Title: Let's Talk about the NOC: A study of standard classification in social context
Author: Eva Marie Hourihan Jansen
This proposal is a version of a full thesis proposal that was submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at the iSchool at the University of Toronto. It was presented for defense and was accepted by the dissertation proposal committee on February 27, 2014. This summarized version is submitted for consideration in the Thomson Reuters Doctoral Dissertation Proposal 2014.

1. Abstract

Context: That classification systems and their categories create consequences is documented in a number of social settings (Bowker & Star, 1999). Standardized occupational classifications are applied in fields like social science research, career planning, and immigration. Little is written about the sociological role played by standard occupational classifications embedded in the digital infrastructures of immigration, education and e-social science. It is therefore urgent to interrogate their design and use in the organizational contexts where they are implemented.

Research problem: The object of this study is Canada's National Occupational Classification (NOC), the standard for organizing knowledge about jobs and skill requirements in the Canadian labour market. The NOC represents occupations in a hierarchy of job titles and numerical codes for skills, and brief descriptions of a range of occupations available in Canada (HRSDC, 2012). This research is exploratory and is concerned with learning about the role of a standard classification systems in an organizational setting; who is involved in creating, evaluating and modifying it; and how people understand what the classification is and what it does for them and others in the context of their work.

Theoretical approach: I propose to study the NOC using ethnographic approaches because ethnography is a theoretical commitment to studying culture. As such, I am sensitized to conceptions of culture discussed in LIS such as information culture (Choo,

1

2013) warrant (Beghtol, 1986) domain (Hjørland &Albrechtsen, 1996) and boundary objects (Albrechtsen & Jacob, 1998). Following methodological and theoretical innovations for the ethnographic study of information (Star, 1999), my immersive study of the NOC includes fieldwork in a local organizational setting described in the research design.

Research Outcome: My contribution towards disciplinary knowledge is a narrative featuring the rich insights drawn from my immersive study of the NOC and contextualized by my fieldwork experience. Through a socio-cultural approach to the NOC, my research interrogates the intersections of knowledge organization systems, information practices and social life. It will also be relevant to a growing body of LIS perspectives on the role of information and information work in employment support services. More broadly, this research will engage in interdisciplinary dialogue on the social study of information.

Methodology: I will pursue ethnographic fieldwork at Toronto Region Immigrant Employment Council (TRIEC), an organization where the NOC is currently used. My fieldwork comprises participant observation, ethnographic interviews and documentation. I will follow the NOC in this workplace setting as volunteer and I will document the experience so that I may write about it from the perspective of information science. I will travel with my informants on consultations, to conferences as they exchange knowledge and spend time in the workplace.

2. **Research Problem**

The research problem is orthogonal to the concerns of information science, including knowledge organization, information use and information retrieval. Classification design and use are increasingly practiced in many work domains, the relevance of professional theory and practice ought to be considered important. Among important issues for classification practice are being able to address structural principles and properties, assess a

system's technical rigour, describe syntactic devices, contend with ambiguity of class names, and determine criteria for assignment to a certain class (Beghtol 2001). While these are seemingly mundane technical details, if not for these concerns, what sort of classification systems would there be to design, to use, or to investigate? I believe the question of how the social analysis of classification systems can *relate* to the development and use of classification systems (Beghtol, 2001) is highly important. This call for exploration into different discourses, contexts, and warrants in which classifications exist (the social) is in order to better prepare for and understand the work that information professionals do (the technical). This view relates to understanding knowledge organization systems as cultural forms and to a view of information professionals information critics (Andersen, 2005; 2008). Both views are vital towards the engagement of information research with broader academic and professional discourses (Andersen, 2005; Olson, 2007).

