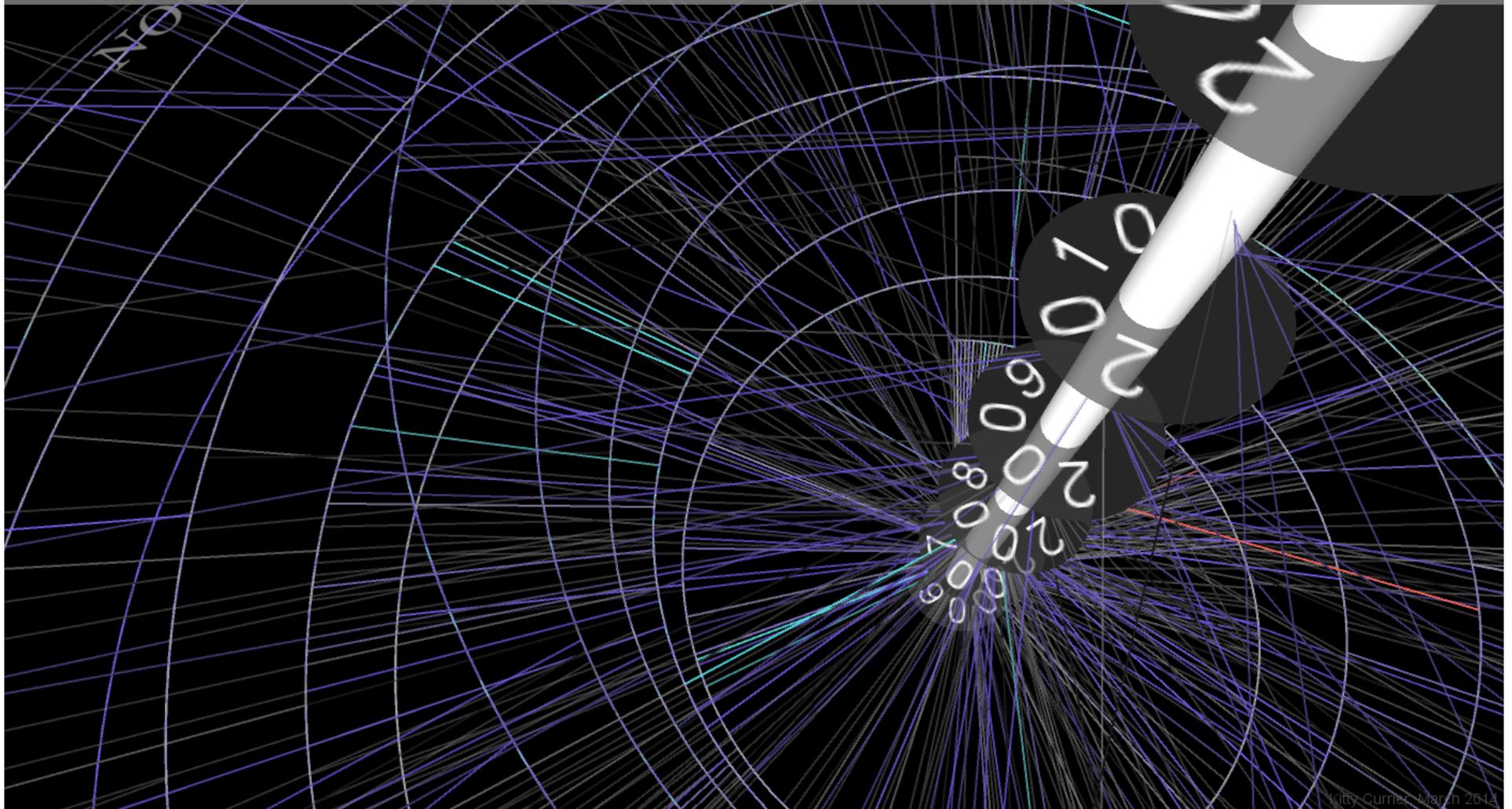
Kit

Other

DVD

bar code histories

This polar graph tracks the bar code history of individual items in the SPL's collection. All items start in the center and 'jump' outward as they acquire a new bar code. The items' trajectories spiral upward, representing years 2006 - 2013.



Earth

Data mining from Seattle Public Library 2005-2011

Dewey Class Color

000 - 99 : Information & Computer Science
100 - 199 : Philosophy & Psychology
200 - 299 : Religion
300 - 349 : Social Sciences
350 - 399 : Social Sciences
400 - 449 : Languages
450 - 499 : Languages
500 - 599 : Science & Mathematics
600 - 699 : Technology & Applied Science
700 - 799 : Arts & Recreation
800 - 899 : Literature
900 - 999 : History & Geography & Biography

Press key 1-5

1 : Full sphere, 2 : Lines, 3 : Spheres
4 : Spheres with Dates text, 5 : Book title texts



