Soft Systems Methodology Results Transform Professional Roles in the Digital Teaching Library

Mary M. Somerville, Assistant Dean, Robert E. Kennedy Library, California Polytechnic State University – San Luis Obispo, California USA. msomervi@calpoly.edu
Anita Mirijamdotter, Head of Research, Social Informatics, Luleå University of Technology, Sweden. anita.mirijamdotter@ies.luth.se

Changing Professional Context

The phrase Digital Teaching Library serves as the guiding metaphor for our 'library of the future' which will extend the physical library into a digital 'library without walls' that connects users to teaching, collections, research, and services, while building and maintaining valuable core relationships. For the library to move from its traditional custodial role to pro-active delivery and integration of digital information resources requires repurposing the library and redeploying its assets. This paper describes the outcomes of an organizational transformation initiative that has readied librarians to assume new roles organizing virtual information and knowledge space (Materska 2004).

While this knowledge management work certainly builds upon traditional professional competencies – librarians as mediators between information systems and users, it also encompasses new relationships between people, information, and knowledge. The Cal Poly experience suggests that librarians, as actors in the social structure of knowledge, can further information creation, usage, and transformation - helping people to learn, to be informed, to solve problems, and ultimately to create and codify new knowledge.

To meet the profession's new knowledge management responsibilities requires uniting information content with the context in which it is created, distributed, organized, and used. Accomplishing this requires moving from a library centric perspective focusing on acquiring and organizing collections for anticipated consultation – a "just in case" model, to a user-centered orientation where evaluative frameworks for resource relevance are relational and contextual – a blending of "just in time" and "just for me" models. Users' high-pressure, high-demand expectations have changed how we, as librarians, think and what we think about.

Soft Systems Methodology

For the past two years, we have coached university library staff at California Polytechnic State University (Cal Poly) in San Luis Obispo, California, in their use of systems thinking and, particularly, Soft Systems Methodology (Checkland 1999). Systems thinking enables understanding the function of the organization in relation to the overall organization of which it is a part. Acting within a systems framework leads to consideration of what is useful for others. SSM, therefore, challenges conventional 'parts' thinking. Its robust 'toolkit' facilitates reconsideration of processes, purposes, and relationships – which can inform new ways of understanding the workplace and one's

role in it (Somerville & Mirijamdotter, April 2005; Mirijamdotter & Somerville, July 2005; Somerville, Huston, & Mirijamdotter, 2005). Developed over thirty years ago by applied researchers at the University of Lancaster, SSM guides appreciative workplace conversations that consider multiple points of view during the course of investigating, modeling, and evaluating for taking action. This iterative process, represented below as Figure 1, now guides the application of 'big picture' systems thinking to planning change, enabling people, and building alliances that better align library services and systems with institutional priorities (Somerville, 2005).
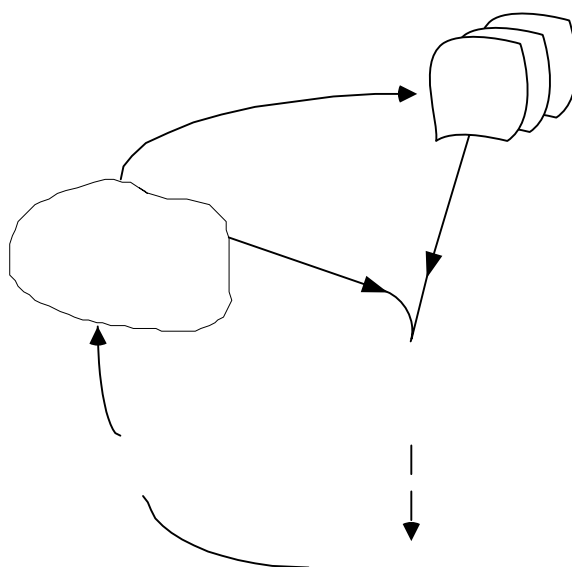

Figure 1. Soft Systems Methodology (SSM) Process

Initial exploratory SSM-facilitated inquiries were intentionally broad, considering structures, processes, and cultures that were both internal and external to the organization. Through iterative reviewing and rethinking, participants created hand drawn renderings, named 'rich pictures', that provide insights into the library's organizational situation, past history, and plausible futures. 'Finding out' was accomplished through consideration of both qualitative data – including a phenomenographic study of undergraduate students' conceptions of information use (Maybee 2006) – and also quantitative data – such as gate counts, circulation figures, and database hits. A diversity of data types was especially useful in the 'modeling' phase when librarians built conceptual models enriched by many perspectives and assumptions. These visualizations informed the 'comparing' phase that assessed and evaluated implications and indicators of changing internal and external circumstances. In the final phase, 'taking action', it was clear that bold new steps were needed to enhance web presence and accelerate digital migration. This prompted staff recognition

that we needed to implement organizational changes sufficient to make desired actions possible.

Building Insights, Crossing Boundaries
Operating from an expanded appreciation for both internal and external circumstances and animated by ongoing information exchange and knowledge creation dialogue (Somerville, Mirijamdotter, & Collins 2005), librarians continued to use systems thinking as they forged innovative working partnerships with academic faculty. These relationships subsequently positioned librarians to co-create dynamic interdisciplinary centers of instruction, exploration and learning (Somerville & Schader, 2005).

To gain insight into students' perspectives, we also invited research projects generated by students about students. Between January and December 2004, six student teams applied interaction design techniques to evaluate web research guides, the library website, a federated 'out of the box' search engine, and a digital research portal (Rogers, 2005; Rogers, Somerville, & Randles, 2005; Gillette & Somerville, 2005). Not only has the data gathered through focus groups, survey instruments, and usability studies provided recommendations for service and system redesign, but it also ensured new user-centered workplace conversations and insights. Because SSM dialogue methods inherently encourage persistent learning, we continue to benefit as we apply students' findings to take informed actions that better integrate technology and information into campus teaching and learning activities.