Although knowledge organization research is often more technically oriented and is assembled around specialized language and concerns, I believe this can be extended to operate commensurably with the conceptual language of studying culture. To this end I will later discuss sensitizing concepts that bring some of these discourses into view. Moreover modern classification systems like the NOC, are often built on and used under assumptions of objectivity and are taken to be a reflection of reality. By exploring a particular point of view, it engages with the idea that there are many different ways to describe reality (Bryant, 2000). This study of the NOC will document use of the classification system from a particular point of view not yet described in information science.

3. Significance

This program of study seeks to respond to issues in knowledge organization research such as: gaps between theory and practice encountered by information professionals (Beghtol, 2001); shifting away from a cognitive user-based studies to socio-culturally oriented studies (Hjørland, 2013); and explicating ethnography as an approach to the study classification systems. The written outcome of this ethnographic study will aid readers interested in the often enigmatic and invisible aspects of classification work and information systems within organizations by documenting a specific local situation. It may also draw the interest of those designing information products and infrastructure for employment support. More broadly, the written outcome of this study, an ethnography, will capture the imagination of information scholars interested in interpretive research at the crossroads of knowledge organization; information practices and information retrieval systems. It is my further hope that an ethnographic study of the NOC will enrich interdisciplinary dialogue about the role of knowledge organization practices and public policy related to immigration and labour market information.

4. Research Questions

My exploratory questions concern knowledge organization in relation to research methods, organizational work practice and information theory. What is the role of classification systems in an organizational setting? Who is involved in creating, evaluating and modifying them? How do people understand what the classification is and what it does for them in the context of their work environment? What sort of beliefs and norms does it support or resist? These questions will be answered through emergent research design and engagement in fieldwork where the work of a classification system will be situated and contextualized through ethnographic interviews, participant observation and documentation.

Locating an inquiry on the NOC as it is used in a specific organizational context I seek to document the norms, values, beliefs and behaviours that emerge among people and the NOC in this setting. As I become immersed in the organizational setting my research questions focus more specifically on querying the role of the NOC in the work practices of the field site.

Questions that emerge in relation to the specific research site include the following: How do people understand what the classification is and what it does for them and others in the context of the work environment at TMP? What are some of the norms, values and expectations that participants express for themselves in relation to the NOC? How can I, as researcher best represent these norms and values to people interested in knowledge organization systems and LIS more broadly?

5. Literature Review

This literature review considers occupational information[1] by focussing on areas of information search and information retrieval and classification. Among information needs seeking and use (INSU) research, organizing information through professionally designed classification systems is not currently perceived as a significant topic of inquiry (Fidel, 2012, p. 40). A number of INSU studies relate to information within the context of job seeking, including Savolainen (2008), Jansen et al (2005), Haas & Hert (2002), and Blakemore & McKeever (2001).

Information retrieval (IR) scholars build and investigate retrieval models and mechanisms for computer-based systems that retrieve information in response to user

---

[1] The topic of occupational classification is discussed in various academic disciplines, including and by no means limited to industrial relations, historical research, occupational health, gender studies, urban studies and economics. Notably, topic was a core interest to data custodians of e-social science in the UK DAMES project (cf http://www.dames.org.uk/). It has not been a central topic of either classification researchers or general LIS scholarship in North America. There is immense potential for interdisciplinary collaboration and communication on this topic and I believe, a strong need for the LIS and Knowledge Organization research communities to promote such dialogue.

requests (Fidel, 2012, p. 21) Related studies consider labour statistics made available on the web by government agencies (Marchioni, 2002). Heese et al, (2007) White & Sutcliffe (2011) discussed the use of standard occupational classification systems as a strategy towards building semantic information systems. Among knowledge organization research, the North American Industry Classification System, (NAICS) has been studied comparative to bibliographic classification (Campbell, 2003) and in economic discourse on information (Knott-Malone & Elichirigoity, 2003).