Earth

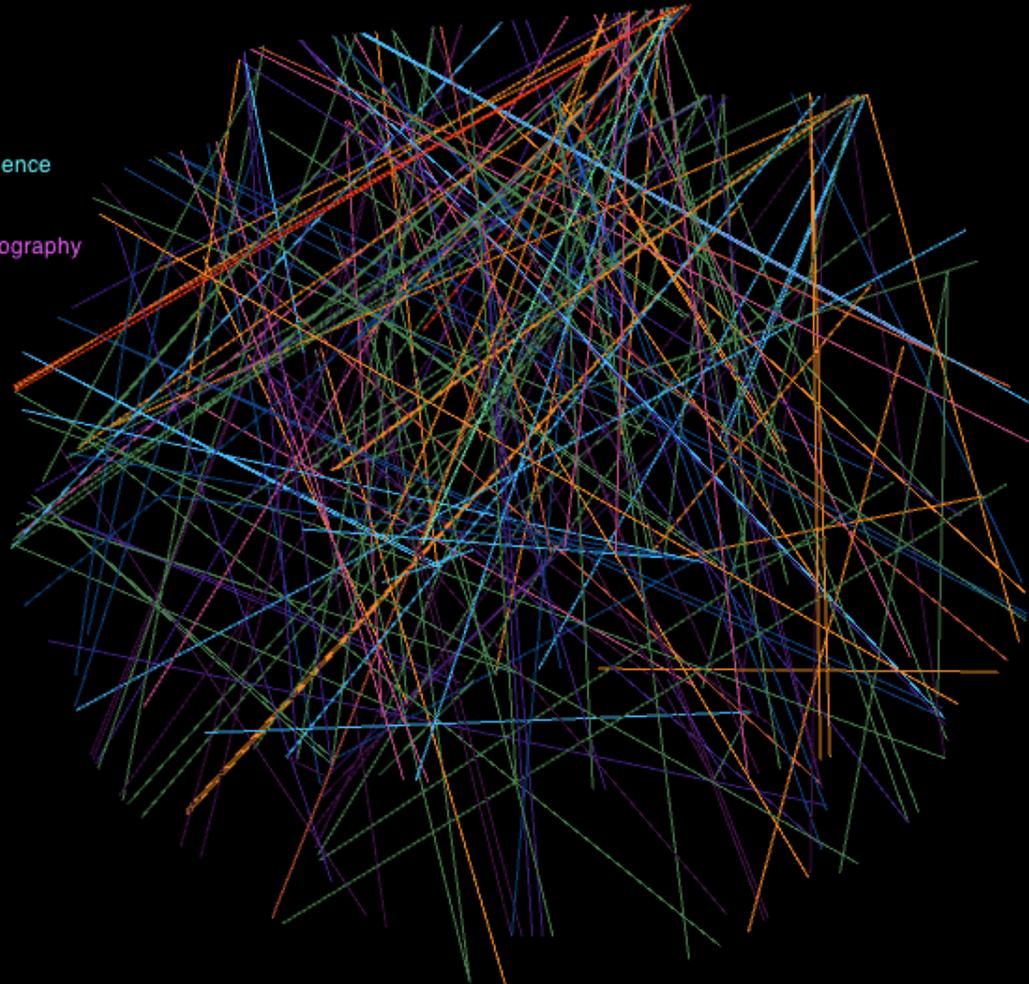
Data mining from Seattle Public Library 2005-2011

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000 - 99 : Information & Computer Science
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1 : Full sphere, 2 : Lines, 3 : Spheres
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Earth

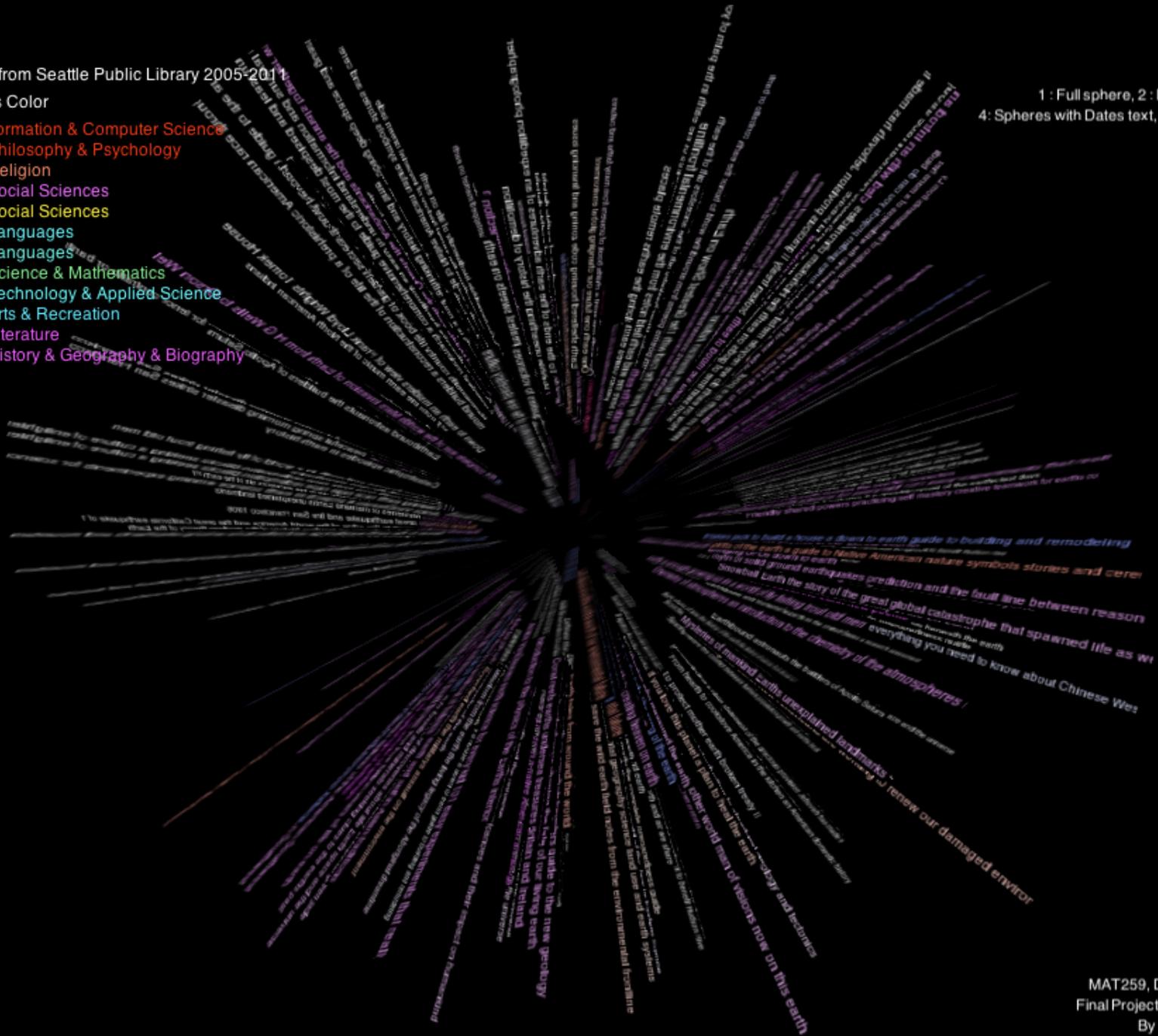
Data mining from Seattle Public Library 2005-2011

