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Information Outlook, September/October 2017

Special Libraries Association

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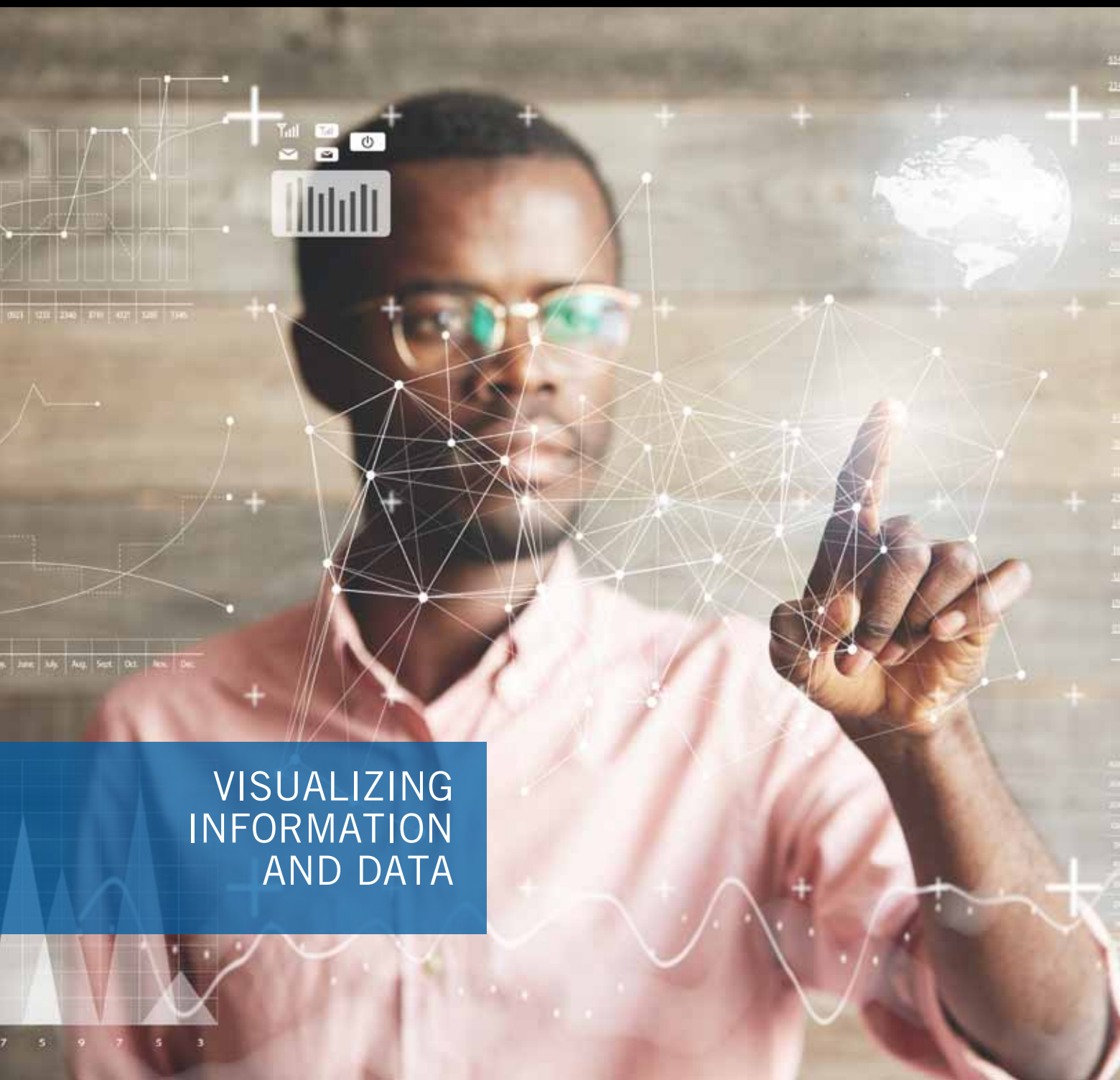
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information outlook

THE MAGAZINE OF THE SPECIAL LIBRARIES ASSOCIATION



VISUALIZING
INFORMATION
AND DATA

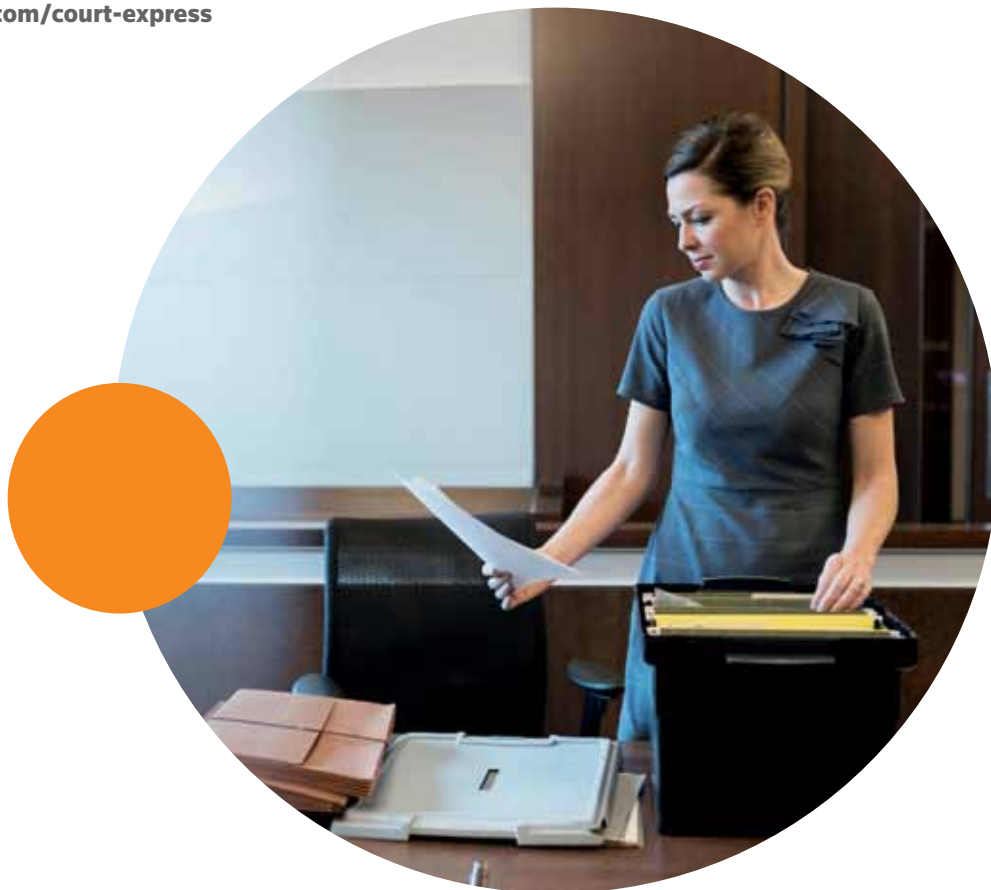
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information outlook

THE MAGAZINE OF THE SPECIAL LIBRARIES ASSOCIATION



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Kirkwood Elected to Lead SLA in 2019

Hal Kirkwood, associate professor and business information specialist at the Roland G. Parrish Library of Management & Economics at Purdue University, was elected by SLA members to serve as the association's president in 2019.

Since joining SLA in 1992, Hal has held several leadership roles within the association, including serving as president of the Indiana Chapter, chair of the Business & Finance Division, and director on the SLA Board of Directors (2012–2014). He will serve as president-elect in 2018, president in 2019, and past president in 2020.



The following SLA members will join Hal on the board in 2018:

- Valerie Perry, chapter cabinet chair-elect;
- Alex Grigg Dean, division cabinet chair-elect;
- Hildy Dworkin, director; and
- Amy Jankowski, director.

The new board members will serve three-year terms (2018–2020). They will replace the following members, who are finishing their board terms at the end of this year:

- Tom Rink, past president;
- Kim Silk, past chapter cabinet chair;
- Ruth Kneale, past division cabinet chair;
- Kevin Adams, director; and
- Catherine Lavallée-Welch, director.

The election was conducted online beginning September 6 and ending

September 20. The candidates were put forward by the SLA Nominating Committee: Tony Landolt (chair), Marilyn Bromley, John Coll, John DiGillio, and Pam Rollo.

SLA Launches New Certificate Course in Competitive and Decision Intelligence

A new SLA certificate program, Competitive and Decision Intelligence, will kick off Oct. 30 with its initial course offering, INTEL-01: Introduction to Competitive and Decision Intelligence.

The program is designed to help special librarians and information professionals enhance their research skills to produce better analyses and provide decision-ready intelligence. The program is webinar-based and includes interactive forum discussions.

Participants in INTEL-01, which concludes Nov. 15, will—

- Learn about the different types of intelligence support;
- Explore intelligence concepts, functions, and roles;
- Gain an understanding of intelligence ethics and legality;
- Identify job opportunities in CDI for LIS-trained professionals; and
- Discover the purpose, application, and value of intelligence to their own organization.

Sarmiento Issues Call for 2018 Volunteers

SLA 2017 President-Elect Roberto Sarmiento reached out to association members in early October and asked them to contribute their time and talents next year in the service of SLA chapters, divisions, committees, councils, and the SLA Board of Directors.

“If you are ready to make a difference in your unit, if you are willing to help us continue building the future of our association, if you want to start—or continue—on your leadership develop-

ment path, I invite you to invest in your future and ours and sign up as an SLA volunteer for 2018,” he wrote.

SLA members interested in volunteering in 2018 can complete an online form on sla.org. The form allows members to submit their name for consideration to fill vacant positions or continue volunteering in a current capacity. The form also offers members the opportunity to serve in “micro-volunteer” roles, such as a writer or speaker.

