ANNUAL MEETING COVERAGE

Inside ASIS&T
8] A Look at ASIS&T 2009 | Photo Montage
9] 2009 ASIS&T Award Winners

Features | ASIS&T 2009 Plenary Sessions
17] Tim Bray Encourages Innovation — by Steve Hardin

Special Section
24] Introduction | A Decade of SIG/USE: Celebrating SIG/USE and Information Behavior Research — by Crystal Fulton, Guest Editor
27] Fifty Years of Information Behavior Research — by T.D. Wilson
35] Early Information Behavior Research — by Barbara M. Wildemuth and Donald O. Case
39] Collaborative Information Seeking and Sharing: The 9th Symposium of SIG/USE — by Nadia Caidi, Soo Young Rieh and Guillermo Oyarce
42] SIG/USE Live in Second Life at ASIS&T 2009 — by Diane Nahl
44] Forecasting the Next 10 Years in Information Behavior Research: A Fish Bowl Dialogue — by Gary Burnett and Sanda Erdelez

FEATURE

49] Perspectives on DRM: Between Digital Rights Management and Digital Restrictions Management — by Rafal Kasprowski
To the Editor:

Ryan Shaw (2009) published in *Bulletin of the American Society for Information Science and Technology* a very interesting article in which he criticizes my definition of “concept” (from Hjørland, 2009). He wrote:

> Even though concepts are of primary interest in library and information studies, colligatory concepts have been mostly overlooked. Even the most sophisticated theoretical discussions of concepts in the literature tend to equate concepts with classes or categories. For example in his recent survey of concept theories Hjørland (2009, p. 1522) asserts that “[c]oncepts are dynamically constructed and collectively negotiated meanings that classify the world according to interests and theories” (emphasis added). This preoccupation with classification is perhaps understandable in light of the aforementioned focus on scientific domains. The sciences seek to abstract away from unique individuals to generalized classes that can be related by laws. While historians do generalize, they also – arguably primarily – seek to assemble descriptions of unique past events into connected and coherent but no less unique representations. Concepts like “The Renaissance” colligate rather than classify. (Shaw, 2009, p. 15).

I do not find this criticism justified. Consider the following quotes: “Unlike McCullagh, L. B. Cebik insists that colligation is simply a form of classification” (Roberts, 1996, p. 19). And

> The term *colligation* has thus come to have two meanings: the tracing of the connections between events and the grouping of events under appropriate conceptions. One could adopt the procedure of referring to colligation, and colligation, in order to distinguish between the two meanings but this is an awkward and cumbersome procedure. Instead, throughout this book I use *colligation* to mean the tracking of the causal connections between events, and *classification* to mean the grouping of events under appropriate conceptions (Roberts, 1996, p. 20).

These quotes alone should be sufficient to justify my definition of concept, but let me explain by one of the concepts he uses.

Shaw mentions, among other terms, “Renaissance” as a concept, which, according to him, colligates events, but does not classify them. I believe this is wrong (as also Cebik and Roberts found): The concept Renaissance is a fine example of my definitions of concepts: If we have a book on history, some events may be collected in a chapter termed “The Renaissance.” The events presented by the author are thus classified by labels in volumes, parts, chapters or sections. Also, if a library catalog or an electronic database uses “Renaissance” as a subject heading or as a descriptor, documents are being classified under that concept. (But another author or another catalog may have another understanding of Renaissance and either avoid the term or classify events differently under this term.) The term is theory dependent (and has, for example been criticized for underestimating the influence of the scientific revolution). I thus find that this term perfectly matches my definition of concept: “[c]oncepts are dynamically constructed and collectively negotiated meanings that *classify* the world according to interests and theories.”

A more general critique might be that Shaw overemphasizes the difference between science and the humanities: Scientific concepts like “mammal” are in a similar way theory based and not a simple classification of “given” properties.

Despite this disagreement about whether concepts are
classifications, I found Shaw’s paper very qualified and relevant. There is certainly a big need of information scientists looking into specific domains, in this case, history. I do hope that my article about concept theory may be useful for this purpose. It also discusses another concept found in Shaw’s paper: “cup.” And I believe it opens more ways to understand the classification of cups (and any other concept) compared to the two ways (extensionally and intensionally) discussed by Shaw.

References

**Birger Hjørland**  
Professor  
Royal School of Library and Information Science  
6 Birketinget  
DK-2300 Copenhagen S, Denmark  
Email: bh<a>db.dk

**The author’s response:**

Dr. Hjørland advocates for a broad definition of classification as any grouping associated with a concept. If we accept such a definition then we certainly must agree that what concepts do is classify. But such a broad definition obscures an important distinction between grouping *like* things under a concept (thereby arguing for a particular theory of likeness) and grouping *unlike* things under a concept (thereby arguing for a way of seeing those various things as a connected whole). The distinction between likeness and connectedness is particularly salient for understanding the practice of historians. When a historian employs a concept such as “The Renaissance,” she typically is not simply using the concept as a stable label for grouping a collection of like events, but is also proposing a new meaning for the concept. The “theory” upon which the proposed new meaning depends is the narrative in which the events are connected.

Not everyone accepts this distinction. Cebik (1969) argues that no clear difference exists between colligation and classification and that both are simply ways of using concepts. McCullagh (1978) argues that colligation and classification overlap: some colligatory concepts classify and others do not. Roberts (1996) argues that any grouping associated with a concept is classification, except when that concept is a causal process, in which case he calls it colligation. These writers make their arguments on mainly rationalist grounds, proceeding from idealized models of explanation to develop their definitions of colligatory and classificatory concepts.

These arguments have their merits (I find McCullagh’s the most compelling), but for the purpose of knowledge organization, the views of Thompson (1967) are more relevant. Thompson addresses the issue not as a philosopher or a historian but as a teacher of history. He thus wishes to distinguish between classification and colligation on pedagogical grounds. His argument is a pragmatic one: treating colligation as a distinct form of conceptualization has real consequences for the construction of history syllabi. Likewise, I believe that making a distinction
between colligation and classification is useful for designing semantic tools intended to help people comprehend history. The distinction is complicated by the fact that historians’ proposals are usually responses to earlier proposals, so that over time colligatory concepts can acquire classificatory functions as well. As Dr. Hjørland points out, once a colligatory concept becomes so entrenched that catalogers hypostatize it as a subject heading, it is no longer being used to colligate events but to classify documents. Thus he is correct that I should have written “Concepts like ‘The Renaissance’ colligate as well as classify.”

Despite my criticism of his definition of the relationship between classification and concepts, I agree wholeheartedly that Dr. Hjørland’s article about concept theory is very useful for understanding ways of thinking about concepts. My work on colligatory concepts in the domain of history is an attempt to contribute to the program outlined in that article of historicist and pragmatist theorizing about concepts in LIS.

**References**


**Ryan Shaw**

Ph.D. Candidate
School of Information
University of California, Berkeley
Email: Ryanshaw<at>ischool.berkeley.edu
Couldn’t be everywhere in Vancouver? Couldn’t be in Vancouver for the ASIS&T Annual Meeting? This issue offers you the opportunity to discover some of what you missed.

First, we have our always-popular photo coverage of the events and awards followed by Steve Hardin’s reporting of the plenary sessions, which also has risen to the level of a Bulletin tradition. I believe he has rendered this service to us since 1997. My hat is off to Steve. I’ve tried to write up a session or two myself (with unprintable results), so I recognize what a great job he does.

Our special section, as well, deals with an important event at the meeting: the 10th anniversary of one of our most active Special Interest Groups, SIG/USE (Information needs, seeking and use). The SIG took advantage of this milestone to hold several special events and institute some new activities. It inducted 10 SIG/USE Fellows and initiated an annual SIG/USE award for Contributions to Information Behavior. It also sponsored an anniversary panel structured as a fish bowl dialog, and its annual pre-conference activity, the SIG/USE Symposium, was joined by 16 avatars on the ASIS&T Second Life Island – another first for the Society. Crystal Fulton, who initiated the Bulletin coverage and then served as the special section editor, has captured all these events and two more important contributions – two brief overviews of the field of information behavior that can serve as valuable introductions to this field for those of us who are not specialists in the area. The first is by T.D. Wilson, who was also the first recipient of the new Contributions to Information Behavior award as well as one of the 10 fellows. The second, focusing on early research, is by Barbara Wildemuth and Donald Case.

Our last feature is also from an ASIS&T Annual Meeting, but from 2008. I attended this panel and thought it was of particularly high quality. I am very pleased to have a report on it (with some updates). Rafal Kasprowski took on the task of writing it up. The subject is “Perspectives on DRM: Between Digital Rights Management and Digital Restrictions Management.” The panelists considered the issue from many angles. Kristin Eschenfelder of the University of Wisconsin spoke on the basis of her extensive research on digital rights management, especially in relation to libraries and archives. Kevin Smith, scholarly communications officer at Duke University, spoke to the issues of DRM and fair use in teaching and research, while Bill Burger from the Copyright Clearance Center discussed how DRM affects its efforts to provide content licensing solutions. The final speaker was John Sullivan from the Free Software Foundation.
A

SIS&T begins 2010 with great expectations that the work of ASIS&T leaders over the past few years to increase participation and engagement will stimulate more ideas and actions by information professionals around the globe. The 11th Information Architecture Summit http://iasummit2010.crowdvine.com/ will feature Dan Roam and Whitney Hess as keynote and plenary speakers respectively, and the program committee has created a flexible and dynamic program that includes plenty of time for professional interactions and networking. We are excited about a new summit on Research Data Access and Preservation http://ASIS&T.org/Conferences/IA10/ResearchDataAccessSummit2010.html that will be held in conjunction with the IA Summit. Reagan Moore, the architect of the iRods data grid software system, has organized the event. A series of panels by leading researchers and implementers of large-scale data repositories will address technical and policy issues. This summit represents the digital echo of ASIS&T’s origins as a documentation society devoted to access and preservation of scholarly information and promises to be the linchpin that connects large-scale digital management research to institutional and corporate practice. These two events will take place April 7-11 in Phoenix.

Plans are underway for the 2010 Annual Meeting, chaired by Elaine Toms and Cathy Marshall. Significant changes are planned for this year’s meeting so please stay tuned to the ASIS&T website and associated social media. This year we will be using topical tracks for full and short papers, which will provide in-depth reviewing by experts on those topics. The new short paper submissions will allow researchers with late-breaking or preliminary work to share more details than is possible with posters. We are planning for much later submission dates to get the most recent results to the conference. The SIGs are working on a series of sessions that are interactive and build bridges between innovative practice and research. Alternative tracks such as video and mixed time/space events that leverage social media are encouraged, and we welcome ideas for innovative ways to involve ASIS&T members before and after the conference. The Pittsburg venue will provide a great opportunity for meeting and sharing ideas.

As I noted in the last issue, I am promoting the theme of participation in information science and by information science. I challenged each of you to commit to doing one specific participatory act this year. Some of you have made oral commitments and a few have sent me statements or
One other initiative that the ASIS&T Board is taking is to create an annual ASIS&T lecture. Details will be announced after the April virtual board meeting.

suggestions for how ASIS&T can take more leadership in promoting information science. I welcome your ideas and suggestions and hope you will continue to expand your own participation. One event that I joined in December illustrates a small step in this direction. The Council of Scientific Society Presidents represents 60 scientific societies with 1.4 million scientists and science educators, and ASIS&T is one of those member societies. In addition to an active conference that draws leaders in science research and policy from academe and government, various committees address issues and make recommendations, and ASIS&T has long been an active participant in the Information Technology and Scholarly Publishing committee. In addition to participating on that committee, I joined the Environment and Energy Committee, which is developing a campaign to reduce energy consumption by 20% in 20 weeks. This was a challenge issued by Representative Brian Baird (D-WA) in his talk and taken up in subsequent discussions. The final call and action plan was not completed by the time of this writing, but I believe this is the kind of action we can all take and ASIS&T can promote, so look for details soon. In addition to our individual efforts to use resources wisely, the ASIS&T Board will take one tangible action by holding the spring meeting via teleconference rather than face to face. This mode will not only save Board members travel expenses but also reduce the ASIS&T carbon footprint.

One other initiative that the ASIS&T Board is taking is to create an annual ASIS&T lecture. The Board will support one lecture a year, and a committee of past presidents will select the lecture from proposals submitted. Details will be announced after the April virtual board meeting, and ASIS&T members are encouraged to work with their institutions to consider innovative information science lectures that will enlighten attendees and promote information science to broad communities.
A Look at ASIS&T 2009

Join us throughout this issue of the *Bulletin of the American Society for Information Science and Technology* for a look at some of the work and fun that members and guests enjoyed at the 2009 ASIS&T Annual Meeting in Vancouver. In addition to photo montages and news and pictures of all ASIS&T award winners included here in Inside ASIS&T, look throughout the pages for coverage of plenary sessions and the anniversary symposium conducted by SIG/USE.
2009 ASIS&T Award Winners

Each year at the ASIS&T Annual Meeting, the Society honors the winners of the prestigious ASIS&T Annual Awards. This year’s winners are featured in this section.

Award of Merit

Carol Tenopir, recipient of the 2009 ASIS&T Award of Merit, has had a remarkable career as a researcher, teacher and contributor to the information science profession for almost three decades. A major study of information science scholarship recently found Carol Tenopir to be the most frequently cited researcher in the field and ranked her first in terms of scholarly productivity.

Carol’s research emphasizes a strong user focus while covering the evolution and development of databases, online systems and searching and, more recently, scholarly communications on a broad scale. Her bridging of the research and practice communities is outstanding.

An STM publisher supporting her nomination noted, “Her studies have been unique in bringing an evidence-based rigor to an area that has long been fraught with misinformation and controversy. Her exhaustive studies and their publication have been an inspiration to all those who seek better to understand how scholarly journals have been used and the role they perform for academics. Her studies on the behavioral patterns of academics in their approach to the electronic literature have lain to rest many misperceptions.”

She is an international presence for information science, with over a third of her presentations delivered overseas in more than 18 countries. In addition, she is a popular consultant for national and international firms. Tenopir has authored five books and more than 200 journal articles.

She has been most successful in involving a large number of faculty and students in major research projects, giving them an opportunity to develop research skills and knowledge that immediately contribute to their personal and professional growth. Carol Tenopir has received national awards for teaching excellence from ASIS&T, as well as from the Association for Library and Information Science Education.

For all these reasons and more, Dr. Carol Tenopir, University of Tennessee, is presented with the 2009 ASIS&T Award of Merit.

Watson Davis Award

In recognition of her two decades of continued service to the membership of ASIS&T, Edie Rasmussen is honored as the 2009 recipient of the Watson Davis Award.

Her activities have touched on nearly every aspect of the organization. She has served on five standing committees and five award juries; chaired the 2002 Annual Meeting, and served on a number of other Annual Meeting planning committees; served as Student Chapter Advisor at two schools and Chapter Assembly Representative for Student Chapters; chaired the Pittsburgh Chapter, where she is credited with reinvigorating that group; provided extensive support and activity within a number of special interest groups, most notably SIG/CR; and held the highest level of leadership as ASIS&T 2007 president.

Her efforts on behalf of the profession and the Society go beyond the official roles and leadership positions. One nominator wrote, “Dr. Rasmussen has had a significant but indirect effect on ASIS&T through her mentorship of doctoral students who have become ASIS&T members and contributors.”

One letter of support noted, “One of
Edie’s traits that have impressed me the most over the years is her quiet way of just getting the job done and done at an excellent level.” Another letter stated, “She is a role model for all of us and a wonderful human being…There is no one I know who is more deserving of this Award.” A member of the Award Jury summed it up: Edie is a “member who has made the well-being of the Society as an organization, and of its individual members, a priority in her professional life…Edie is exactly the type of member this award is meant to recognize.” With much gratitude and appreciation, ASIS&T is proud to recognize Edie Rasmussen as the 2009 recipient of the Watson Davis Award.

