

P. Bryan Heidorn

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CHRONOLGY OF EDUCATION

- 1996 Doctor of Philosophy in Information Science, 1997, University of Pittsburgh.
Dissertation: "Natural Language Understanding for Image Retrieval: Botanical Texts."
Advisor: Professor Steven Hirtle.
- 1983 Master of Science in Information Science, University of Pittsburgh
- 1979 Bachelor of Science in Psychobiology, *summa cum laude*, University of Pittsburgh

CHRONOLOGY OF EMPLOYMENT

- 2019- Professor, University of Arizona, School of Information
- 2008-2018 Director, Associate Professor, University of Arizona, School of Information
(previously - School of Information Resources and Library Science)
- 2007-2008 Program Manager, Division of Biological Infrastructure, National Science
Foundation, Arlington VA
- 2003-2008 Associate Professor, Graduate School of Library and Information Science,
University of Illinois at Urbana-Champaign
- 1996-2003 Assistant Professor, Graduate School of Library and Information Science,
University of Illinois at Urbana-Champaign
- 1995-1996 Instructor, Graduate School of Library and Information Science, University of
Illinois at Urbana-Champaign
- 1991-1993 President and Principle Investor: Hazardous materials software for environmental
compliance, Ben Franklin Grant from the State of Pennsylvania in coordination
with the Center for Hazardous Materials Research, Pittsburgh Software Company
- 1988-1991 Software Consultant: Main client McGraw Edison Power
- 1984-1988 Co-owner and Vice President of Operation: Managed all programming teams,
technical writing, production and customer support with a company peak census of
20-25 employees, Pittsburgh Software Company

1979-1983 Biometrics Lab Technician, Biometrics Research Laboratory, Highland Drive
Veterans Administration Medical Center

SERVICE/OUTREACH

Reviewer for GIST Tech-I 2016, 2018-2019. U. S. Department of State's **Global Innovation through Science and Technology (GIST)** initiative. GIST empowers young innovators through networking, skills building, mentoring, and access to financing to develop startup solutions that address economic and development challenges. As a part of the GIST initiative, AAAS manages and runs the **Tech-I Competition**. The GIST Tech-I Competition is an annual competition for young science and technology innovators and entrepreneurs from 135 emerging economies.
<http://www.gistnetwork.org/GISTTechI2019>

Search Committee Member: Senior Environmental Health Hire Oct 23, 2017-April 2018.

Board of Directors (2016-), and Chair of the Informatics Committee (2013-) for the Organization for Tropical Studies.

Steering Committee: NSF RCN-UBE: RCN-UBE: Biodiversity Literacy in Undergraduate Education - Data Initiative (BLUE Data Network).

Steering Committee August 2017 – present. WorldWide Telescope. The open source WWT displays [astronomical](#), earth and planetary data allowing visual navigation through the 3-dimensional (3D) Universe.

Steering Committee Sept 2017- present Unified Astronomical Thesaurus. The Unified Astronomy Thesaurus (UAT) is an open, interoperable and community-supported thesaurus which unifies the existing divergent and isolated Astronomy & Astrophysics thesauri into a single high-quality, freely-available open thesaurus formalizing astronomical concepts and their inter-relationships.

Paper Review; 2017. Journal of Information Science.

NSF Proposal review Computer, Information Science and Engineering, June 2017.

Board of Directors, 2015-May 2017. The Biodiversity Group. July 2015-2017. Facilitate program development and fund raising for education and science mission. Includes grant writing and donor relations. <https://biodiversitygroup.org>

Senior Investigator: Seeing Speech. Award #1244687 NSF BCC-SBE: Seeing Speech: Building a Community. Dates: September 15, 2012-August 31, 2015. PI: Diana Archangeli, UA Linguistics, \$255,272.00.

External Advisory Committee NSF – RCN-UBC "Enhancing Data Discovery and Usability for Inquiry in Biology Education", with University of Michigan, Philip Myers pmyers@umich.edu (Principal Investigator) Award#: 1247821 PI Dec 2012-

Univ of Arizona Office of Research and Discovery, Strategic Planning Workshop: Informatics August 27-28, 2015 at Biosphere II. Executive Planning Committee and Section Leader for a breakout session on Analytics.

July 2015, Review of NSF CAREER proposal for SBSRI and a faculty member in the Anthropology Department. Written reply and video conference.

