Profiles in digital information: Marcia Zeng, Ph.D.
By Jody Perkins

I.   (Past) Background: school; career path; mentors; influences, interests
II.   (Present) Projects: research, digital libraries
III.   (Future) Predictions; challenges; advice for students, practioners…

Abstract:
In an interview, Marcia Lei Zeng, Professor of Library and Information Science at Kent State University discusses her education, career path, important trends and their implications. Her professional interests are highlighted beginning in the early part of her career with indexing, classification and information retrieval, and continuing with her more recent interests in metadata and knowledge organization systems.

Can you tell us something about your background and how you came to be in the field of library and information science?

To answer your last question first, it was an accident. The Cultural Revolution began in 1965 and lasted ten years. There was no formal education in China from 1966 until 1977. When higher education resumed in 1977, it was very competitive because everyone that graduated from high school during that 10 years was competing to get into a limited number of colleges. The admission rate that first year was approximately 1% of those who took the national college entrance examinations. Initially I had the idea to go into engineering because I had been working as a welder in a large factory. However, my elder sister, who was an engineering major, suggested that women in engineering usually had a very limited career because of physical limitations and family responsibilities – so I decided to find something else. In China the college entrance exams are based on two categories: science (math, physics, and chemistry) and social science/ humanities. It requires you to choose your major in either category before you register for the examinations. I thought that libraries embrace all disciplines and usually require librarians to have a wider range of knowledge. If I chose library science I could still keep my interests in science while I would be studying in a social science area, i.e. library science.

There were only two library science schools in China at that time. I was very fortunate to be admitted to Wuhan University in 1977. I began in library science at the undergraduate level, which is typical in China. My favorite courses were in information retrieval languages, taxonomy and classification which are related to what they now call Knowledge Organization Systems (KOS). The professor who taught those courses and who later became my graduate advisor wrote a book, which is still very heavily cited today [Zhang, Qiyu. (1983). Information Retrieval Languages. Wuhan: Wuhan University Press]. The book led to two newer editions and the most recent one was published in 1997.

Can you describe some of the projects you did as a graduate student?

When I became a master's student in 1982, my university class had only 14 female graduate students. Of course the situation changed very quickly in later years as more women entered higher education in every subject area. In China, we had to study three full years to get a master's degree. During that time, I was directly involved in the development of two KOS projects: (1) the Index for Chinese Library Classification [2nd edition, published in 1984; the current edition of the classification is: Chinese Library Classification, 4ed. 2000. Beijing: National Library of China Press], which is similar to DDC; and (2) the Chinese Classified Thesaurus [Chinese Classified Thesaurus, 1994. Beijing: Huayi Press], which is similar to LCSH in that it is a pre-coordinate system but it is not as restrictive. I was also asked to assist in creating a special thesaurus Urban Construction Chinese Thesaurus in 1985 for the information center of the Ministry of Urban Construction of China.

What did you do once you finished the Master's program?

I taught three years in the library school at Wuhan University. Then, I came to the United States in 1988, to enter a Ph.D. program at the University of Pittsburgh School of Library and Information Science, now The School of Information Sciences.

Did you continue to pursue your interest in IR languages when you entered the Ph.D. program or did your interests change?

My research interests remained the same but there were not many courses in that area. I did an independent study on the compatibility of controlled vocabularies. I learned a great deal from Professor Allen Kent and my advisor, Professor Edie Rasmussen. Pitt gave me an opportunity to study many aspects and issues of library and information science, which really widened my research areas and interests.

What topic did you choose for your dissertation?

My dissertation was titled "An evaluation of the quality of Chinese language records in the OCLC/OLUC database: a study of a rule based data validation system for online Chinese cataloging." The purpose of the study was to investigate the quality of Chinese-language records in a large multilingual database, an area that had not been explored, and to develop a viable approach for improving quality. OCLC funded the research and provided a random sample of over 2000 records. The dissertation received the 1992 American Society for Information Science (ASIS) Doctoral Forum Award for outstanding doctoral research done in the information field.

Can you provide a brief overview of your career path?

I worked as a Lecturer at the School of Library and Information Science in Wuhan University in China for three years after receiving my master's degree. Then when I came to the United States to attend the University of Pittsburgh I worked in Pitt's East Asian Library. Once I received my doctorate I accepted a faculty position at Kent State University in the School of Library and Information Science. I have been at Kent State for 12 years, from an assistant professor to a full professor. In addition, I was a Visiting Associate Professor at Columbia University for my sabbatical and I now also hold a number of appointments at major university and province libraries in China.

Who has helped you most in your career development?

My graduate advisor Zhang Qiyu was very involved in my development. He looked everything over in great detail. He gave me a lot of feedback and was always very positive. He taught me what it meant to be a scholar. He was very detail oriented but was also able to think abstractly.

