

Some Ethnomethodological Observations on ‘Interaction’ in HCI

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Abstract

This paper tries to indicate how interdisciplinary work between ethnomethodologists and system design can be taken seriously. To do this, we proceed to indicate that our problem is not with engineering procedures but with the portrayal of human action and especially human interaction in the field of Human-Computer Interaction (HCI). We deconstruct the use of cognitive, information processing models of HCI and indicate how such conceptualisations are problematic and lead to a simplification of human action. As a result, we indicate that tools of ethnomethodological sensitivity provide more detailed and accurate analyses of work practices and technology. We consider the impact of replacing the cognitive HCI model with descriptions of work, action and interaction provided by ethnomethodological studies. We continue to provide some remarks on the ways in which such descriptions may form a useful resource for systems designers, by providing a better description of current socio-technical system operation, and by furnishing sensitivities, reminders and cautionary tales.

Introduction: confusing cognition and computing

One of the pervading issues in Human-Computer Interaction (HCI) is the reduction of human activities and interaction to the status of an annex of machine function. This appears to be a product of the mutual attraction between information processing and cognitive scientific explanations of human mental functioning and interaction (mental models, schemata, neural networks), and their incorporation in the domain of computer science (particularly HCI). Indeed, their mainstream incorporation in HCI has fed

their supposed explanatory power in relation to human mental functioning and interaction. Cognitive theoretical constructs are presented in a computer commensurate form and the metaphor of computer as mind (from serial processor to patterns of excitation over parallel networks) still pervades. It is in this way that human activities and interaction can wrongly be seen as an annex of machine function.

To be aware of the importance of this reflection, and its consequences for the view of man, his work and his ways of acting with the world, it is necessary to get a clear picture of what computing does. Furthermore, there is a need to clearly differentiate this from the actuality of human action, interaction and interaction with, through and around computer systems. The first requirement is to know what 'work' machines such as computers are able to deliver, nothing more and nothing less. To begin with, it seems important to keep in mind that computing is the technological art of automation of different functions in machinery. As Denning et al. (1989: 12) put it:

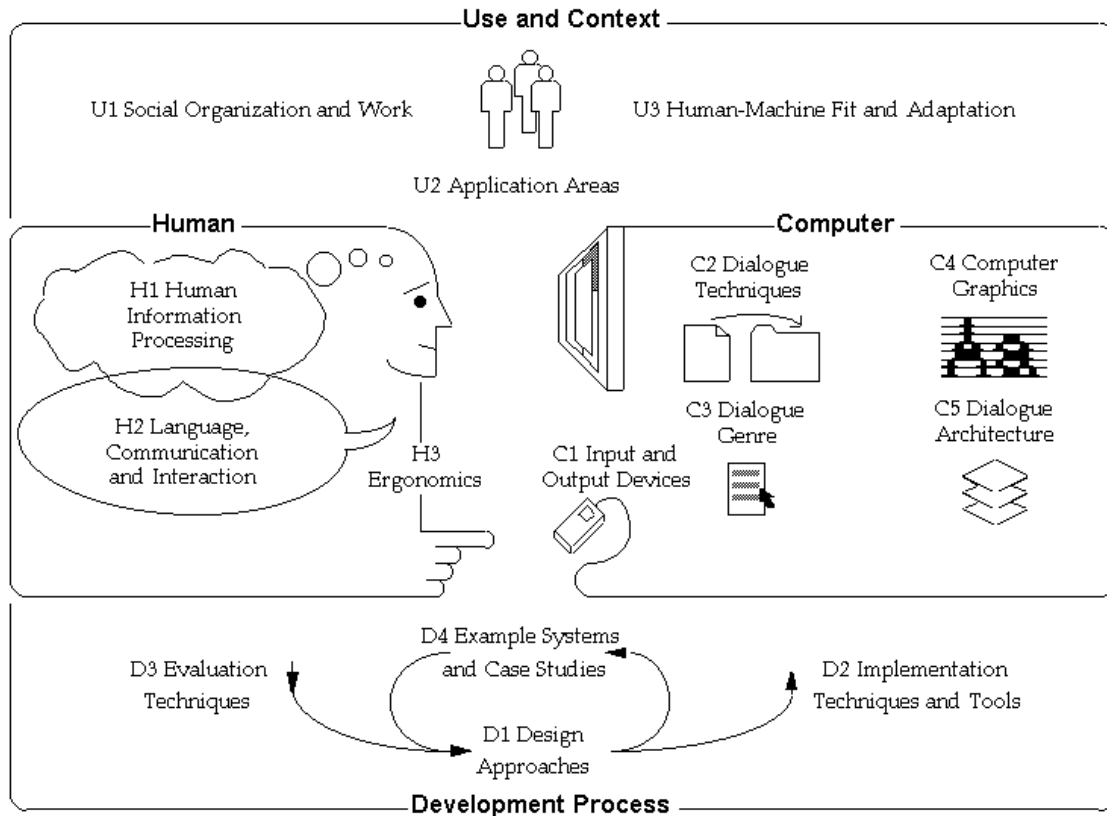
The discipline of computing is the systematic study of algorithmic processes that describe and transform information: their theory, analysis, design, efficiency, implementation and application. The fundamental question underlying all of computing is: 'what can be (efficiently) automated?'