Thomson Reuters Outstanding Information Science Teacher Award

The 2009 Outstanding Information Science Teacher Award is presented to Diane Kelly, University of North Carolina at Chapel Hill. Dr. Kelly’s courses are integral for preparing future information professionals to apply critical thinking and analytical skills to challenges in practice. Her research in the area of user behavior not only informs colleagues in the field, but also instructs her students who participate in her research projects. She also provides students with practical projects that expose them to real world situations they are likely to encounter in their professional careers. Dr. Kelly’s student-centered approach is appreciated by her students, and her excellence in teaching is recognized by her colleagues. Her teaching performance and her professional activities combine to confirm her merit for this award.

Best Information Science Book Award

The Public Domain: Enclosing the Commons of the Mind, by James Boyle and published by Yale University Press, is a well-written exploration of the mix and balance between intellectual property on the one hand and the public domain on the other. The book provides an excellent overview of where the debate has been and where it will go. Boyle has written an impressive book; it is extremely well-grounded in history and specific about how political philosophy, public policy and society more generally influence cultural expression. The book gives an excellent analysis of the complex history underlyiing issues ranging from Jefferson’s philosophy of innovation, remixing and synthetic biology to Internet file sharing, and as such it will be of interest to many disciplines. Boyle’s eloquent narrative is impressive for telling a tale that begins well before the Internet age and points to the challenges for the “future present” we must all face. This broad outlook will serve students and scholars in information science well as they seek to better understand copyright and its numerous implications for information, systems and the Internet.

John Wiley & Sons Best JASIST Paper Award


This paper evaluates and provides example designs to support a user-subjective approach to personal information management through an empirical study. The user-subjective approach is concerned with the capacity of individual users of their own personal information systems to organize or label material by subjective attributes, such as project, importance and context. Participants in the survey tended to use subjective attributes when the system design encouraged them to act in this way.
The professional merit of the paper is particularly manifested in its methodological and conceptual development. Methodologically, the paper is notable for its care in developing a sample population and the use of multiple forms of data collection, including questionnaires and semi-structured interviews. The study also helpfully covers a range of documentary types, including email, locally stored textual documents and Internet resources. The conceptual contribution of the paper focuses attention on the significance and ubiquity of the issues studied – most contemporary scholars and other information workers store personal information in a number of formats. The paper is also clearly and progressively written and the hand-drawing of design sketches adds to the appeal of the paper. The design recommendations are simple and presumably could be implemented, and their simplicity should not disguise their potential significance.

In summary, the paper is a well-argued and documented, effective, intelligible and potentially useful and applicable study.

**James M. Cretsos Leadership Award**

ASIS&T member Cassidy R. Sugimoto is the recipient of the 2009 James M. Cretsos Leadership Award – an award that recognizes new ASIS&T members who have demonstrated outstanding leadership qualities in professional ASIS&T activities.

Since joining ASIS&T in 2006, Cassidy has engaged in a wide variety of activities to support local, regional and national ASIS&T activities with impressive energy and skillful leadership. Cassidy served as treasurer of the University of North Carolina at Chapel Hill’s ASIS&T student chapter and played a major role in co-founding the Carolinas Chapter of ASIS&T in 2007, serving first as the chapter’s secretary and then chair. As chapter chair she both extended and deepened membership activity with several successful events. She also laid the groundwork for the continual success of the chapter by recruiting high caliber and highly motivated individuals to serve as officers.

Cassidy currently serves as ASIS&T Deputy Chapter Assembly Director. She has been an active member on the Membership Committee, working on an international survey to assess the benefits of ASIS&T to international members, the results of which were published in the February/March 2008 *Bulletin of the American Society for Information Science and Technology*. She was also involved with creating student chapter “Kits,” a collection of resources that will be made available on the ASIS&T website to encourage activity in current student chapters and to assist with the development of new student chapters. She serves as communications officer for ASIS&T’s SIG/ED.

Cassidy’s scholarly pursuits are rich and abundant. She has published in papers in *JASIST* and the *Bulletin* and has been an author of ASIS&T conference papers and posters.

In letters supporting Cassidy’s nomination, she was described as “exactly the type of candidate who has demonstrated the leadership abilities and contributions signified by this award” and rarely would one “encounter someone with such service talent and enthusiasm.”

The James M. Cretsos Leadership Award for 2009 is presented to Cassidy R. Sugimoto.

**Pratt-Severn Best Student Research Paper Award**

Evaluated by the same rigorous standards as papers submitted for the *Journal of the American Society for Information Science and Technology*, the best student research paper is judged on technical competence, significance of findings, originality and clarity of expression. The 2009 Pratt-Severn Best Student Research Paper Award, recognizing the outstanding work of a current student in a degree-granting program in the information field, goes to Katie O’Leary, University of British Columbia, for “Information Seeking in the Context of a
Hobby: A Case Study of a Young Adult With Asperger’s Syndrome.”

O’Leary’s research breaks new ground in a currently understudied area—the information needs and seeking behaviors of young adults with disabilities. The paper uses research on information interaction for serious leisure to frame a case study of information use and meaning of information use. O’Leary’s work takes this line of investigation to a new level by going beyond the mere need for information to illustrate how information seeking by the individual affects quality of life and enhances ability to communicate with others. Furthermore, the research gives useful insights for information professionals who work with disabled individuals to help them understand the information needs and habits of people with disabilities and how the library is used to enhance the individual’s life.

Although the study is limited in its scope by its small sample size, it shows great promise for additional studies of others with similar disabilities or perhaps individuals with similar special interests. The jurors were impressed with the work and believe it shows great promise for O’Leary’s positive future contributions to the information science literature and the practice of librarianship.

Thomson Reuters Doctoral Dissertation Proposal Scholarship

**Heather Piwowar**, University of Pittsburgh, is the winner of the 2009 Doctoral Dissertation Proposal Scholarship for *Foundational Studies for Measuring the Impact, Prevalence, and Patterns of Publicly Shared Biomedical Research Data*. This proposal addresses a very timely topic—publicly shared biomedical research data—with a solid methodology. Much time and effort have been invested in requiring that biomedical research data be available for sharing, with the assumption that this would lead to greater reuse of data and ultimately more effective research. This is an opportune time to study what sharing has occurred and to what effect.

The strengths of this proposal are in the importance of the questions and the originality of the approach taken to address them. The student seems committed to making a significant scholarly research contribution in this area, both in terms of results and tools for further research. This is a significant topic that could impact healthcare and research in information science as well as biology.

**ProQuest/ASIS&T Doctoral Dissertation Award**

The 2009 ProQuest/ASIS&T Doctoral Dissertation Award is presented to **Luann Freund** for *Exploiting Task-Document Relations in Support of Information Retrieval in the Workplace*. This dissertation showcases important research objectives, executed in a rigorous manner and outstandingly presented. Luann’s research examines the relationship between the environment in which the search for information emerges and the document collection searched, with an aim toward achieving more targeted results. The research was conducted in an enterprise workplace and involved that organization’s digital information collection (both public and private) with people who actually do the work and need/use the information. Luann identified core factors that influence the search for...
information in this information use environment, isolating three factors for further examination: work task, information task and document. She developed a methodology to weigh relationships among these factors and utilized a Support Vector Machine method to assign genre tags to the documents in the set. Finally, she integrated this novel process into an existing information retrieval system and experimentally tested it in the working environment. Luanne’s work is an elegant example of the integration of information behavior and interactive information retrieval research to design a system that is seated in human behavior and influenced by the real-world context.

**Thomson Reuters Citation Analysis Research Grant**

The 2009 Citation Analysis Research Grant is presented to **Cassidy Sugimoto**, University of North Carolina at Chapel Hill, for *Measuring Interdisciplinarity: An Exploration of a Novel Metric Applied to ILS Dissertations*. The study will provide a description of the constructs of disciplinarity and interdisciplinarity and then explore measurements used in empirical studies of the latter, focusing on studies of interdisciplinarity indices. An interdisciplinarity index will be proposed along with a study for validating and applying the index.

**CHAPTER AWARDS**

**Chapter-of-the-Year**

Chapter-of-the-Year Awards for 2009 are presented to two worthy chapters: **New England ASIS&T (NEASIS&T) chapter** and the **Potomac Valley Chapter (PVC)**. These two chapters set clear goals for themselves and articulated relevant accomplishments, which included efforts to enhance membership, improve communication and organize programs that drew both members and non-members. **NEASIS&T** hosted 10 business meetings and eight programs, drawing 243 attendees. The chapter continues its commitment to providing no-cost or low-cost programs and exploring new program models, such as the TED Talks Festival. This program provided high-quality content at no cost to the attendees. The chapter also continues to improve its communication with its leadership and membership. This year the chapter augmented its existing Facebook and Flickr tools with a conversion of its website to Wordpress, and creation of program committee and board wikis and a Twitter feed to conduct business, keep members informed about upcoming events and recruit new members.

**PVC** focused much of its efforts this past year on membership recruitment. Using a grant from the chapter development fund, the chapter created a number of incentives for membership and participation, including allowing friends to attend programs at member rates; free student attendance at all programs; and discounted memberships for new professionals. The chapter also developed a student membership award and created a new recruitment brochure that was sent to new professionals and information science programs in their area. The recruitment project is still on-going, but they have already added eight new members. In support of the recruitment activities, PVC planned a variety of programs, both theoretical and practical on a wide range of relevant topics.

**Student Chapter-of-the-Year**

The 2009 Student Chapter-of-the-Year Award goes to the **University of Washington, Information School**.
Student Chapter which began its year with two goals: develop meaningful relationships with information practitioners in the local community and foster ties between information students and students in other departments with similar interests. To these ends, the chapter designed program events to appeal to students in such departments as computer science, visual design and technical communications; broadly promoted its events and activities; provided audio recordings of events for students unable to be physically present; and created cooperative ventures with other organizations in the community. With 15 meetings and events throughout the year, every member attended at least one; the highest attendance was 120 people. For its commitment to its goals and its success in working toward them, the University of Washington student chapter is honored this year.

Chapter Member-of-the-Year

The 2009 Chapter Member-of-the-Year Award goes to Nicole Henning of the New England Chapter of ASIS&T (NEASIS&T). Nicole is the current chair of NEASIS&T and has been the key motivator behind a number of chapter events and publications. Nominators call her the “ideas person” of the chapter and the brains behind the TED Talks Film Festival, which won the 2009 Chapter Event of the Year Award. Her nominator said Nicole “has a unique ability to turn ideas into practical and accessible events.” Nicole’s skill in planning events was noticed by the judges, who were also impressed by her work in developing communication tools for the chapter, in particular her ability to implement innovations that will allow the chapter to communicate over a broader geographic distance.

Chapter Event-of-the-Year

The 2009 Chapter Event-of-the-Year Award goes to two events this year: the Introduction to Content Management Systems Workshop held by the Carolinas Chapter of ASIS&T (cc:asis&t) and Mobile Mania, an event hosted by the New England Chapter of ASIS&T (NEASIS&T).

More than 40 students and professionals attended cc:asis&t’s half-day workshop on content management systems. The workshop introduced ASIS&T to the larger technical community in North Carolina and began building relationships with other professional societies in the area, as a way to promote ASIS&T’s mission and recruit new members. The judges found the event timely, valuable and affordable and were impressed with the chapter’s ability to present such a technical topic in an accessible and introductory manner.

NEASIS&T’s “Mobile Mania: Developing Information Services for Portable Devices” was a collaborative event between the New England and Simmons College chapters of ASIS&T. This event brought together a diverse audience of more than 60 participants, including public librarians, mobile device vendors, freelance programmers and mobile device developers. The judges were impressed by the timeliness of the topic and the way in which the event engaged a variety of participants. As one judge commented, the chapter benefited from the event “by reaching beyond its boundaries to other groups.”

Chapter Innovation-of-the-Year

The 2009 Chapter Innovation-of-the-Year Award goes to the New England Chapter of ASIS&T for the “TED Talks Film Festival.” This event leveraged the free, virtual content from TED to gather together a wide variety of information scientists, developers and librarians. Their approach to grouping and discussing the films impressed the judges. As one judge noted, “This was an innovative way to share a variety of new developments, in an accessible and simple format, at minimal cost to attendees.” NEASIS&T’s efforts are applauded, and other chapters are encouraged to consider using this innovative idea for chapter events.

Chapter Publication-of-the-Year

The 2009 Chapter Publication-of-the-Year Award goes to the Potomac Valley
Chapter of ASIS&T for the PVC blog
The blog connects the other online communication tools of the chapter, such as the chapter website, Facebook page, LinkedIn group and GoogleCalendar. The judges were particularly impressed with the offerings of slidecases and podcasts on the blog, allowing participation to continue after events have occurred. Judges also commented on the professionalism exhibited in the structure and presentation of the blog.

SIG AWARDS
SIG-of-the-Year
The 2009 SIG-of-the-Year is SIG/International Information Issues (SIG/III). One of the jury members summed up the appeal of SIG/III very well: “SIG/III has a well-established pattern of service to the international community as well as to the Society. Their membership makes up in enthusiasm what it may lack in size, and they have a large and very task-oriented executive committee. They communicate effectively with their membership through a bi-monthly newsletter, alternating with one to the executive committee. They bring new members into the association through their InfoShare program, and their paper competition is an excellent mechanism for bringing scholars to the conference who would otherwise be unable to attend. Their international reception is one of the highlights of the Annual Meeting, and they make good use of the event as a venue for fundraising for their many awards. As a SIG, they have very high visibility and as a consequence they make all members, not just their own SIG, aware of ASIS&T’s potential role in international scholarship.” Unlike many other SIGs, SIG/III recognizes that the work of this society is not solely accomplished at this Annual Meeting, but consists of small activities throughout time and space and across national, cultural and linguistic boundaries. Congratulations to SIG/III, and particularly to Aaron Bowen, chair, and all the other officers of SIG/III for being this year’s ASIS&T SIG-of-the-Year.

SIG Member-of-the-Year
The 2009 SIG Member-of-the-Year is Ingrid Hsieh-Yee, chair of SIG/ED. Central to Ingrid’s success as a SIG leader is her open and constant communication with members via Wiki, listserv and most recently, through a survey. She successfully shepherded nine of 12 proposals to acceptance for the 2009 Annual Meeting. Two of these were organized by Ingrid, and she will be presenting in a third. Another mark of Ingrid’s leadership is collaboration among the SIGs. Of particular value to SIG/ED has been Ingrid’s focus on diversity through her outreach to the international, biomedical and archives and museum communities.

As ASIS&T moves forward to integrate the important perspective of our international members, SIG/ED, through Ingrid’s efforts, is playing an important role in realizing that goal. Her nominator concluded, “Ingrid’s the best!” and the jury agreed. Congratulations to Ingrid Hsieh-Yee, the 2009 SIG Member-of-the-Year.

SIG Publication-of-the-Year
The 2009 SIG Publication-of-the-Year is awarded to “Visual Representation, Search and Retrieval: Ways of Seeing,” the June/July 2009 special issue of the Bulletin of the American Society for Information Science and Technology. A jury member commented, “This special issue of the ASIS&T Bulletin, compiled by SIG/VIS, is a varied, high-quality synopsis of major issues in the field of visualization. The number of authors enlisted to contribute pieces for this issue obviously required a great deal of effort on the part of the SIG leaders, and the resulting product is valuable for SIG members, members of the society and practicing professionals.” Another juror wrote, “This is incredibly useful as a primer. Now there is a document to which everyone can refer when discussing these issues.” All jury members were impressed with the variety of topics and general quality of the papers. Congratulations to SIG/VIS, and in particular to Diane Neal, guest editor, for publishing the 2009 SIG Publication-of-the-Year.


**ASIS&T Initiates New Summit Series**

Following on the heels of the successful series of annual Information Architecture (IA) Summits, ASIS&T announces the formation of the Research Data Access and Preservation Summit in cooperation with the Coalition for Networked Information (CNI). The first in this summit series will be held April 9-10 at the Hyatt Regency in Phoenix, Arizona.

The summit is chaired by Reagan Moore with the assistance of an advisory board comprising the following people: William Anderson, Christine Borgman, Hsinchun Chen, Sayeed Choudhury, Michael Lesk, Gary Marchionini, William Michener, Art Pasquenelli, Sudha Ram and Stu Weibel.

