Interactive, Collaborative Scholarship: Mammal Species of the World

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The dynamic, rapidly changing state of mammalian taxonomy, documented by an enormous literature, long hampered the compilation of a detailed, complete world checklist.” So begins the introduction to the third edition of Mammal Species of the World (MSW), co-edited by Bucknell Professor of Biology DeeAnn Reeder and Don E. Wilson (Smithsonian Institution). The work is the foremost international reference for identifying and verifying recognized names and taxonomies of some 5,400 mammals. The print publication is widely used by biologists and students throughout the world. The MSW also exists in digital format: Bucknell has hosted a searchable online version of the reference work for almost a decade [www.departments.bucknell.edu/biology/resources/msw3/](http://www.departments.bucknell.edu/biology/resources/msw3/).

In 2014, for the forthcoming fourth edition of the work, edited by Reeder and Kristofer Helgen, Reeder approached Library and Information Technology to redesign the website and database. The online fourth edition of the MSW is notable within Bucknell for being the first to bring together both Enterprise Systems Development and Digital Pedagogy and Scholarship on a project of this magnitude. Library and Information Technology staff members Leo Botinelly, Luyang Ren, Dan Mancusi, Emily Sherwood, and Diane Jakacki have led a design team to partner with Reeder and create a dynamic new editorial and publication application that will accompany the printed fourth edition. Botinelly and Ren created a platform built upon the Bucknell application framework, based on open source components, which supports the presentation of information in both text and dynamic visualizations. The new MSW allows Reeder’s thirty expert collaborators to contribute to the edition by adding to, augmenting, and correcting existing information about individual species. The application produces visualizations of mammalian taxonomies that are automatically adjusted as contributors input new content. The ability to update the information in the reference is key, as taxonomies change and new species are discovered.

One particular challenge for the team was to ensure that this type of collaboration would be controlled by Reeder as lead editor, and involved implementation of a complex permissions and publication structure. In the completed version, Reeder will have final editorial say over submitted content. The collaborators are currently testing the editorial interface in anticipation of a 2017 publication. Reeder hopes that in future years MSW Online will be robust enough to not only augment but perhaps to replace the print version. The data set is available for download, making it a truly open resource, and because the interface allows batch updates there will be no need to wait for subsequent editions. The MSW will continue to grow as users contribute to it. When published, MSW Online will offer a unique digital text used by scholars and students all over the world.

The students placed second in the student research competition held during the conference.
From the Vice President for Library and Information Technology

The poster and banner below went up in Bertrand Library at the beginning of March. After seeing them, numerous students and faculty members expressed their appreciation.

Our reason for putting these up was simple; we wanted to affirm our values as the intellectual center of the university, where all are welcome. Our work in the library and the services we provide are enabled and strengthened by the diversity of our campus community.

Cheers, Param
Bucknell’s Journey to the Cloud

by Ken Flerlage, Business Intelligence Functional Architect | ken.flerlage@bucknell.edu

In the last issue of The Next Page, Param Bedi, Bucknell’s Vice President for Library and Information Technology, discussed our enterprise information systems transformation. We are moving to numerous “best of breed” applications, all of which are Software as a Service (SaaS) offerings running in cloud environments. With so much of our data transitioning to these new systems, we’ve also had to rethink our data and business intelligence platforms. As we began to architect this solution, we asked ourselves if there were any advantages to running these platforms in the cloud as well. We eventually made the decision to build our data warehouse on Amazon Web Services (AWS). Since we began this effort, we have learned a lot about the platform including its many advantages and numerous services not generally available in on-premise data centers, as well as many things that need to be considered in a cloud deployment.

The advantages of public cloud platforms are probably too many to mention here, but let’s focus on some of the key ones. First of all, cloud deployments, by their very nature, result in simplified infrastructure management since an organization no longer needs to manage and maintain physical infrastructure. This also means that organizations are able to avoid many of the capital investments associated with infrastructure refreshes and expansion.