A dominant assumption demonstrated in research across all three fields in this literature review is that users derive meaning from text and terms. Structures of information are as critical to study as item-level representation (Lee, 2003). The role of the institution or organization is not often the focus of these areas of research (Jansen & Rieh, 2010; Andersen & Skouvig, 2006; Hanson, 2006) although some studies of organizations have been concerned with the strategic use of information (Choo 2013). Since the LIS research traditions addressed in this literature review have not yet engaged with the NOC as an object of study, this review suggests an opening for sociocultural perspectives that bring practices into view within the institutional/organizational contexts in which they are performed.

6. **Theoretical Framework**

My approach to this study is ethnography because it enables an orientation toward culture. I take an interpretive understanding of ethnography that draws on assumptions and commitments shared with Emerson Fretz & Shaw (2011, p.2) and characterized by ethnographic participation, writing fieldnotes, inscribing social discourse and reflection. Sensitizing concepts describe the ethnographer's guiding theoretical orientation, what to look for and listen for among in empirical work, for instance, *information culture*, the socially

shared patterns of behaviours, norms and values that define the significance and use of information in an organization. (Choo, 2013) *Cultural warrant* (Beghtol, 1986) pertains to assumptions and decisions about what to include in a classification system and can demonstrate unpredictable and shifting qualities of classification systems (Kwasnik, 2010) as it attends to the values, ethics and change in classification systems (cf Mai, 2011a; Howarth & Hourihan Jansen, 2014). The NOC might also be considered a special classification (Hjørland, 2002) an implicit form of *domain analysis* although developed independently of methodologies of information science. My study is sensitized to the notion of boundary objects pioneered by Star & Griesemer (1989) and diffused in KO research by Hanne Albrechtsen and Elin Jacob (1998). These sensitizing concepts, (culture, warrant, domain, boundary objects) are not meant to be construed as lenses through which to observe information phenomena. They are of particular relevance to the concerns of information science and they may eventually serve the help the researcher to make connections to the broader theoretical field.

7. Methods

Ethnographic fieldwork in the LIS disciplines comprises methods such as participant observation (Spradley 1980; Baker, 2006) photography (Hartel & Thomson 2011), note taking, document gathering and interviewing (Spradley 1979; Talja, 1999) coupled with discursive approaches to data analysis (Frohmann, 1994; Talja, 1999). Along with specific data gathering techniques, fieldwork involves choices in the mode of field involvement, i.e. a commitment to writing while participating and observing as a way to understand the local point of view, a commitment of time spent in the field and time spent away from the field in order to write.

Participant observation involves the ethnographer in intensive, long term, active involvement in a research setting. It is through participant observation that an ethnographer develops ethnographic questions to guide what the researcher sees and hears in a social situation. It is a process that begins with broad descriptive observation that is recorded and analyzed before moving to focused observations and eventually narrowed down to selective observation (Spradley, 1980 p 33). The ethnographer divides her time between active participation in the field and time spent writing description, dialogue and characterization of the field experience. These descriptions are recorded by the ethnographer in fieldnotes, that is fieldnotes that depict and are sensitive to local meanings and writing about what is significant to members while recognizing and discussing problems involved in conveying local meanings. Special attention will be given to the descriptive and analytical techniques of ethnographic writing such as *jottings*, *fieldnotes*, *extended commentaries*, *asides* and *summary commentaries* (Emerson, Fretz & Shaw, 2011).

Ethnographic interviews allow for rapport to develop between ethnographer and informants in the process of learning about the social situation. Informant selection will be guided by minimal requirements that each be thoroughly enculturated, currently involved, have adequate time to spend on interviews (Spradley 1979, 47). Participant interviews comprise descriptive questions that move from general to specific types of questions to aid in the description of the social setting (Spradley, 1979 86).

