

# Whose Perspective are We Studying in Ethnographic HRI?

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## ABSTRACT

The perspective of the members' is key in an ethnomethodological analysis. When studying human-robot interaction, it may not always be clear whose perspective one is studying: that of the user or that of the designer. We reflect on how we struggled to balance both perspectives in our recent video-ethnographic study of delivery robots and discuss how both perspectives can be combined without loosing analytic rigor. We highlight particularly how ethnographic HRI could learn from prior discussion of similar challenges in Human-Computer Interaction and Computer-Supported Cooperative Work.

## CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in collaborative and social computing**; **Human computer interaction (HCI)**.

## KEYWORDS

ethnography, ethnomethodology, interaction design, video

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## 1 INTRODUCTION

Focusing on peoples' lived experience is a key element of many forms of ethnographic study. Yet, when studying human-robot interaction, there are (at least) two obvious perspectives which fundamentally differ: that of designers and that of people who will encounter robots. We want to raise a question about *whose understanding*—designers or the 'recipients' of that design—we are focusing on when conducting ethnographic work in HRI.

Working from an ethnomethodology and conversation analysis (EMCA) stance, which often adopts ethnographic approaches (although certainly not always), our research team regularly uses what we might call video-ethnographic methods to study social organisation and the role of digital technologies within this. In this paper we want to reflect specifically on our experiences following

delivery robots during their journeys between vendors and customers [18]. A key challenge here was finding the right focus and what perspective to take. When writing for HRI, we may—implicitly or explicitly—put the designers' perspective in the spotlight of the analysis. This may be particularly encouraged through the formulation of design implications, which need to be grounded in the technical capabilities of robots to make a relevant and valid contribution. Yet, when taking an ethnomethodological approach, the analytic focus should be on the members', their understanding and concerns—which do not necessarily play nicely with a focus on design (see discussions about ethnography more broadly e.g., by Dourish [6]). In our research process and through data sessions with other EMCA researchers, we repeatedly had to remind ourselves to put focus on people—or 'members' as ethnomethodology reminds us—rather than robot-designers. Despite being relatively new to HRI, these challenges are not entirely novel and have been previously discussed extensively within the Human-Computer Interaction (HCI) community [6].

In the remainder of the paper we will present relevant prior work in this area. We then describe the EMCA approach that we took in the delivery robot study and reflect on the analytic challenges that we faced. We close with a discussion of how we tackled them and highlight questions for discussion at the workshop.

## 2 RELATED WORK

In EMCA research much like other ways of employing ethnographic approaches, focus is on members' understandings, and how they materially and continuously demonstrate and analyse one another's understandings of situations and circumstances. EMCA adopts the concept of 'members' to remind us of the ways overlapping and complex memberships are constantly at play in social interaction. At times, members' understandings may be radically different from a designers' view. By tracing some of the developments in HCI and CSCW, we want to highlight pitfalls in combining both perspectives that HRI may want to try to avoid.

### 2.1 Members' Understandings

Focusing on the perspective of the participants and their understanding of events is a crucial element of EMCA work. Rooted in a phenomenological tradition, EMCA does not put the researcher and their interpretation at the center, but encourages the analyst to work endogenously, studying how members' local reasoning is simultaneously on display and formulates the concreteness of everyday interactions [22]. While positivist HRI work often picks out and reifies certain elements of context as relevant and thereby shapes analysis through the researchers' perspective (such as evaluating certain robot behavior, or placing the robot in two different

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settings), EMCA perspectives relentlessly attempts to surface how members themselves treat matters as relevant to their activity [see e.g. 8, 9]. So for example, on the street, pedestrians may turn towards an approaching robot, or they may not. They may grab a delivery robot's antenna and use it like a toy to entertain them or they may swerve around a delivery robot as if it was someone's shopping trolley or a bollard blocking their way. Just like members of the street scene in which delivery robots are placed into, the analyst needs to look at how other people on the scene themselves analyse and make sense of a given bodily movement, a turn, an utterance, etc. in an interaction to say anything about *how* members understood it [14, 21].

## 2.2 The Designer's Perspective

While the EMCA-oriented video-ethnographic approach we have just described encourages us to focus on how members understand interaction with a robot, HRI work may also encourage us to take the perspective of the roboticist, not the least when formulating design recommendations. Ethnomethodologists Harold Garfinkel and Lawrence Wieder [10] formulate in their "unique adequacy requirement" that researchers should understand—from within, *becoming members themselves*—the activities that are being carried out. This became particularly pronounced in ethnomethodological studies with respect to phenomena that require specialized skills such as math [13] or video gaming [24]. For human-computer interaction unique adequacy means that one does not only consider the perspective of 'the users' (members) but that ethnomethodologists also need to be adequately competent in the perspective of designers to formulate relevant observations [11]. Taking the perspective of a robot designer, we are encouraged to think from robot capabilities. Pelikan [16] has argued previously that developing a systematic understanding of the robot's capabilities can be a valuable step in the analysis, but this may presuppose that the robot can be treated as a 'participant' or potential member in the setting. This highlights that while adopting the designers' perspective can be an important part of HRI video ethnography, it may be a stance that one needs to adopt carefully.