“I can tell you, as a longtime SLA volunteer, you get back what you give,” Sarmiento wrote. “The invitation to a possibly life-changing opportunity is in your hands. If selected, I can only guarantee that your volunteer work will make a difference to your fellow members and our association.”

Leadership Symposium to Be Held in New Orleans

SLA will hold its 2018 Leadership Symposium January 28–30 in New Orleans at the DoubleTree by Hilton.

The Leadership Symposium—the eagerly anticipated in-person addition to SLA's professional development programming—will provide SLA members relevant, quality educational leadership training in conjunction with a revised unit leader training. Attendees should register for one of two separate components of focused leadership training.

All SLA members who lead in their workplaces—whether reflected by an official job title or not—are strongly encouraged to attend. Aspiring leaders seeking to develop their leadership potential are also invited and encouraged to participate. Both longstanding and emerging SLA unit leaders will take away new insights for more effective and efficient leadership.

SLA will award scholarships to attend 2018 SLA Leadership Symposium to two SLA members who demonstrate a desire and commitment to advance their leadership skills and abilities within SLA units. **SLA**

Visualizing Information and Data

To remain relevant in an increasingly visual culture, special librarians must become comfortable with displaying information and data visually.

BY STUART HALES

Contrary to conventional wisdom, seeing is not necessarily believing, but it may be the key to better understanding.

How else to explain the growing use of bar charts, pie charts, scatter plots, and other visual displays that are being used to convey information about everything from economic trends (such as changes in home prices, exchange rates, and the like) to voting patterns to consumer preferences in music, art, and clothing? For journalists looking to share quick takeaways from their reporting and researchers seeking simple ways to explain complex study findings, nothing, it seems, beats an infographic that is easy to read and understand.

But determining when to use a visual display, and identifying the type of display that is best suited to the information and data at hand, are decisions that do not always come easily to librarians and information professionals.

“Librarianship is comfortably rooted in tradition and in text, nestled firmly in academia and theory,” writes Jamie Lin in this issue of *Information Outlook*. “Continuing to operate this way is to struggle with irrelevance in a rapidly changing society. Relevance is necessary for our continued existence.”

Jamie, a digital technologies librarian

at a for-profit educational institution, works partly with college students, a demographic that has come of age in a world of laptops, smartphones, and media such as Twitter, YouTube, and Instagram. Theirs is a visual culture, and librarians and information professionals—no matter their work environment—will need to adapt to this culture.

“I’m not suggesting we need to make everything flashy or entertaining,” Jamie writes. “I do believe, however, that we need to understand what is interesting to our customers and clients so we can do our job more effectively and give them the information they need in formats they can understand and use with minimal effort on their part.

Anselm Spoerri, who also works with college students (as an instructor at Rutgers University), agrees with Jamie that librarians need to understand their audience, but says they also need to understand their data. Without knowing the data, he says, they cannot know how to visualize it.

“When I teach students about data visualization, I tell them the hardest part is getting the data in a form that you can visualize,” he says in this issue. “That’s a lot of work. And then you have to ask, how valid is your data, and what is the provenance of your data?”

For Susan Makar and Amanda Malanowski, understanding the data and the audience meant understanding the research goals of a scientist at their organization. He had co-authored a highly cited journal article about the Protein Data Bank (PDB) and wanted to determine its impact and to communicate that impact to others. Susan and Amanda developed several visual displays (including a poster) that showed, at a glance, the vast “reach” of the article within the scientific community.

“After developing the poster, we shared it with the head of the [Research Collaboratory for Structural Bioinformatics], who has been using it in various presentations about the Protein Data Bank,” they write. “The impact of our joint library-lab collaboration thus went beyond NIST, extending to an organization that is using our analysis to visually show the impact of the PDB to stakeholders and others.”

Like Susan and Amanda, Michele Mittrach and Kelly Durkin also developed a poster—in their case, to illustrate the outreach and instruction program they launched at Los Alamos National Laboratory. The poster, which they presented at the SLA 2017 Annual Conference, shows the many steps and challenges involved in implementing the program, including what they describe as the “legacy of secrecy” at the laboratory and its “partitioned” (open vs. closed) nature.

Conference attendance also figures into Mike Gruenberg’s article on “sharing back” with your organization. Obtaining conference funding is no longer a given, he writes, so the burden is on information professionals who attend conferences to document what they did, what they learned, and how their organization will benefit. Doing so will make it easier to justify attending future meetings.

The final words in this issue are from David Stern, who laments the fact that most libraries have not yet implemented seamless, powerful options for searching collections that contain e-books. Be sure to read his “Info Tech” column for more insights. **SLA**

STUART HALES is editor of *Information Outlook* and content director for SLA. He can be reached at shales@sla.org.



Visualization Creates an Effective Impact Story

A COLLABORATION WITH A RESEARCHER ON AN ANALYSIS OF A HIGHLY CITED ARTICLE RESULTED IN VISUALIZATIONS THAT SHOWED THE 'REACH' OF THAT ARTICLE AND THE IMPACT OF THE UNDERLYING RESEARCH.

BY SUSAN MAKAR, MLS, AMANDA MALINOWSKI, BS, AND TALAPADY BHAT, PHD

Several years ago, while presenting a poster about the impact of the National Institute of Standards and Technology's (NIST's) forensics publications, two of the authors of this article (Susan Makar and Amanda Malinowski) noticed a researcher, Dr. Talapady Bhat, studying our poster very intently. Before long he asked us, "Can you do a similar study for NIST's most highly cited journal article?" Thus began a collaborative journey to determine the impact of a single journal article, "The Protein Data Bank."

Too often, the impact of an article is measured simply by counting the number of papers citing that article, but a much richer story can be told by taking a closer look at the citation data. We developed several ways to creatively visualize and present citation data by

analyzing the authors, institutions, journals, and countries associated with the papers citing a given article.

A 'Classic' Article

With more than 15,000 citations, "The Protein Data Bank" is considered a classic in its field. The article describes the Protein Data Bank (PDB), which was established at Brookhaven National Laboratories in 1971 as an archive for biological macromolecular crystal structures. The PDB has grown over the decades and today holds more than 129,000 structures of large biological molecules, including proteins and nucleic acids.

From 1998 to 2005, NIST was part of a consortium, the Research Collaboratory for Structural Bioinformatics (RCSB), that managed the PDB. In 2000, two

NIST researchers, Dr. Talapady Bhat and Dr. Gary Gilliland, along with researchers from other institutions, co-wrote "The Protein Data Bank." The article was published in *Nucleic Acids Research*.

The status of "The Protein Data Bank" as NIST's most highly cited paper, as well as its wider importance beyond NIST, made it a particularly interesting article to study in depth. The project fit in well with one of the goals of NIST's Information Services Office (ISO)—assessing the impact of NIST's research—and provided library staff in the ISO with an opportunity to collaborate with a scientist to determine the scope of the analysis and the best way to approach it.

We used library resources and tools to analyze the paper's citations and visualize its impacts. The visuals we



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created show that “The Protein Data Bank” has been cited across 151 different research areas in more than 2,100 journals by authors from 5,000-plus institutions in 102 countries.

The Analysis Methodology

To begin our analysis, we turned to one of our library’s resources, the Web of Science (WoS), a database that indexes and abstracts peer-reviewed scientific and technical literature. (Note: Any identification of commercial products does not imply recommendation or endorsement by the National Institute of Standards and Technology or its affiliates.) We searched the WoS to identify papers citing “The Protein Data Bank” since its publication in 2000. We then analyzed the citing papers to identify all of the authors, countries, institutions, research areas, and journals citing the paper. The results for each of these analyses (authors, countries, and so on) were exported from the WoS into a spreadsheet, and from the spreadsheet to data visualization software.

We used a bubble chart to show the variety and breadth of research areas that cite the paper. Bubble charts provide a visual alternative to a traditional bar chart or pie chart. A tree map was used to show the journals that have cited the paper most frequently and their impact factors. Tree maps use a series of rectangles nested within other rectangles to show hierarchical data in proportion to the whole. We also used a global citation map to show the international impact of the paper.

Article Impact Findings

We first looked at citations of the article over time. The simple bar graph in Figure 1 shows that “The Protein Data Bank” has remained relevant since it was published in 2000.

Next, we took a closer look at the articles citing “The Protein Data Bank.” We learned that a wide range of articles have cited it, and some of those articles have been cited very frequently themselves. We identified the 10 papers citing “The Protein Data Bank” with the

TABLE 1: **Top 10 Papers Citing “The Protein Data Bank”** (by number of citations)

Citing Article	Number of Citations
Coot: Modelbuilding Tools for Molecular Graphics <i>Acta Crystallographica Section D: Biological Crystallography</i>	14,709
UCSF Chimera—A Visualization System for Exploratory Research and Analysis <i>Acta Crystallographica Section D: Biological Crystallography</i>	9,563
PHENIX: A Comprehensive Python-Based System for Macromolecular Structure Solution <i>Acta Crystallographica Section D: Biological Crystallography</i>	6,692
MolProbity: All-Atom Structure Validation for Macromolecular Crystallography <i>Acta Crystallographica Section D: Biological Crystallography</i>	3,850
Inference of Macromolecular Assemblies from Crystalline State <i>Journal of Molecular Biology</i>	3,418
MUSCLE: A Multiple Sequence Alignment Method with Reduced Time and Space Complexity <i>BMC Bioinformatics</i>	2,832
Protein Structure Prediction on the Web: A Case Study Using the Phyre Server <i>Nature Protocols</i>	2,714
PHENIX: Building New Software for Automated Crystallographic Structure Determination <i>Acta Crystallographica Section D: Biological Crystallography</i>	2,544
Secondary-Structure Matching (SSM), A New Tool for Fast Protein Structure Alignment in Three Dimensions <i>Acta Crystallographica Section D: Biological Crystallography</i>	2,186
MolProbity: All-Atom Contacts and Structure Validation for Proteins and Nucleic Acids <i>Nucleic Acids Research</i>	1,982