Dewey Class Color

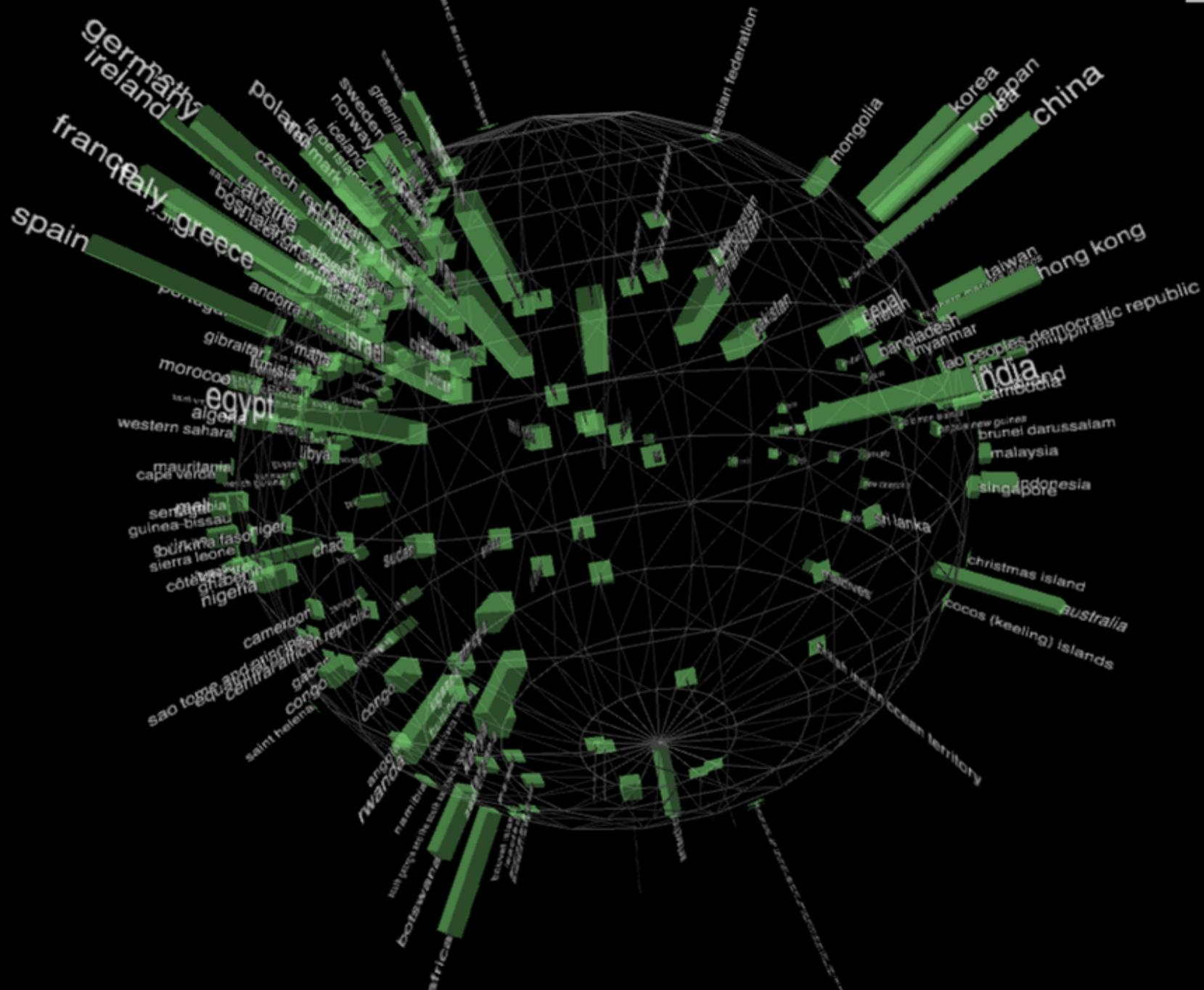
- 000 - 99 : Information & Computer Science
- 100 - 199 : Philosophy & Psychology
- 200 - 299 : Religion
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- 400 - 449 : Languages
- 450 - 499 : Languages
- 500 - 599 : Science & Mathematics
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- 900 - 999 : History & Geography & Biography

Press key 1-5

- 1 : Full sphere, 2 : Lines, 3 : Spheres
- 4 : Spheres with Dates text, 5 : Book title texts



