Capturing the Complexity of Information Interactions: Measurement and Evaluation Issues

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ABSTRACT
This panel addresses how to evaluate information interactions in evolving information landscapes. Using a common scenario, panelists each provide their own take on the user experience and its measurement, building a multifaceted view of information landscapes and their measurement.

Keywords
Evaluation, measurement, information interaction, evolving information landscape.

INTRODUCTION
Today, interaction with information takes place in a variety of spaces both public and private, on small portable devices and large screen displays, in individual or group settings, and as part of personal or shared social experiences. One of the great challenges for information science is in understanding this dynamic convergence of users, contexts, devices and tasks and the behaviors that drive and determine successful multi-platform information use. This panel asks: How should we approach and measure such multi-platform user experiences? How can we address this in a way that acknowledges and incorporates understanding of the complexity of contemporary information behavior?

In this panel, we address these questions by offering multiple takes on a research scenario:

Today's university students are using a myriad of tools and systems in their academic work. They download journal articles to their iPads to read during their commute to campus, compile sources and notes in Zotero, and use Word processors to write papers for their courses. Locating and using information is ongoing, as students move between their homes, classrooms, and the physical and virtual campus library, and is supported by

various applications (e.g., library databases, email, citation management software). Information moves and is transformed across these applications, which are accessed via students' cell phones, tablets, and laptops.

This research scenario is situated in the academic context, one that is commonly investigated in information science. Research questions that we might posit in this situation are: 1) What tasks are carried out by a student to achieve an outcome, such as the successful completion of an assignment? 2) What and how are technologies utilized to accomplish these tasks? 3) What are the user's perceptions of the interactions that occur with those technologies? More specifically, what cognitive judgments are being made and how does the user's affect manifest and change during the process? In order to answer these questions, we must consider the information interaction as a process, rather than an outcome, and look for ways in which to capture its complexity.

Each panelist will focus on an aspect of this scenario to illustrate the challenges and potential solutions for evaluating information interaction in this setting. Specifically, Lopatovska will describe how to measure affect and its relationship to tasks; Rieh will examine students' credibility judgments of information content: What is the effect of the tool or time/place on these evaluations? O'Brien will consider what behavioral and user experience measures might be meaningful for gaining a holistic sense of the user's engagement in the research process. These perspectives will be presented with an emphasis on the complexity of the context in which students are operating.

EVALUATING INFORMATION INTERACTION
Saracevic's (1997) Stratified Model of Information Retrieval Interaction depicts several layers of evaluation: 1) User Level, the cognitive, affective, and situational interaction of users with information, their own motivations and intentions, and their information needs or tasks; 2) Computer level, where the emphasis is on hardware, software, programming languages, etc. as well as the content, i.e., text, images, etc. and meta-data; and 3) Surface Level, the interface between the user and computer levels, consisting of inputs (commands) and outputs (retrieved results). The interaction component occurs at the Surface level, where elements of the User

and Computer levels meet. Our interest lies in capturing and making sense of the affective, cognitive and situational elements that people bring to information interactions in order to provide directions for evaluating what is happening at the User Level at present and into the future.

However, as Saracevic states, "interaction is a complex, difficult, messy, hard, and confusing issue to deal with" because "humans are involved" (p. 313). Difficulties in studying the User Level are inherent in methods of determining user perspectives because we use surrogates to understand user experience based on people's actions or physiological responses; and we encounter a range of individual differences, e.g. that each individual is unique in his/her cognitive, behavioral, and emotional make-up (Kelly, 2009). The dynamic information landscape not only makes it difficult to compare across individuals or groups, but even over the course of an information interaction because the user's perception may shift over its course. Further, as individuals gain experience, their relationships with information devices and content may change over time and with repeated use. In addition, information interactions are social in nature. They may take place in the presence of others, be collaborative in nature, or be informed by the perceptions of others.

PANEL PROPOSAL
Information interactions are increasingly facilitated through digital interfaces and portable devices. As a result, Saracevic's Surface Level may take many forms, from the standard desktop computer, to the cell phone, to large, community information displays. At the same time, the ubiquity of information technology is increasing, creating even more dynamic contexts for people to locate and use information. A fundamental issue is how to evaluate information interactions at the User level given this ever-evolving information landscape and how to determine what measures are appropriate.

This panel focuses on the interplay between affect and task (Lopatovska), cognition and content (Rieh), and users, content and systems (O'Brien). Kelly (2009) posits that, "One of the most challenging aspects of using interaction measures is developing a framework for interpreting them" (p. 106). We take up this challenge to propose frameworks for measuring information interaction that take into account the complexity of human experience, the tasks people undertake, and the increasingly complex systems and content available to the information seeker and user.

STRUCTURE OF THE PANEL
The proposed structure of the panel is as follows:

- The Moderator will introduce the panel and the research design scenario (10 minutes);

- Each of the panelists will address the research scenario (13 minutes each);
- The Moderator will facilitate a discussion amongst panelists and the audience of the challenges and approaches to evaluating information interaction given the complex information worlds in which we situate our research (30 minutes);
- The Moderator will bring together the methodological challenges and opportunities that emerge during the panelists' presentation and discussion and summarize its application to information interaction research (10 minutes).

THE PANELISTS
Each panelist brings unique expertise to issues around to the evaluation of information interaction.

Irene Lopatovska is an Assistant Professor at the Pratt Institute. Her research focuses on emotional aspects of information use. She uses both qualitative and quantitative methods in her research. Recently, she examined the challenges inherent in collecting, making sense of, and applying emotional data to information research (Lopatovska, 2011).

Heather O'Brien, Assistant Professor, University of British Columbia, explores engagement in human-information experiences (O'Brien, forthcoming). Her interest lies in how to capture information interaction as a process that unfolds over the course of using a system or application, and she has been investigating the relationship between self-report, physiological and behavioral measures.

Soo Young Rieh is an Associate Professor at the University of Michigan. Her research focuses on credibility judgments in the process of interacting with information. Recently, she examined credibility heuristics employed when people evaluate online content with respect to various goals and tasks of information activities in everyday life contexts (Rieh, 2010).

Barbara Wildemuth will moderate the session. Dr. Wildemuth is a Professor at the University of North Carolina at Chapel Hill, and recently published a research methods text (Wildemuth, 2009).

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