FIGURE 1: **Citations of “The Protein Data Bank”** (by year)

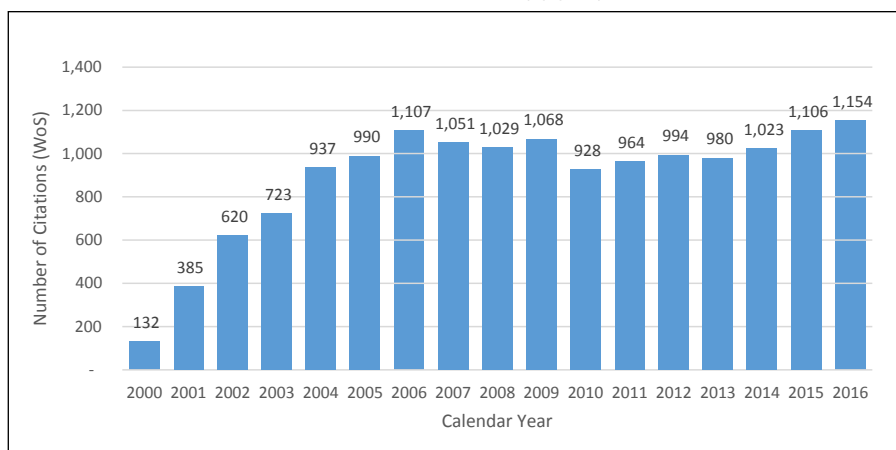


FIGURE 2: Entities Citing “The Protein Data Bank”

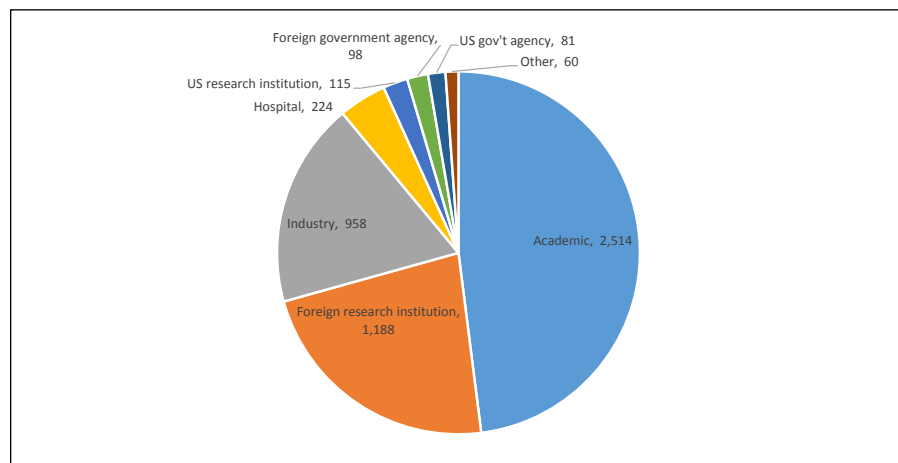
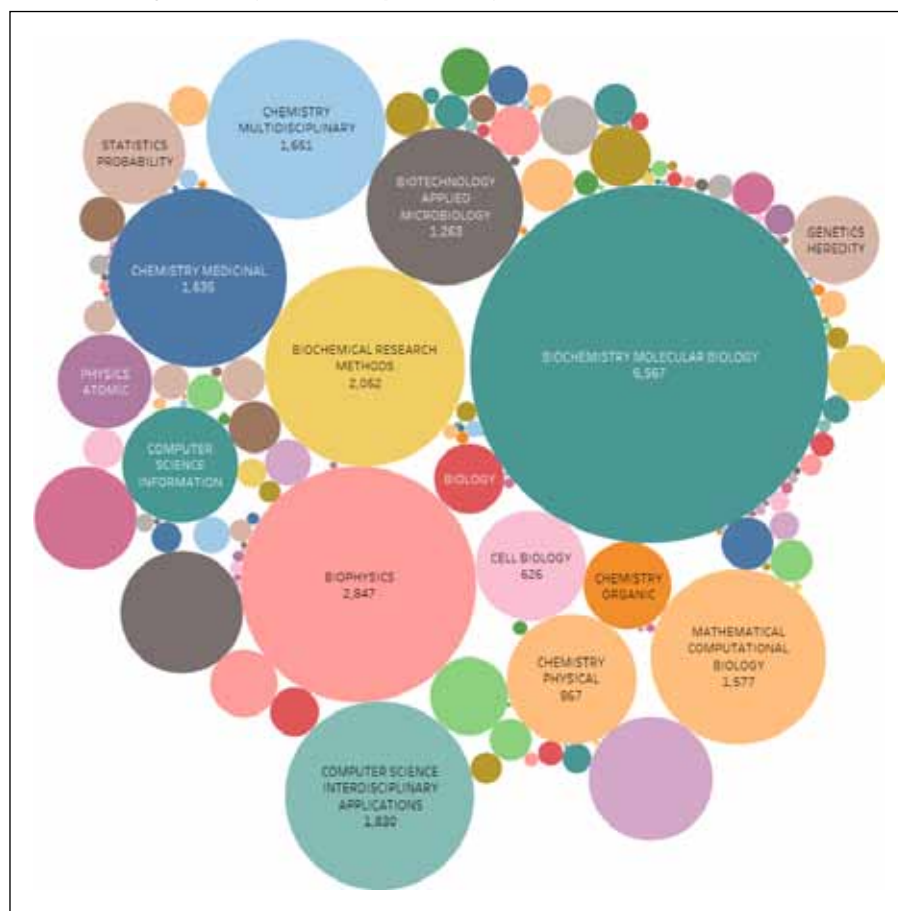


FIGURE 3: Subject Categories of Papers Citing “The Protein Data Bank”



highest citation counts, then created a table ranking those papers by the number of times each was cited (Table 1). This table helps illustrate how being cited by highly cited articles has further increased the visibility and impact of “The Protein Data Bank.”

The pie chart in Figure 2 shows that

the article has been cited primarily by academic institutions, followed by foreign research institutions and industrial entities, respectively.

We also studied the impact of “The Protein Data Bank” across disciplines and learned that the citing papers represent 151 different WoS subject cat-

egories. Figure 3 shows biochemistry and molecular biology as the areas where the article has had the greatest impact. A quick glance at the chart shows that “The Protein Data Bank” has been cited by papers in areas ranging from physical chemistry to biotechnology to genetics/heredity to statistics/probability.

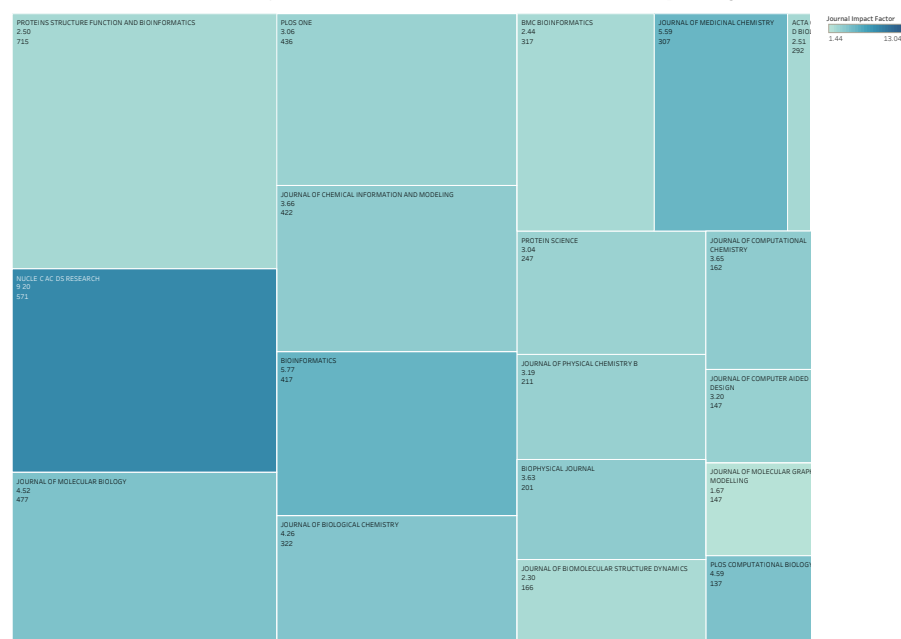
We used a tree map to study the journal titles of papers citing “The Protein Data Bank.” This analysis revealed that the article has been cited by papers in more than 2,100 journals. Figure 4 shows the 25 journals citing “The Protein Data Bank” most frequently and provides the Thomson Reuters impact factor for each journal, along with the number of citations of “The Protein Data Bank.” The rectangle size represents the number of citations, while the shading represents impact factor.

Finally, we used a global citation map to show the international impact of “The Protein Data Bank.” We learned that the article has been cited by authors from organizations in 102 different countries across all continents (with the obvious exception of Antarctica). Figure 5 shows the global distribution of these citing authors, with the area of each circle reflecting the relative number of authors in a given country who have cited the article. It is easy to see from the citation map that the United States has the most authors, followed by countries in Europe and Asia.

