August, 2012

Metatheoretical Snowmen: A Pedagogical Gedankenexperiment in Information Metatheory

Jenna Hartel

Metatheoretical Snowmen: A Pedagogical *Gedankenexperiment* in Information Metatheory

by Jenna Hartel

EDITOR'S SUMMARY

Metatheory is the highest level conceptual device used in social scientific research and determines a way of thinking and speaking about reality and its information phenomena. Today, numerous metatheories exist in information science and create a dynamic climate. There is also widespread confusion about metatheory because it is a relatively new, abstract and elusive concept for students, practitioners and scholars alike. The article introduces metatheory in information science and its ontological, methodological, social and personal implications. Then "Metatheoretical Snowmen," a novel pedagogical strategy, is described. Metatheoretical Snowmen demystifies information metatheory through a *gedankenexperiment*, that is, a thought experiment. In Metatheoretical Snowmen, participants apply the characteristics of a variety of information metatheories to the life and information experience of an ordinary and affable persona: a snowman. The renderings of the snowman and its information world bring the special features of each metatheory into clear view. This approach has been implemented to positive effect as a panel presentation at international conferences in information science, including two recent Annual Meetings of the American Society for Information Science and Technology (ASIS&T).

KEYWORDS

metatheories

epistemology

analytic models

concepts

education

Jenna Hartel is an assistant professor on the Faculty of Information, University of Toronto where her teaching and research centers on three areas: information phenomena in serious leisure; ethnographic methods, especially visual approaches; and the history and theory of information studies. She can be reached at jenna.hartel<at>utoronto.ca.

Bates has defined *metatheory* as "the philosophy behind the theory, the fundamental set of ideas about how phenomena of interest in a field should be thought about and researched" [1, p. 2]. Elsewhere, metatheories are characterized as "the often unarticulated premises upon which empirical research and theorization is based…broader and less specific than theories, they are orientation strategies to the world" [2, p. 272]. There are several near synonyms to *metatheory*. In some instances a metatheory could also be referred to as a theoretical framework, paradigm, sensibility, worldview, approach or perspective, although these terms are less precise.

Certain academic fields operate with a single dominant metatheory. For example, the natural sciences adhere to evolution as an overarching perspective on life. Differently, as an interdisciplinary domain, information science has always had many metatheories in play. Almost a century ago, the first textbook of library science (a tap root for contemporary information science), devoted separate chapters to the sociological, psychological, historical and practical (or technological) problems of information access [3]. More recently, the term *metatheory* gained prevalence in the writings of Finnish theorists Sanna Talja, Kimmo Tuominen and Reijo Savolainen [4] who analyze three "isms" of information science: constructiv*ism*, collectiv*ism* and construction*ism*.

According to Bates [1], there are 13 major metatheories in information science that are shown in alphabetical order in Table 1. Most of the metatheories in Table 1 have been imported from other disciplines, whether history (historical metatheory), philosophy (philosophical-analytic

TABLE 1. Bates' 13 metatheories in information science [1]

bibliometric
cognitive
constructivist
constructionist
critical theory
engineering
evolutionary
ethnographic
historical
philosophical-analytic
physical
socio-cognitive
user-centered design

metatheory), cognitive science (cognitive metatheory) or anthropology (ethnographic metatheory). There is only one metatheory that information science can claim as its own: bibliometrics. The metatheories named by Bates exist in dynamic relationship to each other. Socio-cognitivism (a socially-oriented approach) emerged as a response to cognitivism, which was critiqued as overly individualistic. Some pairs of metatheories are complementary. There is an affinity between critical theory and an historical approach, as well as between ethnography and socio-cognitivism. Table 1 is neither comprehensive nor stable, for metatheories come in and out of fashion. On a regular basis, scholars propose new metatheories, such as activity theory [5], phenomenography [6], neo-pragmatism [7] or phenomenology [8], to name just a few.

