Where the Interaction Is Not:
Reflections on the Philosophy of Human-Computer Interaction

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ABSTRACT

The concept of interaction is foundational in technology interface design with its presuppositions being taken for granted. But the interaction metaphor has become ambiguous to the extent that its application to interface design contributes to misalignments between people’s expected and actual experience with computers. This article re-examines the presuppositions governing human-computer interaction with the motivation of strengthening weaknesses in their foundational concepts. It argues for abandoning the interaction metaphor to refocus design discourse toward the mediation roles of technology interfaces. ‘Remediation’, i.e. representation of one medium in another, is proposed as a conceptual model that more precisely describes the human-to-computer actions.

KEYWORDS

Cultural Perception, Foundational Analysis, Human-Computer Mediation, Interface Design, Philosophy of Interaction, Remediation

INTRODUCTION

This paper examines the nature of human-computer interaction. The motivation is two-fold: first, to see whether there are any cracks in the foundation of the interaction concept as it is used in computer interface design, and thus consider whether these should be repaired or replaced; secondly, to contribute to revisions of: current descriptions of the relationship between people and computers, concepts which function as models of human embodied cognitive processes, and models that are applied to design and engineering of computer interfaces. These purposes are realized with and through an interpretive discourse and a sketch of a prescriptive approach to methodology.

My strategy for decomposing presuppositions is grounded on ‘foundational analysis’ (Saariluoma, 1997), but I deviate from the framework by using methods of the phenomenological tradition. The concepts employed in the critique could be applied to technology in general, but the following treatise is limited to the domain of computer technology, and specifically to the concepts used in design of computer interfaces. Throughout this work, I use the term ‘ordinary user’ to denote people without expert knowledge of computer technology, in contrast to the term ‘expert’, which is used interchangeably with ‘designers and engineers’.

I develop two themes in the following sections. First, interaction as a conceptual metaphor denoting what happens during human usage of computers foregrounds illusory aspects of the mediation and operational roles assigned by experts to computers. I contend that ‘interaction’ is a misplaced label. This misplacement leads designers and engineers to rely on a partial view of design discourse. Modeling and labeling discrete events as interaction, without foundational analysis, contribute to the problem of misalignment between ordinary users’ expected and actual experience derived from
computer usage. Second, there is a need for a philosophy of human-to-computer mediation, which reframes the modeling process in order to assist experts to refocus the design discourse toward the mediation roles of the computer interface. To this end, I propose using the concept of ‘remediation’ as a more accurate description of constitutive events in the realm of human usage of computing devices to understand them well enough to make decisions on how interfaces must be set up.

WHERE INTERACTION IS NOT

One cannot deny the contribution of metaphor usage to modeling technical aspects of the operating principles used in contemporary digital computers: it has triggered the evolution of computer interfaces to its current iteration. Metaphor usage, however, has also become an object for further analysis (Marcus, 1994), related to studies of resultant problems encountered by ordinary users of computers. Researchers are aware of the need for empirical evaluations of metaphors, as shown by the work of e.g. de Castro Salgado et al. (2011), but the literature on computer technology design provides few reflective analysis of interaction, such as the assessment by e.g. Keeler and Denning (1991). Precedent critiques by Dreyfus (1992), and by Winograd and Flores (1988) only lightly touch upon the issue of interaction per se. Works expounding a philosophy of interaction relevant to design of computer interfaces (e.g. Dourish, 2001; Svanaes, 2014) are even fewer, and these precedents do not fully describe the gestalt of interaction. To date, partial answers based on analysis of its components have enabled development of models used in design and engineering of user interfaces. They have helped in realizing the technical aspects. There remain, however, questions regarding human factors in computer usage. Partial answers to them are proving to be inadequate, and consequences manifest in misalignments between people and technology. What is interaction? Where does it happen? How is interaction with a computer experienced? What are the presuppositions and the contingencies that must exist in order for something to be perceived as interaction gestals? These are the foundational issues, which remain partially understood.

Critical deconstruction of the term has already been remarkably absent in seminal literature such as in the work of Card et al. (1983) and Norman (2002). The interaction metaphor has become one of those taken for granted concepts. Practices which change perception of the interface and whose origin and means for becoming something have been forgotten, are now taken for granted as intuitive cultural perception (Husserl, 1970; Polanyi, 1958). There seems to be a tendency to jump directly into the derivatives of action, without an equal amount of effort in describing the phenomenon. Descriptive and prescriptive aspects of technical actions assigned to computer interfaces tend to focus on the constituent parts of interaction without deep critical reflection on the concept of interaction per se, or its constitutive presuppositions.

If we insist on a definition, which explicitly distinguishes between reciprocal influence that happens between persons, and reciprocity in events between things (see e.g. Oxford English Dictionary), we immediately confront problems of equivalence and compatibility. The ontology of interaction must confront this problem. Dealing with this type of ontological issues dates back to the ancients, demonstrated e.g. in Aristotle’s distinction between natural things and artifacts (Aristotle, Physics II.1, 192b8-193b20, trans. Cornford & Wicksteed). From what level of observation could one classify events as interaction that is not restricted to a simple feedback mechanism? Developing a nuanced description of the construct proves to be a tricky problem.

Interaction as a scientific concept (Carnap, 1966) is primarily treated as a classificatory concept—i.e., a taxonomy concept (e.g., memory, attention), which is used to develop and classify quantitative concepts (e.g., time to task completion), while skipping or ignoring development of comparative concepts—i.e., qualitative descriptions of concepts such as utility and usability, which have been deemed as preconditions to developing measurable concepts. One of the results of this state of affairs is that designers and engineers often miss crucial attributes, e.g., ‘cultural responsiveness’
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