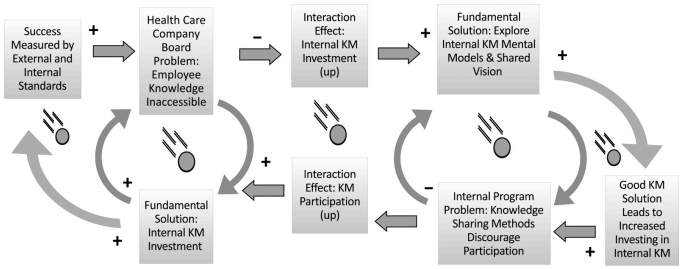
Systems Thinking for Libraries

Strategies to Connect with the Big Picture



Loop Diagram Michael F. Moore, MLS based on the work of Peter Senge. Used with Permission.
From: Zipperer L, ed. *Knowledge Management in Health Care.* London; Gower. In Press.

An Interactive Presentation by

Lorri Zipperer, ZPM and Sara Tompson, JPL

For the Special Libraries Association Annual Conference

Presented by the BIO and ENG Divisions

Sponsored by ACM, Elsevier, IEEE Xplore Digital Library, Infotrieve

June 9, 2013, San Diego, CA.

What We Will Discuss Today

- What is Systems Thinking?
  - It is not systems engineering, though similar roots
- What's in it for Information Professionals?
- Tools for Insight and Improvement
  - The 5 Whys
  - Archetypes and Loop Diagrams

What is Systems Thinking?
Core References for Today's Session

- Senge Peter M., et al. ***The Fifth Discipline Fieldbook: Strategies and tools for building a learning organization***. 1994.
- Senge, Peter M. ***The Fifth Discipline: The art and practice of the learning organization***. 1990.
- Tompson, Sara R. and Lorri A. Zipperer. "Systems Thinking for Success." Chapter 8 in ***Best Practices in Corporate Libraries***. 2011.
- Detailed bibliography:

dbiosla.org/development/systems/webliography.html

What is Systems Thinking?

- A positive word for political and strategic thinking and analysis
- A method of directing effort with effective action
- An understanding of how system behavior "over time" can uncover leverage points and optimize their use to drive sustained change
- A blame-free approach to discussing what does **not** work to enable **partnerships** to address what **could** work

Systems Thinking Involves:

- Seeing the behavior and the interaction of the parts within the context of the whole
- Building collective thinking for sustained change
- Learning from failure
- Working to dismantle the effects of silo-based activity
- Understanding and respecting how humans can affect the system
- Solving problems in non-linear fashion

Systems Thinking is Especially Useful When:

- Problems are complex (vs. simple or complicated)
- Problems persistent
- No single solution is obvious
- Problem fixes fail
- A cause (proximate and/or root) is not obvious

Jurgen Appelo. "Simple vs. Complicated vs. Complex vs. Chaotic." 8/20/08.
www.noop.nl/2008/08/simple-vs-complicated-vs-complex-vs-chaotic.html

Linear vs. Systems Thinking Examples

Linear Thinkers	Systems Thinkers
Try and fix the symptoms	Are concerned with the underlying dynamics
Try to control chaos to create order	Try to find patterns amid the chaos
Care only about the content of communication	Care about content but are more attentive to interactions and patterns of communications
Believe organizations are predicable and orderly	Believe organizations are unpredictable in a chaotic environment

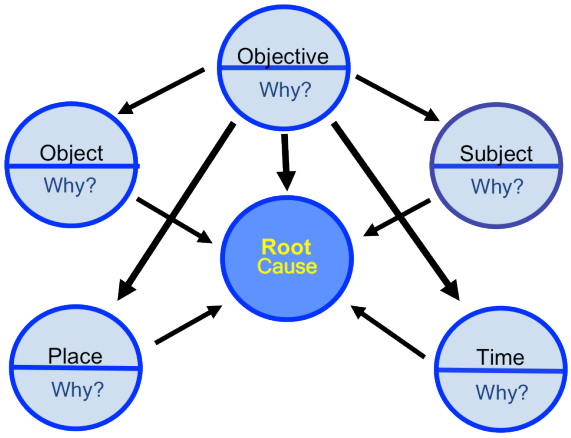
Based on: Ollhoff J, Walcheski M. "Making the jump to systems thinking." ***The Systems Thinker 17:5*** (June/July 2006):9-11.

WIIFM, the Info Pro?

- Systems thinking concepts can enable librarians to better leverage their expertise and experience for:
  - Problem and/or Risk Identification and Mitigation
  - Process-Improvement
  - Strategic Planning
- A view that enables librarians/information professionals to demonstrate both their own and their library's value to the parent organization/ community

Your Examples of Problems that Could Benefit from a Systems Thinking Approach?

