The Nuts & Bolts of Supporting Change and Transformation for Research Librarians

Charleston Library Conference
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Mira Waller, Associate Head of Collections and Research Strategy
Heidi Tebbe, Collections & Research Librarian for Engineering and Data Science
Introduction & Overview

Roadmap

- Introductions
- Data & Visualization Institute for Librarians
- Visualization Discussion Series
- Research Data Committee
- Audience experiences and/or questions
Data & Visualization Institute for Librarians
Data Matters: Data Science Workshop Series (2014 - )

- [http://datamatters.org/](http://datamatters.org/)
- Started in summer of 2014
- Week-long series of classes in Chapel Hill, NC
- Sponsored by the National Consortium for Data Science (NCDS), the Renaissance Computing Institute (RENCI), and the Odum Institute for Research in Social Science
- Librarians from NCSU Libraries have attended every year since it started
Data Matters: Data Science Workshop Series (2014 - )

- Introduction to Data Science
- Managing Big Data
- Large-scale Data Networks
- Hadoop for Huge Data Sets
- Data Studies using SAS
- Data Mining and Machine Learning
- Predictive Analysis
- Data/Information Visualization
- Social Network Analysis
- Data Science Using R

- Data Curation: Managing Data throughout the Research Lifecycle
- IoT Data Creation and Use
- Health Informatics
- Collecting, Classifying, and Analyzing Big Data
- Open(ing) Data: Considerations in Data Sharing and Reuse
- System Dynamics and Agent-based Modeling
NCSU Libraries Data Science Short Course (2015)

- October 2015
- Collaboration with the Odum Institute
- Provided hands-on exposure to broadly applicable tools and important concepts in the areas of data analysis, visualization, and content mining
- Goal of enhancing support for and collaboration with researchers and students in these emerging areas
- 10 am - 4 pm every day for one week
- Managers supported the clearing of schedules to allow participation
NCSU Libraries Data Science Short Course (2015)

- Data Science Discussion
- Project Management
- Statistical Overview
- Tools for Statistical and Qualitative Analysis
- Data Visualization
- Collecting, Classifying, and Analyzing Textual Data
- Broadly Applicable Datasets to Enhance Local Data Analysis
- Working with Messy Data
Data and Visualization Institute for Librarians (2016 - )

- Partnership between NCSU Libraries, the Odum Institute, and the Coalition for Networked Information
- Week-long course providing the opportunity for librarians to immerse themselves in learning about data science and visualization in collaboration with academic peers
General Information

- DVIL working group
- May 23rd to May 27th, 2016
- Applications open February 15 to March 13, 2016
  - Letter of support from Library Director
  - Responses to a series of questions
  - Computer programming & data analysis experience not required
- The week long institute’s curriculum focused on the following topics:
  - Data Exploration and Statistical Analysis
  - Data Visualization
  - Data Description, Sharing, and Reuse
  - Data Cleaning & Preparation
  - Gathering and Analyzing Textual & Multimedia Data
Applicants

- 85 applicants from diverse backgrounds
- All expressed need for deeper knowledge gained from more formal and hands-on training
- Varying skills, experience, and comfort level
- Most learned through MOOCS, Lynda.com, webinars, and short courses
- Tenure-track Librarians interested in applying data science & visualization to their areas of research and scholarly output
- Data research or data management positions being created and/or responsibilities being added into existing positions, e.g. liaison/subject librarian
Attendees

- 27 attendees
- 5 internal
- From a variety of backgrounds
- Various locations
Challenges

- Sustainability
- Resource Creep
- Logistics - hardware, software, etc...
- Differing needs & skill levels of the attendees
  - Advanced Training (Deep Dive) in specific areas vs Overview and surface view of many
  - Medical (HSL) vs General Science/Research
  - Assessment Focused (Internal vs External)
  - Management (building teams with these skills) vs Direct responsibility
Opportunities

- Building a community of practice
- Building internal network of experts
- Building up role of librarians to include other areas of expertise
- Differing needs of the attendees = separate, focused Institute tracks
- Increasing demand on campuses = increased demand for training
The Future