Cloud services also offer lots of scalability options. Most on-premise data centers can handle vertical scaling (increase of resources on a server) and horizontal scaling (addition of new servers to share the load), but AWS also offers Auto-Scaling. Consider a web application which requires additional processing power during one month of the year. Auto-Scaling will automatically create additional load-balanced servers, and when the load returns to normal, it can be automatically downsized. Of course, Auto-Scaling cannot be used on all AWS services, but when it can be leveraged, it’s a game-changer.

Another significant advantage of cloud services is that they often allow shifting of the focus from disaster recovery to high availability. Amazon currently has 16 regions across the world and each of those regions has 2-5 availability zones (essentially, separate physical data centers). Many AWS services have the option of built-in high availability across zones. For extra protection, this can be taken even further, creating high availability solutions that span regions.

In the past decade or so, data centers have gone from big iron to decentralized servers to virtualization to public cloud. But AWS is disrupting that even further by pushing towards the elimination of servers altogether (at least from their customers’ standpoints). An example is their serverless computing solution, Lambda. In a traditional environment, applications and source code require some server to host and instantiate them. With Lambda, servers are no longer a requirement—developers simply write their code, deploy it, and pay for the compute time that is consumed.

And perhaps the most important advantage of cloud services is the agility and flexibility they provide. But, with this flexibility comes additional challenges, there are some key things that must be considered when deploying solutions in the cloud. Once a concept has been proven and begins moving it through its lifecycle, some governance must be put in place. In addition, universities are held to high standards when it comes to protecting personally identifiable information, so security controls and standards are critical.

At Bucknell, we’ve established a governance committee specifically for this purpose. The goal of this committee is to create a balance between the agility and flexibility of the cloud, while preventing a free-for-all environment, which would inevitably lead to poorly managed systems, lack of standards, and porous security. Through this group, we’ll establish standards, policies, and procedures; we’ll implement best practices around security, cost management, and architectural integrity; and we’ll act as a broker for others on campus, promoting consistency in the management of security, compliance, and costs.

To summarize, there are a great many advantages of the public cloud, in general, and AWS specifically. But organizations must be sure to balance the flexibility of these environments with a governed approach. At Bucknell, we’re still learning and still working all this out, but we fully expect to obtain the full value of the cloud while also ensuring that our solutions are secure and properly managed.
Computer science educators have a problem – too many students drop out of introductory courses or choose not to continue studying computer science after the first course. The reasons for dropping out are many: some students don’t realize how much work a programming course will take, others may fail to fit in with their peer learning group, or they may not be interested by the problems posed in the course. In the summer of 2016, Darakhshan Mir, Assistant Professor of Computer Science, obtained a course redesign grant to develop a new class to introduce computer programming to non-majors. She worked with three undergraduate students to develop a class that would introduce students to computer science through their own experiences.

The new class, “Creative Computing and Society,” was introduced in the fall of 2016 and quickly filled. Students in international relations, psychology, English, studio art, management, theater and dance, classics, sociology, and education learned how to program using Processing, a programming language designed for greater interactivity and immediate feedback. The initial class included 7 first-years, 4 sophomores, 6 juniors, and 7 seniors.

The goal is to give students the ability to create projects immediately relevant to their own interests and to teach the concepts of computer science at the same time. Critics of the traditional computer science curriculum complain that the normal introduction-to-programming class is too attached to the engineering and mathematical origins of computer science. This turns some students off of the subject before they are even aware of the amazing things you can do once you know how to program.

The class was designed in collaboration with three Bucknell undergraduates: Jingya Wu ’19, Sierra Magnotta ’18, and Anushikha Sharma ’18. The group settled on a set of course goals and learning outcomes before moving on to develop a series of labs, assignments, readings, and projects. The first few weeks begin with short programming assignments to build a foundation of knowledge. The first small project focuses on creative thinking and the second on a data-driven project that arises out of students’ individual interests. The topic of the final project is open and lets students highlight any of the skills they have learned throughout the semester.