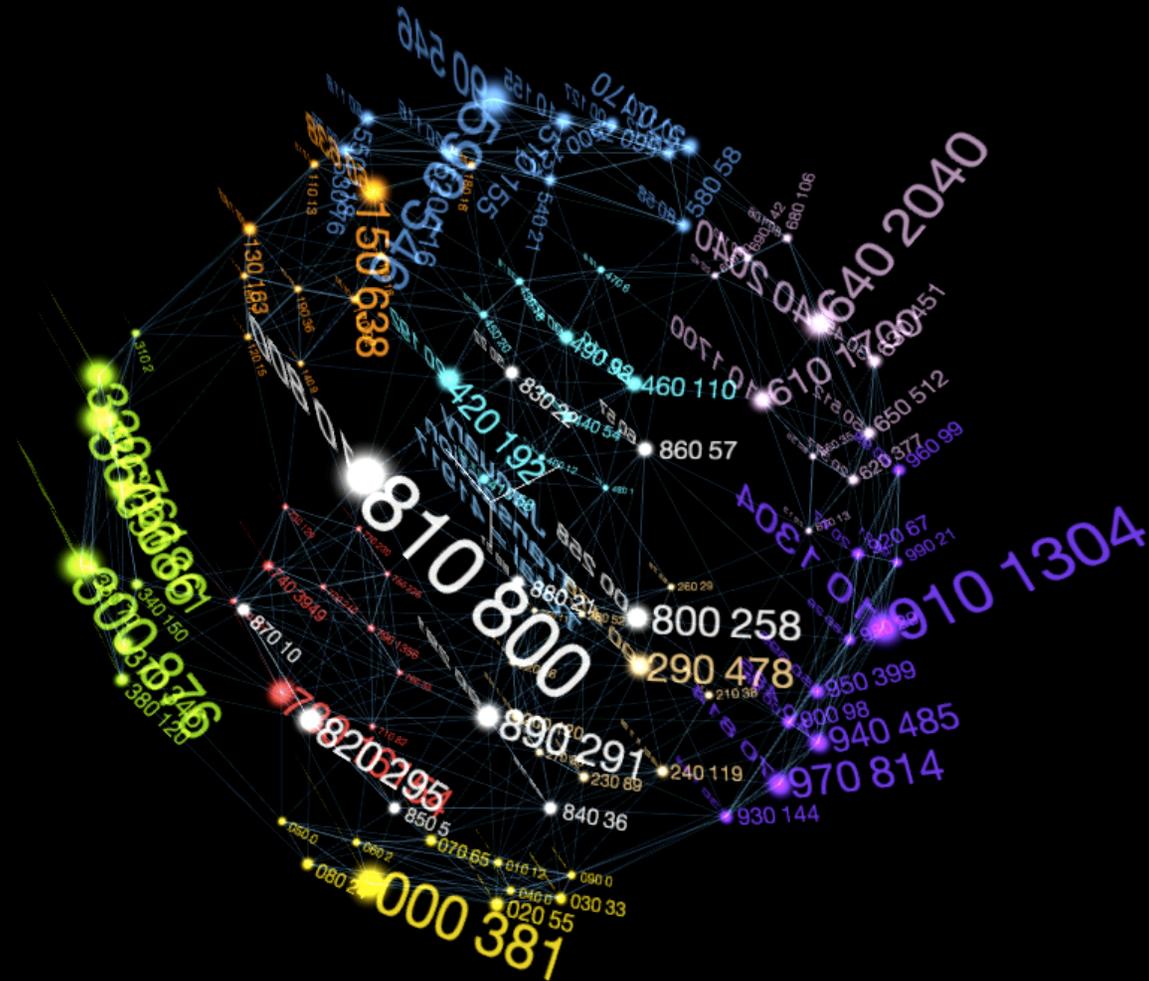
2006



- 000 - Information & Computer Science
- 100 - Philosophy & Psychology
- 200 - Religion
- 300 - Social Sciences
- 400 - Languages
- 500 - Science & Mathematics
- 600 - Technology & Applied Science
- 700 - Arts & Recreation
- 800 - Literature
- 900 - History & Geography & Biography

Dewey Category Breakdown:

- 000 Computer science & Information
- 010 Bibliographies
- 020 Library & information sciences
- 030 Encyclopedias & books of facts
- 040 [Unassigned]
- 050 Magazines, journals & serials
- 060 Associations, organizations & museums
- 070 News media, journalism & publishing
- 080 Quotations
- 090 Manuscripts & rare books



Item Categories:

- 000 - Information & Computer Science
- 100 - Philosophy & Psychology
- 200 - Religion
- 300 - Social Sciences
- 400 - Languages
- 500 - Science & Mathematics
- 600 - Technology & Applied Science
- 700 - Arts & Recreation
- 800 - Literature
- 900 - History & Geography & Biography

500 Category Breakdown:

- 500 Science
- 510 Mathematics
- 520 Astronomy & allied sciences
- 530 Physics
- 540 Chemistry & allied sciences
- 550 Earth sciences
- 560 Paleontology & Paleozoology
- 570 Life sciences
- 580 Plants
- 590 Zoological sciences

Key Controls:

- Subcategories 000 - 900 0-9
- Previous / Next Month / =
- Display / Hide Nodes q
- Display / Hide Lines w
- Display / Hide Labels (1) e
- Display / Hide Labels (2) r
- Decrease / Increase Radius t /

