Theorizing Gender and Information Technology Research

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INTRODUCTION

A fundamental consideration when attempting to understand the complex factors leading to the underrepresentation of women in IT is the choice and use of theory. Theories about women and their relationships to information technology and the IT profession guide the conceptualization of the research problem, the methods of data collection, the basis for analysis, and the conclusions that are drawn. However, a criticism of gender and IT research is that the topic of gender and IT is currently undertheorized (Adam, Howcroft, & Richardson, 2001, 2004).

This undertheorization takes on several different forms. First, there are cases in which there is no theory in evidence to guide the conceptualization of the research project or to inform the data collection and analysis. Rather, the focus is typically on compiling and representing statistical data regarding the differences between men and women with respect to technology adoption, use or involvement in the IT profession. This form of undertheorization can be labeled *pre-theoretical research*. Second, other research, while not explicitly articulating a particular theory, nevertheless, is guided by a theory-in-use. For example, quite often a theory of inherent differences between males' and females' relationships to IT is used implicitly to guide data collection and analysis. This form of undertheorization can be labeled *implicit-theoretical research*. This approach is considered to be a type of undertheorization in that the lack of explicit discussion of a theory makes it difficult for others to discuss, challenge or extend the research. Finally, the body of research that reflects explicit theory-in-use has been shown to have gaps in the theoretical landscape (Trauth, 2002). That is, an argument has been made that current theories about gender and IT do not fully account for the variation in men's and women's relationships to

information technology and the IT field. This form of undertheorization can be labeled *insufficient-theoretical research*. It is this third condition that is addressed in this article: the need for new theoretical insights to guide our effort to understand the underrepresentation of women in the IT profession.

BACKGROUND

Two dominant theoretical viewpoints are currently reflected in the majority of literature about gender and IT: essentialism and social construction (Trauth, 2002). Essentialism is the assertion of fixed, unified and opposed female and male natures (Wajcman, 1991, p. 9). The existence of biological difference between the sexes has led to a tendency to assume that other observed differences between men and women are due to biological determinates as well (Marini, 1990). When applied to the topic of gender and IT, the essentialist theory presumes the existence of relevant *inherent differences* between women and men with respect to information technology. It uses the observed differences in the participation of women and men in the IT field as evidence of this view. Thus, the causes of gender underrepresentation in IT are attributed to biology. It turns to observed differences in men's and women's behavior for explanations of what are believed to be inherent, fixed, group-level differences that are based upon bio-psychological characteristics.

Essentialism underlies research on gender and IT that views gender as a fixed variable that is manipulated within a positivist epistemology (e.g., Dennis, Kiney, & Hung, 1999; Gefen & Straub, 1997; Venkatesh & Morris, 2000). Adam et al.'s (2001) analysis of this perspective points out that focusing on a background literature of psychology, alone, places too much emphasis on individual gender characteristics where a form of essentialism may

creep in. Looking only to psychological explanations of observations without giving attention to the influence of context[1] results in a determinist stance with respect to gender.

One inference that could be drawn from an essentialist approach to gender and IT research is that women and men should be treated differently. For example, Venkatesh and Morris (2000) recommend that trainers adopt different approaches toward men and women and that marketers design different marketing campaigns for men and women. Trauth's critique of essentialist approaches to gender and IT research suggested that one logical extrapolation from this line of thinking to IT workforce considerations would be the creation of two different workforces: a "women in IT" workforce and a "men in IT" workforce. Thus, policies for addressing the gender imbalance would focus on differences between women and men and the equality issue would focus on "separate but equal," something that was rejected in the arena of racial equality decades ago (Trauth, 2002; Trauth & Quesenberry, 2005; Trauth, Quesenberry, & Morgan, 2004).

The other dominant theoretical perspective focuses on the *social construction* of IT as a male domain. According to this theory, there is a fundamental incompatibility between the social construction of female identity and the social construction of information technology and IT work as a male domain. This explanation for women's relationship to information technology looks to societal rather than biological forces. Thus, the causes of gender underrepresentation can be found in both the IT sector and in the wider society.

The literatures of gender and technology in general (e.g., Cockburn, 1983, 1988; Cockburn & Ormrod, 1993; Wajcman, 1991) and that of gender and information technology, in particular (e.g., Adam et al., 1994; Balka & Smith, 2000; Eriksson, Kitchenham, & Tijdens, 1991; Lovegrove & Segal, 1991; Slyke, Comunale, & Belanger, 2002; Spender, 1995; Star, 1995; Webster, 1996) look to social construction theory (Berger & Luckmann, 1966) rather than biological and psychological theories. According to this view, the social shaping of information technology as "men's work" places IT careers outside the domain of women.

Recommendations for addressing this situation vary. One school of thought based on a multi-year investigation of female underrepresentation in both academe and the workplace in Australia explores the development of strategies to help women fit in to this male domain (e.g., Nielsen, von Hellens, Greenhill, & Pringle, 1998; Nielsen, von Hellens, Pringle, & Greenhill, 1999; Nielsen, von Hellens & Wong, 2000; Pringle, Nielsen, von Hellens, Greenhill, & Parfitt, 2000; von Hellens, von Hellens, Nielsen, & Trauth, 2001; Pringle, Nielsen, & Greenhill, 2000). Another school of thought focuses on the need to reconstruct the world of computing to become more of a "female domain." For example, Webster (1996) focuses on the social shaping of female gender identity and the implication for women's relationship to workplace technologies. Based on analysis of women as a social group in cyberspace, Spender (1995) predicted an influx of "female values" into the virtual world that would accompany increased female presence.

Wajcman's (1991) analysis of the social constructivist perspective on gender and technology reveals several issues. For example, there is no universal definition of masculine or feminine behavior; what is considered masculine in one society is considered feminine or gender-neutral in another. Further, while gender differences exist they are manifested differently in different societies. Hence, addressing the gender gap in IT employment based upon an assumed "woman's perspective" is problematic. This analysis suggests a gap in current theory and motivates the articulation of new theory to help us better understand the underrepresentation of women in the IT field.

MAIN THRUST OF THE ARTICLE

The need for an alternative theory to account for the underrepresentation of women in the IT workforce emerges from consideration of the assumptions underlying the two prevailing theories discussed in the previous section. The initial work on the Individual Differences Theory of Gender and IT resulted from an analysis of this theoretical gap and used empirical data from a study of gender and IT in Australia and New Zealand (Trauth, 2002; Trauth, Nielsen, & von Hellens, 2003) to make the case for an alternative theory to occupy the space between essentialist theory and social constructionist theory. Subsequent

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