Going Beyond NIST

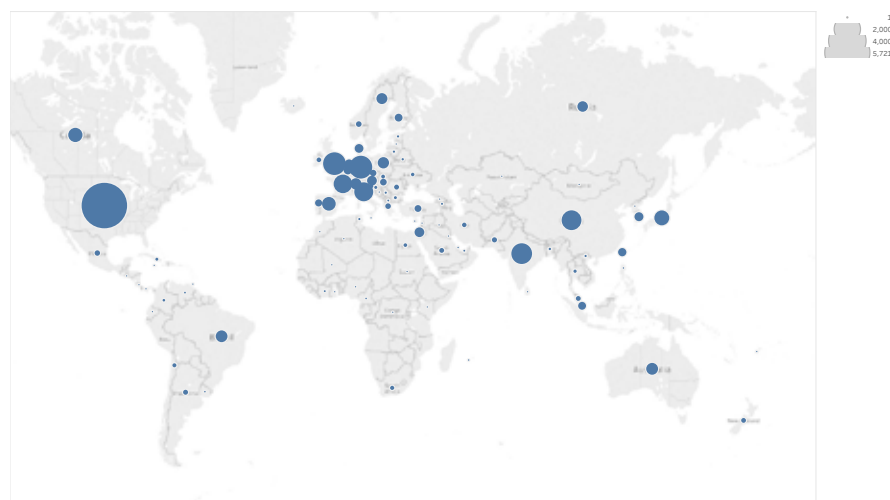
All of these visualizations resulted from NIST library staff presenting their forensic publications analysis study at a venue attended by scientists. At this event, a door opened that led to increased collaboration between researchers and information professionals at the library. This collaboration was beneficial to the ISO in terms of both skill development and relationship building. It was an opportunity to hone our bibliometric and analysis skills to better support the research efforts of our scientists. Plus, it was a chance to work with an NIST researcher in a role

FIGURE 4: Journals Citing “The Protein Data Bank” Most Frequently



Source: Titles, sum of P and sum of R of Records. Color shows sum of P. Size shows sum of R. The marks are labeled by Source: Titles, sum of P and sum of R of Records.

FIGURE 5: Distribution of Authors Citing “The Protein Data Bank”



Map based on Longitude (generated) and Latitude (generated). Size shows sum of R of Records. Details are shown for Countries/Territories.

that went beyond reacting and responding to information requests.

The process of determining the best way to demonstrate impact included back-and-forth conversations with the researcher. What was he interested in learning from the analysis? What visualizations best demonstrated the impact of his paper? What audience did he have in mind for the poster we were developing to show the impact of his article?

After developing the poster, we shared it with the head of the RCSB,

who has been using it (or its content) in various presentations about the Protein Data Bank. The impact of our joint library-lab collaboration thus went beyond NIST, extending to an organization that is using our analysis to visually demonstrate the impact of the PDB to stakeholders and others.

Next Steps

In looking beyond citation counts, we took a broader approach to studying the impact of a single journal arti-

cle, then further enriched that view with visualizations that told simple but important stories. We showed that the work described in “The Protein Data Bank” had reached a very broad audience—scientists at more than 5,000 institutions, working across 151 different research areas in 102 countries and publishing their results in 2,100-plus journals.

During our work, we learned that complex graphs and figures are not always the most effective ways to show impact. Simple is sometimes better. Also, while the Web of Science worked well for this analysis, we would like to translate our techniques and methods to other research databases for future projects where the WoS may not be the best fit. While this project required a citation database, other analysis studies might be better performed using a chemistry or engineering database.

In the meantime, library staff are using data visualization tools and techniques to determine emerging research areas, study publication collaborations, and explore whole new ways to support research at NIST. Additional adventures into data, charts, network diagrams, and more are on the horizon! **SLA**

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Providing Information for a Visual Culture

WHO ARE YOUR CUSTOMERS, AND HOW CAN YOU BEST CAPTURE AND HOLD THEIR ATTENTION? MORE THAN LIKELY, THE ANSWERS WILL LEAD TO VISUAL FORMATS.

BY JAMIE LIN, MLIS

“May I have your attention, please?”

This message would be more effective if it were broadcast over a loudspeaker and you were, say, in an airport. In fact, the most effective delivery method for any piece of information can vary greatly, depending on the time, location, intended audience, and hoped-for outcome.

In recent years, conveying information to users has increasingly become a visual and interactive exercise. What this means for our profession is that we need to learn to speak this visual language effectively if we wish to keep our users' attention.

In June, at the SLA 2017 Annual Conference in Phoenix, I shared some of my thoughts and lessons I have learned from making instructional video tutorials for online college students. If

you attended my session, however, you probably noticed it was less about creating tutorials than about understanding and connecting with a specific audience. This article is not a repeat of that conversation—it is a continuation of it.

Visualization Adds Relevance

Let's think about this from a business perspective for a minute. If you have a great product or service, how do you get the word out? How do you package it so people will use it or buy it, and how do you advertise it?

Luckily, we don't need to conduct our own research into this—we need only look at how large multimedia companies (formerly called “news organizations”) are delivering information. Go ahead, visit a site like NBC or ABC. You'll see a lot of images: news deliv-

ered in video format, graphic buttons for links, images that animate when a mouse rolls over them. You're looking at information delivery for a visual culture, designed to engage the user and entice him/her to continue reading, to click, to scan, and to learn.

This culture is relevant to you, even if you would prefer it not be.

I'm not suggesting we need to make everything flashy or entertaining. I do believe, however, that we need to understand what is interesting to our customers and clients so we can do our job more effectively and give them the information they need in formats they can understand and use with minimal effort on their part. Yes, really—learning should not be difficult!

Librarianship is comfortably rooted in tradition and in text, nestled firmly in academia and theory. Continuing to operate this way is to struggle with irrelevance in a rapidly changing society. Relevance is necessary for our continued existence.

Visualization Formats

Take a look at a document you're drafting. Ask yourself, what text can become an image? What concept can I describe

JAMIE LIN is the digital technologies librarian at Bridgepoint Education, a higher education company that owns Ashford University and the University of the Rockies. In her role, she focuses on the design, presentation, and experience of an instructional moment. Contact her at jamie.lin@bpiedu.com.



THE DESIGN PROCESS

WHAT :

Print campaign to market a service

FOR WHOM :

Enrollment Advisors & Student Advisors
(~1000 people)



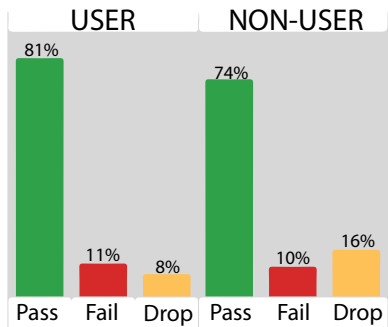
DESIRED OUTCOME :



We want advisors to hang the ad in their cubicle, for easy reference

"make something colorful and beautiful"

DATA : PASS / FAIL / DROP RATE



TRANSLATE DATA INTO SOMETHING USABLE

(ask a data scientist for help)



The odds of passing for each group is calculated by dividing the number that passed by the number that dropped or failed...

the odds ratio indicates 2.8

...tutored students are about 1.5 times more likely to pass...



FINAL PRODUCT :

Did you know?
Students who use tutoring are 1.5 times more likely to pass their class than students who do not!

Go2 Page: Student Success Resources

ASHFORD UNIVERSITY LIBRARY Sept 2017

through storytelling? What message do I want to deliver?

Information visualization, to me, means being able to look at an image and instantly understand what you are seeing. Most failed attempts at this result from (1) forcing too much information into a visual jumble without paying attention to user perspective and (2) willfully ignoring design principles that are freely available on the Internet.

You don't need to be a professional graphic designer to incorporate good design principles. I'm completely self-taught, and my skills always have room for improvement. But I do try to improve, and I continue to learn. Every project is an improvement on the previous project.

Following are some visual modes of information delivery I use in my work. (For more information about videos and interactive tutorials, please visit the asynchronous version of my SLA conference presentation at <http://bit.ly/2zob7sE>).

Short videos. When creating video tutorials for students, I keep them short and sweet and discuss the most important information at the beginning. Videos should be closed captioned, and the audio must be easily understandable and unnoticeable.

Interactive tutorials. When creating longer instructional modules, I focus on storytelling and give the students control of navigation and pace. Including an assessment survey will provide data

that can be used when reporting key performance indicators or developing new products.

Infographics (or instructographics).

These days, everyone says they want an infographic, but most people don't know what that means. Usually, they mean they want information delivered in a visual, easy-to-understand, downloadable, printable format.

When designing an infographic or instructographic, I keep text to a minimum (difficult to do when the content is handed to you), find a theme I can incorporate throughout, and research design principles, such as compositional flow and the use of white space. An infographic can also be separated into several images, then coded and uploaded as a webpage, effectively creating an online, ADA-accessible (remember to alt-text!), scrolling delivery method. I'm exploring creating a web cartoon using this idea.

Tip sheets. A tip sheet consists of screenshots and text. Its purpose is to provide step-by-step instruction in a PDF format. I aim for a two-page maximum and prefer a single page. Developing a style guide will help unify the look and feel of these resources, effectively creating a reusable brand.

Informational poster or flyer. This is, for all intents and purposes, an ad. Think instant attention and instant information delivery. Keep the message simple.

Moving Beyond Text

I find that one of the wonderful challenges of working at a for-profit educational institution is that there are multiple user groups to understand and target. As educators, library team members focus most of their efforts on reaching students and faculty—which makes sense, from an academic perspective. However, we report to the corporate entity and were recently placed under the authority of the Marketing Department. Obviously, corporate executives view the company from a very different perspective than do academicians. Moreover, they're the ones who make major decisions that can affect the very existence of the library, so it is vital that we understand their information needs and expectations as well.

Library team members also work with student advisors, who are the primary contact for students. Our communications with this user group are designed to ensure they know what the library does, how students can connect with us, and what support services we offer. The student advisors are the recipients of most of our marketing efforts and materials.

I view designing for these different audiences as an opportunity to become better at communicating visually. I encourage you to take the same approach. So, who are your customers? What do they need? How can you capture their attention, and hold it? Here's my suggestion: Try moving beyond text and thinking in terms of usability, innovation, and engagement.

