

Ongoing Discussion “Thought Piece”

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

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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 (Davis & Somerville, 2005).

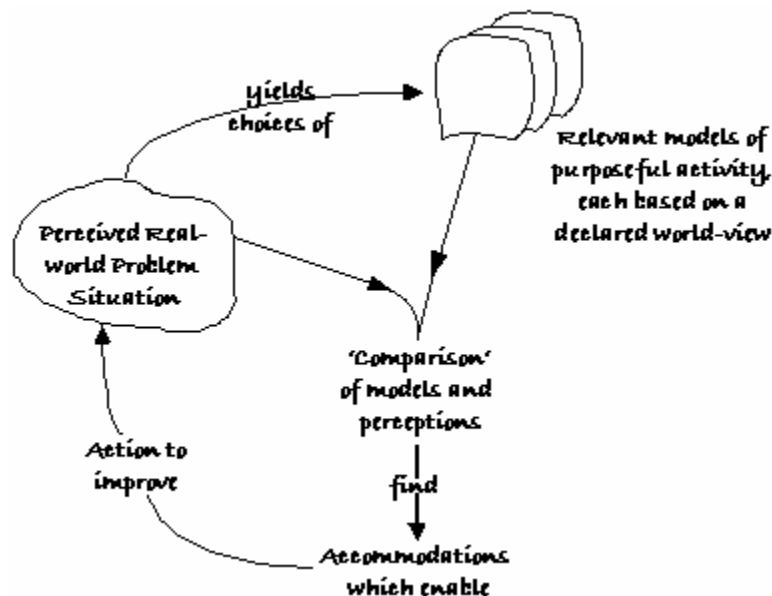


Figure 1. Soft Systems Methodology (SSM) Process

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.

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An Introduction to Anita and Mary

For the past three years, Dr. Anita Mirijamdotter and Dr. Mary M. Somerville have worked closely together from their respective home institutions in the north of Sweden and the south of California. This 'systems thinking' (ST) collaboration originated in 1989, when Mary presented a paper suggesting ethnocultural considerations for user-computer interface design at an International Society for the Systems Sciences (ISSS) conference in Edinburgh, Scotland. Subsequently, she was invited to guest lecture at Anita's home institution, Luleå University of Technology (LTU), where Anita was a graduate student in social informatics. Like Mary, Anita shared an interest in the interplay among culture, communications, community, and computers.

Since Swedish graduate education oftentimes intentionally incorporates international studies into graduate students' experiences, Anita next completed an independent study project with Mary at Texas Woman's University, where Mary taught courses on 'soft' systems sciences that recognized the human dimension in technology design. The women remained in communication during the years that Anita completed her Ph.D. in Soft Systems Methodology, a British construct which gives 'voice' to participating 'beneficiaries' of 'emergent' technology-enabled information and knowledge systems. Occasionally, Anita and Mary furthered their mutual interests by jointly presented conference papers and co-authored journal articles in Western Europe during the early years of the European Union (EU) initiative.

Their interactions for over a decade set the stage for a sustained collaboration begun in 2002 in a Swedish information organization. Anita and Mary coached workers on systems thinking principles to facilitate transformation of organizational services and systems. They customized their coaching to acknowledge the knowledge integration imperative of that workplace. They included 'leading edge' Australian thinking which intentionally advances information identification, evaluation, organization, and communication proficiencies as integral elements of reflective professional practice in the digital age.

Upon her return to the States, Mary assumed an internal 'thought leadership' role in the university library at California Polytechnic University in San Luis Obispo at Cal Poly – SLO, she is responsible for aligning information and instructional services with e-university priorities. Since 2003, Anita has served as an external consultant to Cal Poly, an extension of her LTU responsibilities as Head of Social Informatics Research. At Cal Poly, Anita coaches staff members in 'soft' systems thinking through face-to-face (f2f) external coaching, supplemented by videoconference and e-meeting communication. Swedish-style participatory design principles have become increasingly embedded in the organizational culture, as cross-functional teams apply interactive, user-centered evaluation strategies to dynamically re-invent organizational systems and services.

As the Cal Poly university library increasingly reflects 'workplace democracy' principles and practices, this international collaboration evolves to the next level through a corporate partnership led by Dr. Bill Bellows, thought leader and educator at Boeing's Rocketdyne Propulsion & Power in Canoga Park, California. Building upon the metaphor 'learning commons,' which also connotes a physical place and virtual space for collaborative interdisciplinary student and faculty learning at Cal Poly, library staff benefit from Boeing's pro bono education, training, and consultancy services, as they co-invent new organizational purposes, relationships, and processes. Organizational learning elements draw from systems thinking, information fluency, and knowledge creation principles and practices to improve alignment of workplace priorities with digital age university learning, teaching, and research imperatives.