**CHI' 23 Workshop- Body x Materials: Position Paper**

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**1.1 Existing Work**

The *Work, Interaction and Technology* Research Group at King's College London has pioneered a video-based approach to the analysis of embodied action and interaction (Heath et al, 2010). We examine how tools and technologies; ranging from everyday implements to complex multimedia systems, inform human action within a broad range of organisational environments; including operating theatres (Heath & Luff, 2020), museums (Vom Lehn & Heath, 2016), architectural practices, offices (Salvadori et al, 2022) and auction houses (Heath, 2012). Drawing upon analytic developments within sociology, namely Ethnomethodology and Conversation Analysis, we consider how the materiality of objects, tools, and technologies is made relevant and reflexively constituted through human action and interaction (Heath & Luff, 2010). Therefore, rather than treating a specific environment as the ‘framework’ within which action takes place, we treat context as the product of participants' activities, and the materiality of objects as ongoingly constituted through these ecologies of action. Our work explores the ways in which talk, and bodily conduct are inextricably embedded within the material environment, and through this focus on embodied interaction, consider how objects and technologies are deployed within the course of particular activities. In this regard, we are concerned with the practices which make tools and technologies work; the tacit, ‘seen but unnoticed’ resources through which organisational activities are accomplished in and through tools and technologies.

The work has had an important impact on various disciplines within the social and computer sciences including fields such as HCI, CSCW and AI. These naturalistic, video-based studies have helped to respecify some of the principal concepts which shape our understanding of social interaction, tools and; for example challenging long-held assumptions regarding how individuals interact with tools and digital technologies, and re-specified some of conventional ideas concerning the character of concepts such as ‘*collaboration*’ (Luff et al, 2003), ‘awareness’ (Luff et al, 2008) and even *interaction*. As such, the contribution of our research derives, in part, from its formulation of a novel foundation from which to develop our understandings of tools, technologies and social action as well as informing the design and development of prototype systems and devices.

Indeed, there is a growing interest in using these studies of embodied action to inform the design and deployment of new technologies, underpinned by a growing recognition that a detailed understanding of the practices through which they are used can support the design of new systems (vom Lehn & Heath, 2022). As such, our work has involved close collaboration with social and computer scientists, academics and industrialists, in the UK and abroad concerned with the design of innovative technologies; including artificial intelligence, robotics (Tuncer et al, 2023), video-mediated systems and augmented technologies (Luff et al, 2010). It has contributed to understanding the challenges of designing novel technologies in various organisational settings, in addition to supporting the development of novel methods for prototype systems (Luff et al, 2000).

**1.2 Position with regard to Workshop Topic**

We intend to present fine-grained, video-based studies of embodied or multimodal action as a method through which to consider materiality in relation to tools, implements and technologies. By outlining our methodological orientation, we offer a novel perspective to the proposed theme, that materials serve as a *‘catalyst for human action’,* addressing how the material properties of tools and technologies are made relevant, and reflexively constituted, through our embodied interactions with them. Whilst recognizing that our interactive experiences with objects and technologies are intrinsically related to the materiality of their designs, we argue that to address how ‘materiality’ can be enhanced and augmented through emerging technologies, a practical understanding of how even the simplest technologies are used, is critical. We contend that for researchers and practitioners alike seeking to explore materials as ‘catalysts’ for particular actions or behaviours, detailed, video-based studies offer distinctive affordances.

To illustrate the opportunities afforded by this methodological orientation, we seek to share a developing area of our research, concerned with the tools and implements with which we eat. Despite a growing interest in developing autonomous systems to support people who find it difficult to consume food and drink, there remains little research in the social or computer sciences concerned with the ways in which we use tableware to subdivide, measure, select and transport food. Yet, to develop automated systems which can support or even reproduce aspects of these embodied actions, for example, in using a fork to select and transport food to the mouth, we require a detailed and systematic understanding of the practices that people rely upon in using these everyday tools and implements.

Through the presentation of video fragments, we intend to share the affordances of video-based studies for those interested in the discovery and recreation of aspects of our embodied interactions through the material properties of technologies. Our research is based upon a corpus of both naturalistic and quasi-experimental data. It includes video-based field studies of people eating together in domestic environments, cafes and restaurants, and even banquets. It also includes recordings of diners using redesigned cutlery, produced in close collaboration with designers and students, to problematise eating and thereby render visible the practices that underpin eating and the ‘affordances’ associated with particular tools and implements.

Through an exploration of these data fragments, we can highlight analytic phenomena related to the practice of eating that would be inaccessible using more conventional methods in the social sciences. These include the resources through which people grasp, handle and manipulate cutlery when eating together, the use of cutlery to configure a portion, and the ways in which the head and mouth are progressively oriented to enable the transported ‘portion’ to be safely received.

By showcasing our methodological approach through this focus on eating practices, we seek to discuss with workshop participants the potential of video for researchers, and practitioners, interested in recreating or enhancing the materiality of embodied interactions through the design of new technologies.

**1.3 Key Discussion Points**

* How can fine grained, video-based studies of multimodal interaction contribute to our understanding of material as a ‘catalyst’ for human action, in particular, by revealing how the material properties of tools and technologies are rendered relevant and reflexively constituted through embodied action and interaction?
* How do fine grained, video-based studies of embodied action and interaction provide resources for both researchers and practitioners in seeking to support, enhance or even replace actions that enable the everyday use of particular tools and implements?
* How can fine-grained, video studies of embodied action resonate with other more qualitative approaches to understanding everyday activities to inform the design and development of innovative tools and technologies?

**1.4 References**

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