Documentation is an important intermediary step that takes place at this juncture between fieldwork and data analysis is the production of the ethnographic record. Here I will assemble the material collected in the field, including all the various forms of media, sound recordings, digital photographs, drawings, documents, clippings, emails, screenshots, jottings and fieldnotes and commentaries. The volume of the ethnographic record is estimated to incorporate about 300 pages of typewritten descriptive fieldnotes

(includes interviews & observation) in addition to about 100 photographs. All of these descriptive elements constitute the ethnographic record. In the next phase of the research design I will read and reflect on the ethnographic record in order to produce the writing that will eventually form the ethnographic research narrative.

Data coding and memoing are steps I expect pursue over 8-12 weeks in the field after which I will withdraw to a reading mode (ibid, p 171). Following the practices outlined in Emerson, Fretz & Shaw (2011), my reading will involve practices of analytically coding my fieldnotes through line-by-line categorization of specific notes in search of analytic and presentational possibilities by generating *open coding* – that is, identifying and formulating as many ideas, themes and issues as I can (p 172). I will follow this activity with *focused coding* that highlights specific topics of interest to me and to potential readers for the final ethnography (ibid). My writing will continue at this point and take the form of *code memos* (Strauss and Corbin, 1990 in ibid p 172) wherein I will elaborate on insights and then link analytic themes and categories by writing *integrative memos* (p. 172). Guidance on the processes of coding and memoing will be drawn from Emerson, Fretz & Shaw (2011) as indicated throughout this description. After having completed a detailed analysis of the ethnographic record the next step will be to write an ethnography.

Writing the ethnographic narrative comprises re-orienting my attention away from the fieldwork and towards reading, analyzing interpreting those texts that I have produced in order to determine and select which texts to include in the ethnography. Here, ethnography takes on a different meaning, it refers to a text written for a broader audience. It will be most important at this stage to focus my writing about fieldwork on communicating with the ideas and concepts of the LIS discipline generally and particular interests within the discipline such as knowledge organization and information practices. Here my writing will represent the NOC and they ways people engage with it in the

context of TMP by tacking back and forth between events described in fieldnotes and the concepts of interest to LIS. In approaching this task I will again draw on the exemplary guidance of Emerson, Fretz & Shaw (2011) to develop thematic narratives. "writing out initial statements of analytic themes. The outcome then is an ethnographic story, that is my intellectual examination of evidence that conveys a central idea as a contribution to the field. It is composed of explicating fieldnotes through analytic commentary a process that involves making choices in writing strategies, for instance to approach writing interpretations and excerpts in an integrated way that combines voices. Alternatively, the excerpt strategy makes distinctions between descriptive and analytic writing. Either approach involves writing *excerpt-commentary units* which focus on an analytic point intended to persuade the reader. Once again, Emerson Fretz & Shaw (2011) illustrate an approach to creating excerpt-commentary units comprised of the *analytic point* followed with *orienting information* and then *an excerpt,* and concluding with *the analytic commentary* (p. 214). The outcome of which is the ethnographer is explaining to readers what she wants them to understand about the fieldnote.

Table 1: Proposed Data Collection Methods for Responding to Research Questions

Ethnographic Approach	Data Collection Methods	Relationship to Research Questions
Participant Observation	• Jottings • Descriptive fieldnotes • Photographs • Audio and video recording • Document collection	What is the role of the NOC the TMP organizational setting? Who is involved in creating, evaluating and modifying systems based on the NOC? What are some of the norms, values and beliefs observed among people working in this setting?
Ethnographic Interviews	• Jottings • Semi-structured interview guides • Audio recording • Photographs	How do people understand what the classification is and what it does for them and others in the context of the work environment at TMP? What are some norms, values and expectations do participants express for themselves in relation to the NOC?
Documentation	• Descriptive & Analytic Writing • Coding the Ethnographic Record • Writing Memos • Writing Ethnographic Narrative	What system of beliefs, norms, values and behaviours are supported or resisted in the local setting of TMP? How do these relate to the NOC and knowledge organization practices?