The Five Whys



www.burton.co.uk/cit/images/cit02.gif *No longer online*

The Five Whys

- Simple brainstorming technique to try to ascertain the root cause(s) of a problem
- Ask "why" several times to progress from the symptom in order solve the underlying problem
- Technique could be understood as a progression of Five Whys to One How
- Should lead to more in-depth analysis and process design change

Applying the 5 Whys: Scenario from Chapter

- VP in Engineering Firm:
  - Getting repeated complaints about e-journals collection and library's "overuse" of email alerts
  - Replaced library manager several times
  - Pressured by CFO to close library because "everything is on Google" and support staff can search it
  - Husband is a librarian (elsewhere)
- One last try:
  - VP believes library could be viable and valued with some changes
  - She asks new library manager to look in to these complaints broadly and deeply

Applying the 5 Whys: Your Example(s)

Systems Thinking Archetypes

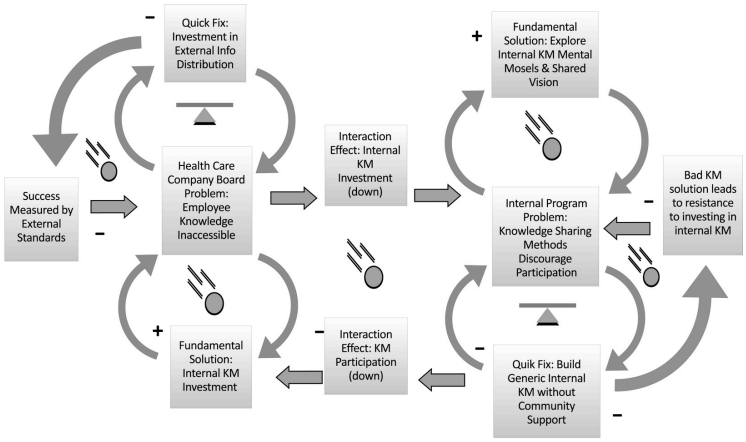
- Tool to recognize and possibly avoid reoccurring problems and behaviors
- A way to talk succinctly about a deeper problem
- Recognized descriptions lend credibility to the message being shared
- Heads up to behaviors reasserting themselves – librarian can bring value by nipping it in the bud / recognizing early / being proactive
- Reduce waste of time and resources through early problem recognition

Systems Thinking Archetypes: For Example: Fixes that Fail

- "We need to manage our knowledge better to serve our members!"
- Librarian psyched to be invited, as internal knowledge management has long been unaddressed thus minimizing staff responsiveness to external needs
- Attends strategy meeting only to find they really are envisioning external info push via the company web site
- Web project ends up swallowing all resources that could have been used for internal improvements assuming external tools would address all internal needs
- Staff still frustrated by makeshift tools and rework to inform their response to members

Systems Thinking Archetypes: Fixes that Fail

Loop Diagram Michael F. Moore, MLS based on the work of Peter Senge. Used with Permission. From: Zipperer L, ed. Knowledge Management in Health Care. London; Gower. In Press.



Archetype(s): Your Example(s)

Systems Thinking Resources: Experts in Your Midst

- Team should be multidisciplinary
- Teams should be built to address weakness or resistance to systems thinking approaches
- Teams should engage those not only with process/topic expertise but those exhibiting curiosity and comfort with problem solving and improvement processes
- Teams should be guided by a vision that will withstand improvement and change fatigue

Recap

- Ah Ha moments for you today?
- What will you tell your staff?
- What will you tell your peers?
- What will you tell your leadership?

Continuing the Conversation

Lorri Zipperer, Principal
Zipperer Project Management – ZPM
Lorri@ZPM1.com

Sara Tompson, Manager
Library, Archives & Records Section
Jet Propulsion Laboratory, California Institute of Technology
Sara.R.Tompson@jpl.nasa.gov

Systems Thinking:
Selected Readings and Instructor Bios

Primary Readings:

Senge, Peter M. **The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization.** New York: Doubleday/Currency, 1994.

Senge, Peter M. **The Fifth Discipline: The Art and Practice of the Learning Organization**. MANY editions are now available, but this first edition was New York: Doubleday/Currency, 1990.

Zipperer, Lorri and Sara Tompson. "Systems Thinking – A new avenue for involvement and growth in the profession." ***Information Outlook***, journal of the Special Libraries Association 10:12 (December 2006), pp. 16-20.

Additional Items of Interest:

Argyris, Chris. "Teaching Smart People How to Learn." ***Harvard Business Review***. 69:3 (May 1991), pp. 99-109.

Bellinger, Gene. "Archetypes: Interaction Structures of the Universe" on his ***Mental Model Musings*** website: http://www.systems-thinking.org/arch/arch.htm.

Choo, Chun Wie. "Information Failures & Organizational Disasters." ***MIT Sloan Management Review*** 46:3 (2005): 8-10.

Corliss, Rebecca, Sara Tompson and Lorri Zipperer. "Systems Thinking: A Stepping Stone to Information Professional Integration." ***Business Information Alert***. 16:10 (November/December 2004), pp. 1-4, 11.