What has to be understood here is that the expansion of automation *de facto* is the job of the computer scientist. And in the domain of technical advancement, i.e. of the expansion of the capabilities of filing systems, (e.g. storage capacity, speed of access), administration of large-scale populations, counting and survey producing, then automation may find an advantageous part to play.

Ethnomethodological critique of cognitive, information processing HCI

We would like to turn to one of the most common confusions that pervade the field of human computer interaction. It is the following one: the conceptualisation of human computer interaction which comes from the approach to studying and understanding human action in the very restricted

frame of *single* person interaction with the desktop computer. (see figure below).



This model, that represents the relationship between a human and a machine, cannot be taken lightly as it is still the dominant model working in new computing domains such as mobile computing as well as traditional desktop computing. Here, this representation of the relationship is assumed to have some kind of qualitative qualities for describing the nature of human-computer interaction. That is, that the human is an 'information processor' who receives 'input' through the senses, performs 'operations' on that input according to 'cognitive models', then produces 'output' in the form of actions and talk. We strongly argue that this is not the case. The problem of this model is the very presentation of the model in the first place. It is assumed in this representation that what interaction is, is the encounter of one human with a desktop computer in a face-to-face manner. And this is what interaction means in the expression human computer interaction.

It appears clearly that this is simplistic and puzzling when we start to address the real issue concerning the real work of people using a desktop computer, in a 'real situation in real time'. It turns out very quickly that the model is useless if not misleading. The problem of the view of interaction such as proposed by this model is the stylisation of interaction. It provides a simplistic, formal distinction, which is easy to grasp, but nothing more than that. But this simplification has devastating results for social scientists - particularly ethnographers and ethnomethodologists - that try to make their perspective on HCI clear to people who are enticed and blinkered by the apparent sense (but actual nonsense) and pervasiveness of this model.

The first problem is that human interaction is seen as a simple presence of a single person with a single computer. Notice that the model does not tell much at all. But one noticeable implication is the way in which the context of those interactions is reduced to the individual, perceptual and motor apparatus, their minds (and as well notice the separation of these 'modules' and the concentration on what goes on in the head). Context does extend to some ecological concerns but these are simplistic, such as light, sound, conversation, proximity between people, and proximity between people and machine.

From ethnomethodological point of view, such schematic views of interaction do not only assume a simplistic understanding of it, which may be useful for practical purposes, but also assume a similar simplistic view of human cognition as well. In the most extreme examples of this of, not only is interaction reduced to a mere information exchange between the human and the system, but it is assumed that humans act simply in accordance to some mental model within their head. Problematically this (and all other schemata type conceptualisations) ultimately reduces the user to some kind of "*judgemental dope*" (see Garfinkel, 1967: 68) who is tied to the playing out of internalised sequences of action rather than being able to reason, take the complexity of his working life into account and make judgements about it, as the situation unfolds. The confusion we are concerned with here is that such models do not provide an accurate description of human-computer interaction, from an ethnomethodological perspective.

We are not talking about the practical use of a cognitive model as an impetus in the work of software designer to help them to think about machine design. The practical use of such models may or may not lead to useful design in particular projects. However, we would like to suggest that a better and more accurate understanding of ‘human action and interaction’ and ‘human-computer interaction’ is a better basis on which to proceed. We need to note, however, that although pervasive not all computer scientists see such cognitive models as accurate representations (or at least the most useful for the purposes of design) (Sommerville et al. 1992; Dourish2001).