8. Schedule of Completion

Activity	Estimated Length	Estimated Timeframe
Defend Dissertation Proposal		February, 27, 2014
Achieve Ethics Approval		May 6, 2014
Enter Fieldwork Setting	12 weeks	May 2014
Conclude Fieldwork, Exit Setting	4 weeks	August 2014
Assemble the Ethnographic Record	2 weeks	September, 2014
Code & Memo Fieldnotes, prepare excerpt commentary units linking the research to LIS literature (these will form chapters 4-6 in the dissertation)	12 weeks	September 2014
Prepare Introduction	1 week	January 2015
Prepare Chapter 1 – describing study context, outlining the setting and methodological approach	2 weeks	January 2015
Prepare Chapter 2 – literature review	3 weeks	February 2015
Prepare Chapter 3 – conceptual framework	1 week	March 2015
Prepare Chapter 4-6 ongoing refinement transitions, metanarrative and content of these chapters	8 weeks	April 2015
Prepare Conclusion	3 weeks	May 2015
Submit completed draft and work through revision process	4 months	January -April 2015
Schedule dissertation defense		May 2015

References

Albrechtsen, H., & Jacob, E. K. (1998). Classification systems as boundary objects in diverse information ecologies. *ASIS MONOGRAPH SERIES* (Journal Article), 1-16.

Andersen, J. (2005). Information Criticism: Where is it? *Progressive Librarian*. 25, 12-22.

Andersen, J. & Skouvig, L. (2006). Knowledge Organization: A Sociohistorical Analysis and Critique. *The Library Quarterly*, 76(3), 300-322.

Baker, L. (2006). Observation a Complex Research Method. *Library Trends*, 55(1), 171-189.

Bates, M. J. (2005). An introduction to metatheories, theories and models. In K. Fisher, S. Erdelez, & L. McKechnie (Eds.), Theories of information behavior: A researcher's guide (pp. 1-24). Medford, NJ: Information Today.

Beghtol C. (1986). Semantic validity: concepts of warrant in bibliographic classification systems. *Library Resources & Technical Services*, 30(2), 109-125.

Beghtol. C. (2001). Sorting Things Out, Book review. *Information Processing and Management*. 37, 357-363.

Blakemore, M., & McKeever, L. (2001). Users of official European statistical data – investigating information needs. *Journal of Librarianship and Information Science, 33*(2).

Bowker G. and Star, S. L. (1999). *Sorting Things Out: Classification and its Consequences*. Cambridge, MA: MIT Press

Brewer, J.D. (2000) Ethnography. Buckingham; Philadelphia PA.

Bryant, R. Discovery and Decision: Exploring the Metaphysics and Epistemology of Scientific Classification Associated University Presses Cranbury, NJ 2000

Campbell, D.G. (2003). "Global Abstractions: The Classification of International Economic Data for Bibliographic and Statistical Purposes." In N. Williamson & C. Beghtol (Eds.), *Knowledge Organization and Classification in International Information Retrieval*. (pp 221-234) The Haworth Press Inc.

Cherry, J. M., Duff, W. M., Singh, N., & Freund, L. (2011). Student perceptions of the information professions and their master's program in information studies. *Library & Information Science Research 33 (2011) 120–131, 33*, 120-131.

Choo, C.W. (2013). Information Culture and Organizational Effectiveness. *International Journal of Information Management*, 33(5) pp 775-779.

Courtright, C. (2005) Context in Information Behavior Research. *Annual Review of Information Science and Technology.*

Day, R.E. (2011). Death of the User: Reconceptualizing subjects, objects, and their relations, Journal of the American Society for Information Science and Technology. 62(1),78-88.

Emerson, R.M., Fretz, R.I., Shaw, L.L. (2011). *Writing ethnographic fieldnotes*. Chicago : University of Chicago Press, 2nd ed.

Feinberg, M. (2011). How information systems communicate as documents: the concept of authorial voice. *Journal of Documentation, 67*(6) 1015-137.