## 2.3 Bridging Ethnography and Design

Work in Human-Computer Interaction and Computer Supported Cooperative Work (CSCW) has seen some of the discussions that are emerging at HRI [19, 23]. While conversation analysts and ethnomethodologists participated in the design of new technology [15, 26] it remained difficult to truly establish a hybrid discipline that bridged both ethnomethodology and HCI (originally envisioned as "technomethodology" [3, 4, 7]). Some even argued against efforts in the field [5], suggesting that they were misguided. We want to highlight that these conflicts point to some tension between working from members' perspectives on the one hand and the perspective of the robot-designers' on the other. We believe that there is much to learn from the history of EMCA-informed ethnography and video-ethnography in HCI, in particular that one may want to be cautious in applying members' versus designers' perspectives.

## 3 DELIVERY ROBOTS ENCOUNTER MEMBERS OF THE STREET

We recently conducted a study of delivery robots [18], and we will draw on our practical experiences and challenges faced during this study. To understand how humans interact with the delivery robots while they are on their way to customers or to vendors, we shadowed these robots in the streets of two towns in the UK, close to London. Videotaping the robots as they went through the streets, we discovered that they encountered several obstacles that signify the presence of people living and working in these streets, such as trash bins that are put out on bin day or waste piles next to a construction site. We also captured many incidents of robots encountering different members of the street, involving for instance a window cleaner who stepped away so that the robot could pass or a mother with a buggy who had to stop and move around the delivery robot that was headed right for her buggy.

While analysing the video material from this study, we repeatedly found ourselves discussing what perspective we were taking. Was it the perspective of the members - the people on the street, who seemed to express a slight impatience with the slow-moving robots that they needed to give way to? Or was it the perspective of the designer who wants to improve the robot? In writing up our analysis we tried to carefully balance these matters, trying to put the user-participants' perspective first, and only putting on a 'design hat' in the discussion section where we put forward our design implications. In the following we want to reflect on some practical challenges that illustrate this struggle.

### 3.1 Competency in the Perspective of the Robot

As we were following the delivery robots, we discovered that we started to adapt to their way of moving and navigating the city. In a sense, we started 'walking like a robot'—adapting to its machinic patterns of motion. In doing so, we started to gain an understanding of what environments are difficult to maneuver for the robots (such as high curbs, certain obstacles) and learnt to anticipate robot-troubles. We also gained familiarity with the way it regularly moved, and could suspect human remote takeovers after the robot was stopped for a long while and suddenly started moving in a very different way.

When transcribing interactions with the robot, we spent some time familiarising ourselves with the robot's particular way of moving around people. We learnt about the pattern in which its indicator is blinking, and how the robot moves in response to an obstacle by slowly turning and trying to move forward, before further adjusting the turning angle. Finding some regularities in how the robot moves, it was tempting to dig deeper. In a sense, this transcription work may be seen as similar to a reverse engineering process, in which one gradually learns about the designers' plan for how the robot should move. Essentially, we found ourselves getting sucked into thinking about the technology on its terms rather than members' concerns. This is where we stopped ourselves and tried to move back to the members' perspective, resisting the temptation of the designers' view. Ultimately, members of the street are simply engaging in their own ongoing interactional 'projects' (e.g., getting to a shop, loading a car, etc.); they are *primarily* working on these as robots enter and exit the scene.

### 3.2 Representing Members' Perspectives

While our perspective initially was very much that of a member (with one of the authors living in a town where the robots are deployed), we found it increasingly difficult to return to this perspective during the course of our study. Since we learnt more about the robot, we were in some sense no longer “lay people” who coincidentally ran into a robot—instead we had a professional interest in them which also had to be reckoned with. Especially as we discovered that there were many people working in the streets who come across the delivery robots as part of their everyday work in the streets, we found that we may in fact not share *their* perspective very much. After all, we are following the robot, and not a window cleaner, or restaurant delivery driver. While our study setup of following the robot was successful in meeting many of the different types of people who a robot may encounter, they remained strangers and we could not spend a lot of time engaging with their world.

