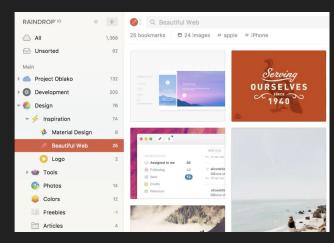
# Bewilder

Handling Web Resource Complexity in Online Learning and Research

Eric Easthope

### Motivation

Visual clutter: folders are not always the best container ...



(source: www.raindrop.io)

-O- 16 3- 1- Q O ▼ Title Creator Year My Library Year v E Info Notes Tags Related ▶ ☐ Guerre, maladie, empire. Les services de santé militaires en ... Zaugg Book Reviews Officiers de santé et soignantes créoles face à la fièvre jaune Nobi 2016 The Emergence of Tropical Medicine in France Title Circulation of Medicine in the Early Modern Dissertation Colonial Disease Translation and Enlightenment: Franco-Briti. Charters. 2014 Science and Empire Trading in Drugs through Philadelphia in the Eighteenth Centu... Wilson - Author Cook, Harold J. ▼ [iii] Teaching The Medicines Trade in the Portuguese Atlantic World: Acquisi... Walker - Author Walker, Timothy D. Mapping Legrosy and Slavery in Suriname: Godfried Schilling and the Er | Spelders Abstract The search for powerful drugs has caused Open Access Medical Experimentation and Race in the Eighteenth-century ... Schiebinger people and commodities to move around the globe for many centuries, as it still does... Text Mining The Circulation of Bodily Knowledge in the Seventeenth-centu... Gómez Publication Social History of Medicine Visualization Volume 26 Synthesis of scholarship on "medicines" to restore focus o... My Publications Issue 3 Duplicate Items Pages 337-351 Colonial Medical Encounters in the Nineteenth Century: The Fr. Thoral Date 2013/08/01 Networks in Tropical Medicine: Internationalism, Colonialism, a... Neill Early Clinical Features of Dengue Virus Infection in Nicaraguan... Biswas et al. 2012 A Group Libraries Series Title Medicine in an age of commerce and empire: Britain and its tr... Harrison 2010 Grant Proposal Finding the "Ideal Diet": Nutrition, Culture, and Dietary Practic... Neill Journal Abbr Soc Hist Med Research Lab Battles of the Self: War and Subjectivity in Early Modern France Pichichero 2008 Language en Topic Modeling The Evneriments of Ramén M. Termeyer S.I. on the Flectric Fel. de Asúa 2008 DOI 10.1093/shm/hkt013 Psychiatry and Empire ICCN 0051-631V Medicine and the Market in England and Its Colonies, C.1450-... Jenner and Wallis 2007 Read 19th century Acclimatization Aged Appetite Blood Cemetery Children Climate Matters of exchange: commerce, medicine, and science in the... Cook 2007 URL https://academic.oup.com/shm/article/26/3... A Horrible Tragedy in the French Atlantic Colonies Competition Creoles Crossing Accessed 1/24/2018 10:17:12 AM 2006 "Neither of meate nor drinke, but what the Doctor alloweth": ... Chakrabarti Degeneration Diet Digestion Disease Archive Transpationalism in the colonies- Conneration, rivalry, and rec. Nail 2005 Loc. in Archive Doctors Drugs Electric Eels Empiricism Variolation, Vaccination and Popular Resistance in Early Coloni... Brimnes Library Catalog Expertise Food France Geography Global "Syphilis, Opiomania, and Pederasty"; Colonial Constructions ... Proschan 2003 Call Number Suvane Hair Indies Indigenous medicine Choosing Scientific Patrimony: Sir Ronald Ross, Alphonse Lay... Guillemin 2002 Rights Intemperance Language Lemonade Medicine Mortality Piment Poison Practice Date Added 1/24/2018, 10:17:12 AM The Colonial Machine: French Science and Colonization in the ... McClellan and Rego... 2000 rofessionalism Regeneration Secrets From medical astrology to medical astronomy; sol-lunar and pl.,. Harrison Modified 1/24/2018 11:50:15 AM Disease and Empire: The Health of European Troops in the Co... Bynum

(source: www.zotero.org)

The problem of "tab overload" ....

## Motivation (cont'd)



(source: an interviewee's tab bar)

- 1. How do we make it visually and cognitively easier to collect, review, and share web links in multiple contexts?
- 2. How do we visualize these collections at scale?
  - e.g. 70 links for a single weekly assignment ...