Fetterman, D.M. (2010). *Ethnography : step-by-step.* Los Angeles : SAGE, c2010. 3rd ed.

Fidel, R. (2012). Human Information Interaction: An Ecological Approach to Information Behaviour. Cambridge MA. MIT Press.

Frohmann, B. (1992). The Power of Images: A Discourse Analysis of the Cognitive Viewpoint. *The Journal of Documentation.* 48(4), 365-386

Frohmann, B. (1994). Discourse Analysis as a Researc.h Method in Library and Information Science. *Library and Information Science Research, 16*, 119–138.

Glaser, B., & Strauss, A. (1967). The discovery of grounded theory: Strategies for qualitative research. Chicago IL: Aldine.

Goyder, J., & Frank, K. (2007). A Scale of Occupational Prestige in Canada, Based on NOC Major Groups. *The Canadian Journal of Sociology, 32*(1), 63-83.

Haas, S.W. and C.A. Hert. (2002). Finding information at the U.S. Bureau of Labor Statistics: Overcoming the barriers of scope, concept, and language mismatch. *Terminology*, 8(1): p. 31-56.

Hansson, J. (2006). Knowledge Organization from an Institutional Point of View: Implicaiton for Theoretical & Practical Development. *Progressive Librarian,* Summer 2006 Issue 27, 31-45

Hartel, J., & Thomson, L. (2011). Visual approaches and photography for the study of immediate information space. *Journal of the American Society for Information Science and Technology, 62*(11), 2214-2224.

Heese, R., Mochol, M., & Oldakkowski, R. (2007). Semantic Web Technologies in the Recruitment Domain. In M. A. Sicilia (Ed.), *Competencies in Organizational E-Learning Concepts and Tools* (pp. 300-318). Hershey PA: Idea Group Inc.

Hjørland, B. (2002). Domain Analysis in Information Science: Eleven Approaches – Traditional as well as Innovative. *Journal of Documentation*, 58(4): 422-462.

Hjørland, B. (2003). Fundamentals of Knowledge Organization. *Knowledge Organization* 30(2), 87-111.

Hjørland, B. (2013). User-based and Cognitive Approaches to Knowledge Organization. *Knowledge Organization*, 40(1), 11-27.

Hjørland, B. and Albrechtsen, H. (1995). Towards a New Horizon in Information Science: Domain Analysis. *Journal of the American Society for Information Science*, 46(6), 400-425.

HRSDC (Human Resources and Skills Development Canada). (2012). Welcome to the National Occupational Classification 2011. http://www5.hrsdc.gc.ca/NOC/English/NOC/2011/Welcome.aspx

Jansen, B. & Rieh S.Y. (2010). The Seventeen Theoretical Constructs of Information Searching and Information Retrieval. *Journal of the American Society for Information Science and Technology*, 61(8), 1517-1534.

Jansen, B. J., Jansen, K. J., & Spink, A. (2005). Using the web to look for work: Implications for online job seeking and recruiting. *Internet Research, 15*(1), 49-66. doi: 10.1108/10662240510577068.

Knott-Malone, C. and Elichirigoity, F. (2003). Information as Commodity and Economic Sector: Its Emergence in the Discourse of Industrial Classification. *Journal of the American Society for Information Science.* 54(6): p. 512–520.

Kwasnik, B. (2010). Semantic Warrant: A Pivotal Concept for Our Field. *Knowledge Organization*, 37(2), 106-110.

Lampland, M., and Star, S.L. (2009). Standards and their stories. How quantifying, classifying and formalizing practices shape everyday life. Ithaca: Cornell University Press.

Lawler, J. J., & Elliot, R. (1996). Artificial Intelligence in HRM: An Experimental Study of an Expert System. *Journal of Management Information Systems, 22*(1), 85-111.

Lee, H-L, (2011). Epistemic foundation of bibliographic classification in early China. *Journal of Documentation*, 68(3): 378-401.