Metatheory impacts research in information science in ways that are ontological, methodological, social and personal. The ontology, or nature, of information takes form differently across metatheories. In socio-cognitivism, information is an artifact, often a document. In constructionism, information is language in the form of discourse. Importantly, there is not one definition of information in information science, but rather multiple definitions exist, depending on the metatheory.

There are methodological implications to metatheory, as well. It serves as a reservoir of tenets that cascade through a research design, shaping the implementation of a research project. To illustrate, a study based in a cognitive metatheory leads to an experiment; whereas an investigation grounded in an historical metatheory involves reading original documents. The cascading quality of metatheory is a matter that doctoral students wrestle with in the theoretical framework section of a dissertation.

Metatheory is also a social force. Metatheoretically like-minded scholars tend to affiliate on account of a shared worldview and practices. Research areas, invisible colleges, special interest groups, networks and collaborators all rally around different metatheories. Some of the metatheories in Table 1 harbor large and well-established research communities within information science, namely user-centered design and cognitivism. In contrast, the evolutionary approach is embraced by a small circle of enthusiastic researchers. Metatheory is propagated by academics each time an article, scholar, concept or method is recommended to advisees or students.

Finally, metatheories are personal. They express how we each see the world and its information phenomena. A reflective reader of this article might ask, "What's my metatheory?" But first, it should be noted that there are two possible ways to answer the question. A metatheory may be a permanent and innate orientation based upon deeply set values, beliefs and cognitive styles. This orientation is akin to being born under a constellation; one simply has and always will have a certain metatheoretical sensibility that remains stable over a lifetime and career. Or, alternatively, perhaps a metatheory is one tool in a toolkit that is picked up for use in a particular problem or project and then replaced by another in different circumstances. In the latter case, a lifetime and academic career can feature many metatheories.

Metatheoretical *Snowmen*?

What does any of this have to do with *snowmen*? During my second year as a doctoral student in the Department of Information Studies at the University of California, Los Angeles, Student Services had an art contest during the winter holiday season. All were challenged to decorate their office doors with a snowman craft, which would be judged and could win an award. Around this time, I was wrestling with metatheory and its implications for my dissertation research design. I wanted to make a snowman craft and felt strongly that my snowman must be bearing information. I wondered, "What is information for a snowman?" I realized the answer to this question depends on my own (or the snowman's) information metatheory.

From this insight, I created a poster for the 2005 conference of the Association for Library and Information Science Education (ALISE), entitled Metatheoretical Snowmen [9]. The poster displayed snowmen from the perspective of four different information metatheories, their information reality and the type of information research produced there. To illustrate, a section of the original poster on the metatheory of cognitivism contained a thinking snowman and Brookes' fundamental equation of information science, a cognitive conception. The poster also displayed a well-known cognitive study about young girls and their understanding of heroin [10]. The ALISE poster session is a heated competition. Alas, Metatheoretical Snowmen did

not win an award, but fellow students agreed that my contribution contained the best title to ever grace a poster in information studies.

The strategy of using an imaginary situation (such as a snowman) to increase understanding is called a thought experiment, or, in German, *gedankenexperiment*. Thought experiments have been used in a variety of fields since classical antiquity and are common in the work of scientists such as Galileo and Einstein. Einstein's most famous thought experiment involved imagining what it was like to chase a beam of light, leading to his theory of special relativity. (For the record, in German, a thought experiment based upon a snowman would be *das schneemanngedankenexperiment*.)

Later in my academic career, as an assistant professor at the Faculty of Information, University of Toronto, I utilized the Metatheoretical Snowmen conceit in lectures. Students reported that the playful device captured their imagination and made an abstruse concept more accessible.

For the 2009 ASIS&T Annual Meeting in Vancouver, British Columbia, I turned the *gedankenexperiment* into a panel [11]. The session began with a brief introduction to metatheory. Then, five thought leaders each provided a succinct (five-minute) overview of the metatheory s/he champions and employs. The presenters were required to explain his/her metatheory in the context of a snowman. To enable comparison and contrast, all presenters addressed three fundamental questions from the perspective of their metatheory:

1) What does the snowman's reality look like?
2) What constitutes information for the snowman?
3) How is information research conducted in this world?