(source: another interviewee's graduate math notes)

### Related work

- Online exploration & archiving
  - HyperPhysics
  - Zettelkasten (The Archive)
- Bookmark managers
  - Raindrop.io
  - Pocket
  - Dropmark
  - o ... and many others.
- Bibliographies
  - o Zotero
- Large-scale online databases
  - Open Graph Protocol
  - Google Knowledge Graph
  - The Dataverse Project



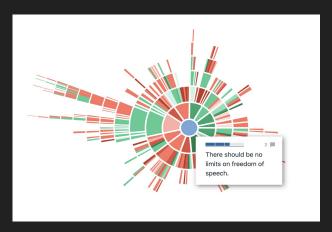


(logos available under fair use)

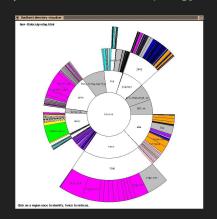
# Related work (cont'd)

- Kialo's "discussion topology" [1]
- StArt [2]
  - Systematic literature review & mapping
- DocuBurst [3]
  - Visualize documents based on text content

- Many visualizations derived from Stasko et al.'s SunBurst technique [4]
- Users cannot navigate & edit hierarchical content directly



(Kialo's "discussion topology" [1])



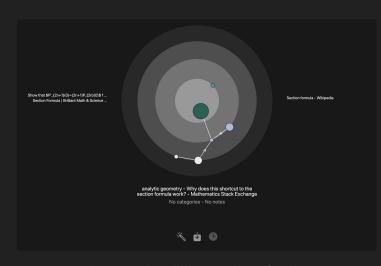
(SunBurst technique [4])

## Project: Bewilder

- Overview, annotate, and arrange collected web items
- Retain why & when we save web items
- Connect web items to each other

#### Want:

- More control over web link and research article collections
- To modify, explore, and enjoy auto-generated arrangements of collections
- Visible web item connections & hierarchy



(source: Bewilder user interface)

### Data

- Need to unify disparate web link file formats
  - o .webloc
  - o .url
  - HTML (multiple bookmarks)
- Using JSON file format
- Social & sharing data available through Open Graph Protocol
- Combine web links + social & sharing metadata to make "nodes" & "links"
- "Nodes" are web items
- "Links" are (editable) connections between web items

### Results: Demo

- "User stories"
- Discussions & interactions ——— Practical use cases for Bewilder ...

e.g. "As a student, how can I quickly aggregate and group web links by their similarities, as well as rearrange and annotate them, to understand and perhaps even solve resource-heavy problems faster?"

### Discussion

- Others can receive, overview, and add content to a web link collection
- Connections are explicit!
- **Con**: JSON data structures require more file space than HTML bookmarks

- Want: Bewilder to handle hundreds or more web items (post-project)
- Future:
  - Hierarchically order web links based on timestamps
  - Refine "default connections"
  - Integrate more Open Graph & Twitter metadata
  - Improve JSON shareability

### References

- [1] S. Chaudoin, J. N. Shapiro, D. Tingley, "Revolutionizing Teaching and Research with a Structured Debate Platform," working paper, Harvard University, Cambridge, MA, USA, 2017. [Online.] Available: https://scholar.harvard.edu/files/dtingley/files/structureddebate.pdf
- [2] S. Fabbri, E. Hernandes, A. di Thommazo, A. Belgamo, A. Zamboni, C. Silva, "Managing Literature reviews information through visualization," in *ICEIS 2012 Proceedings of the 14th International Conference on Enterprise Information Systems*, 2012. [Online.] Available: https://pdfs.semanticscholar.org/e5fb/4d8f9207dbec71a1b60115230e70add1b2ab.pdf
- [3] C. Collins, S. Carpendale, G. Penn, "DocuBurst: Visualizing Document Content using Language Structure," *Eurographics/IEEE-VGTC Symposium on Visualization 2009*, 2009. [Online.] Available: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.160.7051&rep=rep1&type=pdf
- [4] J. Stasko, R. Catrambone, M. Guzdial, K. McDonald, "An evaluation of space-filling information visualizations for depicting hierarchical structures," *International Journal of Human-Computer Studies*, 2000. [Online.] Available: https://www.cc.gatech.edu/~john.stasko

# Thank you!

www.bewilder.me eric.easthope@me.com