Lewis-Beck, M. S., A. Bryman & T. Futing Liao. (2004). SAGE Encyclopedia of Social Science Research Methods. Thousand Oaks, Calif.: Sage.

Mai, J.-E. (2010). Classification in a social world: bias and trust. *Journal of Documentation*, 66(5), 627-642.

Mai, J-E. (2011a). Folksonomies and the New Order: Authority in the Digital Disorder. *Knowledge Organization.* 38(2), 114-122.

Mai, J-E. (2011b). *The Modernity of Classification.* Journal of Documentation, 2011. 67(4): p. 710-730.

Mai, J-E., Kwasnik, BH., Busch, JA., Lee, HI., (2005) Use of classification in information seeking. *Proceedings of the American Society for Information Science and Technology.* 42 (1), pg. n/a

Marchese, C., and Smiraglia, R. (2013). Cognitive Work Analysis for Domain Analysis in an HR Firm: Emergent Vocabulary to Domain Ontology. Advances In Classification Research Online, 23(1), pp. 28-29. doi:10.7152/acro.v23i1.14232

Marchionini, G. (2002). Co-Evolution of User and Organizational Interfaces: A Longitudinal Case Study of WWW Dissemination of National Statistics. [case study]. *Journal of the American Society for Information Science, 53*(14), 1192–1209.

Morgan, C. H., & Morgan, J. (2009). The Effects of Entering the LIS Workforce in a Recession: North Carolina, 1964-2005. *Library Trends*, *58*(2), 291-300.

Olson, H.A. (2007). How We Construct Subjects: A Feminist Analysis. *Library Trends*, 56(2), 509-541.

Savolainen, R. (2008). Autonomous, controlled and half-hearted. Unemployed people's motivations to seek information about jobs. *Information Research, 13*(4), 5-5.

Spradley, J. (1980). *Participant observation.* New York: Holt, Rinehart and Winston.

Spradley, J. P. (1979). *The ethnographic interview.* New York: Holt, Rinehart and Winston.

Star, S.L. & Griesemer, J.R. (1989). Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's museum of Vertebrate Zoology, 1907-39. *Social Studies of Science*, 19, 387-420.

Star, S.L. & Ruhleder, K. (1996). Steps toward an ecology of infrastructure: Design and access for large information spaces. *Information Systems Research.* 7, 111-34.

Star, S.L. (1998). Grounded Classification: Grounded Theory and Faceted Classification. *Library Trends,* 47(2), 218-232.

Star, S.L. (1999). The Ethnography of Infrastructure. *American Behaviour Scientist,* 43(3), 377-391.

Star, S.L. (2010). This is Not a Boundary Object: Reflections on the Origin of a Concept. *Science, Technology and Human Values*, 35(5), 601-617.

Stebbins, R. A. (2001). *Exploratory research in the social sciences*. Thousand Oaks, Calif: Sage Publications.

Sundin, O. and Johannisson, J. (2005). Pragmatism, neo-pragmatism and sociocultural theory. *Journal of Documentation*, 61(1) pp. 23 – 43.

Sweeper, D. & Smith, SA. (2010) Does Gender and Race Have an Impact on Earnings in the Library and Information Science Labor Market in the United States of America? *LIBRES: Library & Information Science Research Electronic Journal*, 20(2), p1-7

Talja, S. (1999). Analyzing Qualitative Interview Data: The Discourse Analytic Method. *Library and Information Science Research*, 21(4), 459-477.

Tennis, J.T. (2008). Epistemology, Theory, and Methodology in Knowledge Organization: Toward a Classification, Metatheory, and Research Framework. *Knowledge Organization*, 35(2/3), 102-112.

White, K., & Sutcliffe, R. E. (2011). Butcher, baker, or candlestick maker? Predicting occupations using predicate-argument relations. *Journal Of The American Society For Information Science & Technology*, 62(7), 1325-1344.