Denning, Stephen. "Effective storytelling: strategic business narrative techniques." ***Strategy & Leadership*** 34:1 (2006): 42-48.

Fuller, Howard. "Systems Thinking, Complexity and EI&K for Safe Care." Chapter 7 in **Patient Safety: Perspectives on Evidence, Information and Knowledge Transfer**. Zipperer, Lorri, editor. London, UK. Gower [in press].

Lachance, Janice. "What Bad Times Teach Us." ***Information Outlook***, journal of the Special Libraries Association 13:8 (December 2008/January 2009), p. 3.

Marais, Karen, Joseph H. Saleh and Nancy G. Leveson. "Archetypes for Organisational Safety." ***Safety Science***, 44:7 August 2006), pp. 565-582.

Matarazzo, James M. "The Value of the Information Professional." ***Bibliotheca Medica Canadiana***. 10:3 (1989): 117-120.

Ollhoff J, Walcheski M. "Making the Jump to Systems Thinking." ***The Systems Thinker***. 17:5 (June/July 2006), pp. 9-11.

Systems Thinking:
Selected Readings and Instructor Bios

Senge, Peter M. et al. **The Dance of Change: The Challenges to Sustaining Momentum in Learning Organizations.** New York: Doubleday/Currency, 1999.

Shubert, Vicky. "No Simple Solutions." ***Leverage Points Blog*** January 5, 2010 - http://blog.pegasuscom.com/Leverage-Points-Blog/bid/29392/No-Simple-Solutions

SLA Biomedical and Life Sciences Division – **SLA Endowment Grant Project: "Systems Thinking Self-Assessment Tool."** http://www.sla.org/division/dbio/Systems/project.htm

Tompson Sara R. and Lorri A. Zipperer. "Systems Thinking for Success." Chapter 8 in **Best Practices in Corporate Libraries**. Porter, Marjorie and Sigrid Kelsey, editors. Santa Barbara: Clio Press, 2011, pp. 129-150.

Waters Foundation. **Systems Thinking in Schools. "Habits of a Systems Thinker"** - http://www.watersfoundation.org/index.cfm?fuseaction=search.habits.

Wilkinson, Richard. "10 Useful Ideas on Systems Thinking" **Futurist Blog** (2001) - http://www.futurist.com/articles-archive/business-and-economics/10-useful-ideas-on-systems-thinking/

Zemke, Ron. "Systems Thinking." **Training** 38:2 (February 2001), pp. 40-46.

Speaker Bios

Sara R. Tompson is the Manager of the Library, Archives & Records section of the Jet Propulsion Laboratory (JPL) in Pasadena, CA. She is in her final year of a three-year term as a Director on the Board of the international Special Libraries Association (SLA). Sara has written and taught with Lorri Zipperer and others on the applications of systems thinking to libraries and information centers. She is an instrument rated private pilot and a member of the Southern California Chapter of the Flying Samaritans; they fly medical practitioners to Guerrero Negro, Mexico, to provide services at a small medical clinic. Sara is a regular guest lecturer for UCLA's Information Studies reference course. She and her husband and cat enjoy watching anything on Netflix.

Lorri Zipperer is a cybrarian and the principal at Zipperer Project Management in Albuquerque, NM. Lorri was a founding staff member of the National Patient Safety Foundation as the information project manager. Lorri currently works with clients to provide patient safety information, knowledge sharing, project management and strategic development guidance. She was recognized in 2007 with a Lifetime achievement award from the Biomedical and Life Sciences Division of SLA and has twice received the SLA Wilson award, once with Sara Tompson. Lorri's knowledge management efforts focus on bringing multidisciplinary teams together to explore and enable effective knowledge transfer. She has worked with regional offices of the National Network of Libraries of Medicine to facilitate avenues for the development and implementation of multidisciplinary team-based knowledge sharing initiatives. Lorri contributed chapters on knowledge sharing work for medical librarians and systems thinking as a strategic development approach to core library management publications in 2011. Lorri has books in press for Gower Publications on knowledge management [isbn/9781409438830] and evidence, information and knowledge sharing in patient safety [isbn/9781409438571] to be published in late 2013.

Systems Thinking: Primary Archetypes: Selected Library/Information Center Illustrations

Descriptions mainly from Senge, et al. ***The 5th Discipline****, pp. 378-390 and from* ***The 5th Discipline Fieldbook****, pp. 121-150.*

Accidental Adversaries

Description: A situation where groups of people who ought to be in partnership with each other, and who want to be in partnership with each other (or at least say they do) end up being bitterly opposed. It is characterized by communication breakdown; competition over cooperation; and short-term over long-term thinking.

For Example....

