### Seattle Public Library

 Making Visible the Invisible: An <u>"indirect</u> crowdsourced" artwork located in the Seattle Central Library -Checked out items by patrons are statistically analyzed and dynamically visualized

## Making Visible the Invisible

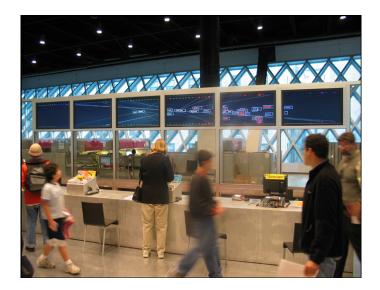


- A public commission for the Seattle Public Library, a critical architectural work by Rem Koolhaas
- Began operation September 2005



- Over 20000 to 36000 daily transactions (people checking out books, dvds, etc.)
- Over 55 million transactions to date
- Possibly the longest running dynamic data visualization artwork





## Hourly Reception of Data



- For the next ten years: Collect hourly the circulation of books, cds, dvd's checked out by library patrons
- Data is analyzed, aggregated and represented through visualizations
- - Animations are featured on 6 large LCD panels located on a glass wall behind the librarians' main information desk



The Mixing Chamber: A Trading Floor for Information



# SPL Data



- Conceptualize the library as a "data exchange center" Visualizations based on the
- organization of data according to rulebased processes based on the Dewey Decimal Classifical System

 All books categorized according to various schema

# Data Processing & Metadata



- How: by tracking the circulation of books/media
- Receive hourly circulation of books, cds, dvds, etc. that are checked out



**Metadata**: Catalog Num, bibliography Num, date/time stamps, collection code, itemtype, barcode, title, callNumber, Dewey class, keywords

# Artwork's Conceptual Premise:

- Correlation is made between the flow of data (books, DVD) leaving the library and what the community of patrons considers interesting information at any specific time.
- The circulation of books is information that can be calculated mathematically and represented visually

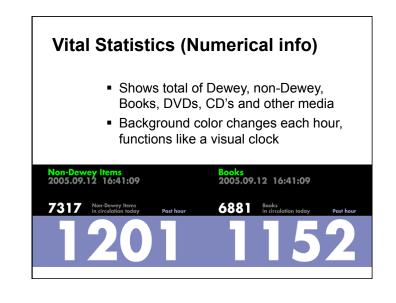
#### **Emergent System:**

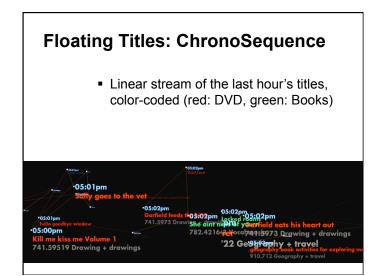
- Meaning to emerge out of the organization of data
- Emergence driven: Local individual actions (checking out books/dvds) add up to collective positions: a statistical sample of community interests!

#### **Dewey Decimal Classification:**

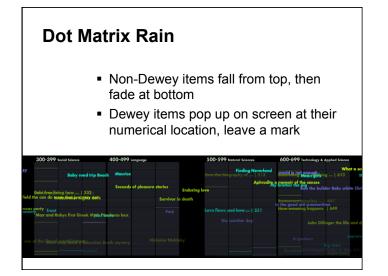
- 000 Generalities
  - 100 Philosophy & Psychology
  - 200 Religion
  - 300 Social Science
  - 400 Language
  - 500 Natural Science & Mathematics
  - 600 Technology & Applied Sciences
  - 700 Arts
  - 800 Literature
  - 900 Geography & History
- "Untangling my chopsticks" has the Dewey label 641.5952, (placed in the 641 "Food & drink" section)

Dewey Decimal Data:						
ItemNumber: BibNumber: Ckodate: Ckotime: Ckidate: Ckitime: Collcode: Itemtype: Barcode: Title: Untang CallNumber: DeweyClass: Keywords:	2005-04-20 16:55:00 2005-05-06 18:21:00 nanf acbk 0010045801205 gling my chopsticks, a culinary sojourn in Kyoto 641.5952 R358U 2003					