### 3.3 Implications for Design—Bridging EMCA and Robot Interaction Design

Two aspects supported our process of balancing between both perspectives. First, we maintained an active discussion about what perspective we were talking about at a given time. We reminded each other during meetings, that we were ultimately interested in the human experience of the robot. This was especially facilitated by our EMCA colleagues at several data sessions [1, 12, 25], who helped to remind us where our focus should be when we presented our analysis in progress. We also discovered that there may be more nuance to the different perspectives than we initially thought. While the perspective of the designer and a person who encounters the robot for the very first time are fundamentally different, members' and designers' perspectives may be more aligned when it comes to people who have spent more time around the robots and have gained familiarity with how they move.

Second, an important aspect may have been the different perspectives and experience that we could bring on our team. Hannah has primarily analysed interaction with robots, Stuart has for the most part worked in HCI, and Marina studies interaction mainly between humans. Bringing our respective expertise in analysing the data helped to keep a balance. Hannah has previously worked with safety drivers on autonomous buses, observing similar challenges as with the delivery robots [17]. Her familiarity with the safety drivers' perspective from these studies was very helpful in trying to reflect on the perspective of the members of the street who actually work and maintain our public spaces. The safety drivers in Hannah's prior work were professional local bus drivers who navigated the environments as they would during their regular jobs—greeting construction workers with hand signs and stopping the autonomous bus by the side of the road so that other service vehicles could pass. This previous study particularly sensitised us to the work that happens in public spaces: construction workers, gardeners and street cleaners typically remain in the background despite performing work essential work for a functioning society. While they do not have the perspective of the designers, they may gain a deeper understanding of the technology by encountering it on a regular basis.

## 4 DISCUSSION

We think that our experiences in the HRI space adopting EMCA-informed ethnography could have useful lessons for ethnography in HRI that might be conducted from many different epistemological and theoretical perspectives. We reflected on our experiences with robot-designers' and members' perspectives that may clash at times. We want to highlight that it is a real minefield where different methodological paradigms can and—at times—will clash, and that this is okay, and much preferable to falling into an uneasy ‘service’ style relationship [6]. We want to highlight that while this can be frustrating and one may face harsh critique at times, it seems especially important to producing ‘good’ EMCA studies. At the same time seeing how those studies might be genuinely productive for other purposes like HRI which can conceptually rub up against them.

We want to suggest three key questions can be taken from our work: First, we hope to have highlighted that it is possible to work at the intersection of EMCA and HRI, but HRI may benefit from engaging with and learning from the struggles that HCI and CSCW work has gone through when adopting EMCA-informed approaches [4, 19, 26] and ethnographic approaches in general [6]. A question for discussion may be: **How to build bridges between CHI and CSCW ethnography and ethnographic practices being adopted in HRI?**

Second, we think EMCA-informed video-ethnographic studies hold important lessons for HRI. Taking the designers' perspective will remain an important aspect of providing analyses for technical outlets, and ethnomethodological work has made explicit that competency in the perspective of the designer is desirable for analysts [10]. It can be important for ethnographers to be consciously aware and engage with this competency. Reflecting on one's skills and understanding of this perspective may be one way to become more conscious of whether one is adopting this perspective—ideally one would focus on members' perspectives first, before taking the stance of the designer, or at least alternate between them [16]. Exploring further the perspective of people who have spent a lot of time around robots (without being designers) may be particularly interesting. A question that seems to emerge from this is: **What methods can we develop for engaging with users'/participants'/members' and robot-designers' perspectives more explicitly?**

Third, and lastly, we want to return to the notion of members' perspectives. Ultimately, designers are also members in their own ways and their perspective is important to study as well. For EMCA researchers, members' perspectives should always be at the heart of the analysis—no matter what. One way to avoid pitfalls that were faced in HCI and CSCW may be to be very clear about the centrality of this perspective and not to compromise on this in interdisciplinary collaborations and in teaching. It may be easier to work in participatory design paradigms that already engage stronger with this perspective [2] and to also explore the designers' perspective with as much rigor [20]. At the same time one may want to be clear about terminology and offer courses where the HRI community can gain hands-on experience with EMCA methods. A question that emerges for us is **How can we retain and**

## embed a focus on members'—rather than the researchers'—perspectives when working in a research field that remains dominated by positivist research traditions?

### 5 CONCLUSION

In this position paper we reflected on some of the challenges we faced during our EMCA video ethnographic study of delivery robots in public streets. Shadowing the robots during their rides, we followed the robots during their deliveries and learnt a lot about the robots' capabilities. While such a focus fits very well with a focus on design implications in HRI, we also found that we had to be careful not to violate basic ethnomethodological and conversation analytic practices of focusing on the participants' perspective. Since we chose to follow the robot rather than the people, we were less familiar with their perspectives and practices. Drawing on work from CHI and CSCW that has previously reflected on the challenges of combining ethnography and design, we want to highlight that this challenge is not trivial and that design ethnographers and ethnographic designers are well advised to think carefully which hat they are wearing during each stage of their work process.

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