Right now, you are my customer, and the irony that this is a text document about visualizing information is not lost on me. So I created the image on the preceding page just for you, to show you a little more of the design process that I go through. While looking at it, ask yourself what works for you. What do you like about it? Would you change anything? How long did it take you to understand what this image is trying to convey?

Whenever you see a design you like, take note of what strikes you and incorporate that into your work. Good luck, and have fun! **SLA**



Visualizing Data: An Interview with Anselm Spoerri

VISUALIZING DATA STARTS WITH PUTTING THE DATA INTO A FORM YOU CAN VISUALIZE, THEN UNDERSTANDING WHO YOUR AUDIENCE IS AND WHAT THEY WANT TO KNOW.

BY JOCELYN MCNAMARA, MLIS

If a picture is worth a thousand words, how many data is an infographic worth?

Typically not many, says Anselm Spoerri. An infographic—often (wrongly) used as a catch-all term for everything from simple bar charts to complex interactive visualizations—is best used to convey a few data points that represent key patterns or trends. Visualizations, on the other hand, provide context for the data and often allow the audience to manipulate the data to reveal more complex relationships among the factors that affect the data.

Spoerri, a faculty member at the School of Communication and Information at Rutgers University, has conducted research in the field of information visualization for the last 20 years

and teaches students how best to visualize data. Earlier this year, he was honored with a Professional and Scholarly Excellence (PROSE) Award for DataVis Material Properties, a tool he helped design for McGraw-Hill Education.

Information Outlook interviewed Spoerri about the techniques and tools for visualizing data and information and the biggest challenges facing information professionals who work with data.

The terms *graphics*, *infographics*, and *visualization* are used frequently and often interchangeably in regard to data presentation. Can you define these words and explain their differences and similarities?

The way I like to think about it is,

infographics usually are static. They give you a high-level view of the key salient patterns in the data that have been identified by an analyst, who then—either by using some tools or hiring a graphic designer—comes up with a visual representation of those key results. So, from the perspective of data visualization as a whole, infographics are what you use when you are communicating with a very general audience or you just want to communicate highlights in a quick way.

But the moment you want to understand more about the data, then you come into the realm of what's considered interactive data visualization, meaning you can actually drill into the data and filter it and look at the subsets and understand the data yourself. The questions to ask about interactive data visualization are, one, who is doing it, and two, for whom is it being done?

An infographic is designed for end users who don't need to have a lot of content understanding or domain understanding, so they can very quickly grasp key things that are going on with the data. But you can't communicate

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more complex or subtle relationships with data using infographics.

If you're an analyst and you have a data set, you'd like to have interactive data visualization tools so you can better understand the data you're trying to analyze. What's starting to happen—and you're seeing this in newspapers like *The New York Times* and *The Washington Post*—is that readers are being given access to interactive data visualization tools, so the readers themselves can explore the data and not just have to take the word of journalists that these are the key insights to be gained from the data.

It's critical that the right kinds of displays are used to make the underlying patterns of the data visible. Often, you need to first figure out what those patterns are, so you need to go through an interactive or iterative loop to figure out what's going on in the data and what's the best way to see it and understand it and then present it. The distinction, in a way, is between the *presentation* of data and *understanding* and *analyzing* data. Sometimes the same tools are being used for both purposes.

If you want to go one level deeper, you get into what's called data analytics. This is where the data sets are so huge that, yes, you can visualize them, but to be able to really understand them you need machine learning or artificial intelligence methods to find the interesting subsets. Then you can use visualization to further examine these data sets or fine-tune the algorithms that are crunching through them.

So the idea is that you don't need to be a subject matter expert to be able to drill down and understand what's going on, correct?

It depends. For example, you can view an infographic as an access ramp into data to get the key ideas. The reader gets an understanding, then moves on. He doesn't linger with the data, maybe doesn't even have a desire to, because often data is messy.

Think of it almost like being in a big city and wanting to show someone the



Anselm Spoerri

major sights. You position your camera and take a snapshot, and you say, here is an interesting sight. Infographics is like that—you take a snapshot of an interesting pattern, and then you move on and explore the data and find another interesting connection or relationship, and you take another snapshot. And those snapshots are what you put into your presentation.

Using infographics is really a question of who your audience is and how much they care to know. Infographics are great for giving you the highlights, and depending on the sophistication of the designer, sometimes it can be done in a very memorable way so that even a lay person can understand quickly that the data are about cars or animals or the climate. There are pictorial representations that immediately tell people the context the data are in.

The challenge with what I would call “cold” or “sober” data visualization is that you have a series of displays that you look at and you don't even know what they're about. You have to go look at the axes and read the labels, and it's all very abstract.

The other question in my mind is

one of motivation—how much do I care about the data, and how much value is in the data? For example, if you look at *The New York Times*, they did quite a lot of visualizations around the 2016 elections. Why? Because they believe their readers care about that kind of data—they want to know more about it, and they may even want to drill into it. So it really comes down to the value of the data set and what people are hoping to do with the information they gain from the data set.

What's also happening with infographics is what I call “animated presentations.” These are like mini-videos that tell you, in an animated way, a story. They're highly scripted, like a movie. And somebody has to figure out the highlights to present.

So the interpretation has already been done for the viewer?

Yes. And the questions there are, how skillful is the analyst who interpreted the data, and how skillful is the graphic designer who created the presentation?

I can readily imagine that data could be interpreted and communicated one way,

but someone might view it and draw a different and unintended conclusion.

If it's a rich data set, there are multiple ways you can slice it and filter it. For example, go back to the 2016 election. People are still trying to understand what happened, how we got the result we got, and who voted for whom. The question is, what types of data variables do you need to take into account? Income? Religion? Education? What variables do we have, and how do we bring them into the data space so that a viewer can start to see relationships and correlations?

An Infographic simplifies, either because a person has decided that what's being presented is good enough, or there's a very established way to think about it. The key is to make the information as accessible and consumable and understandable as possible. For me, if an infographic is done well, it's like a well-designed documentary or movie. It's also there for quick consumption. That's what it's designed for.

If you look at what's happening right now, infographics are becoming very popular. The news media are using infographics to communicate with their readers; infographics are also being used in education to make certain facts available, to make numbers not appear as cold or abstract—to make them more relatable. Infographics is more about how data can be *consumed*. When we talk about data visualization, we are moving into a higher-dimensional realm of interaction, inquiry, examination, asking questions, and developing hypotheses.

Going back to your election example, people often talk about data as something that's very objective and that we can refer to in a highly scientific way. Oftentimes, we forget that the variables we come up with at the front end of the inquiry are being determined by people. I think the human bias is overlooked a lot when we decide how to construct and interpret data sets.

Sometimes you have to work with what you have—this is what we mea-

sured, or this is what was easy to measure, so now we'll work with it even though it's not really the best way to think about this phenomenon. That's one issue. Another issue is, how important is this data? Is it worth it for me to develop new ways of measuring things so I can start collecting this data?

And there are always errors in data, because data is noisy and messy. So when I teach students about data visualization, I tell them the hardest part is getting the data in a form that you can visualize. That's a lot of work. And then you have to ask, how valid is your data, and what is the provenance of your data?

Another thing that's happening—and I think this is where big data is coming in—is that people are starting to collect so much data that, at the end of the day, the noise in it doesn't matter as much. If you were to look at one data variable on its own, you might say there's too much noise in it, there's too much measurement error, or there's too much bias. But if you add another data variable, and then another and another, soon you have millions and millions of data points. And with the statistical methods and machine learning techniques available today, you can squeeze out some decent patterns that, if you had much less data, wouldn't be as good.

Yes, the data is noisy, and yes, it can be biased. But there comes a point where, at certain volumes of it, and combined with other data sets—this is another thing that's happening, people are combining multiple databases—when you start comparing them and relating them, you can sort of get the noise out, so to speak.

Looking at big data sets is something we haven't previously done before. And that raises all sorts of black swan scenarios, where we're trying to look for patterns that are emerging, but we don't even know what to look for because we haven't analyzed data at this level before.

You mentioned the black swan phenomenon, which is something that has

a very low probability of happening, but when it happens, it has a catastrophic impact. True, there is a possibility that we don't know yet how to use all of this data and make sense of it. But we have this computer infrastructure now that has gotten so cheap that we can really go for it. Before, it was way too expensive to work with these large data sets, so you had to be more “clever” to extract value.

Now, let's bring it back to infographics. I'm in this sea of data and I'm using visualization to navigate the data and get some sense of it. In a way, data visualization is a communication tool. The question is, with whom am I communicating? Am I communicating with myself, meaning I'm looking at the data and I want to understand it so I can make a decision? If so, I'm using visualization as an analyst of the data.

Now I need to tell others about the data. If I have a team of specialists, we work together to build up know-how and maybe we even customize some visualization tools so we can better understand the data. Then we may need to communicate the data to others who are not experts, who are not as involved with the nitty-gritty of the data. And the question there is, what's the attention span of the audience?

If it's higher management and they just want the highlights, I might say we should create an infographic for them—here are the key facts, and here are some charts that are easy to read and don't require special knowledge to understand. Or maybe we need to have a feedback loop and an interactive tool, so that when we're talking about the data we can be in the moment and change the filter settings and the view of the data so we can start exploring the data and communicate to others how rich and complex it is.

It's all a question of who's doing it, why they're doing it, what they're hoping to get out of it, and how much time they're willing to invest in it.

So, what are the main techniques for visually displaying data, and what visualization tools do you think would be

most useful for librarians and information professionals to learn?