Revenue-generating members of a firm (e.g. attorneys, engineers, physicians, associates, paralegals, etc.) have been known to do their own research when the library operates via cost recovery, and sometimes when they want to keep information skills in hand to promote themselves. This behavior can cause costly delays or errors (see "Johns Hopkins' Tragedy: Could Librarians Have Prevented a Death?" newsbreaks.infotoday.com/nbreader.asp?ArticleID=17534). If each employee does what s/he is hired for and best suited to do, customers receive better service and safety is better ensured, but without a big picture view, it is easy to fall into competition and not collaboration.

Fixes that Fail/Backfire

Description: A fix, effective in the short term, has unforeseen long-term consequences which may require even more use of the same fix. The central theme of this archetype is that almost any decision carries long-term AND short-term consequences and the two are often diametrically opposed. It is an example of a reinforcing loop/vicious circle – where the same solution is applied repeatedly with no improvement.

For Example...

A university's faculty senate formally complains to the Library Director that faculty are not receiving "informed service" at any of the library service points on campus and demands something be done. The Library Director and her team decide to hire a PhD researcher with no library or information training to run one of the smaller departmental libraries. The researcher develops a great relationship with the lab group closest to her own interests, and serves their information needs, but neglects the other groups. The served group includes a senate member, so the PhD is reported as a success. Over the next few years, the Directorial Team hires more PhD's to run more libraries. Eventually the collection and services vary greatly across campus and none of them are optimal and in fact are worse than at the outset.

Limits to Growth

Description: A process feeds on itself to produce a period of accelerating growth or expansion. Then the growth begins to slow (often inexplicably to the participants in the system) and eventually plateaus or comes to a halt. The process may even reverse itself and begin an accelerating collapse. This is another short-term-focus pattern of not anticipating limits to growth and/or worst of times. The system "pushes back" in this one.

For Example...

A medical library invests in expensive smart phone docking stations for the library when a certain brand of phone becomes hugely popular with the medical students. First two stations are acquired, then six as demand increases. After two years, popularity of those devices has waned a bit on campus, plus more models are available, some of which do not work in the docking stations.

Systems Thinking: Primary Archetypes: Selected Library/Information Center Illustrations

Shifting the Burden

Description: A short-term "solution" or symptom fix is used to correct a problem, with seemingly positive immediate results. As this correction is used more and more, more fundamental long-term corrective measures are used less and less. Over time, the capabilities for the fundamental solution may atrophy or become disabled, leading to even greater reliance on the symptomatic solution, i.e. the capacity of the system to right itself declines. "Crisis heroism" [Fieldbk] is illustrative of this archetype, including those individuals who frequently "rescue" an organization (or person) from a problem situation.

For Example...

> A new librarian at a new firm establishes a pattern of getting researchers the articles and documents they need via interlibrary loan. Sometimes steep rush fees are required, plus the librarian often goes to great lengths (calling friends at his previous employer, etc.) to get the materials. The researchers are happy, though, as long as they have what they need. And they keep what they need in their labs. In the meantime, the librarian is barely building either print or online collections. After several years, he has little but bills to show for the library, cannot access materials in the labs, and has fallen behind on new developments in the literature.

Tragedy of the Commons

Description: Individuals use a commonly available but limited resource solely on the basis of individual need. At first they are rewarded for using it; eventually they get diminishing returns, which causes them to intensify their efforts. Eventually, the resource is significantly depleted, eroded, or entirely used up. Central Park's common area for sheep-grazing is the source of this archetype's name. Nowadays freeways illustrate a common resource (the fastest way to get from one point to another) that can be overused such that each individual driver feels victimized by the jam, even though each helped create it. This is another competition over cooperation scenario like Accidental Adversaries.

For Example...

> Discretionary acquisition funds are intended to build collections in emerging areas of campus research, and all the library selectors decide on purchases. However, when demanding faculty members occasionally complain to the Library Dean about the lack of a particular resource, he directs that these funds be used to buy the item immediately. He repeatedly has library staff go to this pool, with the result that not enough funds are available for planned critical, interdisciplinary resources.

vol. 10, no.12

information outlook®

December 2006

www.sla.org

Systems Thinking

Internet
XBRL Changes Financial Reporting

Negotiate
Consortia Build Strength

table of contents

Features

SLA Member Profile
10

Structuring Information
By Forrest Glenn Spencer

Cover Story
16

Systems Thinking
By Lorri Zipperer and Sara Tompson

Internet
22

XBRL Changes Financial Reporting
By Louise A. Klusek

Consortia
31

Consortia Build Negotiating Strength
By Karen Eccles

Columns and Departments

5

Executive Outlook
The Power of Participation: 2006 in Review
By Janice R. Lachance