Nevertheless, some computer scientists use this model precisely because it contains, at least in potential, an explanation of human behaviour that may be described purely in cognitive terms. This simplification of human cognition has a danger of restricting a better understanding of social settings. From the ethnomethodologists’ point of view, we want to draw attention to the fact that cognitive accounts in HCI are often based on theoretical constructs that are in turn are either derived from or elaborated by computing metaphors. The force of the cognitive metaphors such as ‘human processing information’ or language as ‘communication and interaction’ is that they offer an approach that airbrushes over a lot of features of social life. In particular they obscure the complexity of social life and the way interaction is a constitutive component of the on-going achievement of detailed work practices, which unfold within the contextual particulars of the situation, in which people are active actors not passive rule followers.

The ethnomethodological alternative: a pragmatic introduction

So far we have pointed out some problems of the model that the major part of HCI studies are based on, from an ethnomethodological point of view. Yet, this is not to suggest that ethnomethodologists are trying to offer an alternative model to replace it. Nor do they provide detailed prescriptions ready to be handed to system designers for them to use straight out of their ethnographic studies. Then, computer scientists may wonder, ‘Do ethnomethodologists have anything to offer to us?’ At the theoretical level, ethnomethodologists suggest computer scientists should put down their

explanatory tools such as information processing accounts and notions of mental models. Doing so, they should start to look for detailed descriptions of people's activities to understand where computers and technology may be put into best usage. At the practical level of engineering, ethnomethodologists suggest that their detailed descriptions of people's activities in settings can help inform developers which activities may be usefully supported by technology and in what kind of way. And furthermore, such studies can serve to introduce relevant caution; allowing designers to see where new technology may problematically disrupt important features of current work. Unfortunately, however, it will probably not take long before we find puzzled looks on the faces of computer scientists. What kind of interdisciplinary work is possible? Here are our thoughts on this matter.

Ethnographic studies which ethnomethodologists carry out could be taken to offer occasions for researchers to be *reminded* of the actual ways in which people 'interact' with computers. Some may trivialize such studies on the ground that they are too situationally specific. We argue, however, that the specific nature that those studies have is of some importance to computer scientists. This is because the ways in which people interact with computers is specific to situation, and it is this situation-specificity that gives sense to people's interaction with computers. People do not do 'interacting' with computers, but instead, they write messages to their bosses, refer to information on the screen for giving directions to pilots for landing (Bentley et al., 1992), or purchase books or cosmetics and so forth (Button et al., 1995). They may use, alongside computers, other resources, which are specific to each situation. Thus, people make use of computers as part of their activities, and the ways in which a cashier, a nuclear scientist, a civil servant, a gamer, etc. do so are different depending on the character of the work at hand. This is something we all know in everyday life without paying much attention to it. Yet it is important to be reminded of this fact especially when engaging in making some kind of generalization of the relationship between people and computers. What the ethnomethodologist brings to this picture then, is a specific skill: one thing to notice things in everyday life and another to bring those perspicuous noticings into considerations for systems design and development.

After all, ethnomethodologists are not computer scientists, therefore, how ever much ethnomethodologists study the work of system designers or other workplaces in which system designers are involved, their outputs may not directly affect the discipline at the theoretical level unless computer scientists seriously consider their perspective and research. But those studies may fill the gap that other models of human activities, such as information processing will never be able to deliver. By pessimistic comparison, as Fish rightly pointed out, cultural studies of literature have not changed the practice of literary world (Fish, 1995). On the other hand, at the practical level, there seems to be some form of 'partnership' and division of labour emerging already between computer scientists (or rather system designers) and ethnomethodologists. There is a growing realisation that there is a need to understand systems and HCI in other ways than models that reduce systems to information flows and repositories. The ethnomethodological perspective defends the idea that knowing the 'real world' and having a socio-technical perspective enhances the basis from which we may design and refine systems and technology. From comparative researches done in information theory, psychology, anthropology and sociology, we would contend that ethnomethodology provides a superior apparatus for the study, description and analysis of work practices and technology (Button et al., 1995; Sharrock and Anderson, 1986). Researchers are still exploring the multiple ways in which ethnomethodology can be made useful for systems design but even at its most modest - providing a fuller and more detailed description of work - its studies have proved a useful resource. The field is developing and ethnomethodologists are interested in continuing these studies concerning with systems design. It is a reward in itself when outcome of their studies has a place in the professional life of system designer. That this is often done in an unwritten way (and then unavailable to a larger public) does not diminish the achievement nor should it stand in the way of recognition in the profession.

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