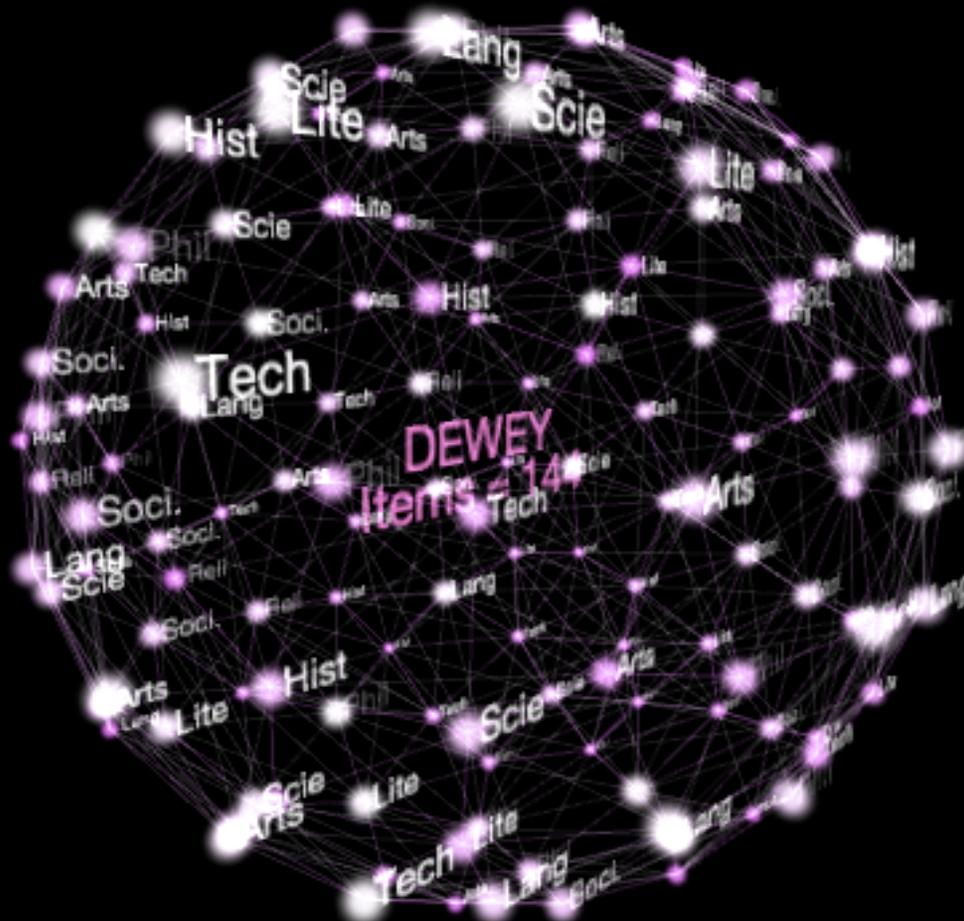


Physical Parameters Key

- Node Distance +/- u / i
- Node Attraction +/- o / p
- Node Separation +/- [/]
- System Damping +/- a / s
- Sphere Radius +/- t / y
- Reset Parameters \

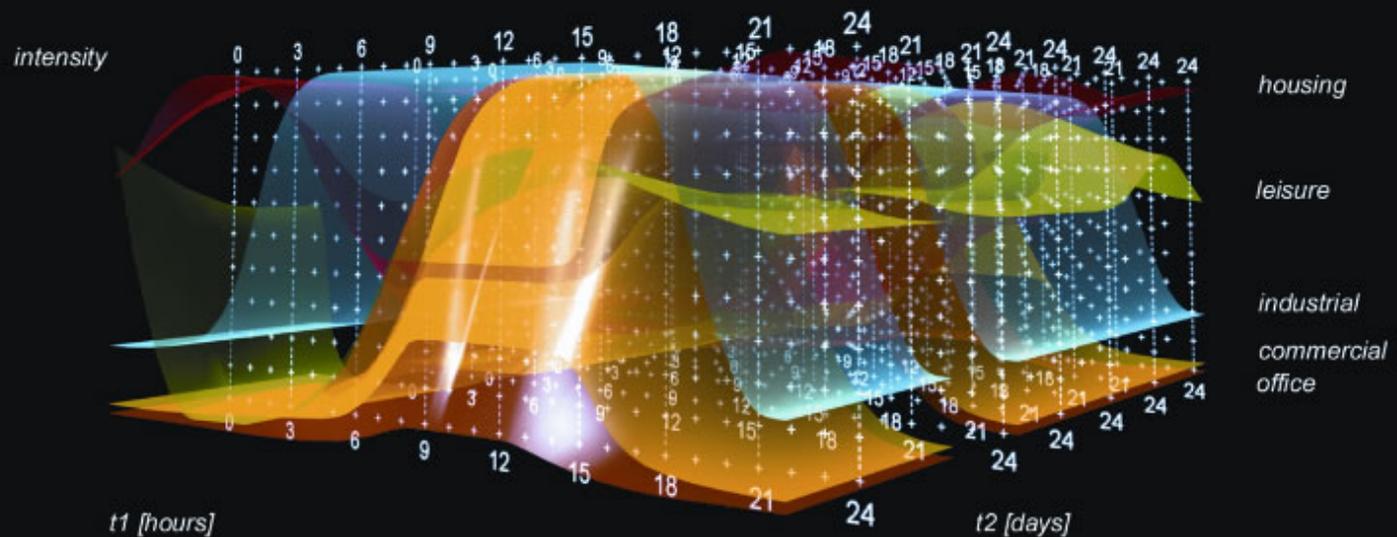
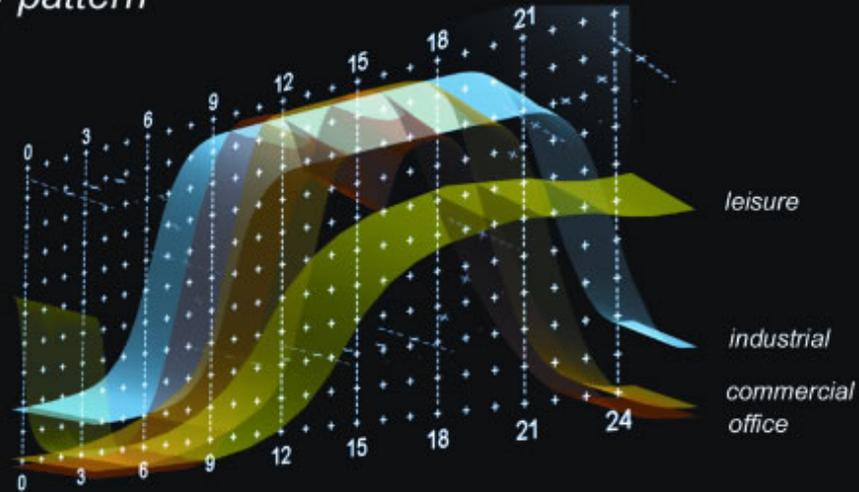
System Values

