

## **Ethnomethodology and Usable Security: The Value of Descriptive Research for Graduate Students**

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Instrumental, cognitive and behavioural approaches to usable security yield important insights about usable security and privacy as a discipline and as a practice (Ackerman and Mainwaring 2005; Bonneau, et al. 2012; Cranor and Garfinkel 2005; Sasse and Flechais; Yee 2004). These approaches fulfill an important need for computer scientists and information security experts. Instrumental approaches to usable security and privacy often inform computer science and engineering by integrating reflections on usability engineering and related human-computer interaction (HCI) research. An important thrust in usability engineering and HCI has been the turn to cognitive and behavioural sciences as seen in the work of Norman (2013) and Nielsen (1992) to explain the human side of security, privacy and interaction. Do instrumental, cognitive and behavioural approaches to usable security and privacy convey all the critical aspects needed by today's information expert and usable security student? Are there other approaches that enlighten researchers and professionals about usable security and privacy?

I suggest an ethnomethodological approach to understanding usable security and privacy based on social theoretical research done in HCI. An ethnomethodological approach borrows from social theories and phenomenology to provide insight about how humans interact with technology in their everyday practices. For example, recent research in user experience investigates the contextual and experiential environment of users interacting with technology (Hassenzahl 2008). This context is often laden with organizational constraints and communities of practices that end users have already acquired by interacting with previous information systems (Wenger 1998). Hence, I argue that usable security and privacy problems face in their everyday interaction with interfaces are co-constituted by their existing knowledge of information systems, rules, and established organizational practices and even culture.

Usable security and privacy research draws substantially from usability engineering. For example, the foundational usability discipline of human factors and ergonomics rely on psychological insights and industrial design to improve the use of physical space and technologies (Grudin 2012). Similarly, an early focus of computer-human interaction, in the 1980s, was the discretionary use of computers by hobbyists, and non-technical experts (Grudin 2012). Today, much of CHI's research relies on usability engineering and the measurement of users' successful task performance (Tullis and Albert 2013, 5). It is my interpretation that research supporting applied research programs such as human factors, ergonomics and CHI, tends to be more prescriptive than descriptive.

Prescriptive and applied research is useful to deal with direct practical problems. However applied prescriptions cannot deal with trends and wider societal shifts in users' practices the same way that descriptive research does. Information security and computer science students should be aware of the contextual, experiential and informational environment that shapes the interactions of users with technologies when trying to understand the typical pitfalls that they must control for architecturally. Users' mental models cannot be explained only through cognitive and behavioural studies. What cognitive and behavioural studies do is measure existing mental models and prescribe solutions. They do

not explain the origins of mental models and how they change. Usable security and privacy research cannot focus on existing mental models and prescription only. It must also anticipate where users' practices will change.

Descriptive research HCI by Lucy Suchman and Paul Dourish is often theoretical and based on ethnography, anthropology, phenomenology and sociology theories. Suchman (2007) explores the reconfiguration created by the relationship between the human and the machine. The human does not stand apart from his experience and the context of his interaction with a system. The system and the human create a new assemblage. Dourish (2001) explores the changing modes of interaction between humans and computer from physical to visual and back to physical space in through ubiquitous computing. There are important insights gained about security and privacy through the work of Suchman and Dourish. The negotiation of security and privacy occurs through physical space occupied by networked appliances and multimodal ubiquitous computing. Security and privacy are affected by different sensory inputs such as sounds, touch, and gestures that mobile phones, drones, and computers respond to.

Responding to ethnomethodological research from researchers such as Suchman and Paul Dourish, HCI scholars like Marc Hassenzahl (2006) have borrowed from social theory and phenomenology to help redefine user experience as an interpretive field. The adoption of the term UX has also happened in industry although there, professionals often use the term as a synonym for usability (Hassenzahl 2008, 11). Hassenzahl(2006) lists three elements that distinguish UX research from usability. They are the exploration of users beyond the instrumental and the behavioural; the study of emotions and affect; and the preponderance of the experiential dimension of the interaction for the user (Hassenzahl and Tractinsky 2006). To this list, borrowing from Dourish, I add context to better reflect the phenomenological interpretation of the user interaction with technology. A phenomenological interpretation of the user allows the exploration of the user's satisfaction with his interaction with technology without trying to measure cognition. It also considers the environment, the place and time used where the user interacts with a technology.

An ethnomethodological approach to usable security and privacy introduce students and professionals to a series of questions beyond the direct instrumental problems faced by users. It allows the student and the professional to step back and offers an opportunity to integrate a wider set of questions and solutions to the architecture of secured and confidential information systems. While there is minimal literature integrating ethnomethodological approaches to usable security and privacy is (Dourish, Grinter, et al. 2004) research using descriptive approaches should be integrated within graduate students' existing prescriptive curricula.

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