If you think in terms of visualization, there are standard display types—bar charts, line charts, pie charts, bubble charts, scatter plots, and maps. These are the workhorses of data visualization, and you'll also see them in infographics. People are familiar with them; they've been in use for some time. And if you think in terms of how designers visually encode information, they do it in a way that makes it quite easy for human visual systems to read it, because they produce visual patterns that the human visual system is good at detecting.

Now the question is, when do you use a bar chart, when do you use a line

chart, and so on. Most often, librarians will be using these types of tools. Some of them you can generate in Excel to create static visualizations, or you can use a tool like Tableau that has a free public version. Or maybe you get a license because you have data that's coming from different databases that needs to be merged, and then you create visualizations and presentations for your management or for the public.

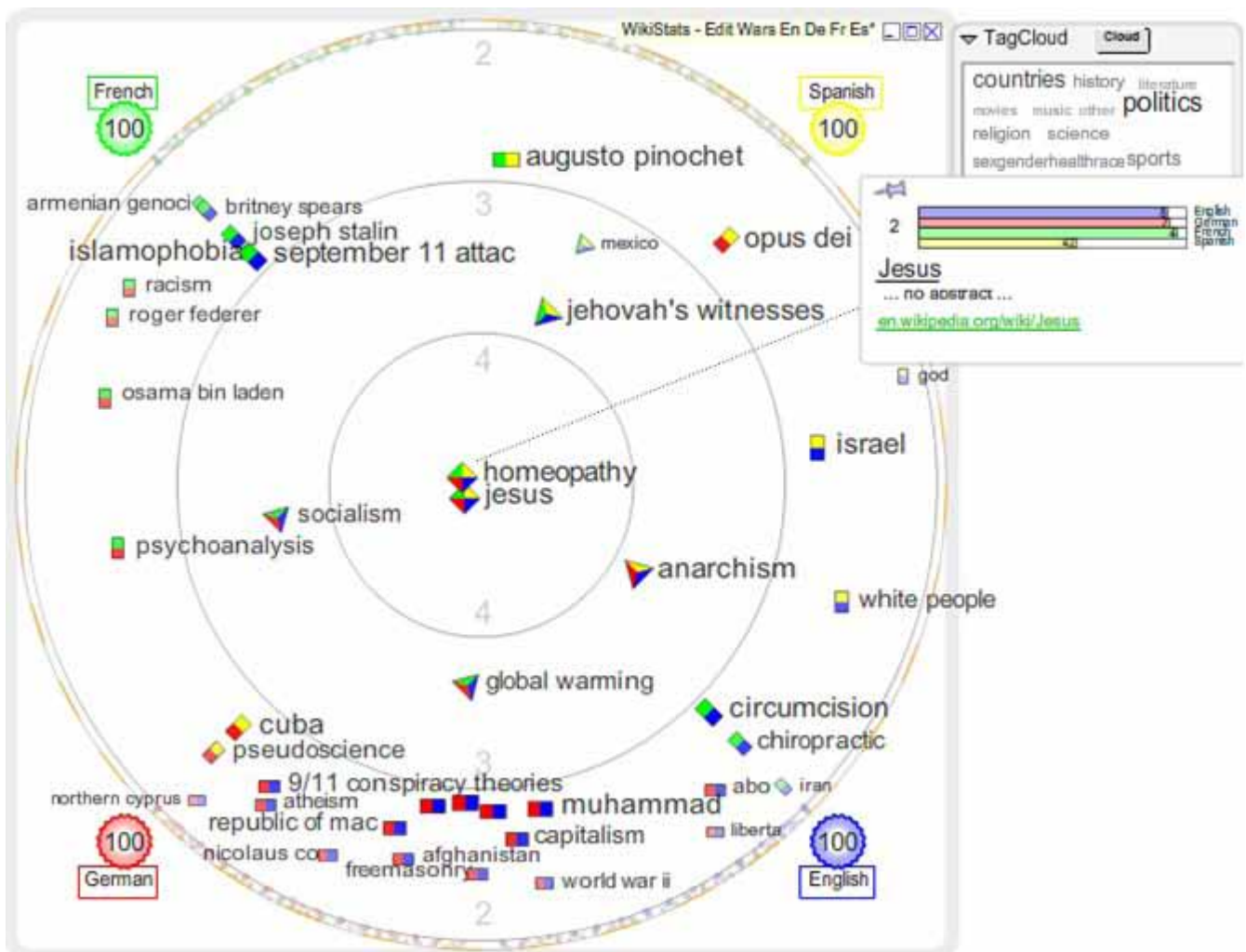
Google has free tools you can use; there's a whole slew of tools available out there. The question then becomes, do you also want to do some statistical analysis? There are packages that are optimized for that. So it really becomes a question of how rich your data is—the larger the data set, the more sophisti-

cated the tool you need to understand the data.

For me, the main driver is this: At the core is the data. Does the data matter? Depending on how rich the data is and how much it matters, are there meaningful patterns in the data? What are those patterns? You pick the right display to make those patterns visible. Then, if you want to design for a short attention span or for people who just want the key facts, you move to an infographic; if you want to open it up so there can be more exploration, you use an interactive data visualization tool.

With an interactive tool, the question is, do you give people access to all of the data, or do you create a curated data set that contains the key facts

FIGURE 1: **The 100 Most Controversial Pages on Wikipedia** (by language)



and patterns, but you don't put all of it in there because it's not necessary or because it's proprietary or there's something you don't want everyone to see? And in order to get to that, you need to have some data specialists who, depending on the size of the data, have to dig around and analyze it until they get it to a place where it's presentable.

There's a notion out there that if I have a data visualization tool and I connect it to the data set, I will magically understand the data. Not so. You need to have certain skills and understandings so that you know how best to make visible what's in the data. And sometimes there's nothing in the data—there's nothing strange or earth-shaking, or you already knew it or had a sense about it, and there are no major insights lurking in there.

Is there a risk that data visualization can be overused—that it will lose its impact?

This brings me back to infographics. If you ask me my opinion about infographics, I'm sort of skeptical. I understand the value of a well-designed infographic—if it's done well, it can be extremely powerful. But the key is that there has to be something in it that's of meaning, of value.

I think sometimes visualization, because we're moving into a more "visual" world, is used as an attention-getter. If you look at some infographics, they use very saturated colors and large fonts in a way to draw the eye. It's like putting a little sugar out there just to get somebody to pay attention. So it loses its power, but maybe for a certain consumption pattern, it's perfect. I get a little taste, a little flavor, a little visual stimulus, and I can quickly make sense of it. No harm is done, but no deep insights are generated.

Can visualization be overused? In certain contexts, it is overused—the visual event that's being created is not warranted. But you also have that danger with videos, when people are creating animations. Where there is data that has value in it, visualization will play its role, either to help communicate the

value that's there or to help people find the value that's there.

Where do you see data visualization going, and what may be some of its long-term applications?

I said before that visualization is a communication tool. It's either a communication tool for me to understand the data as a data analyst, or a tool to communicate what I found in the data to others. The question here is the sophistication. Will this become part of a general tool set that's available for free—meaning I will buy a computer or a smartphone and it will have this capability built in—or will I have to buy some sort of specialized software?

The trend for the last few years has been that more and more has to go through the browser. Many people, even heavy-duty users, would like a way to use their browser so they can access the tool and view the data. That puts pressure on what can be done in the browser, whereas if you build specialized applications that are optimized for, say, rendering data points very quickly, that would be easier, but it would require either a download or a special license, and that will make it harder for people to become part of the conversation. So the trend is toward making it more ubiquitous in terms of what you can visualize and how you can visualize it, and there the browser plays a key role as a gateway to view the data.

I think the other trend is that visualization is used in different contexts to serve different purposes. For example, there are certain visualizations that I would call entertainment. They're designed to entertain, to move, to elicit an emotion. Yes, there's an overall theme, but it's not about being able to reliably infer certain things. It's more to get a feeling about the data.

Then there are tools that are more analytical, so that I can ask questions. If I do certain interactions, I get the same display, whereas if there's a more artful visualization, it changes each time how it chooses to display the data.

Another trend is the diversity of display types that are becoming available,

and that really depends on the specific need and also on the value proposition in the data. It's the same as in other contexts—if there's something that has special value, we will build specialized tools to extract that value.

Do you have a favorite resource to recommend for those of us who want to learn more?

There's Alberto Cairo, who has written some great books that are not just for specialists. He comes from a journalism background, but he's also a data visualization researcher.

To me, what's interesting is what's happening with the newspapers. If you look at *The New York Times* and *The Washington Post* and *The Guardian*, they're using visualizations in their storytelling. And I don't mean infographics—I mean interactive data visualization for a lay audience to better get a sense of the data and understand and explore it.

I think the other thing to think about is how it's being consumed. Some of the visualizations require a large screen; otherwise, it is difficult to make sense of them. If it's being consumed on a smartphone, that immediately limits what you can do and how much richness you can communicate. So I would be guided by the attention span of your audience. That guides what you can do and what you should be doing in terms of what you present. **SLA**

RESOURCES

- Scatterplot matrix (<http://mbostock.github.io/d3/talk/20111116/iris-splom.html>)
- Motion Chart: <https://bost.ocks.org/mike/nations/>
- Treemap of folder hierarchy of one million computer files: <http://www.cs.umd.edu/hcil/millionvis/million-treemap.gif> at <http://www.cs.umd.edu/hcil/millionvis/>

Attending Industry Conferences: Sharing Back

WRITING A PAPER THAT SUMMARIZES YOUR CONFERENCE ACTIVITIES AND THE BENEFITS THAT WILL ACCRUE TO YOUR ORGANIZATION WILL HELP YOU OBTAIN FUNDING TO ATTEND FUTURE CONFERENCES.