This summit will bring together leaders in data centers, laboratories and libraries in different organizational and disciplinary settings to share ideas and techniques for managing, preserving and sharing large-scale research data repositories with an eye toward achieving infrastructure-independent access and stewardship. The summit will engage three kinds of leaders: those from projects with experience in integrating high-performance technologies; those from large scale collaboratories in science, social science and the humanities; and those from institutions coping with the challenges of integrating different technologies and data collections.

Program data and speaker information is available at the ASIS&T website (www.asis.org) and is updated regularly.

---

**The International Calendar of Information Science Conferences (icisc.neasist.org/)**

is a nonprofit collaboration between the Special Interest Group/International Information Issues (SIG/III) and the European (ASIST/EC) and New England (NEASIST) chapters of the American Society for Information Science and Technology, with the additional support of Haworth Press.

---

**News about ASIS&T Members**

Hazel Hall has been named IWR Information Professional of the Year for her outstanding contributions to the information profession during the last 12 months. Dr. Hall is director of the center for social informatics at Edinburgh Napier University and executive secretary of the Library and Information Science Research Coalition. She is an internationally recognized information professional, best known for her research and teaching of information and knowledge management. She also holds a reputation for her active involvement with information and knowledge management practitioners through work with professional bodies, as well as time spent in industry. The award is organized by IWR magazine and Online Information Conference organizers, Incisive Media, and sponsored by the American Psychological Association.

Ingrid Hsieh-Yee, professor at the Catholic University of America (CUA), has been appointed acting dean of the School of Library and Information Science. Hsieh-Yee joined the CUA faculty in 1990 following a teaching stint at the University of Wisconsin-Madison. Her research and teaching interests include organization of information, metadata, digital collections and information architecture. She was named 2009 ASIS&T SIG Member-of-the-Year at the recent ASIS&T Annual Meeting in Vancouver.
Tim Bray Encourages Innovation

Inventor, author, entrepreneur and open source supporter and developer Tim Bray encouraged several hundred people to go out and invent the next great things for the web. The Sun Microsystems Distinguished Engineer and director of web technologies made his remarks at the opening plenary session of the 2009 ASIS&T Annual Meeting. Bray based his talk on the “trivium,” the foundation of medieval education, which combines logic, rhetoric and grammar. His talk discussed each of these aspects in turn.

Bray considered logic first. Computer science people claim to represent the applied branch of logic and technology, he said. He highlighted Ravelry [1], an online community of knitters and crocheters. Users can talk with others, organize their projects and post pictures of their stashes. The site boasts as many as 3.6-million views per day, with 900 new users every day. This successful site features a rapidly growing, highly functional community. And it all came from a single developer, Casey Forbes, done with open source. He and his wife Jessica started designing the site in January 2007. There was immediate strong reaction to their site. They got a few users and listened to them and provided what they wanted. He quoted Casey: “I could talk for ages about how awesome and valuable the beta process was. We learned so much during the first year. I would do it all over again in a heartbeat – start with something that works, get people in it and build it together.” Bray noted there were no IT experts, architecture studies or similar resources. It’s important to understand the subject matter you want to communicate and understand what people want to do with it. He encouraged everyone in the session to “just do it.” He added, “If you have an idea, don’t launch a project planning process; just try doing it. You probably can.”

The Ravelry site is based on Ruby on Rails [2]. Ruby is a computer programming language from Japan. Bray said he would “unhesitatingly recommend” you purchase Programming Ruby 1.9 [3] if you’re interested. Rails is a web framework designed to work with Ruby. It works on the DRY principle: “Don’t repeat yourself.” Every application lives in only one place. The idea is to get you up and running quickly. Bray also recommended Agile Web Development with Rails [4]. Both books will make you think you can create your own website on a particular topic, he said.

Other useful software includes Django [5], based on the Python software. There’s also PHP [6], the framework that proved to the world that a smart person can put up a website quickly without having to spend a lot of time on IT infrastructure. Drupal [7] is another open source content management system. WordPress [8] is the most popular blogging software. Other options include Facebook [9] and Wikipedia [10]. There are a lot of very good and interesting technologies around right now that will enable you to put something up without having to pay anyone or ask permissions. Just do it, Bray said.
Bray next considered the storage and retrieval of data. Consider the problems, he said, facing people using his Facebook page. There’s data about him there. Database design orthodoxy requires a bunch of database tables, and it needs to be updated several hundred thousand times each second. That’s impossible. Also, a lot of the data just doesn’t fit well into the rows and columns of standard database thinking. So we’re starting to see a large number of nonrelational data stores becoming available – most, if not all, open source. CouchDB [11] is a “slick piece of work,” based on Apache, Bray said. Also, Amazon SimpleDB [12], Cassandra [13], Tokyo Cabinet [14] and MongoDB [15] are useful.

Mobile technology is another game changer. Every year, about one billion mobile devices are shipped. A small but increasing percentage are small computers that can use the Internet and have MP3 players and many other applications. What’s the impact? The iPhone, Palm Pre, Blackberry and Android all have a small share of the cell phone market. But they’re a huge proportion of network revenue. Previously, phones weren’t used much on the Internet; now they are. People in emerging markets are becoming able to use mobile phones for less than five dollars per month. Applications based on SMS (short message service) technology are letting them find out how to raise better crops and get other information they need. SMS may not be the best technology, he said, but it’s changing people’s lives. And the customer base is several times the population of North America. Projects may also help feed the hungry, educate the illiterate, and lift hundreds of millions out of poverty.

Next, Bray moved to the grammar leg of the trivium, focusing on text rather than speech or pictures. Bray said he’s been getting static about how technology has been degrading reading standards. He doesn’t buy that. He thinks technology has been helping literacy. The online culture is an epistolary culture – participants write as much as they read. He referred to a Clive Thompson article in September’s Wired [16] that discussed how current Stanford University students, thanks to texting, write more than any previous generation. He quoted from the article, “Before the Internet came along, most Americans never wrote anything, ever, that wasn’t a school assignment.” Bray said, “We’re in the golden age of writing. Sure, a lot of stuff being written isn’t very good, but that’s always been true. We need to consider what it means that the world is home to all these streams of text flowing back and forth all the time.”

Turning to the rhetoric leg of the trivium, Bray asked, “What is the Internet for? What is the killer app of the Internet?” The only answer for the past 20 years has been “the other people on the Internet.” Contacting and interacting with other people is the big thing. A high proportion of that contact is rhetoric.

So how do we communicate? For almost all our history, we had no computers. We got together and talked. Such an arrangement featured immensely high immediacy, as well as immensely low persistence. “Human memory is a very leaky vessel indeed.” The audience size was necessarily small. With the invention of the telephone, the dimension of distance was removed from the human ability to communicate. Immediacy was about the same, and persistence was about the same unless the call was recorded. Then email arrived. We quickly discovered it was essential. Its immediacy is much less than that of speaking. The audience is pretty high. It’s practical for several hundred people to communicate with each other via email. Then came SMS – its immediacy is not quite as high, but better than email. Its persistence is low – users have to keep the messages, and most don’t. The audience is only one. Then came instant messaging. Immediacy is very high. People get messages as soon as the user hits “Enter,” unless they ignore them. The audience is pretty small. Persistence is poor. Then came IRC – group chat. Persistence is good – it gets logged. The audience maxes out at a few hundred. A decade ago, we got blogging. Immediacy is terrible – no telling
when someone will read something. Persistence is very high, though – it’s on the web, therefore in Google, therefore available forever. The other side of it is feed-reading. Persistence is excellent; the audience is huge. The most recent new thing is Twitter – micro-blogging. The flaw, Bray said, is that it’s owned by a company. That’s not acceptable to him. We need to break it out into an open platform so that multiple parties can play, he said. People are working on it. Twitter still doesn’t have a business model, but a lot of people are addicted to it. The immediacy is high; persistence not as good as blogs. The audience is large.

So, Bray said, we observe a pattern that when new modes of communication come over the horizon, we discover we always needed them. Have we invented all the ones we need? Are there others waiting to be discovered? When they are, we’ll find we need them, too. He notes that even with presence of video, communication seems to be becoming more textual.

“Where are the next spaces to be found?” Bray asked his audience. “Why don’t you go invent them? Why don’t you help us all communicate with each other, because that’s the only thing the Internet is for,” he concluded.

Resources Mentioned in the Article

Six information scientists outlined their ideas about the opportunity or chaos facing us in the diversity of digital information environments in the second plenary session at the 2009 Annual Meeting. The presentation followed a rapid-fire format called “Pecha-Kucha,” Japanese for “conversation.” Each panelist was given six minutes and 40 seconds to display 20 slides for 20 seconds each.

Microsoft Research’s Cathy Marshall noted that diversity stems from the way we use and share information. She began with a vignette about the re-use of a picture that was posted in Twitpic, a photo-sharing service associated with Twitter. The picture (of an out-of-place hairpiece or “weave”) was the butt of many jokes. Copies proliferated. In fact, Marshall said, these copies and partial copies – the result of re-use and re-publication – accumulate in all the nooks and crannies of the Internet. There are “giant dust bunnies” under the cloud of information. Copyright law is evolving to support the creative use of material in the growing mashup culture. Even with de-duplication, the same material keeps reappearing. But it’s not quite the same. Each digital copy takes on a life of its own. For example, photos may be re-captioned. Other metadata, both real and fictitious, may be added. Marshall said she’s heard computer scientists say, “The truth is in the cloud.” This means that there’s always a reference copy of data somewhere – the “digital original.” But which manifestation is the original? Does it matter? We agree that it does. For our own material, we have a tendency to designate one copy as the original and to think of it as authoritative. However, when we look at an example (in this case, a student animator’s films that she published on the web), the metadata for each copy is substantially different. Some of it is social – ratings and number of views; some of it is descriptive – tags and characteristics. We should look at digital diversity as an opportunity. There is value in the accumulation. “Because of that,” Marshall concluded, “the truth isn’t in the cloud. The truth is a cloud.”

Elaine Toms, of Dalhousie University in Canada, made a case for getting back to basics and getting the foundation of our house in order. Diversity is nothing new, she said, and we’ve adapted to changing communication tools as they evolve, from the tin cans we used as children through the telegraph, the crank phone, the dial phone, the touch phone and now the cell phone. But now, the diversity is showing up in information. As Jean Tague Sutcliffe put it nearly 15 years ago, “Information has become like the air we breathe, so pervasive that we scarcely notice its existence and yet so essential that we cannot live without it.” Where previous generations focused on physical activities, our activities are in our heads. We receive information like the water flow through a fire hose. We need new tools. We’ve left tool development to technologists. They’ve given us some good tools, but others – such as
requiring a user to push START to turn off the computer – leave a bit to be desired. Why have we not taken the lead? Toms believes we have not put enough effort into defining who and what we are. Our own terminology is misused. We haven’t made connections with other disciplines. There aren’t any up-to-date coherent information technology textbooks with statements of our core principles. This lack is evidence that we don’t know what we stand for. She concluded by asking, “How can we develop tools if we don’t have an integrated conceptual foundation?”

Allison Druin of the University of Maryland began with a story. Once upon a time, she said, children lived with blocks, books, songs, stars, boats and magic dragons that went puff. Then it came to pass that a new day dawned with new technologies – laptops, handhelds, mp3 players and mobile phones – that rose to meet our children. They could now search the online world of knowledge, and they could read stories brought to them by iTunes. Changes came in control, collaboration and community. Children could find a community that cared about what they did. Druin posed several questions: What technologies belong in schools? What changes should we make in the learning process? When should something be public or private? How much knowledge is too much? Druin described the “iChild,” born of the fruits of technology. The iChild is independent; she doesn’t wait for others to explore. She expects to find what she wants to find when she wants to find it. The iChild must ask: Am I really here? Is the iChild destined for the dark side? Technology forces members of the next generation into being passive, addicted consumers. The path begins with learning. Learn to hear what the iChild says, and what it does. It’s not good enough to accept what is; our children expect much, much more. Children can be partners in designs of new technology and content. Give a choice to children. But we also need to open our eyes to see why children and their families use technology wherever they learn. When we understand, new technologies will be born, she said. When this happens, new technologies don’t need to be banished from our classrooms. We need to embrace what cannot be changed. Respect and honor the child. Make it possible for children to love learning and believe in themselves. We can ignore the dark side; we can give up, or we can learn from all this and learn what to do in the future. You can give the blood of new ideas. Druin called upon the audience to give now, before it’s too late. “You can make a difference in the life of a child,” she said.

Gary Marchionini, University of North Carolina at Chapel Hill, believes we should augment the rich texts we use with other media expressions. What does “digital diversity” mean? We are embodied minds, embedded in digitally augmented environments. He showed a series of videos, which he said were pieces of his life. How many senses have you? How many minds have you for each? There’s more to information than text. Get beyond your neighborhood. Get beyond text. We live in a globally connected kind of world. Can we get beyond time? Back or forward in history? He showed fast-forward video work, including scenes from an old movie about Coney Island, last year’s ASIS&T Annual Meeting, the Information Architecture Summit in Memphis.
and a poster session. Is it real? Is it done? He showed videos of bits of his life. They make up his “proflection” in cyberspace – they’re now on the web. What is your identity? You know some of it, but not all of it. Marchionini halted his presentation for 16 seconds. The sudden stop seemed like a long time. He then asked, “How uncomfortable was that?” Returning to his “sensory assault,” he told audience members to trust their bodies: “You can’t have a thousand strong ties, no matter how many social networking tools you have.” Digital media are rich and interactive, but nowhere near as rich and interactive as we are, he concluded.

Simmons College’s Candy Schwartz spoke of the Internet as being participative, collaborative and interactive, promoting content sharing and content creation through open collections and tools. Early adoption spreads more quickly through fora such as Code4Lib and unconferences. Services are distributed and are device and location-independent. Information can be watched, listened to and read. Twitter has become a current awareness and crowd-sourced information delivery tool. All of these developments have led to problems. There’s too much information in too many haystacks, coming from too many channels and friends, and it all takes too much time. What areas do we need to pay attention to, then? One is identity management – we present ourselves in our social networks, professional and personal blended together, but we are also what we publish, what we buy, how we are pictured, what we search, whom we talk with, what we listen to, what we watch and what reflects back to us. Another area of study is ambient awareness – how do all those updates combine to form a sophisticated portrait of an individual? We should be concerned with evolving definitions of friendship – what does it mean when you don’t have to ask your friends “what’s new?” because you know, and you pick up a conversation in the middle. How do we understand “friends” and “followers”? Also, we need to examine the effects of diverted attention and time management. Sophisticated filtering is a research avenue worth pursuing; current filtering is somewhat primitive – it usually requires blocking individuals or blocking specific applications. Finally, we need to consider context. Much of what streams through our online lives lacks context – it may be a snippet of a blog, a piece of a song, one picture, a retweet, a snarl on Facebook, a factoid without surrounding facts. Context is important for understanding and trust. It can be related to location, time, activity or event, any number of things. This is where linked data will play a role.

Andrew Dillon, University of Texas, asked, “Chaos, what chaos?” He added he doesn’t think we’re in danger of chaos at all. Information is part of who we are. He noted there were cave paintings 15,000 years ago. The pace of change increases with time. In a way, it does not matter what happens next – it’s going to happen. Chaos may actually have beautiful underlying aspects. What’s magical is that we can play around it. Perspective is everything. You’ll never get it if you concentrate on the technology or on the information. It’s not about information – it’s about the people. He showed a slide of someone in sub-Saharan Africa wearing a cellphone. Inequality is accelerating – but that’s not where the issue is. Your processing abilities are declining with age. We know what sort of designs we’ll need in 20 years because of that decline. The more we pursue digital, the more it becomes human. When X-rays were first developed, people had to learn how to interpret them. You and the doctor see something different in the same x-ray. We must learn how we interpret and make meaning – the platform is not where the action is. The action is where people are. We get caught up in the fast-changing things: fashion, art, commerce, governance. But culture changes more slowly; that’s what we need to study. “I know where I stand; you need to figure out where you are,” Dillon concluded.

