UC Merced

Proceedings of the Annual Meeting of the Cognitive Science Society

Title

Cognitive Analysis of Mediated Activity

Permalink

Journal

Author

Cerratto, Teresa Ines

Publication Date

1997

Peer reviewed

Cognitive Analysis of Mediated Activity

Teresa Inés Cerratto

University of Paris VIII / CNRS

93, chemin de Mouilles BP 167 69131 Ecully Cedex- France

`cerratto@gate.cnrs.fr`

Introduction

In recent years there has been growing interest in mediation aspects concerning human computer interaction (HCI). Many current approaches have been developed neglecting : how people become 'users' of technological artifacts.

In this sense, this contribution emphasizes on 'cognitive internalization' of artifacts from a psychological centered point of view. In particular,we propose an analysis of developmental dimensions of mediated human activity in order to track 'instrumental genesis' processes.

Background

Historically,Vygotsky was, at the beginnings of the century, whom stressed the role of the tool mediation. For Vygotsky (1978),'the use of artificial means,the transition to mediated activity, fundamentally changes all psychological operations just as the use of tools limitless broadens the range of activities within which the new psychological functions may operate'.

This perspective extended further by many approaches in HCI such as : 'cognitive tools' (Kommers, 1992), 'cognitive artifacts' (Norman,1991,1993),and more recently 'functional organs' (Kaptelinin, 1995) describe the importance to characterize human computer interaction as a particular mediated activity by physical tools. However, these theoretical focuses don't explain how people transform physical artifacts as software into psychological means or instruments.Which are the cognitive mechanisms that make possible integrating a tool as a shared artifact into a collaborative activity.

Analyzing mediated activity from a developmental point of view

In order to account mediated activity from its instrumental genesis, we propose a model to point out the role of mental schemes or invariance of human action during mediated and collaborative activity.

The model SACI that stands 'situations d'activité collective instrumentée' instanciates four poles from human computer human system:individual, other individuals, object of the current activity and instrument pole. These poles organize the observation of direct and indirect interactions. The interest is put on individual and collective actions with instruments in order to depict how invariance of action emerges when an individual manipulates a colaborative software.

SACI is within an antrhopocentric approach developped by Rabardel (1995). He demonstrates that any artifact used as a tool is necessarily associated to a personal scheme of use or to a dominant social use scheme that has become a personal scheme. His anthropocentric approach distinguishes between artifacts, or objects that have undergone a minimal transformation of human origin, and instruments which are artifacts associated with one or several schemes of utilization resulting from the subject's own constructive activity or having been integrated to this activity.

This new dimension of tools focuses the analysis of tool use on the instrumental genesis, a process which concerns the evolution of the artifact, its characteristics and components on one hand, and the elaboration of mental schemes by the user, through adaptation of existing schemes and elaboration of new ones. Such a process takes time and involves co-ordination between environment, social uses and adjustment of the existing mental schemes and representations of users.

Following this perspective, artifacts become instruments when users transform materials objects into theirs own means to accomplish current activities.

In this sense, there is a particular relation constructed actively by people who use technological artifacts. This particular relation called ' instrumental relation with the artifact ' (Rabardel, 1996 Symposia Geneva pp. 67) merits to be stydy in depth in order to clarify the role of the instrumental genesis in a human-computer interaction.

References

Bélisle, C. (1994) L'émergence d'espaces médiatisés en formation: les enjeux de l'intégration technologique en télé-formation, in Lacroix, J.G. & Tremblay, G. Presses de l'Université du Québec.

Rabardel, P. (1995). Les hommes et les technologies. Approche cognitive des instruments contemporains. Paris, Collin.

Verillon, P. et Rabardel P. (1995) Cognition and artifacts : A contribution to the study of thought in relation to instrumented activity in European Journal of Psychology of Education, Volume X n°1, 77--98.