6

News Briefs

6

Web Sites Worth a Click
By Carolyn J. Sosnowski

8

Business Management
The Learning Organization
By Debbie Schachter

39

Coming Events/Ad Index

40

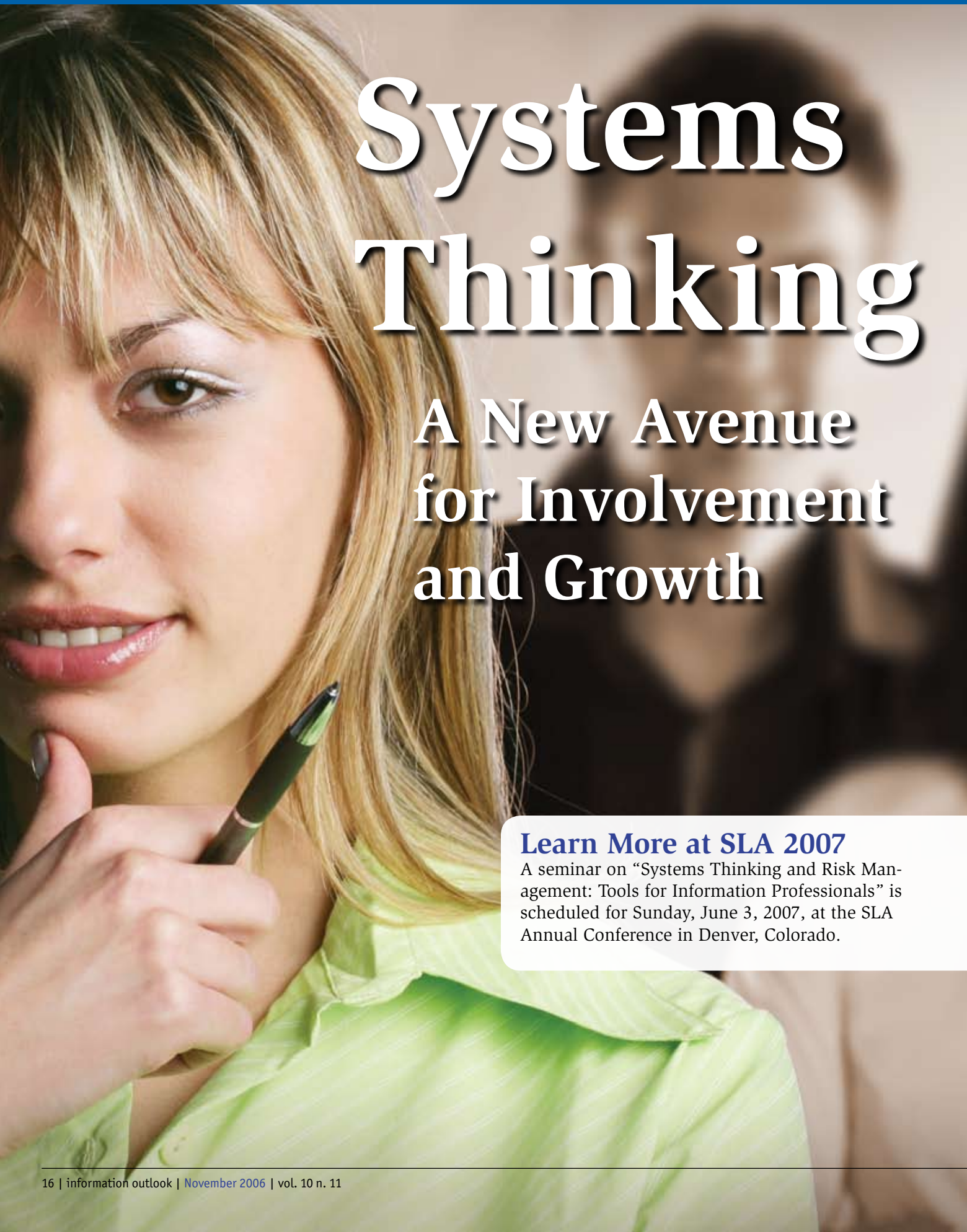
Copyright Corner
Weighing the Four Fair Use Factors
By Lesley Ellen Harris

42

Information Tech
Growing Your Own Search Engine
By Stephen Abram

44

Information Management
O is for Optimism
By John R. Latham



Systems Thinking

A New Avenue for Involvement and Growth

Learn More at SLA 2007

A seminar on "Systems Thinking and Risk Management: Tools for Information Professionals" is scheduled for Sunday, June 3, 2007, at the SLA Annual Conference in Denver, Colorado.

By Lorri Zipperer and Sara Tompson

A solo librarian in a mid-sized product development consulting firm is routinely faced with service problems due to lack of support and increasing requests for his professional services. The problems result from a change in behaviors of the professional staff. This group has been engaged in more continuing education, and the staff members have been doing more primary research in response to a leadership challenge to improve their own knowledge base, and thereby improve their professional status.

One Friday, upon receiving an expedited instant-message request from one of the firm's top-performing consultants for 15 articles to be obtained and delivered right away, the librarian responded that it is the information center's policy that staff obtain articles themselves through the digital library. The consultant—a library champion and frequent user—was not at all pleased with this response and arrived in person at the information center to express her discontent. She is an extremely busy professional who has a complicated travel schedule and notoriously demanding clients. The librarian proceeded to try to train the consultant on how to find, download, and print the materials directly from her PDA. However, this approach just added fuel to the fire—the consultant did not understand why the librarian would not simply get the articles for her.