To motivate the panelists, the event was staged as a competition. At the beginning of the session, a jury of three judges was drawn from the audience, composed of a senior academic, a junior academic and a student. In real time, the jury ranked each presentation on a scale of 1 ("incomprehensible!") to 10 ("eureka!"). The presenter with the highest score was awarded the Snowman Trophy. At the conclusion, a discussant provided synthesizing observations and hosted a question and discussion period with the audience. The panel has since been repeated at the 2010 Conceptions of Library and Information Science conference in London, England [12] and again at the

2011 ASIS&T Annual Meeting in New Orleans, Louisiana, as Metatheoretical Snowmen II [13]. A few scholars who witnessed the panel have implemented spin-offs at their campuses. It is not possible, due to space limitations, to recount every snowman presentation, but a summary report and select examples are provided next. The definitions of metatheories that follow come from Bates' previously noted analysis [1].

Metatheoretical Snowmen at the 2009 ASIS&T Annual Meeting

Understandably, the first participants in the Metatheoretical Snowmen session had some reservations, since ASIS&T panels are typically marked by gravitas. The five presenters were accomplished information scientists with substantial legacies within their favored metatheory. Howard D. White (Drexel University) represented *bibliometrics*, a metatheory in which the analysis of the statistical properties of information is seen to provide understanding of value for both the design of information provision and the theoretical understanding of social processes around information, including historical processes. Pamela McKenzie (University of Western Ontario) addressed *constructionism* (also called *discourse analysis*), an approach in which it is assumed that the discourse of a society predominately conditions the responses of individuals within that society, including the social understanding of information. Jens-Erik Mai (Royal School of Library and Information Science, Copenhagen) presented *socio-cognitivism* (also called *domain analysis*), a position in which both the individual's thinking and the social and documentary domain in which the individual operates are seen to influence the use of information. Paul Solomon (University of South Carolina) interpreted *sense-making*, a set of metatheoretic assumptions for understanding how people overcome discontinuity. Siobhan Stevenson (University of Toronto) championed *critical theory*, an approach in which the hidden power relations and pattern of domination within a society are revealed and debunked. Marcia J. Bates (UCLA emerita) served as a discussant and offered concluding remarks.

The presentation on critical theory at the 2009 ASIS&T Annual Meeting is an example of how the *gedankenexperiment* works. Stevenson first clarified her focus on a form of Marxist critical theory known as political economy [14].

1) *What does the snowman's reality look like?* Cast in terms of capitalist society and forces such as mass production and mass consumption, this snowman is the fetishized invention known as "Frosty" and a special type of commodity: *intellectual property.* Frosty is the product of legions of invisible creative laborers; has proliferated across various technologies and cross-promotions (see Figure 1); reproduces a host of social inequalities and stereotypes; and is licensed by select capitalists for millions of dollars.

FIGURE 1. A presentation slide by Stevenson [14], showing the snowman (Frosty) from the perspective of political economy

2) *What constitutes information for the snowman?* As a form of content, Frosty is information that is shaped by intellectual property policy, regulatory trends and technological developments in the telecommunications sector.

3) *How is information research conducted in this world?* As a methodology for information science, political economy aims to uncover Frosty's role in the successful reproduction of capitalism as an inequitable economic regime. This research examines the economic, technological, social and cultural history related to information. Further, inquiry into this tradition attempts to be a moral compass, revealing the inequalities that underlie intellectual property such as Frosty and articulating alternative futures.

All the Metatheoretical Snowmen presentations at the 2009 ASIS&T Annual Meeting were ground-breaking. The judges awarded Pamela McKenzie the prize for her presentation on constructionism, which edged out a compelling talk on socio-cognitivism by Jens-Erik Mai, the runner-up. Based upon applause and a palpable enthusiasm in the room, Siobhan Stevenson's statement, described above, appeared to be an audience favorite.