- Node Distance 200
- Node Attraction 030
- Node Separation 600
- System Damping 0.05
- Sphere Radius 587

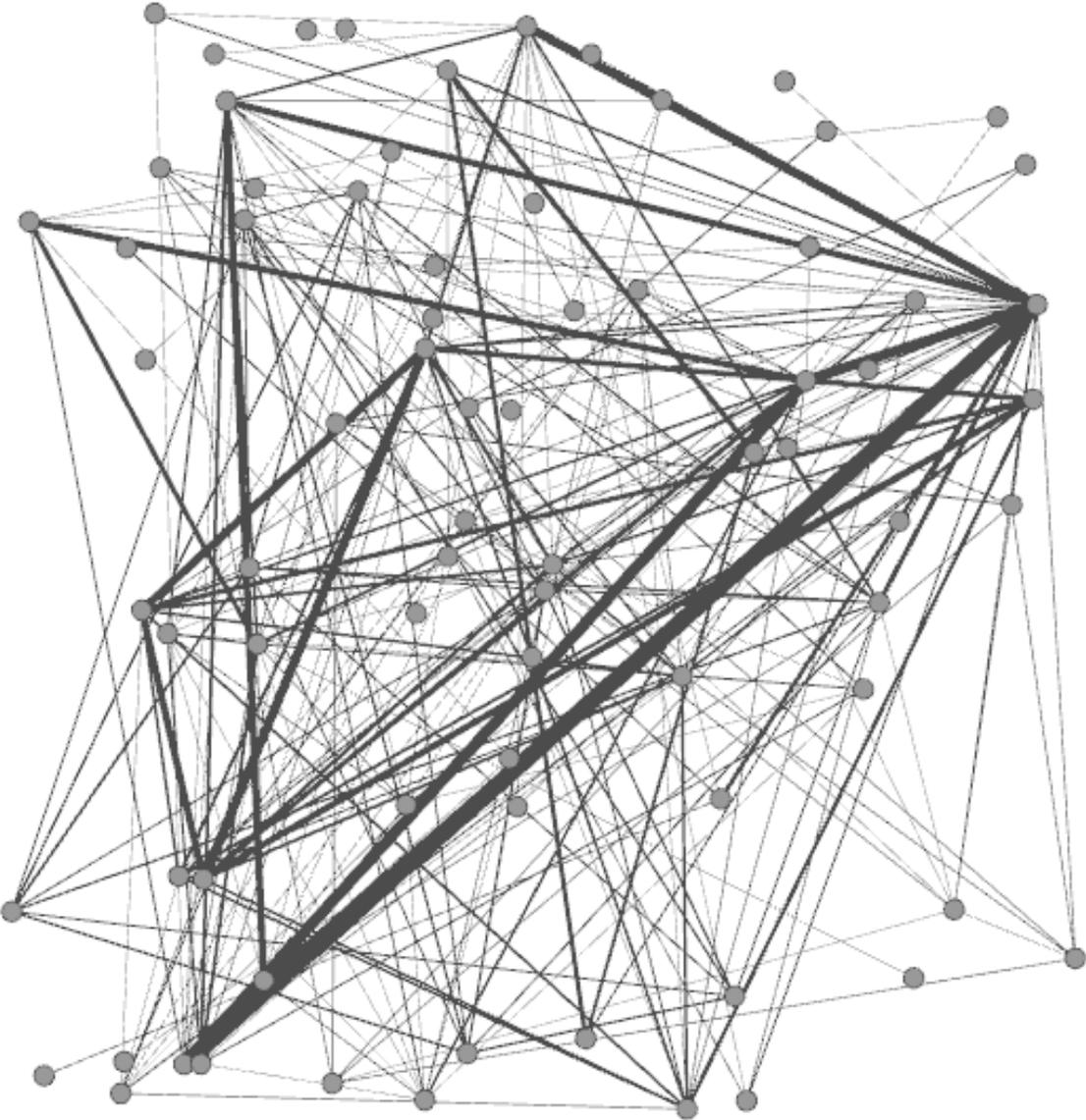


Labeling: How much?

