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Michael J. Scialdone
Syracuse University, mjsciald@syr.edu

Ping Zhang
Syracuse University, pzhang@syr.edu

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Applying Extended Adaptive Structuration Theory to Qualitative Research on Human-Computer Interaction

Michael J. Scialdone
Syracuse University
mjsciald@syr.edu

Ping Zhang
Syracuse University
pzhang@syr.edu

Human-Computer Interaction (HCI) research lends itself to considering *characteristics* (features) of technologies which humans perceive and thus *interact* with directly. Yet, Griffith (1999) observed that IT features can be decomposed repeatedly. For example, one feature of a smartphone may be stylus-based input. A feature of the stylus may be the material it is made of. If it is plastic, one could consider whether it is hard or soft, and so on.

In qualitative, exploratory research where studies are highly contextualized, the features of IT relevant to a phenomenon may be ambiguous. Here, *we describe an approach for conducting exploratory qualitative HCI research that adequately conceptualizes IT features at a level of granularity pertinent for the phenomenon of interest* by using extended Adaptive Structuration Theory (eAST) (Markus & Silver, 2008) as a framework (Figure 1).

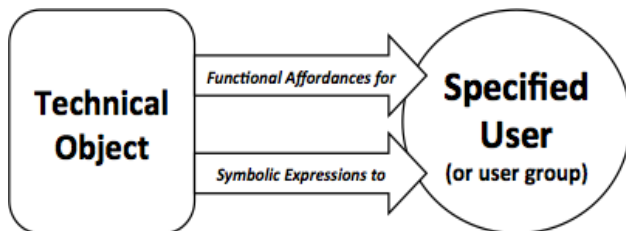


Figure 1: Extended Adaptive Structuration Theory

The functional affordances and/or symbolic expressions of technical objects can determine the appropriate level of granularity to depict IT-related phenomena for a given user group. Technical objects are “IT artifacts and their component parts” (Markus & Silver, 2008, p. 620). Functional affordances are “the possibilities for goal-oriented action afforded to specified user groups by technical objects” (p. 622). Symbolic expressions are “the communicative possibilities of a technical object for a specified user group” (Markus & Silver, 2008, p. 623).

We use an example study to illustrate how eAST can be applied to qualitative HCI research to depict a phenomenon at an appropriate level of IT granularity. Our study asked: *how do specific features of social media impact student experiences in higher education?*

The human element was informed by the Community of Inquiry model (Garrison, 2011; Garrison, Anderson, & Archer, 2000), which assumes deep, meaningful educational experiences involve cognitive presence, social

presence, and teaching presence. Interview questions asked about features as generally as possible to ensure that the data matched a level of IT feature granularity that was relevant to participants. Detail was prompted when an interviewee made reference to aspects of eAST. For example, if a student referred to Twitter impacting social interactions, we would probe on which social actions Twitter allowed (functional affordances), and how he/she knew social actions were possible (symbolic expressions).

We then categorized interview data within the eAST framework, allowing us to understand technical objects as students perceived them, and to map functional affordances and symbolic expressions in relation to categories of cognitive, teaching, and social presence. The results of the study showed that the functional affordances of timeliness, information curation, and multimedia engagement had the most impact on students’ educational experiences. Little evidence of symbolic expressions’ relevance emerged for this study. A considerably more detailed breakdown and discussion of these findings can be found in Scialdone (2013).

Our multi-case study is but one example in which HCI researchers might appropriate eAST as a framework for qualitative research. The following list of guidelines is suggested for future scholars who may consider using it:

- 1. Determine if eAST is an appropriate framework for the study:** eAST is useful when a researcher has decided to somewhat decompose an IT artifact based on the phenomenon of interest, but is *unsure as to how the artifact should be further decomposed*.
- 2. Maintain a level of abstraction consistent with the users of interest:** We strove to categorize data in such a way that technical objects were mutually exclusive and had distinct impacts. This ensures that the *level of feature granularity is relevant to those affected by the phenomenon*.
- 3. Decide which elements of eAST are relevant:** Functional affordances are likely to be appropriate if the study’s primary concentration is use and impact, while symbolic expressions are likely to be appropriate if the focus is design. But, one should be mindful that both might be relevant. The key is to be mindful about *which relationship(s) between technical objects and the specified user groups are pertinent to depicting the phenomenon*.

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