Metatheoretical Snowmen II at the 2011 ASIS&T Annual Meeting

Metatheoretical Snowmen returned to the 2011 ASIS&T Annual Meeting in New Orleans, Louisiana, with a different lineup of scholars and metatheories. Jonathan Furner (UCLA) presented the *philosophical-analytic* approach, in which the classical techniques of the discipline of philosophy are brought to bear on information-related matters. Soo Young Rieh (University of Michigan) championed *user-centered design*, wherein the development and human testing of information systems is seen as a path to both scientific understanding and improved information access. Michael Olsson (University of Technology, Sydney) represented *critical studies*, an approach in which the hidden power relations and patterns of documentation within society are revealed and debunked. Marcia Bates (UCLA) addressed an *evolutionary* stance: the insights of biology and evolutionary psychology are brought to bear on information-related phenomena. Finally, Nick Belkin (Rutgers University) represented *cognitivism*, a perspective arising out of cognitive science in which the thinking of the individual person operating in the world is the dominating focus of research on information seeking, retrieval and use. Andrew Dillon (University of Texas) was the discussant who provided summarizing observations and hosted a question and answer period.

Another example of a snowman, drawn from this panel, was Soo Young Rieh's user-centered-design snowman. To begin, Rieh [15] described user-centered design as a philosophy and set of research methods that aim to involve users in the design of information systems.

1) *What does the snowman's reality look like?* In this metatheory, the snowman is an information system (see Figure 2). It is incomplete without two human stakeholders: users and information system builders.

2) *What constitutes information for the snowman?* In user-centered design, the snowman itself (as an information system) contains information in a variety of multimedia formats. This information helps people achieve goals and complete tasks in everyday life.

3) *How is information research conducted in this world?* Rieh critically reports that a tense bifurcation exists between two research specialties devoted to improving the snowman's contribution to society. On the one hand, there are information behavior scholars who take a broad interest in all the information behaviors performed by people who encounter the snowman. On the other hand, information system designers place a narrower focus on the user's direct engagement with the snowman and strive to improve these experiences. Each research specialty has a distinct set of methods and would benefit by closer integration with and appreciation of the other.

FIGURE 2. A presentation slide by Rieh [15], showing the snowman as an information system from the perspective of user-centered design

Although the format was identical to the 2009 event, Metatheoretical Snowmen II included new panelists, addressed a fresh set of metatheories and had its own exuberant spirit. Michael Olsson was victorious with a sharp explication on critical theory. Jonathan Furner's contribution on the philosophical-analytical approach resembled performance art; an audio version of this memorable disquisition can be heard at www.jennahartel.com/metatheoretical-snowmen.html.

Spin-Offs

This approach to understanding metatheory has generated novel adaptations. The College of Communication and Information of Florida State University presented Metatheoretical Flamingos [16], an appropriate means to analyze information metatheory in a tropical setting. Organized by Adam Worrall, the session featured Worrall and fellow doctoral students presenting semiotic, cognitive, social and physical metatheories followed by a fishbowl discussion. The School of Information and Library Science at Pratt Institute offered the panel [meta]Theoretical Lions in its annual research showcase. At Pratt the lion is a symbol of patience and fortitude and is a campus landmark. Spearheaded by Debbie Rabina, the session at Pratt featured faculty presentations on existentialism, evolutionary theories, empiricism, political economy and feminism [17].

A Critique

All pedagogical strategies should be subject to critique and a public discussion of their merit. One information scholar has remarked that this playful treatment of metatheory makes it difficult for other scholars and their students to engage the topic with the sobriety it deserves; put another way, Metatheoretical Snowmen has rendered information metatheory a joke. Also, a reviewer of the original panel proposal asserted that academic work should not be conducted as a competition for a trophy, for the outcome of new insight is reward and motivation enough. As the originator, I acknowledge that the five-minute statements by the presenters require that they transmit simplified understandings of metatheories that are truly complex idea systems. (For this reason, a bibliography of selective articles on metatheory is provided at the panel events and is available at the link below).