Paper Review: TAXON 2012. Frontiers in Ecology and the Environment Paper review 2013; Letter review 2013; Earth Science Informatics, 2015;

Heidorn, P. B. (2013). Workshop participant. "NCEAS Workshop to Conceptualize an Institute for Sustainable Earth and Environmental Software (ISEES)". National Center for Environmental Analysis and Synthesis, Santa Barbara, CA. August 12-13, 2013.
(<https://www.nceas.ucsb.edu/news/nceas-workshop-conceptualize-institute-sustainable-earth-and-environmental-software-isees>)

[Rapporteur, Public Access to Federally Supported R&D Publications, National Research Council, National Academy of Sciences, May 14-15, 2013. Video and slides at:
\[http://sites.nationalacademies.org/DBASSE/CurrentProjects/DBASSE_082378\]\(http://sites.nationalacademies.org/DBASSE/CurrentProjects/DBASSE_082378\).](http://sites.nationalacademies.org/DBASSE/CurrentProjects/DBASSE_082378)

External Advisory Board, Data Federation Consortium. <http://datafed.org/> Attend yearly face to face board meetings and two calls per year. Activities focus around NSF site visits, community involvement and latest advances that should focus developments at DFC. The goal of the DataNet Federation Consortium is to assemble national data infrastructure that enables collaborative research, through federation of existing data management infrastructure. The DFC seeks collaborations through six communities of practice that organize national expertise. The areas of expertise needed to build the national infrastructure include: Science and Engineering; Facilities and Operations; Technology and Research; Policies and Standards; Education and Outreach; and Sustainability. Each community of practice defines the related infrastructure and works with an extended group of experts to track evolution of the technology.

Hackathon

DataUp Steering Committee: April 2013: Funding for DataUp development ended in 2012. This meeting was intended to gather stakeholders to help to chart a course for where DataUp should go next. Report generated.

Dean of Libraries Search Committee Member Feb 2013-May-2013

Encyclopedia of Life, Science Advisory Board 2012-

Global Biodiversity Informatics Outlook (GBIO) Working Group to create an outlook document and roadmap to inform priorities for the global biodiversity informatics community over the coming decade. Includes, conference calls, several meetings at GBIF, organization of a conference in July 2012 for about 100 and input document for e-Biosphere, in Feb 2013.

Semantic Intelligence Group for the Encyclopedia of Life. Recruitment for a workshop in September 2012. Development of an action plan for implementation of a semantic web-enabled version of EOL.

Integrated Digitized Biocollections (iDigBio) IT Standards Workshop March 28-30, 2012.

iDigBio Augmented Optical Character Recognition Working Group. January 2012-2015. Organize a working group to write a best practices document for semantically enhances OCR. Organize a workshop in December 2012 in conjunction with iDigBio summit.

Sustainable Environment –Actionable Data (SEAD) a DataNet Initiative, Advisory Board.
<http://sead-data.net/>, April 2012- .

University Service: UA Research Computing Steering Committee (RCSC), a committee formed by Chief Information Officer (CIO) and the Senior Vice President for Research (SVPR). The committee will guide the administration, access, utilization, and development of our central research computing resources (April 2012-present); Campus Data Management and Curation Advisory Committee (2011-present).

Ad Hoc committee on the Future of SBSRI (April-May 2011);
(2012); SBS 1885 Review Committee 2012. SBSRI Director Search Committee (May 2011-Sept 2011). Research Computing Governance Development Committee (May 2011-Dec 2011);

Board of Directors: J.R.S. Biodiversity Foundation <http://www.jrsbdf.org/> (2007-2013). Grants Committee 2008, 2009; VP 2010; President 2011 and 2012. I left the Board in 2013. JRS disperses about two million dollars a year to about 20 biodiversity informatics projects in the developing world. I act on the grants committee, lead the executive committee and conduct site visits for grant oversight. This included teaching in Costa Rica and Kenya in the past three years.

Grant Proposal Review for African Travel Bursaries for the Taxonomic Database Working Group, 2011.

Organization for Tropical Studies, Science Committee Member 2011-2016. Includes three day board meeting at La Selva Biological Research Station in Costa Rica each year and about 4 conference calls a year, development of a science report including science planning for the stations writing and selection of conference grants.