- Data Science and Visualization Institute for Librarians
- Incorporate feedback from attendees
- Continue to improve logistics
- Explore providing Institute tracks for different groups
- Coming soon - spring 2017
- For more information see www.lib.ncsu.edu/datavizinstitute
Visualization Discussion Series
"Recognizing the power of visualization to ask and answer novel questions, spark new insights, enable greater understanding, and communicate powerful ideas, the Libraries offers advanced visualization spaces, services, and technologies that support university research and teaching in all disciplines...

Building on these investments, the Visualization Services Team will shape and articulate the Libraries' role in addressing campus-wide needs for visualization spaces, tools, and support."
Visualization Discussion Series

COFFEE & VIZ
A SEMINAR SERIES SHOWCASING THE VISUALIZATION WORK OF NC STATE RESEARCHERS

DR. JENNIFER LANDIN
DRAWING ON THE UNEXPECTED
HOW BIOLOGICAL ILLUSTRATION IS GREATER THAN THE SUM OF ITS PARTS

Dr. Jennifer Landin, assistant professor in the Department of Biological Sciences at NC State, is a biologist, illustrator and science educator. She will discuss biological illustration as a form of visual communication and the challenges in teaching students to observe, investigate, create and share.

FRIDAY, OCTOBER 23, AT 9:30 A.M.
THE HUNT LIBRARY, TEACHING AND VISUALIZATION LAB
COFFEE AND LIGHT REFRESHMENTS AT 9:15 A.M., PROGRAM BEGINS AT 9:30 A.M.

COFFEE & VIZ
SERIOUS GAMING WITH TANGIBLE LANDSCAPE

This interactive seminar explores how serious, analytical games can be deployed to simulate real world problems. Hands-on games and demos, plus lightning talks:

- Playing Games with Tangible Landscape: with Brendan Harmon and Anna Petrasova
- Participatory Modeling: Engaging Stakeholders with Geospatial Analytics: with Ross Meentemeyer
- Simulating Emerging Infectious Diseases: with Francesco Tonini and Douglas Shoemaker
- Modeling Coastal Dynamics: with Helena Mitasova

FRIDAY JANUARY 15 AT 9 A.M.
Games and Demos: 9 – 9:30 a.m. and 10 – 11 a.m. in the Creativity Studio
Lightning Talks: 9:30 – 10 a.m. in the Teaching and Visualization Lab
Hunt Library, 10/20 Partners Way, Raleigh

COFFEE & VIZ
A SEMINAR SERIES SHOWCASING THE VISUALIZATION WORK OF NC STATE RESEARCHERS

DR. MATTHEW BOOKER

Dr. Matthew Booker, associate professor of history at NC State, will discuss how historians use visualization in their research and why, sometimes, low-barrier, inexpensive exploratory visualization tools are more effective than complex visualization methods. His presentation will include examples of tools that have enhanced his ability to explore data and provide insight into how others can benefit by using and incorporating similar visualization tools in their research.

FRIDAY, NOVEMBER 20, AT 9:30 A.M.
CREATIVITY STUDIO NORTH AT THE HUNT LIBRARY
Coffee and light refreshments at 9:15 a.m., program begins at 9:30 a.m.
Objectives

- Share tools and techniques for visualization
- Give examples of how visualization can be applied
- Get feedback on visualization-related projects and initiatives
- Foster discussion of campus visualization needs and how services could be improved
Visualization Discussion Series

Details

- Informal discussions led by library staff members on visualization topics and problems of interest - not formal presentations
- Wednesdays from 11:00 am - 12:00 pm, roughly once per month
- Location alternates between main libraries
## Topics (January 2015 - May 2016)

**General**
- Choosing the Correct Visualization and Identifying Misleading or Inaccurate Visualizations
- The Good, the Bad, and the Tufte
- Visualization Conferences

