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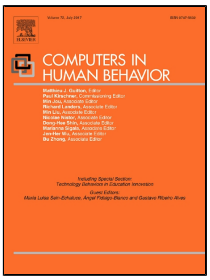

Personal Artifact Ecologies in the Context of Mobile Knowledge Workers

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ABSTRACT

Recent work suggests that technological devices and their use cannot be understood in isolation, and must be viewed as part of an artifact ecology. With the proliferation of information and communication technologies (ICTs), studying artifact ecologies is essential in order to design new technologies with effective affordances. This paper extends the discourse on artifact ecologies by examining how such ecologies are constructed in the context of mobile knowledge work, as sociotechnical arrangements that consist of technological, contextual, and interpretive layers. Findings highlight the diversity of ICTs that are adopted to support mobile work practices, and effects of individual preferences and contextual factors (norms of collaboration, spatial mobility, and organizational constraints).

Author Keywords

Artifact ecology; mobile knowledge worker; nomadic work; mobile technology.

INTRODUCTION

Weiser (1993) envisioned interactions with multiple systems interconnected by a ubiquitous infrastructure. One of the primary outcomes of ubiquitous computing has been a computational environment wherein users interact with multiple devices and interfaces. Consistent with this vision, users now interact with a growing number of devices and technologies in a technological environment characterized by trends such as the Internet of Things (Jokela, Ojala, & Olsson, 2015; Santosa & Wigdor, 2013). People's everyday environments are flooded by digital artifacts and platforms; many own, have access to, and make use of multiple information and communication technologies (ICTs) in their personal and professional lives, including laptops, tablets, and smartphones (Hamilton & Wigdor, 2014; Stolterman, Jung, & Will, 2013). New devices exist in an overlapping information space with traditional computers, including communication tools, cloud services, and social media. None subsist or are used in isolation (Baumer et al., 2012; Bødker & Klokmose, 2012; Bossen & Markussen, 2010; Stolterman et al., 2013; Turner, Qvarfordt, Biehl, Golovchinsky, & Back, 2010). Recent human-computer interaction research has presented the concept of a "device" or "artifact ecology" as a means of accounting for the emerging computing environment in a "post-PC" era (e.g., Bødker, Korsgaard, & Saad-Sulonen, 2016; Jarrahi & Sawyer, 2012; Jung, Stolterman, Ryan, Thompson, & Siegel, 2008; Vasiliou, Ioannou, & Zaphiris, 2015), and suggests that artifacts and their affordances cannot be understood separately. Rather, these are meaningful only in relation to one another and to the ecology itself (Dearman & Pierce, 2008; Houben, Tell, & Bardram, 2014; Pipek, Wulf, & Johri, 2012).

The proliferation and consumerization of ICTs has also contributed to the rise of new working arrangements, such as remote or mobile working. With the ubiquity of digital infrastructure, many knowledge workers, in particular, are now able to work almost anywhere, anytime (Blatt & Gallagher, 2013; Davis, 2002). A recent survey by Forrester Research confirms that mobile knowledge work is on the rise: across Europe and the United States between 2001 and 2012, the population of mobile knowledge workers (MKWs) grew from 15 to 29 percent (Brodkin 2013). Current research on MKWs' work practices highlights the physical mobility of these individuals: many may not have a centralized organization of which to speak, but instead orbit around clients and colleagues and through an extended professional network (Costas, 2013; Czarniawska, 2004). Their looser affiliations and higher degrees of autonomy make it difficult if not impossible for them to connect to "formal" computational resources in the same ways as those who work under the traditional paradigm can, for whom such things as hardware, software, systems, applications, standards, and policies are supplied and dictated