Organization for Tropical Studies, Science Committee Member 2016-. Vice Chair of Informatics and Board of Directors. The BOD makes the bulk of the important decisions of OTS and works closely with the staff to turn our mission and vision into viable programs. It has fiduciary responsibility for ... OTS, including the success of its education, research and outreach missions and the effectiveness of its resource management. The Board meets at least four times each year in person and electronically. The Board accomplishes its work through standing committees, ad hoc committees, working groups, and other formats as needed ...The Board has fiduciary responsibility and contributes to strategic planning about academic priorities ... The Board questions, reviews, and contributes to annual plans and budgets developed by the management team (the President, CEO, Costa Rica Director General, Vice-Presidents, and Station Directors), as well as long-range strategic plans and multi-year budget estimates. OTS seeks to populate the BOD with individuals who have achieved leadership stature in academia, government, business, philanthropy, conservation, research, or the nonprofit.

sector.http://www.ots.ac.cr/index.php?option=com_content&task=view&id=65&Itemid=264

Consortium for the Barcode of Life, Database Working Group. 2011-2012. Conference calls every other month and once a year meeting. Develop recommendations for data policies and information technology for the CBOL.

Life Science Working Group, NSF DataNet Data Conservancy 2010-2011. A couple of meetings a year to set data management policy.

Journal Review: Ecological Informatics, 2011; Frontiers in Ecology and the Environment 2012; Frontiers in Ecology and the Environment 2013;

Guest Speaker, Phoenix Public Library with its first Staff Development Day, Burton Barr Central Library, Phoenix, AZ. Dec 11, 2009.

Arizona Library Association Annual Conference Roundtable convener on "Libraries as Environmental Information Centers". AZLA Conference, Glendale, AZ Dec 8-9, 2009.

Arizona County Library Association Meeting, Dec 7, 2009.

International Digital Education Associations committee 2009 held prior to the International Digital Curation Conference (IDCC) London Dec 1, 2009.

Steering, Program and Publishing Committees e-Biosphere 2008: Biodiversity Informatics, to be held June 2009, London, England.

Taxonomic Databases Working Group committees; Education, Structure of Descriptive Data and Taxonomic Literature.

Service prior to 5 years

Reviewer: Encyclopedia of Library and Information Science 2008; Briefings in Bioinformatics 2007; 2010; 2017ASIST 2007, 2008; JASIST 2007; Journal of Biodiversity Informatics 2006, 2008, 2009;

National Science Foundation Biology Division panel reviewer 2006, 2007, also ad hoc reviewer.

U.S. Civilian Research & Development Foundation proposal reviewer. 2006, 2007, 2008.

Microsoft European PhD Scholarship Program, 2007.

Human Dimension of Environmental Systems Steering Committee, UIUC: The mission of HDES is to enhance scholarship on the human dimensions of environmental systems at the UIUC.
<http://www.environ.uiuc.edu/hdes/>. 2004-2006

Current Funded Research Grants and Contracts

NSF 19-543, HDR-Harnessing the Data Revolution “Collaborative Research: Converging Genomics, Phenomics, and Environments Using Interpretable Machine Learning Models.”
NSF Grant #: 1940062 October 1 2019-September 30, 2021. \$237,930. PI: Bryan Heidorn, Co-PI: Tyson Swetnam. Collaborating PIs include Anne Thessen, Oregon State University; Remco Chang, Tufts University; Arun A Ross, Michigan State University. **Our long term goal** is to develop predictive analytics for organismal response to environmental perturbations using innovative data science approaches. Ultimately, we hope to change the way we think about gene expression and the environment. This project will serve as proof-of-concept for an institute focused on predicting emergent properties of complex systems; an institute that would itself foster the development of many new sub-disciplines. **We propose to develop a machine learning framework capable of predicting phenotypes based on multi-scale data about genes and environments.**

State Farm Priority grant, Community Focused Peer Instruction in Information Technology Education. January 2020-Dec 2021. Scholarship funds for senior students to teach coring in local libraries.

NSF 19-543, “Harnessing the Data Revolution (HDR): Institutes for Data-Intensive Research in Science and Engineering - Ideas Labs (I-DIRSE-IL).” PI, Bryan Heidorn. Facilitating science with science-based data sharing including long-tail science. Travel grant to participate in the NSF Ideas Lab workshop on Harnessing Data. May 20-24, 2019. This travel award was for brainstorming facilitated workshop where teams generated ideas for transdisciplinary research. Administered by the Society for Industrial and Applied Mathematics.

