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User analysis in HCI—the historical lessons from individual differences research

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User analysis is a crucial aspect of user-centered systems design, yet Human–Computer Interaction (HCI) has yet to formulate reliable and valid characterizations of users beyond gross distinctions based on task and experience. Individual differences research from mainstream psychology has identified a stable set of characteristics that would appear to offer potential application in the HCI arena. Furthermore, in its evolution over the last 100 years, research on individual differences has faced many of the problems of theoretical status and applicability that are common to HCI. In the present paper, the relationship between work in cognitive and differential psychology and current analyses of users in HCI is examined. It is concluded that HCI could gain significant predictive power if individual differences research was related to the analysis of users in contemporary systems design.

1. Introduction

The current emphasis on user-centered design for interactive technologies (see, e.g. Norman & Draper, 1986; Karat, 1991) places great emphasis on understanding the user in attempting to develop more usable artifacts. To this end, design teams are urged to perform user and task analyses at the earliest stages of product development and to consider the nature of the users' cognitive and physical predispositions and abilities. These use characteristics are correctly seen as important in constraining the available design options and, if attended to, in increasing the likelihood of producing a usable application.

In current situations user analysis often means distinguishing users broadly in terms of expertise with technology, task experience, educational background, linguistic ability, gender and age. Nielsen (1993) for example, proposes a three-dimensional analysis of users that draws distinctions in terms of domain knowledge, computing experience, and application experience. Booth (1989) offers a more detailed list of user characteristics that clusters user variance into five broad dimensions: user data, job characteristics, background, usage constraints, and personal traits.

Of necessity, such user analyses are highly context sensitive and offer little potential for generalization, never mind agreement across proponents. Design

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