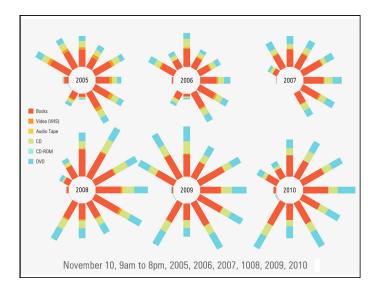


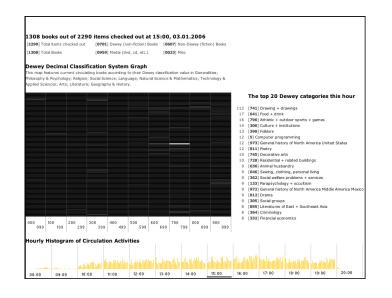


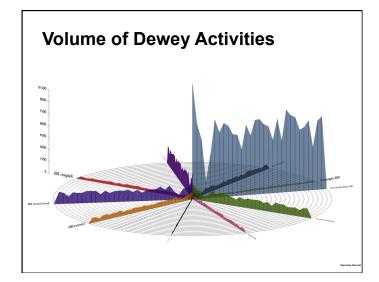
# KeyWord Map Attack Dramatic visualization of most popular words from titles and keywords Color coded, and spatially plotted according to Dewey order and usage

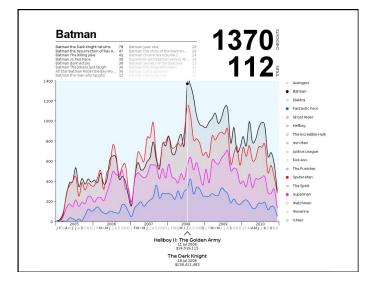
# Data Mining/Analysis Directions:

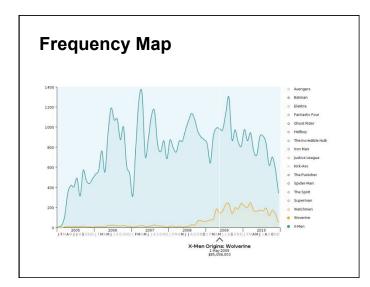
- Explore "Change Over time"
- Discover patterns through data mining
- External correlation (news events)? relevant?
- Feedback: How does the visualization impact on circulation?
- Anomalies in the classification system
- Explore visualization forms