United States Forest Service, FS Agreement No. 19-CR-11242300-046. “Preserving Research Data from Forest Service Experimental Areas in Arizona.” PI, Bryan Heidorn. The Research & Development branch of the U.S. Forest Service operates four long-term experimental areas from its office in Flagstaff, Arizona. We are starting a project to 1) digitally preserve and organize and 2) publish the research data from the oldest of these sites: Fort Valley Experimental Forest. Fort Valley holds paper-based research data and related materials dating back to 1908.

SI2-SSE: Visualizing Astronomy Repository Data using WorldWide Telescope Software Systems, NSF/ACI Software Infrastructure for Sustained Innovation PI Bryan Heidorn, Co-PI Douglas Roberts. WorldWide Telescope (WWT) provides a powerful data-visualization interface for data exploration and presentation. Through the open source WWT visualization software systems, this project enables the broader use of institutional and community-based, researcher-oriented astronomy data repositories and computational tools. WWT will be integrated with Astrolabe, a University of Arizona (UA) data repository targeted at researchers with legacy data, mostly supporting scholarly articles, and being built to provide dataset access using the (NSF-funded) CyVerse cyberinfrastructure. University of Arizona. October 1, 2016 - September 30, 2020. \$499,997

Past Funded Research Grants and Contracts (5 years)

La SCALA: Latino Scholars Cambio Leadership Academy. Institute for Museum and Library Services. Ed Cortez & Suzanne Allard, University of Tennessee; Bryan Heidorn, Hong Cui and Patricia Montiel-Overall, University of Arizona. Joint program with University of Tennessee to train Latino/a STEM PhD students in Library and Information Science by

forming cohort of six students, three at each University who will exchange semesters between the two Universities and would take joint doctoral seminars across universities.

The Arizona Astronomy Data Hub. Office of Research and Discover, Accelerate for Success grant. January 1, 2016-Dec 31, 2016 \$171,492

The Arizona Astronomy Data Hub. Office of Research and Discovery, Incubating New Interdisciplinary Research Programs: Start for Success Program. We propose a workshop to bring together a group of experts to create a white paper that will form the basis of a set of grant proposals, leading to construction of a global data hub at the University of Arizona for previously uncurated astronomy data. The University of Arizona is already a center of astronomy and space exploration for the world. We can leverage this expertise and existing astronomy and cyberinfrastructure projects to attract funds to develop a permanent data resource that will help to raise the profile of the University and attract new researchers and new research funds, as well as to serve as a platform for education at the graduate and undergraduate level and an excellent community engagement activity. **July 1-7, 2015 \$4,974.**

Biological Science Collections (BiSciCol) Tracker, NSF Collaborative Grant, P. Bryan Heidorn PI for University of Arizona; Nico Cellinese and Reed Beaman, Steven R Manchester, Gustav Paulay, Norris H Williams, University of Florida; Richard L Pyle, Bernice P Bishop Museum; Robert P Guralnick, University of Colorado at Boulder; Neil Davies, Jonathan A Coddington, Christopher P Meyer, Thomas M Orrell, George K Roderick, University of California-Berkeley. We will develop online resources for linking and tracking scientific collection objects (specimens, sequences, images, etc.) and their digital metadata across multiple institutional collections with heterogeneous information management systems. In current distributed data systems (e.g., GBIF, MANIS, HerpNet, ORNIS), information is passed one-way from data providers to users. No mechanism exists to tag or annotate collection objects and link information to other collection objects or data records and back to the original collections. The BiSciCol team will 1) develop a tracking and annotation system based on globally unique identifiers (GUIDs) and ontological relationships; 2) deploy this system and others in a Virtual Information Appliance (VIA) as a Virtual Machine (VM); and 3) document and implement a set of use cases and practices, based on characteristic physical and digital workflows in the community. NSF Award Number: 0956271 sub-award amount \$229,067.00. Oct 1, 2010 – Sept 30, 2013.