Students presented their projects to the Bucknell community at an end-of-semester event hosted in the library. Projects included visualizations of gun control policies and suicide rates, drunk driving prevention, wealth inequality, Latinx graduation rates, property and women’s rights, and texting while driving. Other projects presented simulations of impaired driving and social privilege, while others took a more artistic approach that combined music, political action, and stress reduction.

“After creating this course, I’ve noticed that I’m better able to articulate my needs and ideas to others. I think that this experience of taking an idea and implementing it to make a real change at Bucknell has made me a lot more confident in myself. I don’t feel as intimidated to share my ideas with other people or to work to make them a reality,” said Magnotta after working on the course design and serving as a teaching assistant during the first semester the course was taught.

Professor Mir and her three students presented a paper on their course design work at the SIGCSE ’17 (Special Interest Group on Computer Science Education, part of the Association for Computing Machinery) conference held March 8-11 in Seattle, Washington.
What character would you like to add to the cast of PBS’s television drama, *Downton Abbey*?* Visiting Assistant Professor Erica Delsandro ’02, M’05 (Women’s and Gender Studies) posed this question to students in her Fall 2016 course, “The Literature of *Downton Abbey,*” and challenged them to create a realistic and relevant character whose background and plotline fit within the parameters of the popular TV series. Delsandro developed the assignment with the goal of cultivating in her students what she termed “historical empathy: the marriage of an analytical and emotional understanding of a historically-contingent person, event, or position.” Through the use of course texts, novels, and secondary sources, students centered their characters vis-a-vis the overarching plot of *Downton Abbey,* other characters in the series, and the cultural and historical context of the period.

Librarians Jason Snyder ’95, M’98 and Carrie Pirmann guided the class through an exercise with an imagined character, and modeled the process of identifying key researchable topics that were pertinent to creating an accurate profile. They worked with Delsandro to craft an in-class exercise which encouraged students to explore both literary and historical resources that could be used to inform the development of their character profile.

Snyder says that collaborating with Delsandro and Pirmann on this project was very rewarding, and that “assignments like this really bring the research process alive for students. By using both primary and secondary sources to create something both contextual and novel, the students gain a much greater understanding of how exciting literary and historical research can be.”

Associate Professor of History David Del Testa’s course, “Introduction to Historical GIS,” enables students to hone their skills as historians while at the same time learning ArcGIS. The students’ culminating assignment consisted of a substantive research-based project centered on the San Francisco Bay Area from 1960-1990, in which they incorporated both historical and spatial analysis facilitated by ArcGIS. The topics chosen by students were often wide-ranging, and have included: an examination of the Black Panther Party nutrition programs and their impact on community health; the impact of sports arena construction on neighborhoods; the development of parks and their relationship to property values; and the relationship between punk music venues and property values in San Francisco.

Work on the projects was scaffolded throughout the semester, and supported by a partnership with librarians Nancy Frazier and Carrie Pirmann, who lead three information literacy sessions for the class. Through these sessions, students were introduced to a variety of resources, including newspapers, historical texts, and data sets from the Census. Del Testa also required his students keep research journals, in which they recorded information about sources they had located and possible next steps in the research process.

Frazier remarked on her involvement in Del Testa’s course, “David excels at transforming his classroom into an active learning environment, where students are guided in developing the skills of thoughtful historians. Their use of GIS combined with historical research enables them to make new connections to the material that would not be possible in a traditional research paper.”
New Library and Information Technology Staff

**TONI BAYLETS-HOLSINGER, IT Procurement and Asset Analyst**
Toni joined Library and Information Technology in January as the IT Procurement and Asset Analyst. In her role, she will focus on supporting the transformational growth of IT at Bucknell by applying best practices in IT procurement, licensing compliance, and asset management. She comes to Bucknell with over 26 years of IT experience at Penn State University, where she was a Senior Software License Administrator and Contract Coordinator. Toni is ITIL certified and has earned Advanced Software Manager, Expert Software Manager, and Software Asset Manager Practitioner. She is a native of the State College area, residing there with her husband, son, daughter, and Yorkshire terriers.