Next, the floor was opened for questions from the audience. Dania Bilal from the University of Tennessee wanted to know about the topic’s...
relationship to library and information science education. Marchionini said instructors should assign videos. For years, many of us have been augmenting our reading lists with things that aren’t texts. Toms said educators should be working on “animation, graphics and new media.” She added it’ll be a long time before text disappears. Schwartz said educators need to cover general principles. Students need to learn tools to be hirable, but it’s about what Dillon said: Get beneath the tools, work with them on a fundamental level.

Mike Koenig of Long Island University raised privacy concerns. An “Exxon Valdez for privacy” has already been predicted. He wonders whether we’ll discover a major country has been maintaining a minute-by-minute log of the whereabouts of its citizens with cell phones. Will that be an Exxon Valdez, or a ho-hum? Toms noted medical data will get distributed; that will be your Exxon Valdez. Dillon said it’s happened and we haven’t noticed it. It’s happening routinely. We’re just barely figuring out how to deal with it. Marshall said the dark part of the Internet is well organized and controlled by people who have this information and sell it.

We have oil on our feathers and don’t realize it. Druin noted it’s already happening with our children. There’ll be more information on them than anyone else.

Shelly Warwick of the Touro-Harlem Medical Library in New York City observed that members of the current generation don’t seem to care about privacy. They live their lives online. They’re used to being invaded. There are other cultures where there’s a lesser expectation of privacy. Maybe our North American culture will change. Druin said it’s the impact of this privacy or public face that they care about. They care when they can’t get a job because of something they’ve done online. It’s hard for them to make the connection between the virtual and physical worlds. Marchionini said Facebook privacy settings have been increasing. Schwartz said it’s not a matter of generations; she’s 61 and not very private on the web.

Interest in the topic remained high as discussion of the issues continued with the speakers and audience members joining in small knots as they headed for lunch when the session ended.
A Decade of SIG/USE: Celebrating SIG/USE and Information Behavior Research

Introduction

by Crystal Fulton, Guest Editor of the Special Section

It hardly seems possible that 10 years have passed since a group of researchers committed themselves to developing a new special interest group in ASIS&T – Information Needs, Seeking and Use (SIG/USE). Our special anniversary year (2009) culminated in celebrations at ASIS&T Annual Meeting in November. This special section of the Bulletin revisits the various conference events that commemorated this anniversary.

SIG/USE began with an initial planning meeting on October 27, 1998, during the 1998 ASIS&T [then ASIS] Annual Meeting in Pittsburgh. Forty-nine people signed a petition to charter the SIG, with another 43 adding their support by email.

In spring 1999 SIG/USE was officially chartered at the ASIS&T Mid-Year Meeting. The following officers accepted their roles: chair, Barbara Wildemuth, University of North Carolina at Chapel Hill; chair-elect, David Robins, Louisiana State University; communication officers, Sarah P. Brown, Yale University Library, and Jane Starnes, Intel Corporation.

The first SIG/USE-sponsored panel occurred at the same 1999 Mid-Year Meeting. The panel, entitled Information Use in the Professions, was moderated by Nancy Roderer, National Library of Medicine, and featured the following panelists: Anne Hotta, Graduate Theological Union, Berkeley; David Burch, William M. Rains Law Library, Loyola Law School, Los Angeles; Debra Ketchell, Health Sciences Libraries, University of Washington; and Marcia J. Bates, University of California, Los Angeles. The first SIG/USE-sponsored panel at an Annual Meeting took place later that year and was entitled, The Influence of Discipline/Domain on Information Seeking Behavior. David Robins moderated the panel, which included Eileen Abels, Marcia Bates and Barbara Wildemuth.

In 2001, Barbara Wildemuth, Ann Peterson Bishop and Ruth Palmquist organized the first SIG/USE Research Symposium, with the theme, Effective Methods for Studying Information Seeking and Use. Six papers were presented and led to publication in a JASIST “Perspectives” section [1].

Membership has grown substantially over the past decade. From a total membership of 84 at the end of 1999, SIG/USE has flourished with a membership of over 300 members in 2009.

SIG/USE continues to encourage research about cognitive and affective information behavior with an emphasis on the following areas [2]:

- shaping and identifying information needs
- seeking (and not seeking) information that will address those needs
- exploring information sources present in one’s context/situation
- retrieving information from available information sources
- sharing information with others
- managing personal information collections
- communicating and collaborating with others concerning an information need or information resources
- personal and group-based information use.

SIG/USE supports a number of events and activities such as organization of the Annual Research Symposium, sponsorship of panels at ASIS&T Annual Meetings, sponsorship of several research and travel awards and
publication. To-date, two monographs have resulted from symposia, the royalties from which support the work of SIG/USE: *Theories of Information Behavior*, edited by Karen E. Fisher, Sandra Erdelez and Lynne McKechnie [3], and *Information and Emotion: The Emergent Affective Paradigm in Information Behavior Research and Theory*, edited by Diane Nahl and Dania Bilal [4]. *Information and Emotion* was named the SIG Publication-of-the-Year in 2008. For its ongoing contribution in all of these areas, SIG/USE was named SIG-of-the-Year in 2008.

**Celebrating 10 Years of SIG/USE at ASIS&T**

A variety of events marked SIG/USE’s 10th anniversary at the ASIS&T 2009 Annual Meeting in Vancouver. A highlight of the festivities was the induction of 10 fellows into SIG/USE’s newly created Academy of Research Fellows. The following researchers were recognized for their work in information behavior research: Marcia J. Bates, University of California, Los Angeles; Elfreda A. Chatman, Florida State University (posthumously); Brenda Dervin, Ohio State University; Raya Fidel, University of Washington; Karen Fisher, University of Washington; Carol Kuhlthau, Rutgers University; Catherine Ross, University of Western Ontario; Reijo Savolainen, Tampere University; Robert S. Taylor, Syracuse University (posthumously); and Tom D. Wilson, University of Sheffield. (Tom D. Wilson was also this year’s recipient of SIG/USE’s Contribution to Information Behavior award.) SIG/USE fellows were nominated by SIG/USE members and voted upon by the SIG/USE Cabinet. Future recipients of the Contribution to Information Behavior award will also be inducted into the Academy.

Fellows were inducted at the SIG/USE 10th Anniversary Evening Reception, held on Saturday, November 7, 2009. Colleagues read biographical sketches reminiscing about inductees’ research careers as they were congratulated as new fellows. A special cake completed the evening. An anniversary poster, illustrating 10 of the theoretical models SIG/USE members chose as some of the most influential models in information behavior research to-date, was promoted at the reception and throughout the meeting.

An anniversary panel, *Celebrating 10 Years of SIG/USE: A Fish Bowl Dialogue on Information Behavior Research Past, Present & Future*, drew together over 125 researchers to explore the future of information behavior research. In addition to speakers Donald Case, Karen Fisher, Heidi Julien and Barbara Wildemuth, the panel featured a fish bowl dialogue, which enabled audience participants to debate the future of information behavior research. As ever, SIG/USE also supported a number of other panels in Vancouver, demonstrating the enduring interest in information behavior research.

Although the official 10th anniversary of SIG/USE has now come and gone, celebrations for this SIG promise to extend through the year with the achievement of another milestone: 2010 marks the 10th anniversary of the SIG/USE Symposium, held annually at the ASIS&T Annual Meeting. Preparations are already underway, and SIG/USE looks forward to welcoming everyone again this fall in Pittsburgh.

**Articles in Celebration of the 10th Anniversary of SIG/USE**

To commemorate SIG/USE’s 10th anniversary, this issue of the *Bulletin* offers articles reflecting on a number of aspects of information behavior research. Articles report on various aspects of our development as a special interest group (SIG), as well as the conference events surrounding our celebrations at ASIS&T 2009. The intent is not only to document our past, but also to probe the important ideas and possibilities for exploration in the next 10 and more years of information behavior research.

The first article considers the historical development of information behavior research. As the recipient of SIG/USE’s Outstanding Contribution to Information Behavior Research Award 2009, it is fitting that Tom Wilson presents this piece as SIG/USE reflects on the development of our research area. Wilson has long been a key player in the field of information behavior. Among his many accomplishments are his theories of information behavior, landmark publications in our field such as *INISS (Information Innovations in Social Services Departments)* [5] and the creation of the online journal *Information Research* [6]. In his article for the *Bulletin*, Wilson revisits his overview of the history of information behavior and projects future directions for this field.

Continuing on this historical theme and drawing upon their SIG/USE anniversary panel presentation, Barbara Wildemuth and Donald Case
consider the early years of information behavior research. Exploring patterns of investigation in our field, they consider the contribution of the pre-1999 period to the foundation and future of information behavior research.

The 2009 SIG/USE Research Symposium explored research possibilities present and future for information behavior research with the theme of collaboration. Symposium organizers Nadia Caidi, Guillermo Oyarce and Soo Young Rieh reflect on SIG/USE’s Annual Symposium, held this year in conjunction with SIG/Social Informatics (SIG/SI). They bring together the main findings from an afternoon of discussing and brainstorming research pathways for collaboration and information sharing in our field.

As much as 2009 marked a 10-year milestone for SIG/USE, there were also firsts to celebrate, in particular, embracing new social technologies for reaching out to members. In addition to our Facebook group, simply called SIG/USE, and our photo gallery in Flickr, members can now follow us on Twitter. All links to social networking tools are available via the SIG/USE website [2], where announcements and full information about SIG/USE and its activities are also found. An exciting innovation has been the integration of Second Life into our conference events. SIG/USE is ASIS&T’s first SIG to develop real estate on ASIS&T Island [7]. Diane Nahl reports on our first experience with incorporating this method of meeting into our symposium and anniversary panel.

Finally, Gary Burnett and Sanda Erdelez summarize the lively discussion from our 10th anniversary panel, Celebrating 10 Years of SIG/USE: A Fish Bowl Dialogue on Information Behavior Research Past, Present & Future. They predict an exciting future for the next 10 years.

The year 2009 was, indeed, an eventful and memorable year. As SIG/USE chair during the year of celebrations, I’d like to thank everyone for their support, in particular Barbara Wildemuth, the SIG/USE Cabinet and all the members who made the anniversary celebrations and this issue of the Bulletin possible.

**Resources Mentioned in the Article**

Fifty Years of Information Behavior Research
by T.D. Wilson

When I was asked to write about 50 years of information behavior research, I initially quailed, partly because I had written a similarly titled piece 15 years ago [1] and was reluctant to go over the same ground again and partly because finding a way through the volume of material is not exactly a trivial task. However, a smaller piece than the previous was required, and I finally agreed. I have tried to draw attention to investigations which, I believe, any researcher new to the field ought to be aware of. Inevitably, because of my background, there is something of a UK bias in this report, but sometimes this inclination is justified by the fact that major, nationwide studies were carried out in the United Kingdom, which were not replicated elsewhere. I hope the reader will find any bias irrelevant to the overall picture.

What did the library and information research world look like in 1959? Very different from today, certainly. Although the computer had been invented some time previously, it was not in general use for the handling of information. In fact, in that year, I was running an information unit in the nuclear energy industry and, knowing of the early work on computer-based indexes, I visited the computer services division and talked to them about a possible replacement for the optical coincidence card system I was using. (This employment, in itself, was novel: that system was only the third such in the United Kingdom at the time.) The computer manager came along to my office to see the system in use and, after a demonstration, looked thoughtfully into the big box containing the cards, shook his head and said, “No, we couldn’t do any better than that!”

Over the past 50 years the computer scientists have certainly discovered how to do better, and today, information retrieval without the computer is almost inconceivable. Clearly, the widespread use of computers and, more recently, the development of the Internet and the World Wide Web have completely transformed the way information is handled in many disciplines and how many ordinary people, as well as scholars and researchers, now think of gathering information.

The Prehistoric Era

Technology is not the only driver of research, however, although we may think of it as the most significant; other environmental factors also affect our view of what problems are important and what methods we should employ to investigate them. It may be useful, therefore, to review the past 50 years in these terms, particularly as others will focus upon other aspects of the research.

If we look back to the era before 1959 and indeed for a time after that, two factors appear to dominate in the history of what we now call information behavior. The first was related to the link between public support and funding for libraries. The need for public libraries in the United States to build public support to ensure that funds were provided through local taxation drove the library surveys of the pre-World War II era. As McDiarmid [2] puts it:

In order to answer the question, “What type of library service is needed in the community?... a great deal must be known regarding the area to be served. What are the important factors in the library’s community environment? What social changes have altered this environment? These are questions which require historical, geographical and social data and, hence, an important part of an effective library survey is a study of the community itself. (p. 11)

T.D. Wilson is professor emeritus at the University of Sheffield, UK. He can be reached by email at t.d.wilson<at>shef.ac.uk
The consequence of this approach was that users were discussed generically, as members of particular occupations or ethnic groups, as in the Westchester study [3], or as members of significant groups in the community. For example, Quigley & Marcus [4] reported on membership of the College Woman’s Club, *Who’s Who in America* and “other key people,” including teachers and ministers of religion. Studies of how individual users behaved in relation to libraries appear to be lacking in this era.

It seems curious that this concern with the make-up of the community served by a library or information service appears to have disappeared from the research literature. In a related area, the Pew Internet and American Life projects present a demographic picture of Internet use in their various reports (for example the reports on *Networked Families* [5] and *Degrees of Access* [6]) and perhaps it is time that information use was explored in a similar way.

The second major factor in the era before 1959 was World War II and this for several reasons. First, the amount of scientific and technological research increased enormously as both sides sought to improve their war machines, and there was a consequent production of large numbers of scientific reports. Most of these reports were of restricted access but, nonetheless, the organizations concerned (particularly governmental organizations) had to manage them. Secondly, at the end of the war vast amounts of scientific and technological documentation were made available, especially the material produced in Germany and made available to Allied researchers after the war. These two factors constituted a significant part of the information explosion, which was the subject of much debate. The term is used today to describe the explosion of information following the introduction of the World Wide Web, but it originates in the 1960s, by which time, not only was much of the former secret information in wider circulation, but the various programs for the peaceful uses of atomic energy were also generating enormous amounts of research and consequent publication, and there was growth in research and development spending in other industry sectors.

Towards the end of this era a significant event took place in London, the Royal Society Scientific Information Conference of 1948. The aim of the conference was set out in a report of an earlier conference, the Royal Society Empire Scientific Conference of 1946 [7], which asked the following of the society:

> …to convene a conference of the libraries, societies and institutions responsible for publishing, abstracting and information services, in order to examine the possibility of improvement in existing methods of collection, indexing and distribution of scientific literature, and for the extension of existing abstracting services. (p. 11)

Given the theme of the conference, it is not surprising, perhaps, that little attention was given to information use; however, one paper on the subject still deserves our attention. This exception was Professor J.D. Bernal’s paper, *Preliminary analysis of pilot questionnaire on the use of scientific literature* [8], which may well be the earliest published paper in the area of information use. It is remarkable that a major scientist, a crystallographer and physicist (and probably one of the most outstanding scientists never to have won the Nobel prize – although a number of his students and associates did) should find the time not only to carry out this work but also contribute another paper to the conference, as well as editing the initial notes and playing a full part in discussions. The paper itself has now become outdated because of developments in technology, but the methods employed and the questions asked could well be adapted for a comparative study, 50 years on.

1959 to 1979

In the context of the pre-history of information behavior research, we can see that 1959 was something of a watershed. Nowhere is this clearer than in the papers presented at the International Conference on Scientific Information [9], which was planned as a follow-up to the 1948 conference. The contents list of the *Proceedings* reveals that, by this date, how information was sought and used was on the research agenda. Indeed Area 1 of the conference was devoted to “Literature and reference needs of scientists: Knowledge now available and methods of ascertaining requirements.” The 13 papers under this heading constitute the first significant compilation of research results in what came to be known as “user studies.”
Given the nature of the conference, it is not surprising that scientists and technologists were the focus of interest. The geographical distribution of the authors, the methods employed and the objectives of the research are of interest, however. One might expect, given the location of the conference – Washington, DC – that there would be a preponderance of papers from the United States. This was not the case: There were six papers from the United States and seven from Europe (the United Kingdom, with five papers dominated the European contribution). This international approach suggests that either the organizers were very careful to ensure a good distribution of papers or, which I believe to be more likely, it represented the interest in the subject in the different areas. It is particularly notable, for example, that research for two of the papers from the United Kingdom was undertaken at the United Kingdom Atomic Energy Authority [10, 11]. At the time this field of research was very buoyant, with thousands of scientific reports and published papers pouring out annually and being reported in Nuclear Science Abstracts, which began publication in 1948 (all of which are still cited in the Energy Citations Database.)

