

Project title: Effects of Joint and Multimodal Remembering on Collaborative Learning (Distributed Learning)

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Summary

Collaborative remembering involves people engaged in recalling past experiences, which may themselves have been shared. Often remembering in collaborative activities is supported by the social and material environment in which the specific activities unfold. In collaborative work, from collaborative design to teams in operating theater and team navigation, collaborative work processes are built upon previous ones, transforming shared activities as temporally distributed processes. The temporal distribution of collaborative work depends on successfully recalling relevant aspects of previous of the projects and activities members of teams are engaged in. Hence, processes of collaborative remembering in these contexts become crucial. And these collaborative processes rely on the successful interweaving of multiple cognitive, bodily, social and material resources, each anchored in specific historical, social and cultural environments. Our project addresses the challenge of investigating the web of mutual dependencies animating these cultural and cognitive ecosystems. In order to accomplish this goal, our project has developed an innovative methodological framework to propose an integrated analysis of different modes of behavior during collaborative remembering in group activities, taking into account the central role that multimodal interaction plays in such contexts.

Results

These are the main results that we achieved. In an experimental study in the laboratory (Bietti & Baker, accepted), we found that: i) Participants structured collaborative remembering of creative tasks in a spiral and iterative fashion by association between semantic elements of the conversation; ii) Most elaborated categories during co-design, were the best-remembered ones during collaborative remembering; iii) Participants collaboratively remembered better those creativity moments when they were more jointly involved in elaborating the features of their design; and; iv) Participants collaboratively remember what initially generated most joint activity during co-design.

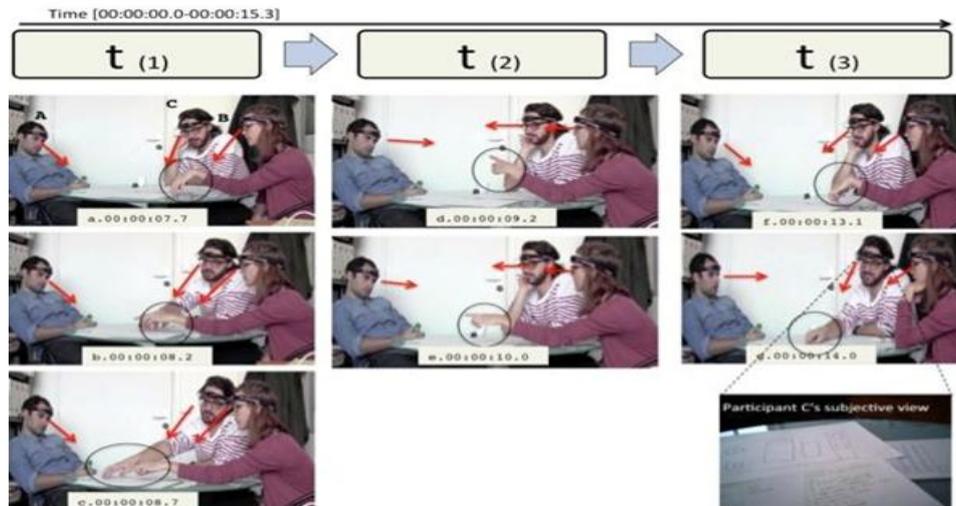


Fig. 1. Stills from experimental study on collaborative remembering collaborative creativity in the laboratory.

In a real-world study in the design studio (Bietti, Baker & Détienne, 2015; Bietti, Baker & Détienne, in press; Bietti, Baker, Detienne & Sutton, in prep), our analysis suggest that: i) Material resources such as computers, written descriptions in paper as well as calendars, externally support collaborative remembering in real-world working environments; ii) Specifically, questions acting as reminders enable the designers to collaboratively remember relevant information in order to achieve the team goals; and iii) Fined-grained sequential analyses suggested that questions acting as reminders were related to the designers' role and statuses at the workplace (see figure 1 attached). Our empirical analysis led us to the development of a theoretical model of how social interaction shapes remembering at multiple by complementary timescales (Bietti & Sutton, 2015; Bietti & Sutton, 2015), which for the time consider collaborative remembering as joint activities distributed in space and time.



Fig. 2. Views of the design studio from multiple video cameras.

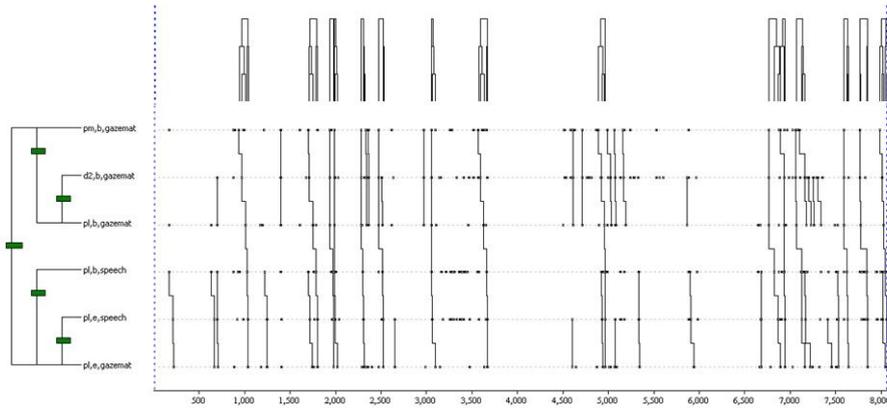


Figure 3: T-pattern diagram showing the distribution of most recurrent and longest pattern including a completed speech event. The sequential analysis was taken from the observational study with animation designers at the design studio.

Conclusion

Collaborative remembering in team work should not be considered as merely a type of joint action whose aim is to retrieve information about previous phases of projects and activities performed by members of teams. Collaborative remembering in team work is multimodal, future-oriented and necessary for maintaining common ground, making decisions and planning future actions at the workplace.

Socioeconomic impact

A new generation of computer-supported external memory systems (i.e. design rationale systems in HCI) should take into consideration how members of teams actually remember in multimodal interactions, in order to fully be integrated into collaborative work practices, rather than representing work records in a manner that is detached from the actual ecology of collaborative activity. New computer-supported external memory systems at the workplace will help members of teams to better distribute cognitive load and increase performance.