**DON SPIDELL, Director of Technology Architecture and Operations**
Don joined Library and Information Technology in November 2016 as the Director of Technology Architecture and Operations. He is the lead technologist and strategist responsible for assuring Library and IT provides a current, highly-responsive technology infrastructure. Before joining Bucknell, Don worked as the Uptime Preservationist for Nxtbook Media in Lancaster. He grew up in Chatham, New Jersey and came to Pennsylvania to earn his Bachelor's degree in Computer Science from Messiah College. He currently lives in Hummelstown with his wife and two kids. Don is an avid runner and enjoys competing in 5k and 10k races and half marathons.

**JEFF TOLBERT, Postdoctoral Fellow in Digital Scholarship**
Jeff started as Postdoctoral Fellow in Digital Scholarship in November 2016. He is studying digital scholarship and pedagogy practices at Bucknell, interviewing faculty to determine what strategies and tools have been useful and what areas can be improved. He comes to Bucknell from Japan, where he briefly taught English while finishing his dissertation. Jeff's Ph.D. is in Folklore from Indiana University. His areas of interest are supernatural belief, place studies, popular culture, and the interplay of folklore and new/emergent media.
Representing the Generations:  
Dianne Guffey Celebrates 40 Years of Service

When Dianne Guffey came to Bucknell 40 years ago, she was no stranger to campus. Her father worked briefly as a custodian, and her grandfather was once the head of security. Dianne joined the Bucknell staff as a mainframe systems operator; and when the mainframe was decommissioned, she transitioned to systems operator and then systems specialist. Currently, Dianne is a systems integrator, a role she took on in 2005.

Imagine the changes in 40 years! When Dianne started here, there were typewriters and rotary phones in use. There was no campus network, no email, and no desktop computers. Computing involved mainframes, terminals, teletypes, and punch cards. Dianne has seen the installation of the campus network, the introduction of email, and the deployment of desktop computers. More recently Dianne has been involved in major technology shifts such as the move of email and calendaring to Google and the introduction of virtual computing.

Dianne is known across campus for her outstanding customer service attitude. She is known for always completing the job with skill, dedication, and attention to every detail. In 2003, Dianne was awarded the John F. Zeller Award for Support Staff Excellence.

Dianne’s son, Jeremy Dreese ’98, now continues the family tradition as a systems integrator with the Engineering Computer Support Team.

Our heartfelt congratulations to Dianne! We thank you for your service and dedication to Bucknell.

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Scholarship Reception

Library and Information Technology hosted the annual Bucknell Scholarship Reception on March 6, 2017, to recognize articles published within the last year. 126 publications were submitted, representing 71 authors in 25 departments. Professors Mihai Banciu (Management), Mai-Linh Hong (English), and Katharina Vollmayr-Lee (Physics and Astronomy) were the featured faculty speakers.

For a full list of publications, see: facultyscholars.scholar.bucknell.edu/
This is what they had to say about us.....

Lauren White @mappingthestars – 30 Oct 2016
"Student labor should be compensated, recognized, and provided leadership opportunities* thank you #s4a #BUDSC16

R.C. Miessler @iconodule – 30 Oct 2016
#BUDSC16 is one of the highlights of my year. By far my favorite conference and a great group of people.

Carrie Pirmann @librariancarrie – 30 Oct 2016
.@DianeJakacki speaking to the need for sustainability, teamwork, & proj mgmt in cross-institutional projects #BUDSC16 #s4a

Joseph Koivisto @Joseph_Koivisto – 30 Oct 2016
Theme of #BUDSC16: Early undergrad research engagement, supporting digital publishing, research as making (content, platforms, data sets)

Emily McGinn @EmMcGinn – 29 Oct 2016
Yes undergrads have big ideas too! Give them the space, the time, and the resources to think them through. #BUDSC16

Alexis Henshaw @Prof_Henshaw – 30 Oct 2016
Check #BUDSC16. We’ve been tweeting out great digital research from Education, History, Int’l Studies, Ethnic Studies, etc.. #ScholarSunday