As for the methods employed, they were almost entirely quantitative in character. The authors used structured self-completed questionnaires and interview schedules, diary forms or cards as well as the analysis of forms used to report, in one case, reference requests received and, in another, requests for journal issues. In virtually all cases the reporting was quantitative.

Over most of this period interest in the use of library services was strong, with academic libraries being a significant area. So much so that a review of the literature was prompted and published in the Journal of Documentation [12]. The driver for research of this kind was a perception that, perhaps, university students were not receiving the kind of support they needed for their studies and, consequently, there was an attempt to measure the satisfaction of students, researchers and teachers with library services.

In the United Kingdom, the Public Libraries and Museums Act of 1964 led to the establishment of a government department with responsibility for ensuring that local authorities provided an efficient service, and this mandate led to a number of studies of public library use. One of the most important of these efforts was an investigation into the use of public reference libraries [13]. In a study involving 33 reference libraries and almost 30,000 response forms for personal visits and telephone and telex requests, it was reported that 70% of enquirers found what they wanted.

In the United States in the same period, library surveys continued to flourish – again, one of the most important was in the area of public libraries. The Rand Corporation undertook a study for the Beverly Hills Public Library in California (as a result of a donation from an anonymous resident), which sought to answer a variety of questions:

- How should the library allocate its book budget? What kinds of books should it tend to buy? What types of households use the library? Why do some households not use the library? What is the cost of the various services provided by the library? What specific steps can the library take to improve its services? What are the library’s options in choosing among the different circulation systems? For how long should the library allow books to be checked out? How frequently should overdue notices be sent out? Is an investment in a security system worthwhile? [14, p. v]

Some of these questions appear to be rather dated (inevitably), but the questions on community use and non-use remain of interest today and are becoming more significant as more information behavior is web-based. On non-use, the authors of the report were pessimistic (or, perhaps, realistic):

- It appears that there is little that can be done to cause non-users to use the library. Further, since the presence or absence of a child is critical in determining a household’s use, declining family size may mean that the demand for library services will increase in a much slower rate in the future. [14, p. iv]

Throughout this period, the field we now know as information behavior was termed user studies and the focus was almost entirely upon how and for what purpose library and information systems were used. Two significant reviews used the concept of “the flow of information,” but, in fact, Menzel and his colleagues described their study as “a synthesizing review of completed studies of the behavior, habits, usages, experiences, and expressed needs of research scientists with regard to the obtaining of available scientific information” [15, p. 1] while Paisley, covering the behavioral sciences, noted...
that, “[a]ny study dealing with the information-gathering and -disseminating behavior of scientists has been considered relevant to this review” [16, p. I-2].

These two studies resulted in two of the first reviews of “information needs and use” to be published in the Annual Review of Information Science and Technology [17, 18] and continue to be cited today.

Paisley’s review heralded something of a shift in focus for user studies, from science and technology to the social sciences, and the 1970s saw a number of investigations, still following the positivistic, quantitative model. One of the most significant of these, certainly in the United Kingdom, but of much wider relevance, was INFROSS (Information Requirements Of the Social Sciences), an investigation based at the University of Bath under the direction of Maurice Line [19]. The investigation began in 1967 and was reported in 1971. It covered social science researchers, social scientists working in government, college of education lecturers and schoolteachers, and social workers [20, 21, 22, 23]. The main method employed was a self-completed questionnaire, mailed to 2,602 social scientists, with a 41.8% response rate. Given the length of the questionnaire, this response was quite remarkable. Line remarks:

At the end of the questionnaire, where we asked for suggestions for improvement of the information system, one person stated: “Your questionnaire is so long it has drained me of any original thoughts on the matter.” [19, p. 413]

The questionnaire survey was complemented by 125 interviews, some of them group interviews and, therefore, covering more than 125 individuals. A further output from INFROSS was Michael Brittain’s Information and its users [24], which, until Case’s review [25], was the only book-length review of the field.

Another major, national investigation followed quite quickly upon INFROSS in the United Kingdom. This was INISS (Information Needs and Uses in Social Services Departments) [26], which lasted five years from 1975 to 1980. The INFROSS study of social workers was a relatively minor part of the project as a whole and, at the time, there was an interest from government and from the funding agency (the British Library R&D Department) in information provision to practitioners generally, rather than to researchers and academics.

INISS adopted an unusual research strategy: The project head and the four researchers carried out a total of 22 weeks of observation of social workers and their managers in five social services departments. The participants were selected to represent the full range of work roles in such departments from director to administrative assistant. The structured observation method was employed (inspired by Mintzberg [27]), resulting in 5,839 records of communication events recorded on edge-notched cards that were subsequently transferred to punched cards for computer analysis (this was 1975-76). Following the observation period, an interview schedule was designed and interviews were carried out with 151 social services staff members in an effort to validate the results from the observational study.

Experience with INISS and, particularly, the writing of that part of the report entitled A Week in the Life of a Social Services Department, which drew not only upon the quantitative data from the 5,839 records but also from the qualitative information gathered in the process, led Wilson [28] to propose that qualitative methods should be adopted in research into what he proposed should be called “information seeking behavior.”

1980 to the Present

Perhaps because we are too close to the time frame, the past 20 years or so are a little more difficult to typify. One development is clear: Over the period, the subject has become one of the main areas of doctoral research in the broad area of librarianship and information science. No statistics are available to support this view, but we can point to the success of the doctoral workshops run as part of the ISIC (Information Seeking in Context) series of conferences and the grants for doctoral students to attend the SIG/USE conferences in the United States. In other words, one of the drivers in this period has been the drive for what we might call academic accreditation of the new faculty member.

A second phenomenon, associated with the first, has been the drive to establish theoretical and conceptual frameworks for the subject. Beginning with models of the information-seeking process [28, 29, 30], researchers
have moved on to test those models and to undertake their research within specific theoretical contexts. Thus, the cognitive approach has been employed [31], along with phenomenology [32], social constructivism (or constructionism) [33] and activity theory [34, 35], to name only a few. The theoretical diversity is, perhaps, healthy, but the hope of theoretical conversion and unanimity has not been achieved.

Partly as a consequence of adoption of specific approaches to the management of data through, for example, grounded theory approaches, and as a result of particular theoretical stances, qualitative methods seem to have become the norm for studies in the field. This shift has two consequences, at least. First, we now have many in-depth investigations into the information-seeking behavior of small samples of people – possibly all too often, samples of students of one kind or another. These studies can be very revealing but, on the other hand, we lack the large-scale studies of the past (like the INFROSS project mentioned earlier), which adopted quantitative methods for the analysis of large-scale survey data. As a result, there is little evidence of the impact of research on either policy or practice.

The technology of information management has become significant for practically all areas of life. The Internet is used at home to locate health information or compare prices on products; it is used in the workplace for the recovery of task-related information; it is used to support leisure activities; and it is used in educational institutions at all levels to provide information to support teachers in delivering class materials and to support students in their study activities. In other words, the existence of the technology itself has been a driver for change in the way people think about how to look for information.

This technology driver is reflected in the subjects of information behavior research in virtually all aspects from personal information management [36] through children’s web-based information seeking [37] to school and university student use of the web [38, 39] and on to the world of work, or lack of it [40]. The volume of Internet-related research has increased in recent years and, as more and more information seekers employ the web, it is likely to increase further still.

### Into the Future

The future of research in this field is the subject of another paper in this issue; consequently, I shall not attempt a comprehensive forecast (which, lacking data about the future, would be problematical). Instead, I shall continue the idea of considering the drivers of research and attempt at least some prognostications.

First, it is clear that technological developments of one kind or another will continue to drive research. Most immediately, the concepts of cloud computing and social networking systems will be a focus of considerable interest. Cloud computing is postulated to provide a new, virtual environment for collaboration. Google Wave, for example, is possibly the first attempt to replace e-mail with a cloud-based, real-time, interactive system for collaboration [41]. Social networking sites, such as Facebook, are already being used for collaborative work and these two developments immediately bring to mind a variety of potentially interesting research questions on, for example, how a geographically distributed team allocates information discovery and dissemination activities to its members.

Secondly, the digital divide is likely to persist, especially as, in the developed world, the gap between the rich and the poor, the haves and the have-nots, continues to widen. National and charitable initiatives to encourage the use of the Internet and the provision of venues (especially in public libraries) for access to the Internet are merely palliatives when the underlying problem demands political will and economic, rather than technological, solutions. The impact of “information lack” on the disadvantaged in society and, particularly, its economic effects will become of interest to researchers.

Thirdly, the economic divide between the rich countries and the poor countries, exacerbated later this century by the impact of global warming, will result in a continuing, expanding and illegal “economic migration” [42], placing new burdens on the rich societies and increasing pressures on locally provided social services, such as housing, unemployment benefits and health services. Exploring how the migrant discovers how to make his/her way in the world with and without access to information resources is a significant potential research area.

Fourthly, the impact of the Internet on children, its use in the educational
process, its potential damage through sexual grooming and, related to the previous topic, its value in inducting migrant children into the new society will remain high on the research agenda of governments and, hence, academia.

Finally, although the list could be continued much further, I suspect that the present focus upon small-scale studies focusing upon the information behavior of readily accessible groups of people will decline as investigators discover that there is little new that can be said, and that there will be a growth in policy-related, large-scale projects aimed at discovering facts about information access and use that can guide government and business action in relation to the deployment of information and communication technologies. This may result in a decline in academic research in the field, as the tendency is for governments and other public bodies to commission consultancy groups to undertake such work.

In other words, although the nature of information may change, and the context of information use may change, I see no end to the need to explore, partly for theoretical reasons, but increasingly for policy reasons, how people discover, access, use, store for future use, share and disseminate information of all kinds.

Resources Mentioned in the Article

### Resources Mentioned in the Article, continued

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
</table>

RESOURCES continued on next page
Resources Mentioned in the Article, continued


Investigations of those who seek and use information have been an important aspect of information science since its beginnings. Some reviewers of the literature point to studies as early as 1916, or even 1902, as the start of this genre. Whatever is the case, it is clear that the explosion of scientific and technical literature during and immediately after World War II created a situation in which attention to information seeking was inevitable. Even the rapid development of computing devices (starting in 1939) and their subsequent application to the storage and manipulation of text were not enough to fully solve the problems of dissemination in the area of scientific and technical information. Hence it was that the first blossoming of information seeking and use studies tended to focus on the behaviors of scientists and engineers. Reviews of studies of this population and their information-related practices appeared almost yearly during the 1960s and continued well into the 1970s. It was not until the mid-1960s (and even then, haltingly) that we began to see attention focused on others who worked with information and knowledge: social scientists, physicians, managers and humanities scholars. Even with an expansion of focus, these investigations tended to be descriptive in nature and oriented toward traditional channels such as libraries, journals and conferences and toward practical improvements in dissemination.

The Shift to a Focus on People and Their Behaviors

A major shift in information behavior (IB) research occurred in the 1980s. While the early use studies focused on a particular system or service and its users, the new generation of studies placed the information seeker/user in the center and did not presume the use of a particular resource or set of resources.

Some early studies had hinted at this shift in focus. For example, in 1968 Robert Taylor discussed psychological levels of information needs: visceral, conscious, formalized and compromised needs [1], and in 1973 Patrick Wilson defined the concept of situational relevance, that is, the relationship between an information object and an individual’s personal situation and worldview [2]. Brenda Dervin [3] urged librarians to turn away from measuring “library activities” and “user demographics,” and instead work on understanding the situations that led people to seek information; Nicholas Belkin, Robert Oddy and H.M. Brooks [4] proposed an anomalous state of knowledge as motivating people’s information seeking. Each of these scholars, in his or her own way, was pushing the field to take the perspective of the information seeker/user, rather than the library or information retrieval (IR) system.

In 1981 and 1982, Brenda Dervin, Thomas Jacobson and Michael Nilan published two articles [5, 6] exploring how one might go about studying the situations and decisions that led to information seeking. Their emphasis on situational gaps – and how we might help people to overcome them – brought a new perspective to the study of information behavior. A few years later, Dervin and Nilan published what proved to be a highly cited chapter in the Annual Review of Information Science and Technology, entitled, “Information needs and uses” [7]. Their review and commentary served as a call to arms for information behavior researchers. It solidified the field’s move toward a user-centered perspective on information behaviors and led the way in making user-centered research the dominant approach in information behavior research.

This new focus on the information seeker/user also made the wide variability of user behaviors visible. Researchers found that different people behaved quite differently when performing similar tasks and that the same person might behave quite differently in different situations.
Borgman [8] identified performance differences as large as 20:1 across multiple users of computer systems, while the qualitative methods of Dervin, Nilan and Jacobson [6] uncovered wide variation in question types and information needs among people in a highly similar situation. These findings highlighted the inherent subjectivity of information behaviors and encouraged researchers to take this subjectivity into account, often by employing qualitative methods that could expose the context of the information behaviors under investigation.

**Information Behaviors as Dynamic Processes**

As the attention of IB researchers focused on people and their many uses of information, rather than on their use of particular sources and services, it became clear that an important aspect of information behaviors is that they occur over time. An episode of information seeking may last just a few seconds (for example, when someone is looking up the phone number of a new restaurant). However, a complete sequence of information seeking and use may span months or even years as when a doctoral student is preparing the literature review for his dissertation. As Marcia Bates [9] argued in 1989, in “real-life searches” searchers are likely to start at one point with one piece of information and “move through a variety of sources. Each new piece of information they encounter gives them new ideas and directions to follow and, consequently, a new conception of the query. At each stage they are not just modifying the search terms used in order to get a better match for a single query. Rather the query itself (as well as the search terms used) is continually shifting, in part or whole” (pp. 409-410).

Once we began to study information seeking and use processes over time, it became increasingly clear that many of the important constructs related to information behavior are dynamic – they evolve over time. As a person finds useful information and applies it to the current goal, the goal itself may shift (or not). The person’s ideas about the problem change as he or she learns more. Other external events may occur that affect the importance of the problem to the information seeker. These and other possible changes affecting information behaviors as they occur over time called for the use of different research methods.

Early use studies typically used survey methods, interviews or one-time observations of a particular information behavior such as entering the library or searching a particular database. They typically focused on variables that provided an overview of people’s information interactions with a particular service or system (for example, precision of a search or frequency of library visits). With attention focused on the dynamic nature of information behaviors, longitudinal and qualitative research approaches were often adopted. Some important early examples of such approaches included Carol Kuhlthau’s development of the information search process model [10, 11], Raya Fidel’s work on search moves [12], Donald Case’s study of humanities scholars [13] and Liwen Qiu’s study of navigation in hypertext [14]. Experimentation with a variety of methods has continued to be a hallmark of information behavior research [15].

During the early 1990s, a number of researchers focused particular attention on the concept of relevance and the criteria people use when making relevance judgments. In early information retrieval studies, relevance was usually seen as a specification of topicality and was defined as the match between a subject term in a query and a subject term in a document [16]. This definition was distinguished from more user-oriented views, which incorporated differences in user judgments of relevance across different users and by the same user across time. To investigate the concept of relevance further, a number of studies of relevance judgment processes were conducted (e.g., Barry [17]; Bruce [18]; Park [19], [20]; Schamber [21]; Wang & Soergel [22]).

**Moving Off-Campus: Studies of Everyday Life Information Seeking**

While many studies continue to examine information behaviors in academic settings, incorporating students or faculty as study participants, a new stream of research began to gain momentum in the mid-1990s. These studies examined information behaviors within the context of everyday life activities. Reijo Savolainen first defined the scope of this subfield of information behavior research [23], noting that it included people’s information behaviors at work, at leisure and while pursuing hobbies and included interactions with both orienting and practical information. This approach to information behavior research takes a holistic view of people’s lives, building directly on Brenda Dervin’s 1983 work on Sense Making.
Theory [24], and the earlier interviews by Dervin and others with members of the general public (see, for example, Dervin & Greenberg [25]; Chen & Hemon [26]). This line of research has led to a reconsideration of information seeking in the context of individual work tasks and goals such as the studies by Byström & Jarvelin [27] and Vakkari [28].