Also my advisor Edie Rasmussen at Pittsburgh, not only her special knowledge but also how to publish in English, how to be involved in professional societies, and how to become a good researcher and instructor. She is very loyal to the field. Her vision and her teaching methods have influenced my research and teaching a great deal. I always see her as my role model but I know I will never be able to become as excellent as her.

My classmates at Pittsburgh and the librarians at the East Asian Library where I worked helped me with the culture shock I experienced when I first came here. They helped me fit in and adjust to living in a new country. My classmate Linda Hill has helped in most of my publications, from then to now. We have a lot of common interests and have been participating in similar professional activities such as those of the NKOS (Networked Knowledge Organization Systems/Services/Structures).

The faculty and director where I currently teach have given me the best support possible for my teaching, research, and personal life. I could not imagine that I could have gone so far without their support and help.

My mentors in my professional services include Kaye Gapen, (former Dean at the University Library at Case Western Reserve University and now President of Northern Lights, Inc), Dorothy McGarry, (former Head of Cataloging Division, UCLA Physical Sciences and Technology Libraries), and Margie Hlava (President of Access Innovations, Inc). They brought me into the professional associations and taught me how to contribute to the profession. Without them I would not hold the positions in SLA, NISO, and IFLA that I do today. The committees I have

served on are all related to knowledge organization and representation as well as technical standards.

What are your current research interests?

I am very interested in KOS (Knowledge Organization Systems). I especially like the work of Elaine Svenonius. Her background is in philosophy, cataloging, classification and thesaurus development in which I am always very interested.

In your opinion what are some of the most important recent developments and trends in digital libraries?

Important trends and developments are related to Semantic Web applications, including XML, RDF, KOS and ontologies.

Why are these important?

The Semantic Web is the next generation of the Web. No matter whether one accepts it or not, it will happen. The leaders and practitioners of the Semantic Web have used (or borrowed) fundamentals of library and information science, especially knowledge organization theories and practices. However, this is not a simple repeating of conventional KOS. It's important for Library and Information Science to continue to be part of this movement.

Where can our readers learn more?

Pay attention to the Semantic Web activities at W3C. [http://www.w3c.org]

What are you doing currently?

As I mentioned earlier, I am currently a professor at Kent State University School of Library and Information Science where I develop new courses as well as teach established ones. The new courses include a course in KOS, digital image processing and collection management, and a workshop in metadata. We have a new degree program in Information Architecture and Knowledge Management. It has three concentrations: Information Architecture, Knowledge Management and Information Use. I'm also involved in a number of KOS related research projects and I'm on the Advisory Group for the Z39.19 thesaurus standard's revision.

I understand that IAKM is an interdisciplinary program. What are the other disciplines involved?

In addition to core courses in Library and Information Science there are courses in business management, computer science, visual communication design, communication studies and journalism and mass communication.

Can you describe some of the DL projects you've been involved in?

An early project, funded by OCLC, was done using a collection at Kent State University's Fashion Museum. The purpose was to study what metadata schemas could be used for non-document-like objects. We compared VRA core, MARC, and Dublin Core. We looked at what information was actually available and how it fit with various elements. We modified the VRA core, using qualifiers and added elements, built-in vocabularies and built a metadata tool [Zeng, Marcia Lei. 1999. Metadata elements for object description and representation -- A case report from a digitized historical fashion collection project. Journal of American Society for Information Science and Technology (JASIST) 50(13):1193-1208].

The GREEN Project (Green's Functions Research and Education Enhancement Network) is funded by the National Science Foundation. Dr. Greg Shreve (Director of the Applied Linguistics Institute) is the project director. There are two things that are unique about it. First, it's multi-lingual. Parallel metadata must be maintained for each of five different languages. In addition to obtaining the metadata there are also related display and interpretation issues. Second, a special markup language was developed which uses domain-specific content labels in tags. It could be described as very granular indexing that follows a schema. Metadata, together with domain-specific markup, makes it possible to discover what's inside a document and it enables the creation of new resources from existing resources. [Shreve, Gregory M. & Marcia Lei Zeng. 2003. Integrating Resource Metadata and Domain Markup in an NSDL Collection. In: DC-2003: Proceedings of the International DCMI Metadata Conference and Workshop, Sept. 28-Oct. 2, 2003, Seattle, Washington:223-229 http://www.siderean.com/dc2003/604_paper62.pdf]

I have also worked with the Columbia University Rosenthal Center for Complementary and Alternative Medicine (CAM) on a prototype for a multi-lingual, multicultural comprehensive CAM resource. This has provided me with another opportunity to address issues of semantic interoperability. I worked with Drs. Fredi Kronenberg and Pat Molholt on a couple of proposals to develop a conceptual framework and a vocabulary for CAM. [Zeng, Marcia Lei, Fredi Kronenberg, & Pat Molholt. 2001. Toward a conceptual framework for complementary and alternative medicine: challenges and issues. Knowledge Organization.28 (1):27-40.]