Middle management at the organization had put up some resistance to the information center's new self-service model, but they had accepted it begrudgingly. Managers are still heard around the water cooler complaining about it and saying that they tend to read less as they feel it is such a hassle to find and print their own materials. As news of what some staff members considered his refusal to help them has spread through the consultant ranks, the librarian has found that requests for document retrieval have dropped off, which is what he wanted. However, invitations for the librarian to participate on product development teams and become involved in innovation activities have dropped off as well.

The librarian had designed the digital library with efficiency in mind, to enable staff at all levels to access materials any time of day. However—because he felt professional staff didn't have the time or interest to engage in the process—he didn't involve anyone else in the planning and set up, or in projecting its effect on existing services. If he allows staff to call on him for routine research, his more critical and specialized services would delayed. Therefore, he decided to stand firm on the self-serve policy.

Systems thinking might have helped prevent the problem.

What Is Systems Thinking?

Systems thinking is a means to deeply understand and recognize the interconnectedness of roles and services in organizations. Systems thinking was introduced to a widespread audience by Peter Senge in *The Fifth Discipline*; it is built upon both systems engineering and organizational psychology tools (Senge, 1990). Systems thinking enables one to see how an individual's activities affect the larger environment (Sterman, 2006). Systems thinking facilitates a shift away from blaming individuals or departments—IT and demanding staff (as illustrated in the opening scenario) are common scapegoats for librarians—to look at how an entire organization may be contributing to a problem (Goodman, 2006).

The goal of systems thinking is to ensure that strategies are built to optimize and fully respond to interactions within organizations, rather than making them confrontational and thus less effective. Systems thinking enables a mature understanding of the interaction between entities—that is, individuals, departments, and business units—within an organization. These interactions produce behaviors that feed back into the overall work processes and output of the organization. This analysis centers upon breaking down organizations and issues into component parts, a key aspect of the systems thinking approach, and can result in strikingly different conclusions than those generated by traditional forms of analysis, especially when what is being studied is complex or has a great deal of feedback from other sources, internal or external.

Adoption of a systems thinking approach can position information professionals to work more effectively in their respective organizations. Systems thinking requires asking "*Why?*" more often than may seem normal. Systems thinking also requires digging deeper to learn the root causes of problems, and it requires building multidisciplinary relationships. Through these new ways of analyzing and interacting, a systems-thinking information professional can:

- Minimize risk.
- Realize sustainable programs and improvements.
- Highlight goal-oriented contributions through strategic insight and observations.

Systems thinking has been embraced by innovators in health care in the quest to reduce medical error (Leape, 1994). Information professionals have recently noted the value of seeing information and knowledge transfer from a systems thinking perspective (Corliss, Tompson and Zipperer, 2005). However, thus far no empirical evidence has been gathered to determine whether systems thinking is used in, or resonates for, librarianship.

To address this evidence gap, the Systems Thinking Perspectives: Innovation in Knowledge and Information Delivery assessment program was launched in 2005. The work builds upon several projects by overlapping researchers, including work to understand the librarian's role in patient safety and other broader-based educational programs for librarians (Zipperer and Sykes, 2004; Zipperer, Corliss and Tompson, 2005.) The project Web site—www.sla.org/division/dbio/Systems—provides tools to explore one's acceptance and

application of systems thinking behaviors both at a "community of practice" level and within one's own organization. The Systems Thinking Perspectives Web site is hosted by SLA's Biomedical and Life Sciences Division and was funded by a 2004 SLA Endowment Fund grant.

Systems Thinking and Librarians

A primary goal of the Systems Thinking project was to help information professionals see the myriad of interactions that are at play in what may appear, on the surface, to be straightforward workplace transactions. The project sought to get a snapshot of how information professionals view themselves in the context of systems thinking behaviors. An online assessment tool was used to collect data from the field.

The assessment tool was distributed to begin to quantify librarianship's adoption of Senge's systems thinking behaviors and help information professionals "walk the talk" of the systems thinker (Senge, 1990). The availability of the assessment tool was announced on various SLA and information professional electronic discussion lists, written up in newsletters, and mentioned in educational forums on the topic to raise awareness and increase response.

The assessment was designed to stimulate reflection on:

- How information professionals view themselves in relation to their organizations.
- How personal philosophies enhance one's ability to contribute to the overarching goals of the organization.
- How work behaviors play a part in learning, growth and change management.

The tool focused on behaviors that support a systems thinking perspective in four key areas as defined below.