BY MIKE GRUENBERG

In every industry, attending conferences and trade shows is considered an integral activity, especially for association members. There are regional meetings, national meetings, and even specific topical meetings that are held for the benefit of the membership and the overall profession.

Aside from learning about the latest industry trends and earning continuing education credits, the reasons to attend these conferences are varied. Some people may want to bond with old friends and/or meet new friends; some may want to see the latest products being presented by industry vendors; and some may be looking for a new job. All of this is playing out while attendees spend 3-4 days examining the latest technologies, dining with vendors and colleagues, and meeting with salespeople and their company executives

while also trying to find time to see the local sights.

But in these days of declining budgets, the costs associated with employees attending industry trade shows are drawing more and more attention from finance departments. Considering the time spent out of the office and the travel, hotel, and event costs associated with industry meetings, many organizations want to see a healthy return on their investment in this area. If there is even a hint that attending an association conference or show is not worth the expense, that budget item likely will be reduced or even eliminated.

Here's the thinking: What did our organization gain by allowing Alice to attend her association's conference in Denver? We think she learned a lot there, but so far, we haven't been apprised of the benefits. We just know she went to Denver for a few days to

attend an association conference.

That analysis may sound somewhat caustic, but all too often, the people who have budgetary responsibilities think of business travel in terms of how it benefits the *organization*, not you as an individual. The result is a "tug of war" between the benefits and costs of attending, and every person who submits a request to management to attend a conference gets caught up in this struggle. What, then, must you do to ensure your request is not only approved, but welcomed by your superiors?

It's all about communicating with management, meeting the organization's expectations, and showing results. If you handle these responsibilities, the management of your library will likely support sending you to the next association conference (and future ones as well). Failing to meet even one of them,

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At the conclusion of any conference you attend, you should write a brief paper that describes the sessions you attended, your meetings with vendors, your takeaways from the conference, the expected benefits that will accrue to the organization, and any “to do” items.

on the other hand, will probably result in less money being made available to you to attend association conferences, both now and in the future.

Communicating with Management

Communication is probably the most important aspect of the equation. It is essential that you provide information to your supervisor as to why you would like to attend the upcoming conference. In your communication, you must demonstrate that you really believe your attendance will benefit the organization—and be able to enunciate the reasons why.

The first step is writing a memo to your supervisor explaining why you would like to attend an upcoming conference. For example, the primary rationale could be that you need to see a new product being unveiled by your favorite vendor. That product, you could say, might be very helpful in reducing the library’s research costs. By citing concrete benefits in explaining why you should attend, you will be more likely to enroll your supervisor’s support.

Another rationale for attending may be to research multiple vendors to better align the subscription service you are currently receiving with certain aspects of your organization’s activities. Where better to interview multiple vendors in a relatively short period of time than at an industry conference?

Perhaps there are certain continuing education courses being offered that will help you be more productive in your day-to-day activities, thus making you

more of an asset to your organization. “If I take the following course offered at the conference, I will be able to anticipate and more effectively deal with coming trends in technology that we will be facing in our industry,” you could write. That rationale would be tough for any manager to turn down.

In sum, it is important to share with your management in advance how much you—and they—will benefit from your attendance at that conference in Denver. You may be surprised to learn that your supervisor(s) may have certain ideas about what you should do, whom you should see, and what you should try to accomplish while you’re there.

Meeting Your Organization’s Expectations

OK, so your request has been approved. You’re going to Denver to the annual association meeting, and one of your goals is to see a new database retrieval tool being unveiled by a vendor that, incidentally, commands a healthy portion of your budget. What are other vendors doing in this regard? What is the industry stance on this technology? Your organization expects you to know the answers to these questions, and the conference in Denver may reveal this information.

Perhaps your library needs more resources on a certain topic. At the conference, there may be multiple vendors exhibiting products that can fill this need. Your mission is to determine which one will best suit your library’s needs, then deliver a report to your supervisor after the conference on the

results of your findings.

Much of this can best be explained using a concept called “the internal sell.” Whether you work in a university, public, government, or corporate library, you need to demonstrate to your management and colleagues why your conference attendance activities are important for the well-being of the organization, not just for you. By enrolling them in your goals and understanding theirs, they will more readily support your efforts.

Sharing Results

At the conclusion of any conference you attend, you should write a brief paper that describes the sessions you attended, your meetings with vendors, your takeaways from the conference, the expected benefits that will accrue to the organization, and any “to do” items. (Of course, if those “to do” items affect others in your organization, you need to note that as well.)

Although this exercise may not be a requirement of your organization, it should be part of any post-conference evaluation, especially if you intend to attend future conferences. Simply put, the paper should address the following questions:

- Why did you go?
- What did you learn?
- How will your attendance help your organization?
- Who else will be affected?

For example, suppose your sales rep, her boss, and the president of their company were all present at the conference. That group of people might not get together at any other time during the year, so going to Denver was incredibly important in regard to strengthening your relationship with that vendor. When writing your paper after the conference, you might include something like this:

Based on my meeting with our sales rep, their VP of sales, and the president of the company, we will get their new e-content database for no cost for

six months. We will be able to test it with our patrons, and if it does everything they tell us it can do, we can purchase it at a greatly discounted rate for the first year of the subscription. We will be the only library in our industry to have this database for our research, giving us an incredible advantage over our competitors.

That is a concise statement of the results of the meeting, which you had told your supervisor about in advance as part of your rationale for attending the conference. You saw the need for the meeting, scheduled it, attended it, and are now sharing the results for all to see.

Resolving issues (e.g., “I met with the head of customer service, and that pesky problem we’ve been having with the billing is now resolved”), meeting with higher-ups in the vendor’s chain

of command, or just having a frank discussion with your sales rep are all important details in the sharing back of information to your organization. Too often, information professionals attend conferences, gain incredible knowledge, and meet with important people, yet fail to report those activities widely within their organization. If it’s not written down, it doesn’t exist.

The responsibility for securing approval and funding for attending association conferences really rests with you. It’s no longer a given that just because you work in a library, you can go to a library association’s meetings. Justification comes in the form of demonstrating to management that these meetings are worth the expense because you will gain knowledge that will improve the library’s services, become more efficient, and, in turn, benefit the organization.

Although your organization may not have formal reporting requirements for those who attend conferences, I recommend that you always produce a document that tells why you attended, what you did there, who you met with, and the follow-up that is expected. Be sure to explain how the library and the organization will benefit from your attendance at the conference. As a result, you may find that funding for future conferences becomes more readily available. **SLA**

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Outreach and Instruction in the ‘Secret City’

A poster presented at SLA 2017 highlighted the results of an outreach and instruction initiative by staff at the Los Alamos National Laboratory Research Library.

BY KELLY DURKIN RUTH, MI, AND MICHELLE MITTRACH, MLIS

The Los Alamos National Laboratory (LANL) serves the United States by applying scientific excellence to solve national security challenges. The LANL Research Library furthers the laboratory's mission by providing essential knowledge services that support the research life cycle and by providing a suite of tools and services that promote collaborative science.

In 2016, the library's strategic planning efforts identified outreach services as a focus area for supporting several concurrent initiatives going forward. One of the challenges in delivering an outreach and instruction program at the laboratory is its own legacy of secrecy and its partitioned (closed vs. open) environment. This paper summarizes the planning and implementation phases of the library's outreach and instruction program.

Program Background

The library has supported the scientific research community at the laboratory since the early days of the Manhattan Project and has been a leader in shaping the discourse in scholarly communications and information science. From 2008 to 2013, the library's in-house

search tool, OPPIE (named in honor of the laboratory's founding director, J. Robert Oppenheimer), hosted locally loaded digital content that was discoverable through a Google-type search interface using the library's repository, which supported both internal and external customers. When the library decided to retire OPPIE and adopt a commercially available abstracting and indexing database (Web of Science) as its platform for full-text searching, a move to a more distributed subject-based instruction and outreach approach began to gain momentum.

During this time, the laboratory began running retirement projections for its research staff and estimated that upwards of one-third of the total full-time equivalent (FTE) workload of the laboratory would be retiring within the coming decade. In 2016, the laboratory announced plans to hire more than 5,000 new staff through revamped recruitment strategies and through a student-to-staff pipeline and robust post-doctoral program. With the availability of new search tools and services and the shifting demographics of the laboratory's workforce, the need for a change in approach to outreach and

instruction became apparent.

Planning and Implementation

An initial brainstorming session was held to discuss outreach goals, identify our core target audience, and determine the content we wanted to highlight in our outreach. The brainstorming session also addressed the measures of success and the instruction formats (e.g., in-person trainings and web tutorials) that would be needed. At the time the session was held, there were two librarians working a total of 0.5 FTE on outreach; no librarians were officially dedicated to instruction.

Two events occurring concurrently with the library's outreach planning process influenced our next steps. First, the laboratory's day-long employee onboarding process underwent scheduling changes. Previously, library staff had been allotted 10 minutes immediately before the lunch break to deliver a high-level overview of library services and resources to all new employees. The revamped orientation day omitted the library from its presentation schedule.

Although this change closed an outreach avenue for the library, the staff who had been responsible for the library overview recognized that their 10-minute pitch was ineffective, inconveniently scheduled, and unengaging for new employees. The schedule change created an opportunity for us to refresh our outreach efforts to new employees.

Second, a librarian on the outreach team became involved with a labora-



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tory-wide early-career working group. This group turned into an excellent networking opportunity through which other discipline-specific new employee groups, including an engineering newcomers group, were identified. Informal conversations with working group members confirmed that new hires were not aware of library services and resources.

Together, the changes in the new employee onboarding program and the relationships built through the early-career working group gave us an opportunity to rethink how and where we conducted outreach. We wanted our outreach efforts to be informed by user needs, so our next step was to reach out to our audience for more information.

We chose to start with the engineering newcomers group and researchers hired within the past six months.