The Future

Going forward, given the preponderance of positive feedback, Metatheoretical Snowmen will likely reappear at upcoming annual meetings of ASIS&T, other international conferences and special events or classes within information studies programs. In general this approach may encourage more creative pedagogical techniques across the field. Additional background and a collection of PowerPoint slides from past renditions are available at www.jennahartel.com/metatheoretical-snowmen.html. Those interested in participating on a Metatheoretical Snowmen panel or in applying the idea in their own communities are invited to contact the author for assistance. ■

Resources on next page

Resources Mentioned in the Article

[1] 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.

[2] Tuominen, K., Talja, S., & Savolainen, R. (2002). Discourse, cognition and reality: Towards a social constructionist metatheory for library and information science. In R. Fidel, H. Bruce, P. Ingwersen, & P. Vakkari (Eds.), *Emerging frameworks and methods: Proceedings of the Fourth International Conference on Conceptions of Library and Information Science* (*CoLIS4*), Seattle, WA , July 21-25 (pp. 271-283). Greenwood Village, Co.: Libraries Unlimited.

[3] Butler, L. P. (1933). *An introduction to library science.* Chicago: University of Chicago Press.

[4] Talja, S., Tuominen, K., & Savolainen, R. (2005). "Isms" in information science: Constructivism, collectivism and constructionism. *Journal of Documentation, 61*(1), 79-101.

[5] Wilson, T. D. (2006). A re-examination of information seeking behavior in the context of activity theory. *Information Research, 11*(4), 2.

[6] Limberg, L. (2000). Phenomenography: A relational approach to research on information needs, seeking and use. *New Review of Information Behavior Research, 15*, 1-67.

[7] Sundin, O. (2005). Pragmatism, neo-pragmatism and sociocultural theory: Communicative participation as a perspective in LIS. *Journal of Documentation, 61*, 23-43.

[8] Budd, J. M. (2005). Phenomenology and information studies. *Journal of Documentation, 61*(1), 44-59.

[9] Hartel, J. (January 2005). Metatheoretical snowmen. Poster at the Association for Library and Information Science Education conference, Boston, MA.

[10] Todd, R. (1999). Utilization of heroin information by adolescent girls in Australia: A cognitive analysis. *Journal of the American Society for Information Science, 50*(1), 10-23.

[11] Hartel, J. (October 2009) Metatheoretical snowmen. Published abstract for a panel at the American Society for Information Science and Technology Annual Meeting, Vancouver, BC.

[12] Hartel, J. (June 2010) Metatheoretical snowmen. Published abstract for a panel at the Conceptions of Library and Information Science conference, London, England.

[13] Hartel, J. (November 2011). Metatheoretical snowmen II. Published abstract for a panel at the American Society for Information Science and Technology Annual Meeting, Vancouver, BC.

[14] Stevenson, S. (October 2009). Metatheoretical snowmen: Political economy. Panel presentation at the American Society for Information Science and Technology Annual Meeting, Vancouver, BC.

[15] Rieh, S. Y. (October 2011). Metatheoretical snowmen: User-centered design. Panel presentation at the American Society for Information Science and Technology Annual Meeting, New Orleans, LA.

[16] Mandel, L. H., Alemanne, N. D., Worrall, A., & Yu, C. (March 2012). Theoretical flamingos. Panel at the College of Communication and Information, Florida State University, Tallahassee, FL, March 14, 2012.

[17] Rabina, D., Cocciolo, A., Lopatovska, I., Sula, C., Hochman, J. & Pattuelli, C. (May 2012). [meta]Theoretical lions. Panel at the Research Showcase, Pratt Institute, School of Library and Information Science, Brooklyn, NY, May 8, 2012.