- **Interconnectedness.** A system is a group of interacting and interdependent components that form a unified and more effective whole. Systems thinking emphasizes the relationships among a system's parts, rather than the parts themselves.
- **Partnership and leverage.** Partnership involves respecting co-workers and encouraging them to believe that they can contribute to solutions. Tapping the insights and knowledge of all persons in the community facilitates opportunities to leverage experience, resources, and expertise to produce the best organizational decisions and results.
- **Personal mastery.** Individual learning is a key component of personal mastery. It involves defining a clear vision of what one wishes to achieve and then setting a goal to accomplish it.
- **Discussion and dialogue.** Inquiry, conversation, listening, and understanding in an atmosphere of trust and respect can lead to breakthrough ideas and creative energy. Dialogue and discussion don't just happen. They generally need to be orchestrated through conscious efforts to build an opportunity and to prepare personally for this level of exchange.

Individuals who took the assessment were instructed to reflect on their style of working with others. This direction toward introspection was intended to encourage individuals to embrace systems thinking. In a further effort to make systems thinking more clearly applicable to information professionals, the project team set up a "crosswalk" with the SLA competencies (Competencies for Information Professionals, 2003). These links make analogies between some key and well-understood competencies concepts and systems thinking tools and views. In addition, the tool and the site were arranged to make it easy for participants to learn more about systems thinking through materials made available on the site and through peer discussion, facilitated by the blog. The researchers hoped that after individuals took the assessment tool, they would then employ systems thinking methodologies to interact more effectively with their environments from a proactive and innovative platform.

What We Learned

As of September 1, 115 respondents had completed the assessment. The tool remains available online (at www.surveymonkey.com/s.asp?u = 88692854536) and it is expected that some additional responses will be received because of this article and other systems thinking discussions.

The data from the responses thus far indicates that librarians view themselves as exhibiting key systems thinking behaviors, as discussed below. The tool ranked participants' levels of agreement with statements about key systems thinking paradigms.

- **Interconnectedness.** 80 percent agree (strongly agree and partially agree combined) that they view their work as part of many networks. Increasingly, information professionals and librarians are attuned to organizational objectives and priorities and attempt to align their priorities with organizational initiatives.
- **Partnership and leverage.** 71 percent agree that this is part of their jobs. Information professionals understand that effective interaction with other departments and other professionals is crucial to their success.
- **Personal mastery.** 75 percent agree they exhibit this level of self-awareness. Overall, information professionals are quite positive about their engagement in sharing knowledge and in encouraging others to share knowledge.
- **Discussion and dialogue.** 86 percent agree they regularly do both. There are more "strongly agree" responses in this section than in any other sections of the survey.

The sum of the "not sure and disagree responses" are:

- **Interconnectedness.** 32 percent don't actively participate in planning in general, or planning for new initiatives.
- **Partnership and leverage.** 37 percent can't easily identify key stakeholders.
- **Personal mastery.** 38 percent don't spend time around their clients to understand their information needs.
- **Discussion and dialogue.** 19 percent don't actively facilitate a non-threatening environment when seeking solutions or exploring opportunities for improvement.

Discussion

Information professionals must be good communicators to succeed. Two of many illustrations of this necessity include the reference interview—a structured communication technique that is core to the pro-

fession—and the fact that librarianship is a service profession and as such requires interactions with many people. Therefore, it is not surprising that the assessment results indicate high levels of agreement for the systems thinking practice of discussion and dialogue.

The low number of "agree" responses to the interconnectedness question about planning indicates lost opportunities for many information professionals to affect and drive information and knowledge sharing strategies at the organizational level. Being involved in the planning of organizational initiatives is an important way to have a broader and more effective impact on the overall organization and its information use.

The fact that close to 40 percent of the respondents don't strongly identify with stakeholders in their organizations is troubling. As a profession, librarians should explore how communications with other members of the organizations, especially with thought leaders and decision makers, can become more proactive and strategic.

While the majority of respondents to the Systems Thinking assessment agreed they are consciously focused on opportunities for dialogue and discussion, close to 20 percent said they are not. It is likely that for most adults the notion of building dialogue into busy schedules can be a challenge, partly because of time constraints. This reluctance may also partly arise from discomfort at: replaying difficult conversations, actively soliciting others' points of view, or working with others with whom one has had difficulty in the past to achieve outcomes that are more satisfactory in the future. Nevertheless, these are the sort of conversations that information professionals should initiate to become more successfully integrated into their organizations.

Given the limited response to the assessment as announcements of the program and the tool availability were distributed to the SLA membership at large (with a targeted focus on the Biomedical, Engineering, and Leadership and Management Divisions and the Illinois Chapter) the authors considered that the numbers may reflect the "Lake Woebegone" effect: Only those who are "better than average" in systems thinking areas completed the survey. Also, there was significant drop off (one third) in responses after the first set of questions. This drop off may have occurred as the respondents' desire to self-assess dissipated or because the assessment was seen as too long or too challenging, or no longer of interest.

Applying Systems Thinking

This question of how librarians can apply systems thinking—which spurred the project and the assessment tool at the core of it—still needs to be addressed. Looking back at the scenario that opened the article, some systems thinking perspectives could be applied that could prevent, or mitigate, the isolation and ineffectiveness the librarian was starting to experience.