Conceptualizing an Institute for Empowering Long Tail Research. NSF/OCI Software Institutes. Christine Borgman, University of California Los Angeles; Ian Foster, University of Chicago; Bryan Heidorn, University of Arizona; Tom Howe, University of Washington; Carl Kesselman, University of Southern California. This S2I2 Conceptualization project aims to determine whether these obstacles to discovery and innovation can be overcome via the use of software as a service (SaaS) methods. Such methods have proven immensely effective for small and medium businesses due to their ability to deliver advanced capabilities while streamlining the user experience and achieving economies of scale. To determine whether similar benefits can apply for SMLs, the project team will engage with multiple science communities to identify science practices, match science practices against candidate SaaS offerings, and evaluate business models that could permit sustainable development of those offerings. NSF Award Number: 1216884 sub-award amount \$49,819.00 September 2012- August 2013 (no cost extension to Spring 2014).

"Big Data and Long Tails: Addressing the Cyber-Infrastructure Challenges for Research on a Budget." July 28, 2012 to August 4, 2012, Canyons Resort, 4000 Canyons Resort Drive, Park City, Utah. Funded by DOE Institute for Computing in Science (ICiS). Organizers: Christine Borgman (University of California Los Angeles), Ian Foster (Argonne National Laboratory/University of Chicago), Bryan Heidorn (University of Arizona), Bill Howe (University of Washington), and Carl Kesselman (University of Southern California/Information Sciences Institute) <http://icis.anl.gov/programs/summer2012-3b>.

Networked Environmental Sonic-Toolkits for Exploratory Research Project. UIUC Critical Research Initiative. Stephen Downie, Bryan Heidorn, Mike Ward (Illinois Natural History Survey), David Enstrom (INHS), L. Auvil and D. Tchong (NCSA/ALG) To bring together four currently independent research threads to form the foundation for new, cross-domain, high-impact, bio-acoustic research collaboration. Under the rubric of a 3-year field and development study based upon the collection of remotely gathered *Cardinalis cardinalis* (Northern Cardinal) vocalization data (i.e., bird songs). NESTER will leverage participant expertise in the domains of bio-acoustics, music/audio processing, distributed data mining and scientific collaboration to develop a suite of networked environmental sonic-toolkit prototypes. August 1, 2007-August 1 2009. \$298,464.

Centuries of Knowledge: Developing an Effective Data Curation Educational Program. P. Bryan Heidorn (PI) and Palmer, Carole (co-PI). Institute of Museum and Library Services: Librarians for the 21st Century October 1, 2006 – Sept 30, 2009. \$852,503 <http://sci.lis.uiuc.edu/DCEP/>

A Graduate Program for Scientific Communication Specialists: Getting Past the Prototype in Biological Informatics. Palmer, Carole(PI) and Bryan Heidorn(co-PI). NSF/CISE/IIS #0534567 National Science Program: January 2006, End December 2009. \$249,000 <http://sci.lis.uiuc.edu/>

HERBIS: Is the Erudite Recorded Botanical Information Synthesizer. National Science Foundation Biological Databases and Informatics Program. The Peabody Museum of Natural History (YPM), Reed Beaman, to inaugurate the HERBIS project (www.herbis.org), an informatics-based collaboration of the YPM, the University of Illinois at Urbana-Champaign (P. Bryan Heidorn) and the New York Botanical Garden, (Barbara Tiers), with YPM as lead partner. HERBIS will allow for rapid and automated digital capture of botanical specimen images and data from herbarium specimens July 2004-March 2008. \$850,000

Institute for Sustainability of Intensively Managed Landscapes. Collaboration of 28 researchers from 11 departments. Contact: Prof. Praveen Kumar. http://sci.lis.uiuc.edu/ISIML/wiki/index.php/Main_Page UIUC Earth and Society grant <http://www.environ.uiuc.edu/earthandsociety/index.html> May 2006-April 2007.

From Field to Farm Programs; Potential of Organic and Renewable Agriculture to Contribute to Healthy Landscapes Lead Investigators: Michelle Wander, Angela Kent, Gregory McIsaac, P. Bryan Heidorn, Brian Deal, Tracy Twine. *Co-Investigators* Madhu Khanna, John Masiunas, Darin Eastburn. *Cooperators* Deborah Cavanaugh-Grant, Dan Anderson Catherine E. Eastman , Ed Zaborski.. UIUC Earth and Society grant <http://www.environ.uiuc.edu/earthandsociety/index.html>. \$70,0000 May 2006-April 2007.