Currently, we extend our conversation based, systems thinking methodology to work with other campus constituencies. New collaborative partnerships are necessary to achieve our near term goal of co-creating dynamic architectural places, rich with facilities for collaborative group study and social interaction as well as the more traditional individual engagement with collections. Additionally, we prepare to co-design virtual spaces populated with librarians, information technologists, instructional technologists, media specialists, and academic faculty who will work together to advance distributed engagement among interdisciplinary learning communities in a Digital Teaching Library.

The Digital Teaching Library
In its maturity, the Digital Teaching Library (DTL) will seamlessly link teaching, collections, research, and services, advancing learning through synergistic information exchange and knowledge creation. Information architecture will provide seamless integration of digital collections (including licensed electronic databases, data sets and other aggregated sources, and architectural archives), digital tools (including federated search engines such as Google Scholar, PolySearch, and PolyCat), and virtual services (such as 24/7 AskNow and eReserves).

As the first DTL project, the Cal Poly Learning Commons represents an emerging 'information commons' innovation (Beagle, 2004) among academic libraries in North America, Australia, and New Zealand. Enabled by systems thinking to initiate and fortify campus partnerships, library staff members ably contribute to the co-creation of the

Learning Commons - a rich physical and virtual environment that encourages and advances interdisciplinary learning and scholarship. Librarians' professional purposes have necessarily shifted from 'information gatekeeper' to 'knowledge integrator'.

During planning, as library boundaries have expanded well beyond conventional 'bricks and mortar', so too have our partnerships extended to include Information and Technology Services (ITS) and Center for Teaching and Learning (CTL) staff who now work side-by-side with library professionals and academic faculty to discover new ways of advancing student success. Amidst growing recognition that electronic information resources are proliferating and the tasks of judging their value and employing them skillfully are becoming more complex, these cross-functional teams leverage the transformative deep learning potential of digital technologies to move students from mere consumers to able producers of interdisciplinary thought and innovation.

Results and Reflections

Dynamically changing academic community needs and expectations, in combination with advances in information and communication technology, drive contemporary demand for organizational flexibility and changeability in order to ensure viability. Here we demonstrate the successful introduction of innovative ways of working, communicating, cooperating, and interacting, as well as revitalizing an academic library organization.

Our experiences suggest that holistic SSM inquiry tools improve alignment with the knowledge generation and dissemination purposes of the academic enterprise. SSM outcomes facilitate creation of shared vision and purpose that informs invention of new roles and responsibilities for cross cutting teams, aligning intentions and actions among physically and dynamically changing work groups, and accurately anticipating the external indicators informing responsive campus wide courses of action.

References

Beagle, D. (2004, August). From information commons to learning commons. http://www.usc.edu/isd/libraries/locations/leavey/news/conference/presentations/presentations_9-16/Beagle_Information_Commons_to_Learning.pdf

Checkland, P. B. (1999). *Systems Thinking, Systems Practice: Includes a 30-year Retrospective*. Chichester, England: John Wiley & Sons.

Gillette, D., & Somerville, M. M. (2005). Faculty and student usability and focus group findings inform Digital Teaching Library interface requirements. In *Proceedings of Syllabus 2005*, July 24-28, Los Angeles, CA. (forthcoming).

Materska, K. (2004). Librarians in the knowledge age. *New Library World*, 105 (1198/1199), 142-148.

Maybee, C. (2006). Undergraduate perceptions of information use: The basis for creating user-centered student information literacy instruction. *Journal of Academic Librarianship*, 32 (1). (forthcoming).

Mirijamdotter, A., & Somerville, M. M. (2005, July). Dynamic action inquiry: A systems approach for knowledge based organizational learning. In *Proceedings of the 11ᵗʰ international conference on human-computer interaction*. Las Vegas, Nevada. (forthcoming).

Rogers, E. (2005). Student usability projects support information architecture in the library. In *Proceedings of Syllabus 2005*, July 24-28, Los Angeles, CA. (forthcoming).

Rogers, E., Somerville, M. M., & Randles, A. (2005, June). A user-centered content architecture for an academic digital research portal. In *Proceedings of ED-MEDIA 2005 – World Conference on Educational Multimedia, Hypermedia, & Telecommunications*, Montreal, Canada. (forthcoming).

Somerville, M. M. (2005). Learning our way to change: Toward improved institutional alignment. (unpublished paper).

Somerville, M. M., Huston, M. E., & Mirijamdotter, A. (2005). Building on what we know: Staff development in the digital age. *The Electronic Library*, 23 (4). (forthcoming).

Somerville, M. M., & Mirijamdotter, A. (2005). Working smarter: An applied model for "better thinking" in dynamic information organizations. In *Currents and Convergence - Navigating the Rivers of Change: Proceedings of the 12ᵗʰ National Conference of the Association for College and Research Libraries (ACRL)*, April 6-10. Minneapolis, Minnesota, pp. 103-111. Chicago, Illinois: Association of College & Research Libraries.

Somerville, M. M., Mirijamdotter, A., & Collins, L. (2005). Systems Thinking and Information Literacy: Elements of a Knowledge Enabling Workplace Environment. (unpublished paper).

Somerville, M., & Schader, B. (2005). Life after the reference desk: Co-creating a digital age library, *Charleston Review* 7 (1, July). (forthcoming).