**Library Spaces**
- Visualization Spaces in Research
- Reach Out and Touch the Game Lab

**Specific Tools**
- SAS for Data Visualization
- OpenRefine for Data Cleaning
- d3.js for Interactive Data Visualization
- Tableau Public for Data Visualization
- GitHub for Collaboration
- Plot.ly for Data Visualization
- GIS and Mapping

**New Trends**
- Generative Art
- Virtual and Augmented Reality
Visualization Discussion Series

Speakers

Inside the Libraries

- 3 NCSU Libraries Fellows
- Director of Visualization Services
- Visualization and Digital Media Librarian
- Digital Technologies Development Librarian
- Head, Digital Library Initiatives
- Analytics Coordinator & Collection Manager for Social Sciences
- Head of Collection Management and Director of Research Data Services

Outside the Libraries

- Associate Head, User Experience
- User Experience Librarian for Digital Media
- Associate Head, Acquisitions and Discovery (Serials)
- Data Services Librarian
- Business and Technology Applications Specialist

- Data Visualization Coordinator, Duke University Libraries
Visualization Discussion Series

Challenges and Opportunities

**Challenges**
- Logistics
- Volunteers to lead sessions
- Competing for staff time
- Topic generation

**Opportunities**
- Learn new things
- Idea generation and inspiration
- Share tools and techniques
- Public speaking experience
- Foster discussion and encourage feedback
- Collection development
Future: Share With A Peer

- Library Staff Hackathon
- A/V Geeks at the Hunt Library
- D. H. Hill Visualization Studio
- Data Repositories Tour
- Teaching and Visualization Lab
- Orientation to the Digital Media Lab
Research Data Committee
ARL E-Science Institute participation (July 2011-Jan 2012)

What we learned:

- Researchers expect the Libraries to be up to speed, to provide guidance, and the advocate for their needs.
- Researchers primarily expressed a need to store data and make it accessible to the public.
- Researchers also expressed interest in access to computational resources and voiced a need for access to open data.
ARL E-Science Institute participation (July 2011-Jan 2012)

Outcomes from participation:

- Built good momentum to move campus conversation forward about supporting needs around data management, discovery, sharing, access
- Brought the Libraries more firmly in the scope of being a part of the research process
- Identified the Libraries as key to helping create a more cohesive approach at NCSU to bring partners together and reduce decentralized responses to data
- Creation of Research Data Committee
“The RDC is responsible for developing and promoting services to support research data management at North Carolina State University. We also aim to help shape and articulate the Libraries’ role in the management and curation of research data campus-wide.”
Research Data Committee

Current Committee Membership
Research Data Committee work

- Created the DMP Guide
- Implemented the DMPTool customization for NCSU
- Offered to help connect researchers with datasets
- Started to build foundation to support guidance on good data curation practices to help further mission of research, teaching, outreach
Challenges and Opportunities

**Challenges**
- Staff time
- Training
- High demand for just-in-time support
- Rotational nature of appointments

**Opportunities**
- More connections with campus community
- More interactions with faculty, postdocs, graduate students
- Building internal network of experts
- Position the Libraries to be a partner as initiatives develop across campus
Future

- Scaling up on supporting public access compliance beyond NIH
- Enhanced training that includes more active hands-on workshop components
- Following up with PIs on DMPs we have provided assistance on
- Getting involved in research grants, as consultants or as personnel on the grant, to support data management process
- Researching and monitoring ways to better support compliance
- Providing more guidance on data publication
- Helping with tools or platforms that would support data publication
- Continuing to use RDC as a hub for building expertise and capacity internally
Acknowledgements

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Co-Chair, Research Data Committee

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Director, Natural Resources Library & Research Librarian for Science Informatics
Co-Chair, Visualization Services Team

Mike Nutt
Director of Visualization Services
Co-Chair, Visualization Services Team

...and

ALL OF YOU!
Audience experiences and/or questions

Thank you!
Mira Waller, mpark@ncsu.edu
Heidi Tebbe, hjtebbe@ncsu.edu, @ideaofhappiness