A systems thinking analysis would reveal that the librarian chose a quick response to a tough situation but did not consider the unintended, long-term consequences on the library or the staff and the organization—the other parts of the system with which the library was involved. A bigger-picture response to his frustration as a solo librarian who was asked to help move initiatives forward, but also was overwhelmed by article retrieval tasks, could have provided alternatives. In addition to keeping the interconnectedness of the firm in mind, his adoption of a systems thinking perspective could enable him to leverage partnerships, initiate discussions and dialogues, and become a

Sara R. Tompson, M.S., pictured at left, is the science and engineering team leader at the University of Southern California Libraries and secretary of the SLA Physics-Astronomy-Mathematics Division. She can be reached at sarat@usc.edu. Lorri Zipperer is a cybrarian and the principal at Zipperer Project Management in Evanston, Illinois. She works with clients to provide patient safety information, knowledge sharing, and general project management guidance. She may be contacted at lorri@zpm1.com.

The authors would like to acknowledge the SLA Endowment Fund committee and the SLA Biomedical and Life Sciences Division for their support of this effort and Jan Sykes for her work on the SLA-funded project and her assessment and compilation of the survey results. For a complete review of the data or to take the assessment, visit the project Web site at www.sla.org/division/dbio/Systems.

better master of his professional self.

Briefly, these four principles could have been applied as follows:

• Interconnectedness

- The librarian could present service levels and priorities to the staff to illustrate the impact of article demands upon a variety of units and individuals engaged in moving the firm forward.
- He could involve a variety of staff from various departments to ensure buy-in of the new self-service approach.

• Partnership and leverage

- The librarian in the scenario could build a multidisciplinary team to work on the structure of the digital library and its services, which would both ensure buy-in and garner him some willing partners for implementing it.
- The relationships built by these sorts of interactions could leverage the librarian's "capital" within the firm—raise the profile of the information center and highlight his professionalism.

• Personal mastery

- Part of personal mastery is continually learning how to see current reality more clearly (Senge, 1990). The librarian could do this by seeking to understand the consultants' work and knowledge sharing activities more clearly in order to best design services and staff outreach
- Work with instead of against the creative tension between current reality and his vision of a digital library, by, for instance, being candid about his plan with management and the consultants—his customers, and educating and advocating to get their buy-in.
- Set goals to achieve a deeper understanding of the long-term expectations of his organization and how they fit his personal career vision.

• Discussion and dialogue

- The librarian could have invited the consultant to discuss the situation and brainstorm about solutions for the future, including ways to require some level of self-service without making inappropriate demands of the users' time. The librarian should pick up the tab!
- The librarian could be a proactive facilitator, and bring together the consultant and middle management staff to talk to them about their needs and then act upon what was learned.

Plans

This SLA-funded assessment project was one of the first, if not the first, effort to obtain some data on information professionals' views of themselves as systems thinkers. As systems thinking is still very new to the profession and the library literature , the tool also served as an introduction to systems thinking for many of the respondents. The data should be considered preliminary. Nevertheless, the project successfully identified big-picture perspective gaps in many of the respondents' world views, where a systems thinking approach could serve as an important bridge.

The authors, in collaboration with various partners, are working to introduce systems thinking more broadly to the profession. A systems thinking continuing education course with a risk/benefit approach, based in part on successful systems thinking models in the health care arena, will be delivered at the 2007 SLA Annual Conference in Denver. Several possibilities for peer-reviewed articles on systems thinking in librarianship are under consideration.

References

Competencies for Information Professionals. 2003. Washington DC, Special Libraries Association. Available at: www.sla.org/PDFs/Competencies2003_revised.pdf

Corliss Rebbeca, Sara Tompson, and Lorri Zipperer. 2004. Systems thinking: a stepping stone to information professional integration. Business Information Alert. 16 (10): 1-4, 11.

Goodman Michael. 2006. Everyone's problem to solve: using systems thinking cross-functionally. The Systems Thinker. 17 (5): 6-8.

Leape Lucian L. 1994. Error in medicine. Journal of the American Medical Association. 272 (24): 1851-1857.

Senge Peter M. 1990 The Fifth Discipline. New York, Random House.

Sterman John D. 2006. Learning from evidence in a complex world. American Journal of Public Health. 96 (3): 505-514.

Zipperer Lorri, Rebecca Corliss and Sara Tompson. 2005 Systems Thinking for Librarians: Basic and Personal Approaches. Continuing education course presented at Special Libraries Association Conference; June 5, 2005; Toronto. http://isd.usc.edu/ ~ sarat/CE_SLA2005_Part1_fnl.pdf

Zipperer Lorri and Jan Sykes. 2004. The role of librarians in patient safety: gaps and strengths in the current culture. *Journal of the Medical Library Association*. 92:498-500.