BioGeomancer. The Gordon and Betty Moore Foundation has awarded a team of institutions, including P. Bryan Heidorn at the University of Illinois, a \$1.6 million grant to build an online automated georeferencing tool. Ended May 2007.

Illinois - North Carolina Collaborative Environment for Botanical Resources. Institute of Museum and Library Services: P. Bryan Heidorn (PI), Jane Greenberg (CO-PI), Assist Professor, Univ. of North Carolina at Chapel Hill. Other Professional Staff at UIUC: Michael R. Jeffords, Ken Robertson, David Seigler, Beth Sandore. Senior Professional Staff at Univ. of North Carolina: Peter White, Director of the North Carolina Botanical Garden. Evelyn Daniel, Michelle Fox. The main goal of this proposal is to design and build a digital collection and user interface methods for herbarium data. The system would include polyclaves for prairie and woodland environments. \$250,000 (Beginning December 2001- End March 2006) [http://www.isrl.uiuc.edu/~pheidorn/papers/IMLS_Publiccopy.pdf].

NSF/ITR/IM+EWF (Proposal #0113918): An Internet Environment for BioDiversity Survey Collaboration and Verification. P. Bryan Heidorn (PI), Michael Jeffords, Carole Palmer and Marylin Lisowski The object of the work is integrate information retrieval with information creation and organization using mobile computing and networking. \$493,993 (Beginning January 2002) [<http://www.isrl.uiuc.edu/~pheidorn/papers/BDCE2001d.pdf>]

“Spatial language and spatial reasoning for understanding georeference information in natural history collection”. P. Bryan Heidorn and Richard Sproat. UIUC Campus Research Board. Support for a Linguistics graduate student to study the NLP tools and theory being developed in the HerbIS and BioGeomancer projects. \$6,120 May, 2004-May 2006.

NSF/Biological Databases and Informatics: Biodiversity and Biocomplexity Informatics: Policy and Implementation, Science versus Citizen Science. P. Bryan Heidorn. Funding for a panel at the Joint Conference for Digital Libraries, 2002. Speakers Meredith Lane, Senior Vice President for Science & Vice President for the Biodiversity Research Group, Academy of Natural Sciences of Philadelphia; Stanley D. Blum, Research Information Manager, California Academy of Sciences; Larry Speers, Senior Program Officer for Digitization of Natural History Collection Data, Global Biodiversity Information Facility; Bruce A. Stein, Vice President for Programs, NatureServe; Robert Morris, Professor of Mathematics and Computer Science, University of Massachusetts at Boston.

Unfunded Proposals

Collaborative Research: ABI Development: Breaking the Bottlenecks of Digitization: A Suite of Microservices and Webservices for Object-to-Image-to-Data Transformation. NSF; Division of Biological Infrastructure, Advances in Biological Informatics. Amanda Neill and Jason Best, Botanical Research Institute of Texas; William Moen, Cornelia Caragea, Xiaohui Yuan, Univ of North Texas; P. Bryan Heidorn, Univ of Arizona; James Hank, Harvard Univ; Digitizing natural history specimens in a well-planned and standard way can increase research use and exposure of these collections to heterogeneous audiences while simultaneously reducing physical handling and producing a permanent digital archive (Cohen & Rosenzweig 2006; National Science Board 2005). National and international digitization projects have vastly increased the quantity and quality of digitized images of specimens from many types of biodiversity collections. It is useful to digitally image the specimen as a record of the object, but an image alone is insufficient to allow effective access to and use of the specimen data. Converting the data on specimen labels into semantically

useful, machine processable form is essential for discovery via search engines, distributed databases, and data portals. These conversions are also necessary for sharing annotations and corrections of data across databases so data may be assessed for fitness and then *put to use by the research community*. A key bottleneck faced in the digitization of natural history collections results from our lack of access to robust and scalable processes for Object-to-Image-to-Data (O2I2D) transformations that yield high-quality results in a cost-effective and time-efficient manner. **This project will create a suite of microservices that address the most critical needs for automating the Object-to-Image-to-Data transformation process for biodiversity collections.** The multidisciplinary project team combines expertise in biocollections management, information sciences, digitization workflows, software engineering, and complex data and project management.