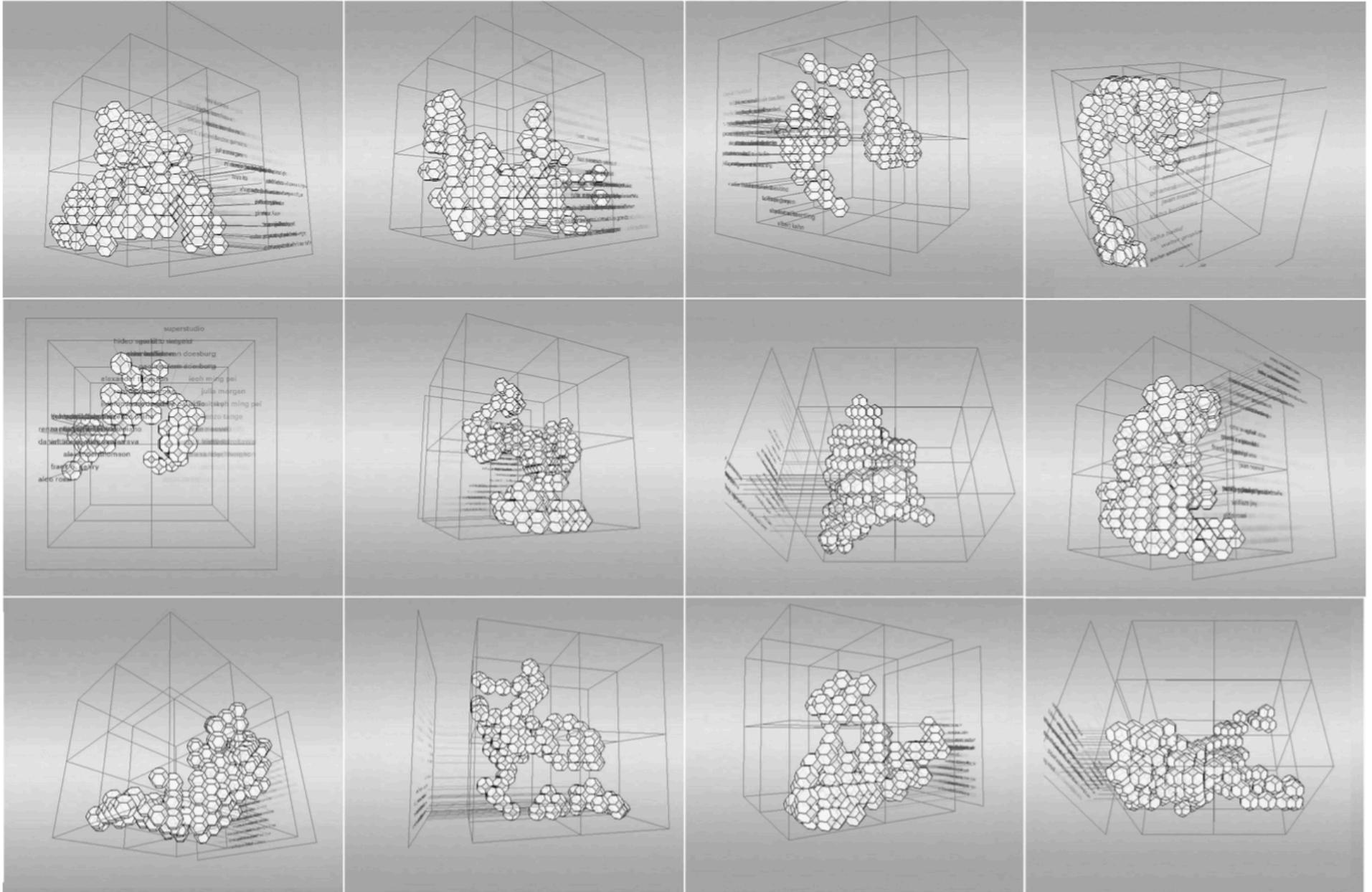
programmatic activity pattern



Nodes

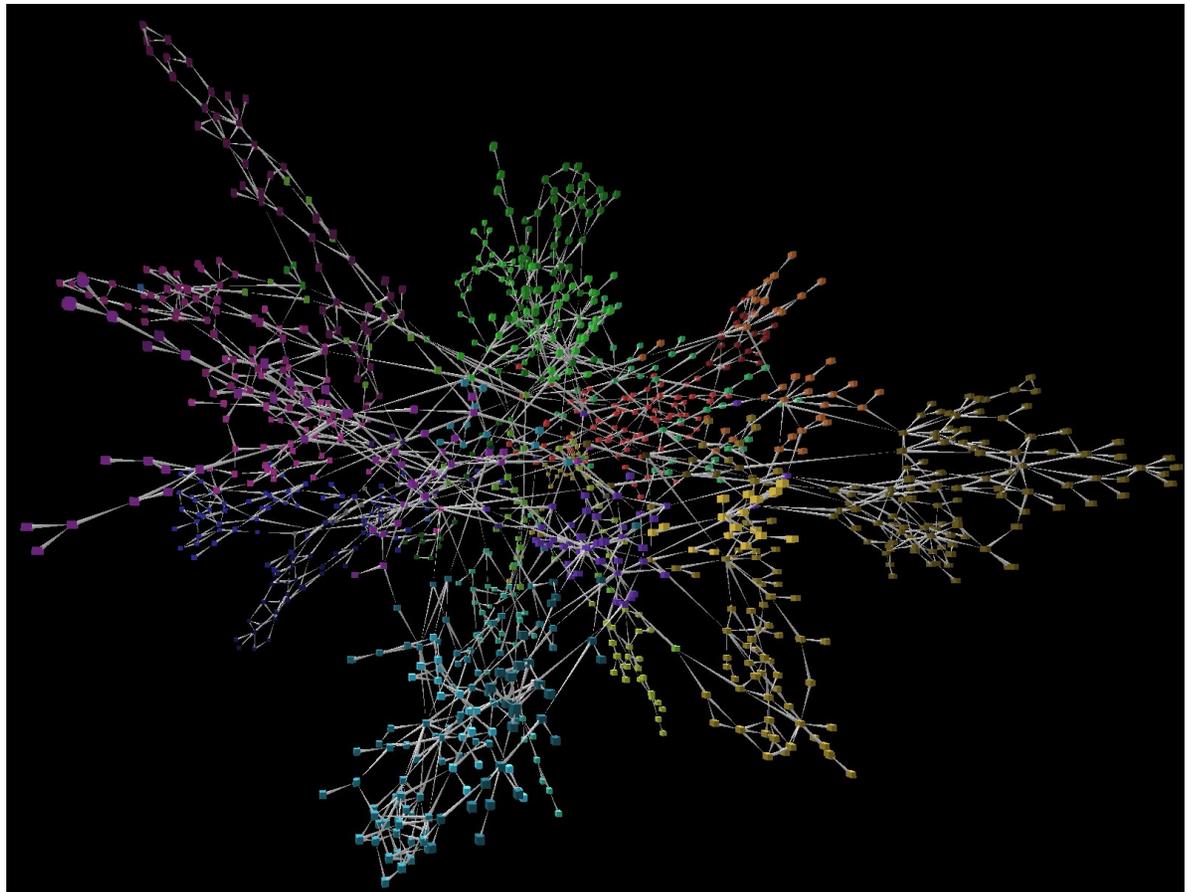


Cuboctahedrons interConnected Nodes



Nodes & Links

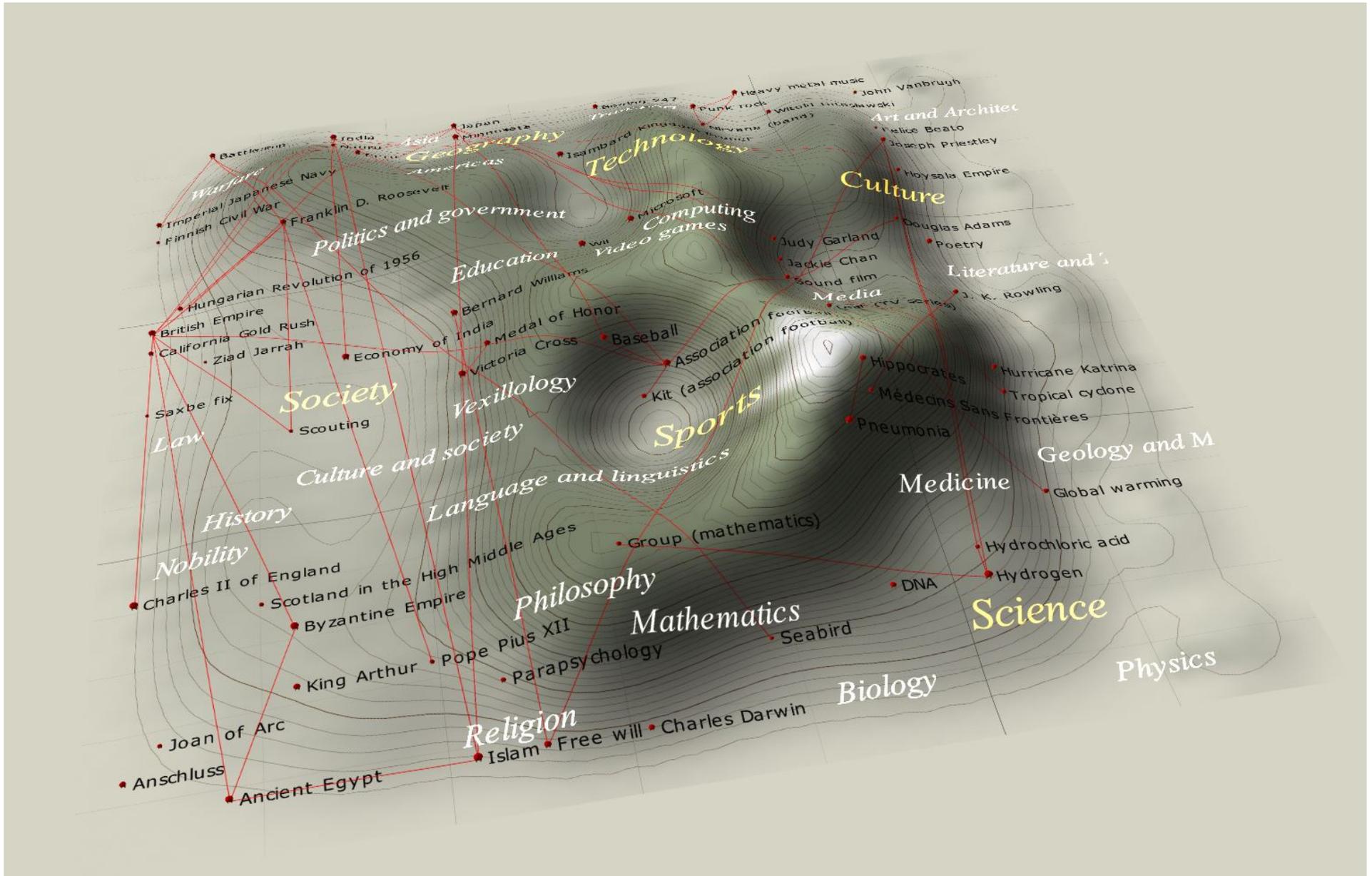
Can be top down hierarchical, or independent, spatially distributed and clustered to highlight relationships



Data Mapping

- **Literal** – one-to-one relation from data to pixel
- **Adjust proximal placement:**
 - Statistical, mean, average, etc.
 - Self-organizing map algorithm (Kohonen, neural network)

Self-Organizing Map: Proximity based on metadata



Recommendations

- Let the data define the shape of the outcome
- Do not use pre-existing, predetermining forms (like a map)
- The data needs to be granular (detailed) to get interesting results