Major theoretical contributions to this line of research were made by Elfreda Chatman, beginning with her study of information flows among the poor in 1985 [29]. Through studies of elderly women [30], women prisoners [31] and other populations, she developed a definition of information poverty and how it applies to the “small worlds” inhabited by her study participants. Drawing on the idea of situational relevance earlier proposed by Patrick Wilson [2], she identified three key aspects of information poverty: risk-taking, secrecy and deception. Her work continues to inspire the research of current scholars.

During the same period, the first of the biennial Information Seeking in Context conferences was held in Tampere, Finland, and T.D. Wilson founded the online journal, Information Research. Both of these venues were important for the presentation of information behavior research, generally, and for results from studies of everyday life information seeking, more specifically. They included studies conducted in a variety of contexts, from studies of teenagers’ health information needs [32] to explorations of journalists’ information behaviors [33] to investigations of information use in households in Scotland [34]. This stream of research is still blossoming in current information behavior studies.

**Summary: The Early Years as a Foundation for Current Research**

Some of the major trends in the early years of information behavior research have been briefly summarized here, and they provide a strong foundation for future studies. Particular threads of this research, such as the emphasis on everyday-life information seeking and the focus on the user’s context, have continued over the last decade and are likely to continue into the future. It is also likely that interest in the behaviors of academics and other information workers will continue to be a strong theme. They are the most intensive information users, so additional study of their information behaviors is warranted.

In addition, new streams of research have begun. For example, recent studies are focusing on the social and often collaborative nature of information behaviors. In these studies, people are recognized for the social beings that they are, and the effects of their social surroundings on them are taken into account, as well as their effects on those surroundings. In addition, the need to understand the context of the information behaviors under investigation is now being recognized. The technological, physical and political contexts of information behaviors both constrain those behaviors and afford particular opportunities. Current studies are beginning to investigate the nature of these influences.

This review of the early years of information behavior research ends in the late 1990s, when ASIS&T’s Special Interest Group/Information Needs, Seeking and Use (SIG/USE) was founded. The initiation of the ISIC conferences, the founding of the Information Research journal and an ASIS&T pre-conference workshop on relevance studies were all indicators that information behavior research was coalescing as a subfield of information science. The energy of those early years of SIG/USE has continued, and this area of research continues to flourish, as can be seen by the other contributions in this issue.

---

**Resources Mentioned in the Article**

Resources Mentioned in the Article, continued


Collaborative Information Seeking and Sharing: The 9th Symposium of SIG/USE

by Nadia Caidi, Soo Young Rieh and Guillermo Oyarce

Since 2000 the SIG/USE Symposium has been a staple of the ASIS&T Annual Meetings. In the nine years since its inception the symposium has provided a space for dialogue among the information science community – both specialists and lay professional public – about key issues and topics facing information, its users, its uses and its technologies. And like all such endeavors, it has required hard work, creativity, perseverance and passion.

At this year’s Annual Meeting, in beautiful Vancouver, the aims of the 9th SIG/USE Symposium were to provide an opportunity for all ASIS&T members (and information professionals at-large) to reflect and brainstorm together on essential questions around information behavior research and practice in a collaborative context: What are the fundamental questions that we should be looking at in this line of research? How are we to move towards making greater impacts on organizations and designers? What follows is an overview of the symposium process and outcomes, an examination of the issues raised by contributors during the symposium and an outline of future research prospects.

Background and Format

Examining the transformative relationship between people and people, as well as people and information, is at the heart of information behavior research. Taking a people-centered focus to our inquiries, we have amassed understandings about the way people work with information, information systems and the people with whom they interact in the process of information seeking and sharing.

For this edition of the SIG/USE Symposium (and as part of the celebration of SIG/USE’s 10th anniversary), we focused on collaborative information seeking and sharing. The origin of the idea was the growing interest on the part of members of the SIG/USE community to take stock of our increasingly social and collaborative information environments and work together toward assessing the models, theories and findings we are collecting in our field and how they can and should inform the design and delivery of collaborative information products and services. The symposium offered an opportunity for SIG/USE and others to reflect on essential questions around information behavior research and practice in a collaborative context. Four research questions were posed to the symposium participants:

1. How does our research address the transformative relationship between people and information?
2. What are the fundamental questions that we should be looking at in our research?
3. How are we to move towards making a greater impact on organizations and designers?
4. How can or should collaborative information behavior research be presented to translate effectively into the language of other information research communities?

Thirty-three position papers were submitted covering a broad array of issues and topics. The papers are posted on the SIG/USE Symposium wiki, available at www.asis.org/wiki/AM09/index.php/Siguse.

The symposium was held on Saturday, November 7, 2009, from 1:30-6:00 p.m. The audience consisted of 64 attendees from a variety of...
backgrounds and interests, both graduate students and faculty members, academics and members of the profession. The program for the day consisted of two keynote speeches by Diane Sonnenwald and David MacDonald, as well as breakout sessions to enable participants to talk to each other and contribute their thoughts on the four research questions. SIG/USE Awards were presented, and Ya-Ling Lu, last year’s winner of the Elfreda A. Chatman Research Proposal Award, reported the findings of her study, “Children’s Information Behaviors in Coping with Daily Life.”

The two keynote speakers approached the topic in different ways, which provided much food for thoughts for the attendees. Diane, head of school and professor at the School of Information and Library Studies at UCD, Dublin, Ireland, and adjunct professor of computer science at the University of North Carolina at Chapel Hill, started the event with a reflection on the meanings and challenges of collaboration. Drawing on over a decade of her personal experiences in collaborations with computer scientists, chemists and researchers in other disciplines, Diane shared her insights on conducting research on collaboration, as well as on the design and evaluation of collaboration practices and technology from our field with others, and along the way, creating new insights for our field.

David, an associate professor at the Information School at the University of Washington, and program director of the Human Centered Computing program at the National Science Foundation, talked about the issue of scale or how to move toward a paradigm for mass participation computing. As David pointed out, when online communities grow, ensuring congenial interactions among all of the members is nearly impossible. In particular, differences in perspectives, beliefs and attitudes ensure that the multivalent character of social relations emerges. Systems and infrastructure rarely account for mechanisms that allow for the effective management of conflict. Handling challenges that result from scale requires rethinking the way we frame research questions about online participation – a potentially new paradigm.

**Issues Raised**

Following each keynote speech, breakout sessions took place where the attendees were assigned to one of six groups to brainstorm (Figure 1). Each group then reported on their discussion and general themes were outlined. As expected, recurrent themes were around collaboration and information sharing. Several groups referred to the expansion of our involvement in efforts that cross disciplinary boundaries recommending risk taking and strengthening the theoretical base of information science on scope, terminology and concepts.

The other important message that came out of the symposium was the perceived need to contextualize collaboration and information seeking and sharing, looking less at technology and more towards individuals. Theories and models from information science are needed that take stock of changing information seeking behaviors, as well as changing using and sharing environments (notably around team dynamics). Further points are summarized below:

1. The role of research in providing frameworks and models to better understand collaborative patterns. There is ample theory to lead research in our area, but it was suggested that these ideas should be integrated into curriculum development and delivery, including courses on research methods. Information-sharing behavior was advanced by symposium attendees as an area of potential research.
2. The need for initiatives to foster and strengthen potential and current interdisciplinary collaboration and communication. Both keynote speakers emphasized this point, and it was repeatedly mentioned during the small group sessions. The key idea is that we need to reflect on and learn from the collaboration and partnerships our field has already established with other disciplines. We must understand disciplinary differences to find common ground and language, as well as a clear idea as to what we bring to the table. (It is particularly important to articulate this latter point for funders). Some attendees advanced collaboration sciences as an area of study that looks at connections and relationships as important to understand, articulate and measure the value of content and relationships.

3. The need to disseminate our research among practitioners and information system designers. These two large groups were identified as potential targets of strategic efforts of dissemination. At one level, our research should help develop systems that address user-centered services. At another level, for dissemination purposes, our research needs to synthesize theoretical models in appropriate language to strategically communicate our findings.

4. The use of new social networking technology to enhance collaboration. Attendees believe that there is a strong need to use current technologies, explore these and understand better how users interact with them. The world is changing and the ways to deliver information are multiplying. We, as researchers on human-information behavior, must adapt by informing ourselves, taking risks and telling others how to make the best use of the technologies and for their information as well as work practices.

The call to “take risks, trust and communicate” reverberated across attendees at the conclusion of the 2009 SIG/USE Symposium.

Sponsors and Acknowledgments

The organizers wish to thank symposium participants and the keynote speakers, as well as the following sponsoring organizations: OCLC, Emerald and Information Today, Inc. The organizers would also like to thank Crystal Fulton from University College Dublin and Karen Fisher from University of Washington for their leadership and support; Margaret Lam from University of Toronto for setting up the workshop wiki site and working diligently; and Maria Souden from University of Michigan for taking notes.
SIG/USE made virtual world history as the first ASIS&T SIG to have a presence on ASIST Island in Second Life (SL). The ASIS&T SIG/USE Symposium on November 7, 2009, was attended in Second Life by 16 avatars and nine MLIS students in a University of Hawaii classroom (Figure 1) with the virtual world projected on a large viewing screen and sound through computer speakers.

Allison Brueckner (Teo Matalova in SL) set up a streaming media server in Vancouver. Diane Nahl (Adra Letov in SL) (Figure 2) populated ASIST Island with interactive posters of the SIG/USE Symposium schedule and speakers and the 10 Information Behavior Fellows and their bios, and she publicized the event to several inworld groups such as ASIST in Second Life, ACRL in SL and LIS Educators in Virtual Worlds, among others. SL symposium participants heard David McDonald speak on “An Issue of Scale: Moving toward a Paradigm for Mass Participation Computing.”

Participants used SL text chat to discuss the breakout session questions and their relationship to Second Life as a communication platform. During the discussion on use of media to collaborate and share information, Lorrie Mon (Lorri Momiji in SL), Florida State University, pointed out that “[o]ur task is harder [in SL], we are actually collaborating over computer mediated communication while they are just talking about it.” Diane Nahl (Adra Letov in SL) said, “Collaborative info seeking assignments in my SL classes have been very successful in part because they are learning together and trying to extend their RL (real life) info seeking skills to the virtual world and teaching...
each other, laughing over their misconceptions.” Tawnya Means (Tawnya Tuquri in SL), University of Florida, noted “My students feel more like we are having a conversation when we meet in SL.” Sheila Webber (Sheila Yoshikawa in SL), University of Sheffield, pointed out that “[p]eople need to have credibility with the people they are hoping to influence, interacting with them to understand what is going to persuade them. I don’t mean academic credibility; I mean they have to be trusted.” Teo Matalova reported the SL breakout comments to Vancouver.

The SIG/USE 10th Anniversary Panel Session, November 10, 2009, was attended by 13 avatars in Second Life who enjoyed hearing many excellent speakers during the fish bowl dialog and participated via text chat. After the discussion of the significance of context in information behavior research, Sheila Webber commented in chat, “I think that context is very important, including cultural, national, disciplinary. ... One of the things that emerges from the different speakers is that (as researchers) discussing context is important, and although there exist some very different opinions about what it means and whether you take it into account, it thus seems fruitful to probe as researchers.”

Vanessa Morris (marchena Rajal in SL), Drexel University, spoke of SL as context: “I think there is a lot to talk about and think about in terms of how we take what we experience in-world and apply it to our first lives. I think that the context of SL informs our context in RL – I am wondering how we learn in SL at all moments and how that learning becomes embedded in us and then enacted in RL.”

The SL-avatar audience was inspired hearing the Vancouver audience, yet not “heard” despite the active SL chat or live back-channel to the discussion. In future mixed reality meetings we intend to improve interactivity by projecting the virtual world avatars and including live voice and chat interactions within the meeting. It seems likely that accomplishing an integrated hybrid ASIS&T meeting is itself an information behavior research area.
Forecasting the Next 10 Years in Information Behavior Research: A Fish Bowl Dialogue

by Gary Burnett and Sanda Erdelez

On the afternoon of the third day of the 2009 ASIS&T conference in the drizzly downtown of Vancouver, British Columbia, Special Interest Group/Information Needs, Seeking and Use (SIG/USE) convened a session celebrating its 10th anniversary. Following brief panel presentations on the history of both the SIG itself and information behavior research, the bulk of this session was devoted to an open discussion dedicated to “Forecasting the Next 10 Years for Information Behavior Research.” Although there were four “initial discussants” (Marcia J. Bates, Gary Burnett, Sanda Erdelez and Eric Meyers) and 15 designated “discussants,” the session used the fish bowl technique to ensure that all attendees, whether named in the program or not, had a chance to weigh in and participate.

The result was a lively discussion including many voices and visions of what the future should hold for information behavior research (for example, see Figure 1. Information Behavior by Karen Fisher and Heidi Julien). The participants ranged from freshly-minted Ph.D.s to long-established and respected researchers to those involved in professional practice. The on-site participants were also joined by seven off-site participants who attended the session through the Second Life virtual environment. Statements from the 20 or so participants, who spoke from places at the center of the fish bowl, included calls to improve the capability and usability of search engines and other information systems, arguments in favor of focusing on particular user groups (particularly children) and impassioned pleas that we remember the centrality of the user in information provision.

This article does not attempt to summarize in any degree of detail or accuracy what was said during the session. Rather, it presents reflections by the authors (two of the session’s initial discussants) on some of the themes

Gary Burnett is an associate professor in the School of Library & Information Studies, Florida State University. He can be reached by email at gburnett<at>fsu.edu

Sanda Erdelez is an associate professor in the School of Information Science and Learning Technologies, University of Missouri. She can be reached by email at sanda<at>missouri.edu
that emerged during the session. As such, it should not be taken to suggest any kind of authoritative or inclusive account of the myriad positions articulated by session participants, but only speculation concerning future directions in information behavior research from two interested participants. It is offered in the spirit of continuing the dialog set in motion during the SIG/USE session.

Brave New Context: The Future of Information Behavior Research

To those readers who attended the SIG/USE panel, it should not come as a surprise that we selected the “future of context” as the opening topic for this article. One of the co-authors (Sanda) turned the fish bowl into, as she quipped, “a magic crystal ball,” and predicted that the future of information behavior research would be impacted by the disappearance of information “context” as we have known it so far. This prediction sparked many engaging comments from the participants about the importance of context in information behavior research.

The context of information behavior emerged as a key concept in information behavior research in the last several decades. This development was documented by the conception of the conference Information Seeking in Context (ISIC) in the mid-90s and numerous panels at ASIS&T Annual Meetings that focused on cognitive and social dimensions of interaction between context and information behavior. While, as Narresh Agarval of Simmons College commented in his fish bowl contribution, there are many, often conflicting, definitions of context, some broad topics in which it has been studied in information behavior research include the roles of the information users, the location where information behavior takes place and the tasks performed by the users.

On a pragmatic level, if we look at information systems that have been developed to facilitate human activities in various contexts, we see a world where users’ information behavior – just as the information needs that the behavior addresses – is compromised by the physical limitations in system design. As the users of information systems physically and cognitively move from one traditional context to another, they are traditionally guided with strong perceptual cues that evoke a specific type of information behavior. The activities and tasks that need to be performed in combination with available system features define users’ information behavior to the extent that the users are not aware of many aspects of this behavior, except perhaps the most obvious expressions of information search requests.

However, as developments in information and communication technologies make the information tools we use more portable, mobile and accessible at any time, the notion we have of context is beginning to change. The old dividing lines between contexts are blurring. Context is becoming an integrated multiple, rather than a singular, and these multiple contexts impact information behavior simultaneously. As singular contexts crumble, information behavior emerges as a visible link that users cling to as they navigate through the landscape of new information worlds with overlapping and constantly intersecting contexts. One possible implication of this trend could be that users may become more cognizant about their visceral information needs, the ways they go about acquiring information, their processes of information use and strategies they implement to manage information. They may become more aware of the processes they rely on when using information tools across blending contexts.