Can you briefly tell us about your most recent research?

I am working on another NSF-NSDL project - "Quality Analysis of Metadata in the NSDL Repository". Dr. Greg Shreve and Dr. Bhagirathi Subrahmanyam are co-P.I.s. We can now do many tests on quality with automated processes but some things still need to be analyzed manually. In digital repositories, unlike Union Catalogs, everyone is not using the same standards. Much of the metadata is created by non-librarians, sometimes on a voluntary basis. There are still no common standards for metadata applications. Repositories have purposes beyond bibliographic control. The environment is loosely-controlled and dependent on voluntary

sharing. Some of the issues that are addressed: What are the various aspects of metadata quality? How can it be measured? How can it be improved?

Another recent article titled "Building Semantic Tools for Concept-Based Learning Spaces" looks at strongly-structured models (SSMs). The major work was done by Dr. Terence Smith and his ADL (Alexandria Digital Library) project team. Applying conventional principles of knowledge organization, representation, and other semantic tools, we constructed a model for scientific concepts and employed knowledge bases and visualization tools to represent knowledge concerning scientific concepts. I was involved in the conceptual model for the digital learning environment. The results of our experiments in developing and employing a digital learning environment in undergraduate classes reinforced the idea that one needs to be able to integrate the knowledge contained in heterogeneous digital library materials at the conceptual level，not just the bibliographic level，for much instructional work. Just having Web portals and search engines as the navigation and access tools to bibliographic entities or digital objects is insufficient. [Smith, Terence, R. and Marcia Lei Zeng. 2004. Building Semantic Tools for Concept-based Learning Spaces -- Knowledge Bases of Strongly-Structured Models for Concepts in Advanced DL. Journal of Digital Information (JoDI) 4(4) Article No. 263. Available: http://jodi.ecs.soton.ac.uk/Articles/v04/i04/Smith/]

I also recently published a paper with Prof. Lois Mai Chan on KOS interoperability approaches, after more than two years' work and over 20 versions. The paper surveys activities and research projects aimed at achieving interoperability among KOS and analyzes the methods used in achieving interoperability. In all, 18 projects were examined and evaluated. [Zeng, Marcia Lei and Lois Mai Chan. 2004. Trends and issues in establishing interoperability among knowledge organization systems. Journal of American Society for Information Science and Technology (JASIST) 55(5): 377 – 395] Working with Prof. Chan is a great joy and I have learned so much from her.

In your opinion what are some of the most significant challenges to libraries in the future and how can they be overcome?

There are many challenges. The current focus of libraries seems to be on digitizing the past. Libraries are creating new resources based on old models. But what about the future? It's not just the same wine in a new bottle. New types of information resources introduce many new issues. The information itself is different in its granularity and the technology it requires. We need to think how to better serve users in the new electronic learning environment, in an environment that depends on knowledge sharing and collaboration. There needs to be more communication between librarians and researchers.

What do all these changes mean for the field of librarianship as a whole? What impact will they have on the practitioner, the person out in the field building the digital libraries of the future?

Progress requires leadership. Directors should go to some of the same conferences that researchers attend, such as ASIS and IEEE-ACM's Joint Conference of Digital Libraries (JCDL). Academic libraries will need to prepare for a shift of focus from integrated library systems to integrated information services, services for distance learning, teaching and learning material repositories which will include many resources outside the library.

What do these changes mean for library education?

We need to prepare librarians of the future. We need to have up-to-date competitive programs and teaching methods that include theories as well as practical applications. Educators also need to keep themselves up-to-date. Direct involvement in the activities of professional societies' and continuing education are essential for any educator.

Any final advice for our readers?

Classification, indexing, cataloging, technical services… those terms seem to have been slowly replaced by other fashionable terms such as ontologies, metadata, digital curating, etc. The change is not just in terminology. Underneath those new terms are changes to the entire scope of library and information science including changes to fundamental concepts, methodologies, and best practices. There is some concern today about the viability of technical services. However, if you take the larger view, you can see the wider application of many of these theories and practices in non-library environments, such as museums, publishers, digital libraries, digital exhibitions, information architecture of institutional portals, a wide range of other knowledge management tasks, and in Semantic Web applications. I believe that these changing times provide a unique opportunity for library and information science to test and advance its intellectual foundations, to secure a role for itself in the changing information environment and to train the information professionals of tomorrow.

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