Publications (Journals; Peer reviewed)

Heidorn, P. Bryan, Stahlman, G., Steffen, J. (2018) [Astrolabe: Curating, Linking and Computing Astronomy's Dark Data](#). The Astrophysical Journal Supplement Series 236 (1), 12p.- arXiv preprint arXiv:1802.03629, 2018

Brooks, C. F., Heidorn, P. B., Stahlman, G., and Chong, S. (2016). Working beyond the confines of academic discipline to resolve a real-world problem: A community of scientists discussing long-tail data in the cloud. First Monday, February 2016 (<http://firstmonday.org/>).

Heidorn, P. Bryan (2011). Biodiversity Informatics. *Bulletin of the American Society of Information Science and Technology*, August/September 2011. (http://www.asis.org/Bulletin/Aug-11/AugSep11_Heidorn.html)

Heidorn, P. Bryan (2011). "The Emerging Role of Libraries in Data Curation and E-science." *Journal of Library Administration* 51, no. 7-8 (2011): 662-672. <http://www.tandfonline.com/doi/abs/10.1080/01930826.2011.601269>.

Heidorn, P. Bryan (2008). Shedding Light on the Dark Data in the Long Tail of Science. *Library Trends* 57(2) Fall 2008 . Institutional Repositories: Institutional Repositories: Current State and Future. Edited by Sarah Sheeves and Melissa Cragin. (<http://hdl.handle.net/2142/9127>).

Heidorn, P. Bryan and Annette Olson (2010). The National Biological Information Infrastructure. In (Eds.) Marcia J. Bates and Mary Niles Maack. *The Encyclopedia of Library and Information Science*. DOI: 10.1081/E-ELIS3-120043271

Heidorn, P. Bryan, Palmer, Carole and Wright, Dan (2007). From Bioinformatics to Biological Informatics Specialists. *Journal of Biomedical Discovery and Collaboration*. (2)1. [<http://www.j-biomed-discovery.com/content/2/1/1>]

Hong, Cui, Heidorn, P. Bryan (2007). The Reusability of Induced Knowledge for the Automatic Semantic Markup of Taxonomic Descriptions. *Journal of the American Society for Information Science and Technology*. 58(1), p. 133-149. [<http://hong.fims.uwo.ca/Research/jasist06.pdf>]

Palmer, Carole, Heidorn, P. Bryan, Wright, Dan and Cragin, Mellisa (2007). Graduate Curriculum for Biological Information Specialists: A Key to Integration of Scale in Biology. *International Journal of Digital Curation*, Vol 2, No 2 (2007), p31-40. (from 2nd International Digital Curation Conference, Glasgow, Scotland, November 21-22, 2006.)

Jane Greenberg, Bryan Heidorn, Stephen Seiberling and Alan S. Weakley (2006). Growing Vocabularies for Plant Identification and Scientific Learning. *Bulletin of the American Society of Information Science & Technology*. June / July 2006.

Bishop, Ann Peterson, Bruce, Bertram C. Lunsford, Karen J. , Jones, M. Cameron, Nazarova, Muzhgan, Linderman, David, Won, Mihye , Heidorn, P. Bryan, Ramprakash, Rajeev and Brock, André (2004). Supporting Community Inquiry with Digital Resources [Journal of Digital Information, Volume 5 Issue 3](#) Article No. 308, 2004-08-24.
<http://jodi.ecs.soton.ac.uk/Articles/v05/i03/Bishop/>

Heidorn, P. Bryan (2004). Publishing Digital Floras and Faunas. *Bulletin of the American Society of Information Science & Technology*. Vol. 30. No. 2, December / January 2004.

Heidorn, P. Bryan (2004). A comparison of Biodiversity Informatics and Neuroinformatics, Part 2. *Bulletin of the American Society of Information Science & Technology*. Vol. 30. No. 2, December / January 2004.

Heidorn, P. Bryan (2003). Biological Informatics: A comparison of Biodiversity Informatics and Neuroinformatics. *Bulletin of the American Society of Information Science & Technology*. Vol. 30. No. 1, October / November 2003.

Heidorn, P. Bryan. (2003) OpenKey: Illinois-North Carolina Collaborative Environment for Botanical Resources. , *First Monday*, 8(5) (May 2003). [<http://firstmonday.org/>]

Bruce, B. C., Bishop, A. P., Heidorn, P. B., Lunsford, K. J., Poulakos, S., & Won, M. (2003, January/February). The Inquiry Page: Bridging digital libraries to learners. *Knowledge Quest*, 31 (3), 13-15.