This increased self-awareness may facilitate empirical data collection for future generations of information behavior researchers and thus provide new insights into information behavior phenomena that traditionally were methodologically difficult to research. However, the multi-layered context is also likely to create new types of information needs and questions for users: Who am I? Where am I? What am I doing here? Future information behavior will have to attend to these questions, since they will have an impact on our understanding for new generations of technological solutions needed by users to be satisfied and productive in the mashed contexts of the future.

Linkages and Continuities: The Future in the Past

In discussions of future research trends – especially in a domain marked by ongoing and rapid changes in available technology – it can be tempting to envision new directions that, in whole or in part, signify radically new directions, approaches and concerns. And it is certainly the case that the
increasing development, proliferation and use of technologies, such as mobile devices like cell phones, have had and will continue to have a major impact on both the availability of information and on the behaviors of people seeking, browsing and otherwise interacting with information. Indeed, in his ASIS&T conference plenary session, Tim Bray (director of web technologies at Sun Microsystems) noted the near ubiquity of cell phones and their use for a variety of information-related activities in the third world. A recent article in the New York Times documenting the extensive – not to say extreme – use of iPhone data networks for information gathering perhaps foreshadows similar trends in the United States (www.nytimes.com/2009/09/03/technology/companies/03att.html?_r=2&hp).

However, several participants noted in their comments during the SIG/USE fish bowl session that such technological transformations are not necessarily harbingers of equally radical changes in information behavior research. That is, while the tools through which human users come into contact with information may change – and may raise many interesting questions about the degree to which specific technologies transform our understanding of the contexts of information use and about the degree to which technological innovation and change determine (or, more accurately, influence) information behavior – the particular relationship between such human users and information itself remains the focus of information behavior research. As Paul Solomon of the University of South Carolina noted in his comments during the fish bowl session, it is important not to reinvent the research wheel each time a new technology is introduced, but rather to draw and build upon valuable previous work. The concepts and approaches of the past 10 years (and more) of information behavior research, thus, remain relevant; the next 10 years should be seen less as a turning point or a break with that past than as an extension of it. Even work that challenges or transforms the work of the past is inextricably indebted to that past, and open acknowledgement of this fact should continue to be an important part of the identity and trajectory of our field.

Discussions of some relevant aspects of that past can be found elsewhere in this special issue, and there is no need to duplicate those discussions here, beyond a brief observation that one of the goals of the fish bowl session was to establish a vantage point from which researchers can sustain a vision both of the importance of previous work and the potentials of future work. While the session explicitly asked questions about the future, it is important to note not only that numerous precursors – Elfreda Chatman and Patrick Wilson central among them – were acknowledged, but also that the participants themselves, scholars at all stages of their careers, collectively embodied such a vision, maintaining ties to work that has already appeared as well as work that has yet to begin.

Intersections: Information Behavior Research and Other Disciplines

Information behavior research has historically attracted researchers belonging to library user studies and the “softer” side of information retrieval. With the dominance of web-based technologies for processing and providing information during the last 10 years, we have seen that many other disciplines have gained interest in the human aspect of information systems design and use, especially human-computer interaction, communications, marketing and sociology. The phenomena that all these researchers are focused on are multifaceted and can be addressed from multiple perspectives and levels of specificity. Inevitably, these perspectives intersect, sometimes complementing, and sometimes contradicting each other.

In many ways the above disciplinary relationships resemble the organization of the United Nations, with all countries sharing a common goal of world peace and prosperity, but coming from different cultural, language and political backgrounds. Just as a language translation is needed in the United Nations, there is an ever-pressing need to identify a common language that would ease translation and understanding of related concepts researchers use to describe human engagement with information on various levels – are these information behavior, information interaction or information activities? Without a common language, or at least understanding of the terminology used for the same concepts by other disciplines, we are limited in the cross-pollination of research ideas, the sharing of research findings and thus left to proverbially re-discover hot water.

In some utopian world of the future one would hope that an organizational
framework would be available to bring researchers from different disciplines together to address their differences and identify a common language. However, such resolution is unlikely, given the organizational, research funding and peer evaluation structures that create a disciplinary chasm. What the future may bring to information behavior research is the increased awareness of individual researchers, as elaborated elsewhere in the article, that they are building their research inquiry on the “shoulders of giants” within and outside of our discipline. As some of the speakers suggested, this connection should be established not only with the neighboring science and social science disciplines, but also with more distant fields such as neuroscience and evolutionary biology where interesting research advances have been made recently about information processing on a cellular level and the socio-historical contexts of human development.

The requirements for interdisciplinary collaboration in large research projects funded by major U.S. research funding agencies, such as the National Science Foundation (NSF) and the National Institutes for Health (NIH), create an opportunity for information behavior researchers to become involved in multidisciplinary research teams. Active participation of information behavior researchers in collaborative research projects could be a needed catalyst for development of stronger interdisciplinary ties, thus resulting in the cross-pollination of research ideas and increased awareness of the ongoing contribution of information behavior research to the understanding of human information needs, acquisition and use.

Pathways: The Objects of Information Behavior Research

Information permeates our lives, professional and personal, whether that information comes to us as the intended result of a focused and targeted searching, incidentally as the by-product of other activities or simply because it is inextricably intertwined with our day-to-day social interaction. Participants in the fish bowl session brought a wide variety of emphases and interests to bear in their comments about the future of information behavior research. However, as Marcia Bates pointed out in her statement to the group, all of these approaches share a common concern: each has information at its center, and, in particular, each looks specifically at human behavior as it relates to that information. As Bates noted, this shared focus is what differentiates our field from other social sciences that investigate human behavior, such as sociology.

While it seems certain that all participants would concur that the focus of future research in the field will continue to be on this relationship between human activities and information, there is less agreement about the precise nature of that relationship and, thus, about the specific object of such research. Several participants, including Katriina Byström of the University College of Borås, strongly emphasized the importance of information in goal- and task-oriented settings. Others, such as Dania Bilal and Louise Limberg, argued that special attention should be paid to particular populations, such as children and to the multiplicity of cultural perspectives and practices in different user groups and around the world. Other emphases – and this list is far from exhaustive – included system development, the importance of theory, the role of professional practice and the need for pragmatic approaches and practical outcomes that make a positive impact on the world.

As the very name of the SIG/USE suggests, with its emphasis on information seeking and use, many research approaches have, historically, been linked in certain ways to more technically oriented information retrieval research, with a focus on a relatively narrow range of information behaviors specifically in the context of formal information systems such as libraries: in the classic model, information seekers come to an information system with a particular need, articulate that need in the form of a query and retrieve information that, if all goes well, matches the query and meets the user’s need. Such a characterization of information behavior research past or present is, of course, something of an oversimplification in any event. Even as brief an account as that presented here of the comments made during the SIG/USE celebratory 10th anniversary fish bowl session make it clear that current trends have unquestionably expanded well beyond a focus limited to information seeking activities and have branched off in many directions. If anything, it seems clear that the diversity of approaches seen during the session will continue to be at the core of information behavior research – that the core of our field is, in other words, both singular in its shared
attention to the relationship between information and human behavior and multiple in how it instantiates and analyzes that relationship. To put it simply, people interact with information many different ways (seeking, browsing, encountering, using, exchanging, avoiding, etc.) and for many different purposes (to complete tasks, to resolve needs, to give assistance to others, to keep themselves entertained, etc.); it is appropriate that information behavior research attend to all of these guises of the phenomenon that simultaneously unites us and makes possible the manifold and divergent approaches that we all take.

**Conclusion**

As noted above, this article does not attempt to cover the full range of topics and issues raised during the SIG/USE fish bowl session. However, we hope it is clear from our brief account that the active – and even enthusiastic – participation of numerous scholars at all stages of their careers in the session bodes well for the future of information behavior research. We hope, further, that this article – like the session itself – points to some fruitful issues and directions for the next 10 years and that it might help to foster continued dialog and interaction between information behavior scholars.
Digital rights management (DRM) is commonly defined as the set of technological protection measures (TPM) by which rights holders prevent the use of digital content they license in ways that could compromise the commercial value of their products. Restrictions on such uses as downloading, printing, saving and emailing content are encoded directly in the products or the hardware needed to use them and are therefore in immediate effect. This automatic deployment challenges the fair use provisions of copyright law, which protect certain uses and let judges determine the outcome of a dispute.

This report of a panel session organized by the author at the 2008 Annual Meeting of the American Society for Information Science & Technology (ASIS&T) presents the DRM issue in four contexts: use restrictions in libraries, the anti-circumvention rules of the Digital Millennium Copyright Act (DMCA), commercial and academic licensing and DRM-free software alternatives. The four panelists were Kristin R. Eschenfelder, associate professor at the School of Library and Information Studies of the University of Wisconsin-Madison and recipient of multiple grants for her work on DRM; Kevin L. Smith, J.D., scholarly communications officer at Duke University and author of the highly regarded web log Scholarly Communications @ Duke; Bill Burger, vice president of marketing at the Copyright Clearance Center (CCC), a leading provider of content licensing solutions for corporations and academic institutions; and John Sullivan, operations manager at the Free Software Foundation, a nonprofit that promotes the development and use of free software and campaigns against DRM. The session was recorded in October 2008 and is complemented in this report with a 2009 update to the DMCA legislation.

The Many Faces of Use Restrictions in Libraries

Based on the results of her studies of use restrictions in libraries, Kristin R. Eschenfelder reported that libraries are not only trying to cope with DRM but are also considering using DRM software to their advantage. She argued that use restrictions have a cultural component and proposed the recognition of a category of soft use restrictions, which are often encountered when users access scholarly publications.

Eschenfelder first discussed several issues with DRM in libraries including the following:

- DRM viewers present interoperability issues and require additional work to be compatible with all the computer platforms used by patrons.
- Preservation of digital content (such as video games) that has been encased with a TPM can only be possible if it could be extracted from the DRM software.
- DRM creates obstacles between users and easy access to resources, which can cause patron dissatisfaction.

Overall, the concept of DRM appears to be contrary to the library’s basic mission to enable maximum access to cultural goods.

In the archives and special collections area, however, there is a fair amount of interest in using rights management technologies. For example, for content that may need to be protected from misuse, such as artifacts at archeological sites that need to be protected from treasure hunters, DRM...
systems can vet users and authenticate them remotely, which safely eliminates the need to meet with archivists in person. DRM software may also help institutions handle content with copyright restrictions. The New York Public Library (NYPL), for instance, has been considering bringing its digitized collection of dance and performance videos closer to the public outside the NYPL system as long as it is possible to restrict access to this online content to library locations only. These examples show that DRM may actually provide opportunities to expand access to online materials in ways previously not possible.

In another study Eschenfelder explored the nature of DRM in today’s applications. Her starting point was the use of DRM technologies in consumer media such as digital music and film, which effectively prevent certain uses. These DRM restrictions would fall into what Eschenfelder defines as hard technology use restrictions, that is, systems that strictly control or disallow direct or subsequent use such as saving, printing or emailing, though these same functionalities are provided by the operating system or browser. By contrast, scholarly publications appear to provide few examples of these hard technology restrictions. DRM falls more often within the category defined by Eschenfelder as soft technology use restrictions. In soft restrictions the interface or server-side configurations of software or hardware may discourage certain uses, but the desired use may be achieved through workarounds such as repeating the same use in multiple sessions or using operating system or browser functionalities.

Eschenfelder also considered non-technology use restrictions. Some use restrictions are based on policies and laws and their interpretation. For example, certain license terms that govern how we can use digital and intellectual property may or may not be enforced by internal policies. How communities of practice understand and perceive relevant laws and how they treat differences between terms of use statements on publisher sites compared to licenses signed by universities shapes how digital and intellectual property is used. Certain cultural norms, such as the gatekeeper role of archivists, constitute another set of non-technological use restrictions. We learn in library school about information ethics and respecting the wishes of special collections and archive donors regarding who should view their material. That libraries should restrict access to archival information in a particular way is a cultural norm.

Eschenfelder concluded with examples from one of her published papers on soft use restrictions which she considers forms of DRM. They include the following:

**Extent-of-Use TPM.** The publisher’s server blocks the user’s IP address when the frequency of document requests exceeds a publisher-defined threshold.

**TPM by Frustration or “Chunking.”** E-book content, in particular, is broken into chunks, which makes it inconvenient to print, email and save. Chunk sizes vary among vendors. Some vendors even let users view entire books (which some consider to be as inconvenient as viewing one page at a time).

**TPM by Obfuscation.** The user interface does not adequately advertise use functionality, such as printing or saving, whether by bad design or by intention. Perhaps the publisher did not hire enough interface designers or did not want to prohibit these uses explicitly in its license (so as to not alienate certain users) even though it clearly wished to discourage them.

**TPM by Omission.** Common uses such as saving, printing and emailing are not provided by corresponding tools or buttons, but are available if users experiment with browser or operating system functionalities.

**TPM by Decomposition.** The hybrid nature of the HTML format causes the saving, emailing and transferring of content to generate files with style sheets and several folders. Making content available only in HTML may discourage these uses. Content in PDF format is not affected in the same way.

**TPM by Threat.** Users often encounter declarations in pop-ups advising them against a particular use, such as for graphic content in encyclopedias or biographies. When users right-click on an image, they are warned against saving the image, although there is no technological barrier to their doing so.
Mitigating the Effects of the DMCA Anti-Circumvention Rules

Kevin L. Smith discussed the effects on higher education of the legal protections accorded by the DMCA anti-circumvention rules to DRM systems and presented the three current options to mitigate the impact of these rules: the Library of Congress’ rulemaking authority, a bill called the “Fair Use Act” that was introduced in Congress in 2007 and a major law review article that proposed a judicially created “reverse notice and take down” procedure for DRM restrictions.

In its essential form, DRM is a type of self-help, a kind of fence erected around a property to keep trespassers away, which frees the owner from having to engage in often lengthy and costly legal procedures. Copyright law with its fair use provisions was deemed not strict enough as digital materials multiplied, and license agreements were introduced to enforce DRM restrictions in some cases. Finally as DRM restrictions are relatively easy to bypass, Congress passed an even stricter law, the DMCA with its anti-circumvention rules, to protect DRM systems. Anti-circumvention provisions may be required by international intellectual property treaties that include the United States, but the extent to which “digital locks” can be applied thanks to the DMCA is, according to Smith, unprecedented and well beyond the requirements of any treaty.

The DMCA imposes some specific rules on DRM systems, but makes it illegal to circumvent DRM measures. Section 1201(a) of copyright law forbids circumvention of DRM systems for purposes other than those defined by four statutory exceptions: encryption research, law enforcement, privacy protection and library acquisitions. The latter allows libraries to bypass DRM systems for product trials only. As no vendor will refuse to temporarily unblock a DRM restriction in view of a potential sale, there is no real benefit to this statutory exception. Copyright law provides room for enforcing other exceptions. Congress has authorized the Library of Congress to investigate cases that can lead to new exceptions and to enforce these exceptions. Under section 1201(b), copyright law also forbids selling DRM circumvention technology, such as “DeCSS” programs for decrypting the content scrambling system used on most DVDs. Despite these provisions, other “rights, remedies, limitations or defenses to copyright infringement” are meant to be unaffected by the DMCA protections according to section 1201(c). Fair use falls within these rights, but, despite this fact, the law does not make allowances for circumvention for legal purposes such as fair use. The DMCA does make room, however, for commercial competition. Companies that have tried to prevent the marketing of generic electronic products such as printer cartridges or garage door openers, which arguably circumvent existing access mechanisms, have been unsuccessful in the courts.

DRM presents several problems for content use in institutions of higher learning. Content providers may lock public domain content in databases using DRM software and prevent users from downloading certain materials. This kind of anti-competitive use of DRM has not been challenged in the courts. It is also not possible to take clips from DVDs to illustrate, for example, film editing techniques or personality types in psychology courses, because under the DMCA such use would amount to circumventing the content scrambling system embedded in DVDs, even though this type of reproduction is fair use in a face-to-face classroom presentation. Smith observed that software for converting DVD content to digital files is not distributed in the United States. If it were, it might violate section 1201(b) of copyright law. He also considered whether regional DVD codes may be a form of protected TPM. It is certainly possible to buy DVD players that can play DVDs from all regions, but could such players constitute a form of DRM circumvention protected under the DMCA? Finally, music legally purchased and loaded on a DRM-enabled device may not play on classroom equipment. A professor, for example, may download music to be taught in a course, but then may not be able to play that music back in class even though it would be legal to do so. These are the kinds of problems that various attempts to mitigate the impact of anti-circumvention rules have tried to address.

