Towards Using Eyetracking Data as Basis for Conversation Analysis on Real-World Museum Interactions

Raphaela Gehle, Antje Amrhein, Maximilian Krug, and Karola Pitsch

1 Introduction

The growing amount of disciplines using (mobile) eyetracking (glasses) leads to the need of reflecting the opportunities and restrictions that derive from using these devices in interdisciplinary contexts or when expanding traditional methods. In this paper, we evaluate aspects of compatibility of eyetracking with methods of qualitative video-analysis based on Conversation Analysis [4].

For studies of real-world human interactions, analysing the gaze conduct is as important as difficult. It's not just that a manual annotation of gaze is time-consuming but also there might be insecurity depending on the videoquality. Eyetracking appears to be promising for improvements of interaction analytic methods. Nevertheless, it requires to take a step backwards during the analysis to reflect the effects of using mobile eyetracking for the analysis.

In recent years, the interest in developing mobile eyetracking technology in interactional studies grows (e.g. [1]), because it presents the prospect of higher precision and lower costs. Recent work seeks for ways of automated annotation [3] depending on fixation estimation.

2 Developing Conversation Analysis on two types of data of the same situation

We will compare results from a step-by-step sequential analysis of the same sitiation with (1) external cams and (2) data of a mobile eyetracker.

Does eyetracking data alone provide for solid results about the structures and functionality of gaze in interaction?

As common in Conversation Analysis, we reconstruct the participants' process of interpretation during the ongoing interaction ("members perspective") [cf. 4]. In a pre-study we equipped a museum guide with a pair of mobile eyetracker glasses (SMI, version 1) and additionally deploied two external cameras [2].

(1) The video data of the *external cams* show, that the guide explains an exhibit while visitor A changes his orientation towards another visitor B. A's

reorientation towards B gets recognized and made interactionally relevant through the guide's reaction (looking at A and afterwards addressing him verbally) - *Result:* It appears that the A's reorientation towards another group member *elicits* the guide's gaze movement.

(2) The *eyetracking data* shows, that the guide looks at the exhibit, then moves his gaze over the group and ends with a fixation on another visitor. Afterwards the guide shifts his gaze back to A, so that the fixation is on A, who is already oriented to B. - *Result*: It appears that the guide *accidentally recognizes* A's orientation towards B while moving his gaze.

3 Discussion

Using data of mobile eyetracking glasses for interaction studies encompasses the risk of considering fixations as key-element of the participants' gaze conduct. Considering the members' perspective, this appears to be only *one* aspect. Other important information consists of the peripheral view and anticipation processes of the participants' conduct. Humans use multiple aspects of interactional coordination to make decisions over their next actions.

For our ways of using eyetracking data in interactional studies, these observations raise the question, how to deal with precise information about fixations and how to consider aspects of perception in peripheral vision when attempting to develop (semi-)automatic annotation tools in interdisciplinary collaboration.

References

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