Heidorn, P. Bryan, Bharat Mehra, Mary Lokhaiser. (2002). Complementary User-Centered Methodologies for Information Seeking and Use: System's Design in the Biological Information Browsing Environment (BIBE). *Journal of the American Society for Information Science*, 53, (14), 1251-1258. [<http://www.isrl.uiuc.edu/~pheidorn/papers/Submission3.pdf>]

Lavagnino, M., Bowker, G., Heidorn, P., & Basi, M. 1998. Incorporating social informatics into the curriculum for library and information science professionals. *Libri . International Journal of Libraries and Information Services*, 481, 13-25.

Heidorn, P. Bryan. (2001) A Tool for Multipurpose Use of Online Flora and Fauna: The Biological Information Browsing Environment (BIBE), *First Monday*, 6(2) (February 2001). [<http://firstmonday.org/>]

Heidorn, P. Bryan. (1994). Automatic Content indexing in image databases. Technical Report LIS054/IS94003. Department of Information Science, University of Pittsburgh, Pittsburgh, PA.

Monographs and Book Chapters

Hobern D, Apostolico A, Arnaud E, Bello JC, Canhos D, Dubois G, Field D, García EA, Hardisty A, Harrison J, Heidorn B, Krishtalka L, Mata E, Page R, Parr C, Price J, Willoughby S (2013) Global Biodiversity Informatics Outlook. GBIF Secretariat (Copenhagen): 1–41.

Heidorn, P. Bryan and Sandore, Beth, Eds. Digital Image Access & Retrieval. Papers presented at the 1996 Clinic on Library Applications of Data Processing. Graduate School of Library and Information Science, University of Illinois at Urbana-Champaign, 1997. 190p.

Heidorn, P. Bryan. Shapes from Natural Language in VerbalImage. In P. Olivier & K-P. Gapp (Eds.), Representation and Processing of Spatial Expressions. New Jersey: Lawrence Erlbaum Associates, press date June 1997.

Hirtle, Stephen. C. & Heidorn, P. Bryan. (1993). The structure of cognitive maps: Representations and processes. In Garling, T. & Golledge, R. G. (Eds.), *Behavior and Environment: Psychological and Geographical Approaches*.

Conference Proceedings Papers (*Peer reviewed) (5 years)

Stahlman, G.S., Heidorn, P.B., Steffen, J. (In press). The Astrolabe Project: Identifying and curating astronomical 'dark data' through development of cyberinfrastructure resources. *Proceedings of Library and Information Services in Astronomy (LISA) VIII*, Strasbourg, France, June 6-9, 2017. <https://arxiv.org/abs/1805.06092>.

*Brooks, C. F., and Heidorn, B. P. (2016). The language of biodiversity informatics: Students identifying with science. Paper submitted to the Science Communication Task Force (theme: Using the science of language to identify and address conflicts in the language of science) for presentation at the convention of the International Association of Language and Social Psychology, June 22-25, Bangkok, Thailand.

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Teaching

Biodiversity Informatics: Kenya September 18-24, 2010.

Research Methods, Fall 2010; Spring 2011; Spring 2012; Spring 2013.

Biodiversity Informatics, Fall 2011. Foundations of Information, Fall 2014. Research Methods in Information Science Spring 2015.

Dissertation Committees (Past 2 years)

Holly White, Information and Library Science, University of North Carolina, Comprehensive Examination Preparation. Committee Member, Comp Planned July 2010.

Brian Anderson, SIRLS, Comprehensive Examination Preparation. Committee Member, Planned Fall 2010

Laura Ruth Lenhart, SIRLS, Comprehensive Examination Preparation. Committee Member, Planned August 2010.

Qin Wei Lee, Graduate School of Library and Information Science, University of Illinois, Proposal Approved: Feb 26, 2010.

Xiao Hu, Improving Music Mood Classification Using Lyrics, Audio And Social Tags, Graduate School of Library and Information Science, University of Illinois. Dissertation Pass with revision, April 8, 2010

Hong Zhang, Graduate School of Library and Information Science, University of Illinois. Proposal in preparation.

Xin Xaing, Graduate School of Library and Information Science, University of Illinois, Proposal in Preparation

Eugene Chung, Linguistics, University of Illinois. Dissertation Awarded January 21,2010