There are attempts to mitigate the impact of the DMCA anti-circumvention rules. As mentioned above, the Library of Congress has legislative authority from Congress to develop rulemaking exceptions for “classes of works” every three years. Since the DMCA was enacted in 1998, the Library of Congress has enforced exceptions three times – in 2000, 2003 and 2006 – and was scheduled to do so again in 2009. Of the six exceptions passed in 2006, one specifically allows film and media studies professors to circumvent TPM to
make film clip compilations for coursework using DVD copies held by their institution’s film-studies library. A movement has been underway to expand this exception to include K-12 educators, all subject areas and all legally obtained copies. This expansion would not threaten the companies’ income in any way. As expanding the exceptions to the anti-circumvention rules involves public hearings and testimony by individuals, presenting compelling arguments to the Library of Congress has proven to be effective. In fact, in the case of the exception for film and media studies it was enough for a single professor to present the case that DRM inhibited his teaching to convince the Library of Congress to draft an exception that would accommodate him.

In February 2007, the Fair Use Act was introduced in Congress, but never passed. It would have codified into law all six exceptions from 2006, which are currently rule-made and remain subject to periodic reviews. The Fair Use Act would have permitted the circumvention of TPM for, among other cases, (1) access to public domain works, (2) access to works of public interest for criticism, scholarship, reporting or research, (3) compilations of educational film clips and (4) preservation in libraries. The latter is of particular importance as the various media with historical content, including DVDs, begin to deteriorate. Smith argued that what frightens publishers about the Fair Use Act is that, if implemented, it would render ineffectual the anti-circumvention rules. Fair use would constitute an exception so broad that decisions regarding the right to circumvent would often be made after the actual circumvention. If a content owner objected, the user could take the matter to court, and only then would a judge decide whether fair use can justify that particular circumvention. The Fair Use Act would thus defeat the anti-circumvention rule’s self-help purpose.

Two proposals have been suggested to allow judges to mitigate the effects of the anti-circumvention rules. The first approach, proposed by Timothy K. Armstrong in an article entitled “Fair Circumvention” [1], would allow judges to analyze any circumvention situation by factoring fair use provisions into the interpretation of the DMCA in the same way as with copyright law. The second and more promising proposal from an article by Reichmann, Samuelson & Dinwoodie, called “Reverse Notice and Takedown” [2], suggests that users give rights holders notice of their intent to circumvent on a defined date, at which point rights holders could object within that designated period or take down the TPM. If the rights holder objects, then the user could bring the case to court in an effort to obtain a favorable judgment. This option would be useful to libraries in many cases, such as making preservation copies.

Digital Rights Management Landscape in Commercial and Academic Licensing

Bill Burger explained the rationale for DRM in the current publishing environment, the opposing positions on this issue between rights holders and content users, and the issues the Copyright Clearance Center (CCC) encounters as it tries to mediate agreements between these two parties.

The CCC, founded following the 1976 revision of the Copyright Act, identifies markets and acts as intermediary between rights holders and content users. It does not hold rights to any content but only collects and equitably distributes the royalties from uses of other parties’ content. Burger pointed out that the information needs of customers often change faster than the CCC is able to convince rights holders to provide the appropriate access rights to their content.

Copyright allows rights holders to control a number of things: (1) copying of content, (2) distribution of content from the first publication through subsequent modes of access, (3) public performance and display of content, (4) preparation of derivative works (translations, adaptations, etc.) and (5) permission for others to do any of the above. Rights holders may work with agents and intermediaries such as aggregators or other organizations who sell their rights or bundle access to the content in a variety of ways.

Burger defined DRM as a set of technologies, in existence since the advent of the digital age over 20 years ago, employed by rights holders to restrict how digital works are accessed, used and reproduced. Because “spontaneous pay-per-use licensing,” which the CCC engages in, is impeded by DRM systems wherever they prevent the redistribution or copying of content, the CCC does not encourage their use. Customers are frustrated by DRM when they legally secure first copies from document delivery services with a license from the CCC, but then cannot redistribute that content in their
corporations because it is controlled by a DRM system. The CCC negotiates with document delivery services to provide content DRM-free, but this arrangement is not possible when document delivery services have explicit agreements with right holders to deliver content with a DRM system.

DRM is omnipresent in everyday content storage devices, for example, Apple’s iPod and iTunes products (which use Apple’s Fair Play system), e-books (which use DRM-enabled Adobe Acrobat and Microsoft Reader), Amazon’s Kindle (which prevents users from printing books and viewing them on any other support), DVDs (which use a content scrambling system) and Blu-ray Discs (which use the advanced access content system).

According to Burger, one reason companies use DRM systems even on content in the public domain is to protect access to the product that they invested in. It would be contrary to their business model to not recoup their investment. Their desire to prevent content cannibalization may not only have logical but also emotional reasons in the context of a digital economy in flux where the processes for delivering online content are not fully mature.

Rights holders are often not willing to provide content in a way that users find satisfactory. Users want convenient access, the ability to use and share information, transparency in pricing and no annoyances. They also want their use of information to be unbound by formats and devices, which is a major point of contention with publishers, because the publishers’ business model relies on content being resold multiple times. That same business model also implies that publishers protect their intellectual property, maintain control over the distribution of their content and be compensated for its use, all in an effort to produce commercially viable products and serve their customers, who are their market. Digital distribution also lets publishers track content use, which was not possible in the print world. Some DRM software may indeed help publishers understand how their content is used, although using DRM for that purpose alone would be a poor use of the technology. Burger noted that understanding how a rights holder’s needs may overlap with a user’s needs is an important component in agreement negotiations.

Besides its inconvenience to users and vulnerability to hackers, DRM often punishes a publisher’s best customers, who need to use the content the most and spend the most money for the corresponding products. DRM can prevent publishers from investing in new business models and can in fact slow technological innovation, as exemplified by the fate of the DAT technology, which music labels burdened with so many use restrictions that it became commercially non-viable. DRM can undermine fair-use rights and, with excessive use restrictions to a limited number of devices, can also be deemed anti-competitive.

Despite the various protection measures used by publishers, DRM does allow for high value content to be more accessible; after all, the necessity to physically visit the library to access content in the print world presented barriers of its own. As imperfect as the situation may be, it is necessary to encourage the transition in publishing from print to electronic, because without DRM publishers would be less likely to migrate. In many cases, DRM is for now, and in some environments may always be, simply an inevitable part of purchasing online content.

Free Software: The Ethical Alternative to Digital Restrictions Management

John Sullivan provided an overview of the Free Software Foundation’s mission to promote freedom for computer users and argued that because DRM presents inherent ethical problems its use should be abandoned in favor of DRM-free software.

The Free Software Foundation (FSF) was founded in 1985 and has as its mission the advancement of free software for all to use. At the core of the free software movement is the ethical conviction that if software can be shared easily then everyone should be free to do so. To the FSF, free software is not just about the practical benefits of open source code, but of a right to four basic freedoms: (1) freedom to run the program, (2) freedom to study and improve the program, (3) freedom to make and share copies of the program, (4) freedom to share modified versions of the program. Software should only come with a copyright license, not a proprietary software license that defines permitted and prohibited uses. Examples of free software include the GNU/Linux operating system, Firefox web browser, OpenOffice.org suite and the Apache web server, which runs most of the sites on the Internet.

Sullivan explained that DRM requires proprietary software and does not
work with free software. DRM systems must be proprietary because they have to monitor the user or deny the user the ability to do something on their own computer. If the user could just freely modify DRM systems, they would be ineffective. DRM is fundamentally incompatible with the four essential freedoms and, for this reason, is a wrong practice according to the FSF. In its campaigns to sensitize the public to the flaws of DRM, the FSF often uses subversive terms, such as “digital restrictions management,” “defective by design” and “treacherous computing.”

Unlike copyright, noted Sullivan, DRM does not expire after a certain time to make works freely available. It often resides on systems that are used to distribute works for which copyright has expired or over which there is no legitimate copyright concern. It may also cover patented and trademarked works that have a different status from copyright under the law. DRM obstructs private uses of works like printing, as well as fair use, which is especially important in academia, where students and teachers need to be able to take excerpts and simultaneously experience works.

Other options besides DRM exist for ensuring the viability of works. Free software has made the creation and distribution of works easier. Thanks to Creative Commons licenses, many people, including academics and artists, want to freely share the works they create. Information is a resource that users should be able to share freely if they choose to do so. Sullivan argued that some companies using DRM systems blame the entertainment industry for forcing them to do so, but these companies need to be held accountable for their business choices because they lock users into their products, which allows them to make considerable profits.

Avoiding DRM is not just an issue of ease of use; DRM is a social problem and making choices involving DRM is about fundamental ideals. Even if DRM software were free, it would still be inappropriate to the FSF, as the DMCA anti-circumvention provisions might still threaten users with imprisonment for modifying these systems. Any DRM is also based on end-user license agreements (EULAs) and terms of service, which allow their providers to prevent access to information on a given expiration date.

With many legitimate security and encryption tools, it is not third-party companies that control access, but the users themselves. As DRM-free businesses like Amazon, Rhapsody, eMusic.com and Overdrive have shown, Sullivan argued, it is not necessary to use DRM systems to be successful. He encouraged users to use licenses that prevent their work from being distributed in a way that deprives users and readers of important freedoms. The GNU General Public License version 3 is one such license, appropriate for software. For other works, the licenses offered by the Creative Commons also include provisions that prevent DRM from being used.

### 2009 Update on Exceptions to DMCA Anti-Circumvention Rules

The situation regarding exceptions to the anti-circumvention rules is, surprisingly, largely unchanged since October 2008. The Library of Congress initiated its rule-making process to revise the exceptions in that same month, with a goal of announcing new exceptions at the end of October 2009. The higher education community was very active in requesting that the exception that allows certain professors to circumvent DRM for the purpose of making compilations of film clips to use in the classroom be expanded to include more faculty members. The motion picture industry, on the other hand, argued that even the current exception was unnecessary and should be eliminated.

On October 28, 2009 the Copyright Office announced that it was delaying the rulemaking process and extending the current set of exceptions, indefinitely. They predicted that the delay would only be for about 3-4 weeks, but as of this writing, no new exceptions have been announced.

### Acknowledgments

Many thanks to Charles W. Bailey, Jr., publisher at Digital Scholarship, for his help in finding panel speakers, and to Kevin L. Smith for his 2009 update on the exceptions to the DMCA anti-circumvention rules.

### Resources Cited in the Article


I believe performance is at the heart of our work as information architects—helping humans do what they want or need to. Perhaps performance is an awkward word choice. You might typically think of computer performance rather than human performance. If you find the term confusing, envision performance as “outcomes” or “accomplishment.” I’ve found this equation valuable: “Capacity minus interference equals performance.” This equation states that we can accomplish more when we reduce interference.

Among those who attend to human performance is David Sless, an Australian information design theorist and practitioner. David runs the Communication Research Institute (http://communication.org.au), which helps industry and government improve the quality of their communication with people. In his work, David explores

**FIGURE 1. Cognitive overload**

![Menu](image)

**Top Banner**

- **Rice Rolls (1)** 4.50
- **Curry Rice** 4.50
- **Prawn Rice Pudding** 4.50
- **Shrimp Rice** 4.50
- **Thai Curry Rice** 4.50
- **Rice Special** 4.50

**Main Courses**

- **Chicken Curry** 4.50
- **Stir Fry** 4.50
- **Beef Curry** 4.50
- **Prawn Curry** 4.50
- **Shrimp Curry** 4.50
- **Thai Curry** 4.50

**Main Dishes**

- **Rice Noodles** 4.50
- **Prawn Noodles** 4.50
- **Beef Noodles** 4.50
- **Shrimp Noodles** 4.50
- **Prawn Noodles** 4.50
- **Beef Noodles** 4.50

**Sides**

- **Noodles** 4.50
- **Shrimp** 4.50
- **Beef** 4.50
- **Prawns** 4.50
- **Shrimp** 4.50
- **Beef** 4.50

**Sides**

- **Green Curry** 4.50
- **Prawn** 4.50
- **Beef** 4.50
- **Soy Sauce** 4.50
- **Shrimp** 4.50
- **Beef** 4.50

**Beverages**

- **Iced Tea** 4.50
- **Hot Tea** 4.50
- **Coffee** 4.50
- **Lemonade** 4.50
- **Ice Cream** 4.50
- **Cheese Cake** 4.50

---

**How do I order a rice bowl or noodles?**

If you like to have hot and spicy food, you can choose one of the **Spicy Rice** or **Spicy Noodles**. If you prefer a milder taste, you can choose one of the **Rice** or **Noodles**.
what happens in the space *between* people and information. His research emphasizes what people do with information and the way they use it to construct meanings appropriate for actions. His findings quite clearly show that the design of information can improve efficiency and productivity.

**So What?**

I've always been interested in how we can improve the ability for people and organizations to perform better. As someone who often feels thwarted by reading burdensome (often academic) sentences, I began my lifelong quest to make the complex clear. Along the way, I discovered Thomas Gilbert’s *Engineering Human Performance*, a foundational text for those of us who love accomplishment. Predictably, the book hurt my brain (Gilbert wrote in a traditional engineering style). So instead of reading it, I carried it around a lot. Despite the challenges, I managed to find a quote that stuck with me: “We can improve human performance as much as 600 percent by improving the structure of information.”

I believe it. Improving performance makes good business sense. Improving information structure improves performance. I believe we all have an opportunity to look more closely at the possibilities.

**Measure**

At the heart of performance thinking is benchmarking—the research and testing done before a redesign that provides the basis for comparison following the redesign. Benchmarking helps us determine whether changes in information structure enable humans to accomplish what they want to. Benchmarking helps us understand the consequences of good or flawed performance.

How do we use benchmarks to help humans? Consider the following, which we can measure only by establishing benchmarks:

- Decreases in
  - time to understand (through contrasting, comparing, differentiating)
  - time to complete a transaction or work process
  - implementation costs (for a system, product, new process, etc.)
  - hand-offs of work, calls or problems to others
  - transaction costs
  - complaints and other measures of dissatisfaction (abandoned processes, reduced sales, etc.)

And increases in

- ability to see consequences of actions
- satisfaction with an organization and its representatives and products, services or information as measured by surveys, follow-up calls or complaint activity

As information architects, we have the opportunity to learn when our constituents are thwarted by information structure. If possible, we should observe actual performers doing actual work in actual work contexts. We should understand what performers need to know, what is better referenced and what is best supported. We should understand the pressures, activities, accountabilities, interruptions, relationships and consequences of good and flawed performance. And we should measure.

Attending to performance makes good business sense. It also can be personally satisfying. We serve as gatekeepers, developing an environment to help humans perform.
## Selected Abstracts from JASIST

### From JASIST v. 60 (12)


**Study and Results:** This study aims to understand the unique character of digital artifacts (e.g., blogs, wikis, personal profiles) from a *processual* perspective – that is, by studying the processes that mediate their creation. A key contribution of the study is in elucidating the activities that comprise these mediations. A case study of “bugs” is analyzed to illustrate exemplary activities of justification, qualification and binding in the process of bug fixing in Free/Open Source Software development.

**What’s New?** The concept of “quasi-object” is introduced to characterize these artifacts as active, immanent, unstable and loosely bounded entities that meaningfully constitute, and are constituted by, their environment. It emphasizes the inherent materiality of digital artifacts that is often made invisible by their phenomenology. In this respect, the study approaches its topic from a direction opposite to that of the documentalist tradition:

Rather than emphasizing the semiotic character of material objects, it seeks to expose the socio-material character of semiotic objects.

**Limitations:** Bugs are probably too simple and minimally representative of artifacts intended here. The concepts and the method need to be applied to other digital artifacts in future work.