Although we were no longer involved with the lab's new employee orientation, our contacts in Human Resources provided us with contact information for recent hires.

We presented a brief informational overview of our resources and services to these employees in an e-mail message and asked where they would prefer to receive library training and what they wanted to learn. We gathered and aggregated this feedback using LimeSurvey, an open source survey toolkit. Although this may not be a novel technique for many other libraries, our approach was new in the context of our library and institution.


Next Steps

A summary of the feedback we received is shown in our poster below. Our


response rate was only about 10 percent, but for a first pass, we were happy to receive the responses we got and identify opportunities for further engagement.

Our outreach team plans to send similar e-mails to all new employees every quarter. Our intent is to engage employees while they are still settling into the organization, but after they have acquired a basic understanding of their work flow and information needs in their new roles. As we communicate with new employees, we also hope to gather input on how to "de-jargon" our outreach materials. LANL is a land of acronyms, and we at the Research Library want to do what we can to help new employees adjust to their work environment.

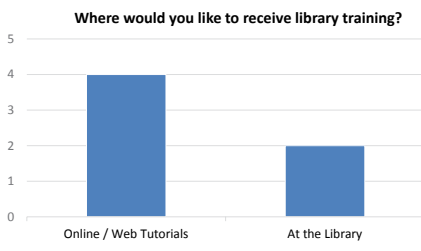
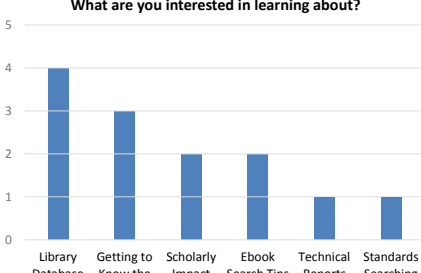
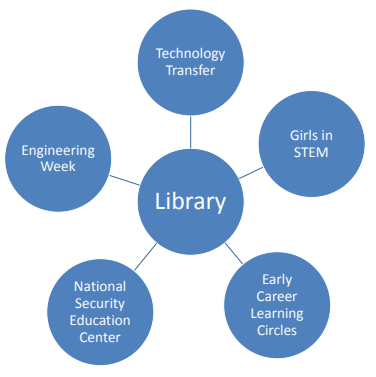
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Building an Outreach & Instruction Program at Los Alamos National Laboratory



Kelly Durkin Ruth & Michelle Mittrach
Research Library, Los Alamos National Laboratory

Background & Issues	The Pilot Project & Initial Responses	Next Steps
<p>Los Alamos National Laboratory, established in 1943 at the height of World War II, is a research and development intensive laboratory with a focus on national security science.</p> <p>Changes at the library and institutional level support the need to refresh outreach efforts.</p> <p>Hiring Trends The Laboratory offers summer internships and year-round appointments to undergraduate, graduate and post-master university students.</p> <p>The Post-Doc program is a major pipeline for the next generation of scientists within the Laboratory, with 70% of post-docs converted to regular staff scientist positions.</p> <p>Library Strategic Plan A goal within the plan is to advance research by facilitating a network of expertise and services that promote collaborative science.</p> <p>A supporting objective is to develop and implement a robust outreach program.</p> <p>Changes in the New Hire Experience In late 2016, as a result of employee feedback, the laboratory's onboarding orientation was revised. The updated program omits the Research Library.</p> <p>Library staffing resources .5 FTE dedicated to outreach 0 FTE dedicated to instruction</p> <div style="display: flex; align-items: center; margin-top: 5px;"> <p>10 minutes: Time librarians had at New Hire Orientation (right before lunch!)</p> </div> <p>Objective & Questions Our goal is to create an outreach and instruction program that is based in best practices and responsive to researcher needs.</p> <p>As a first step, we wanted information on the needs of new or recent hires to the lab.</p> <p>What self-identified information literacy needs do early career and new hires to Los Alamos National Laboratory have?</p> <p>What self-identified formats do these employees prefer for library instruction?</p>	<p>In Spring 2017, an online survey was sent to two groups of new employees</p> <ul style="list-style-type: none"> Engineering Services Newcomers' Networking Group Select employees hired in the past 6 months <p>Where would you like to receive library training?</p>  <p>What are you interested in learning about?</p>  <p>Challenges Our institution has unique elements that require creative thinking to work around, including:</p> <ul style="list-style-type: none"> A review and release system for information intended for publication Computing and networking limitations due to security concerns Controlled access to researchers' offices and work sites 	<p>Survey Plans</p> <ul style="list-style-type: none"> Run the survey at least quarterly for a larger data pool Review survey questions for jargon and clarity <p>Building Relationships & Getting Out of the Library</p>  <ul style="list-style-type: none"> Tailor outreach needs based on survey and researcher feedback Create workshops and online training modules based on instruction framework Pursue Training Staff Qualification Program certification to include library instructional offerings in LANL's course catalogue <p>Acknowledgements Alan Hernandez, Barbara Fronzak and Valerie Maestas for facilitating distribution of the initial survey</p> <p>Elizabeth Coronado, Kelsey Neal, Sandra One Feather and Cassandra Casperson for their interest in library project partnerships</p> <p>Elaine Deschamp and Andrew Gordon for poster review and feedback</p>

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E-books: Integrating Deep Searching across Platforms

Libraries have been making their collections more searchable for years, but too often they resist promoting full text searching, even when that capability is available (and paid for).

BY DAVID STERN, MLS

Libraries have been buying electronic books for a number of years, but there is still a great deal of confusion and frustration among users—and that's assuming they ever even find these materials. It is time for libraries to create more seamless, powerful, and consistent search options that make using e-books intuitive.

Many libraries still have not seamlessly integrated e-book materials into their collections or their search options. Often, library interfaces still isolate the searching of e-books from the searching of traditional paper books. Frequently, the library catalog searches only paper materials (and perhaps videos), but users are sent to a separate search page for e-book searching.

In addition to differences in how libraries handle their purchased and leased e-books, there are also inconsistencies in whether HathiTrust books are included in the catalog, whether they are searched as a default, and whether all or only public domain titles are included in a default catalog search. Some catalogs do not include open access books or any books that require a password to be created for individual access.

Imagine a library user's frustration with having to learn to navigate so

many branded search interfaces and so many different search, downloading, and printing options. In some cases, users are sent to numerous platform-specific search tools, as there are not always comprehensive or satisfactory federated or discovery search tools that

The gold standard would be to create a deep searching tool that could search across catalog metadata records, full text platforms, local repositories of scanned materials, and finding aids that describe material that is not yet completely indexed or searchable.

cover all the titles within the numerous e-book packages.

Some search tools can provide a basic level of cross-platform searching, such as ProQuest's Summon Service or locally developed EBSCO Discovery Service clusters. However, the combined results from these searches do not offer the enhanced navigation that is possible, as each platform has its own proprietary methods to dig deeper into the related and more granular materials. You have cross-platform searching, but you lose some precision and exploratory

navigation with these merged e-book search tools. You also often lose the ability to bookmark, highlight, and save progress markers when you use cross-platform interfaces.

Even if a library does offer cross-platform searching and some level of coordinated interface control, it probably does not provide one of the most powerful aspects of e-books—the full text searching and inter-book navigation that is possible when you have an electronic database of marked-up full text items. Libraries pay for full text, but many do not expose the power of full text searching to their users; instead,

they still rely on very limited subject searching of catalog metadata for discovery. Libraries have been enhancing the searchability of their traditional catalogs with table of contents material for years, but they have often resisted moving away from the limitations of a catalog by promoting full text searching, even when that capability is available (and paid for).

More complete recall and greater precision are possible through full text searching of e-books, which will make discovery of paragraphs, chapters, and even image captions possible. Libraries must develop and/or adopt interfaces that integrate deep searching and full text manipulation into regular search processes.

Another possibility is to provide deep searching of materials we do not own but can provide on demand as e-book material. This would mean moving from

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limited loading and searching of patron-driven acquisition records in our catalogs to cross-publisher full text searching. One example is the full-text searching of thousands of recently published books that is now possible on the Title Preview platform. Once someone uses this deeper search to identify an important title, a library user can either repeat the search (using author/title data) in the regular library catalog or seamlessly purchase an e-book version (assuming the library has configured pre-created book purchasing agent arrangements). This scenario would provide full text searching across a very broad domain of materials.

The gold standard would be to create a deep searching tool that could search across catalog metadata records, full text platforms (HathiTrust and various commercial and open access materials), local repositories of scanned materials (i.e., digital collections and institutional repositories), and finding aids that describe material that is not yet completely indexed or searchable. That would be a true discovery tool. For the moment, libraries should at least provide links to the deeper searching we pay for and develop interfaces to make such searching and navigation more intuitive across various platforms. **SLA**

Info Research

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To support our new outreach initiatives, our librarians are looking into options for e-learning platforms and training programs to improve instruction skills. We are also encouraging librarians to consider serving on lab committees as a form of outreach.

Framing our outreach efforts as a form of relationship building has proven beneficial over the past few months. Approximately 20 outreach sessions were conducted between February and July, reaching approximately 210 staff and students and covering topics such as RASSTI (the review and approval system for scientific and technical information, which is managed by the library), ORCID, standards, and library resources. Librarians also conducted several one-on-one research consultations and participated in laboratory-sponsored events, including Engineering Week, a student safety awareness fair, and the LANL Student Picnic.

One of our outreach sessions led to two follow-up research consultations (on literature searching and research tools) with the principal investigators for a Girls in STEM initiative. With our support, they were able to obtain several grants, and one of the researchers was recognized as LANL's 2017 Distinguished Student. We hope the steps we took in this experience will serve as a model for what we can do for our researchers to move our outreach and instruction efforts forward. **SLA**