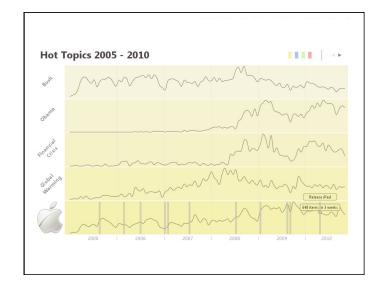


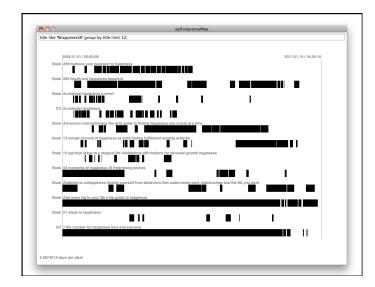


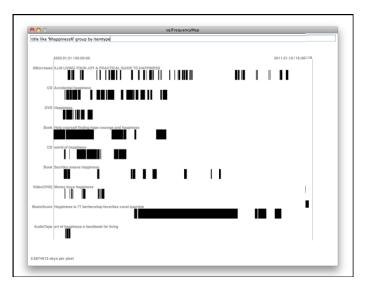


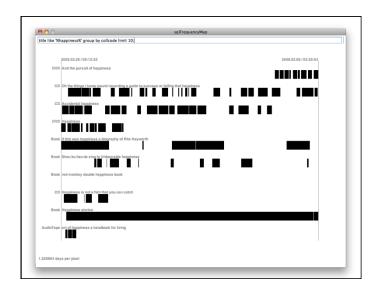






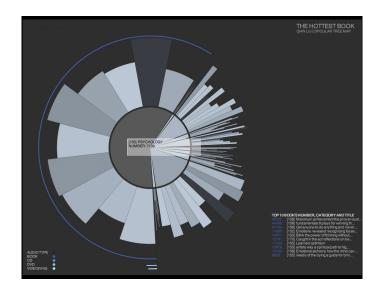


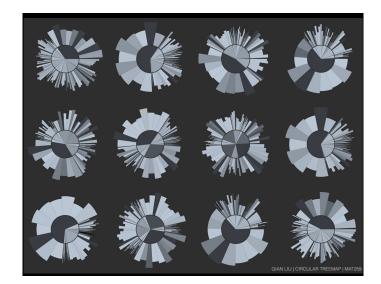


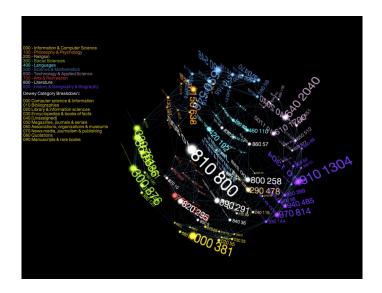


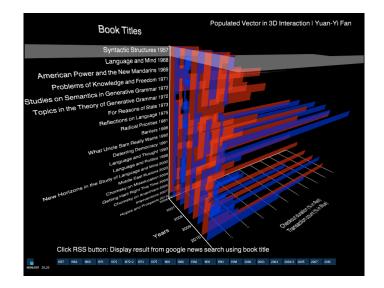


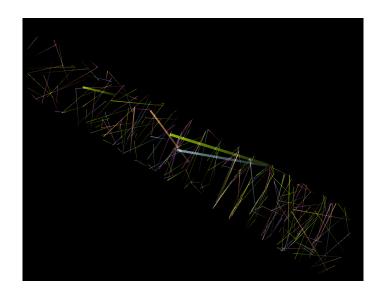
Countries & Cooking Correlation											
China	most popular countries and associated words				seattle publ:	ic library	by Joshua Bicl				
	3440	new literature year	life childrens social	1484	custons books journey		novels adventure story				
France	cooking life cookery			2613							
India	1602			cooking love kingdom							
Japan	cooking gardens art	war world american	cookery music literature				popular technique graphic	novels travel teenage		yakitate customs childrens	
Italy	4342		everything biography across								
Spain					grannar books picture		756		learning war ultimate	intermediat rick steves	
England	music columbia great						534			state american men	
Greece					life drama islands		cooking world stories				
Mexico	1521			city american guide	recipes literature america	coast arizona art		century music vallarta		folklore time stories	
Germany		drama travel relations				conversation britain television	rick steves detective	foyles scandinavia social			
Ireland											

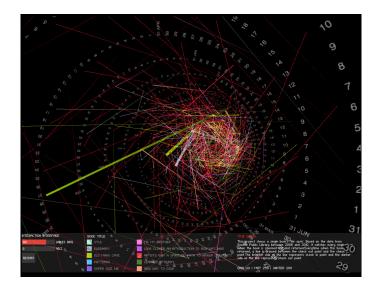












## **SPL Project Collaborators**

- Andreas Schlegel, Preliminary interaction Design, website, data organization (2003-2004)
- August Black, Preliminary data organization and visualization, system administration (2004-2005)
- Rama Hoetzlein/Mark Zifchock Team, Final Engineering design, data organization, production and technical support (Summer 2005)

#### **Data Visualization as Art Summary**

- A cultural practice
- The public as active participant
- Necessity to create an aesthetic context through narrative
- Data collection & its management: Complex data processing
- Software design: Robust , Flexible for different environments, fast, extensible
- Visualization design: Allows for long term content change

# **Data Visualization Studies**

- <u>HEAD Geneva (fall 2010)</u>: Leila Jacquet, Ellwood Spafford, Stanislaus Bernatt, Mathieu Cherubini
- <u>UCSB</u>: Yun-Ting Chuang, Darren hardy, Daniel McDaniel, Reza Ali, Joshua Dickinson, Yun Teng, Sandeep Bhat, Domagoj Baricevic
- Robert W. Deutsch Fellows UCSB: Qian Liu, Karl Yerkes

George Legrady Director, Experimental Visualization Lab Media Arts & Technology PhD program University of California, Santa Barbara <u>http://vislab.ucsb.edu</u> <u>http://www.georgelegrady.com</u>