The strength of the lone wolf

Gerry Stahl

Executive Editor

> *For the strength of the Pack is the Wolf,*
> *and the strength of the Wolf is the Pack.*
> (Kipling, 1894)

The collaborative group and its members

In his keynote at the CSCL 2007 conference, Gerhard Fischer cited Kipling's verse on the dialectic of group and individual. This dialectic is necessarily a primary concern for any theory of CSCL. The current issue of *ijCSCL* addresses this theme in diverse ways. While some established disciplines privilege the individual and others the social, theories of collaborative learning must center on the dialectical relationship between them. Approaches like cultural-historical activity theory (Engeström, 1999), actor-network theory (Latour, 2007) and situated learning (Lave, 1991) sketch their union in general terms. The papers in this issue take a more focused and applied approach, investigating the role of specific CSCL tools in mediating the relationship between individual and group.

If one accepts Vygotsky's (1930/1978) principle that distinctively human cognitive skills are developed in groups (socially, inter-subjectively) first and only subsequently on that basis internalized into mental (individual, inner-subjective) abilities, then one can pose the fundamental CSCL question: How can technology be used to facilitate this intersubjective-to-individual process of collaborative learning? As we have discovered in past CSCL research, this is a complex problem. One must create and coordinate: (i) a group knowledge-building space, (ii) a set of individuals engaged as a group and (iii) channels of interaction between the social and personal systems. Structuration theory (Giddens, 1984) generalizes the relationship between these levels, stating that each of us as individuals with our identities are products of socialization processes within a society which, however, as Marx (1852/1963, p. 15) pointed out, is made by people, "but they do not make it just as they please… but under circumstances directly encountered, given and transmitted from the past." Stated more locally, action and interaction are radically situated in a reflexive way, with the situation created by and essentially including the behaviors for which it provides a context (Garfinkel, 1967). Even the lone wolf draws its strength from origins in the pack.

The interplay between a community wiki and its individual contributors

The paper by *Ulrike Cress & Joachim Kimmerle* presents a conceptual framework for thinking about an evolving Wikipedia article as a communication system in interaction with the people who write and edit it. The individual authors are also conceptualized as systems, although in

their cases as cognitive systems. The paper borrows its notion of system from Luhman's influential work and pairs it up with Piaget's seminal view of equilibration to characterize the interactions between systems. Each system—the wiki and the user—forms a system with boundaries distinguishing its identity from the outside. From the viewpoint of each system, information crosses its boundary from the other system and causes changes such as accommodation or assimilation. Whether or not one accepts these descriptions as adequate or considers the cognitive psychology perspective of the authors compatible with Luhman's systems theory, one must see this paper as an unusually clear attempt to model the interaction between individuals in a group or community and the social artifact that embodies their collaborative knowledge.

Representing the group's opinions to its members

Many people who analyze group processes in CSCL settings come up with the idea of feeding a representation of the processes back to the participants to guide their behavior. However, few of these researchers actually implement a system with such feedback, let alone measure the impact of such a feedback process. As we have seen in the flash theme on argumentation, continued in this issue, many CSCL systems have been concerned with how computer-mediated group discussion influences individual conclusions. *Jürgen Buder & Daniel Bodemer* study this in their paper. They show members of an online small group the opinions of other members on a topic being debated. Their study focuses on the influence of majority opinion and approaches this from a social-psychology perspective and methodology. Since its beginnings in the aftermath of fascism, social psychology has been critical of group cognition. It tends to emphasize negative possibilities of peer pressure, group-think and mob mentality rather than exploring how collaboration can be guided to positive outcomes. In this paper, the authors show how well-designed feedback can provide such guidance—e.g., by having participants rate the novelty of postings in order to increase the salience of minority views. This paper and the preceding wiki analysis provide nice examples of the effort by the group at the Knowledge Media Research Center in Tübingen (directed by Friedrich Hesse) to apply the methods and theories of cognitive psychology to studying the behavior of computer-supported collaborative groups.

Annotating individual perspectives within a group document

Joanna Wolfe touches on the flash theme of argumentation in CSCL by exploring how annotations can spark critical thought about a text. Anchored annotations—where reader comments are placed visually adjacent to referenced textual sources—have often been recommended by CSCL researchers. Here the author compares different annotation styles in lab settings. Her findings are reminiscent of Piaget's concept of assimilation, where suggestions contrary to one's opinions stimulate critical reflection. She argues that annotations can be most effective in fostering reconsideration of one's opinions if the annotations are not only anchored but also selectively filtered to display just a couple of postings, representing conflicting perspectives. Of course, in such a quantitative and manipulated study, cognition tends to be taken as sets of fixed opinions of individuals rather than as results of the co-construction of meaning in group interaction. Although the lab studies reported do not reflect a strong sense of collaborative learning, they imply important lessons for individual and group learning in contexts of collaborative knowledge building, for they suggest that changes in individual ideas can be triggered and influenced by conflicting perspectives within a group.

Group practices to arrange individual arguments

Maarten Overdijk brings our flash theme of argumentation to a conclusion with the last paper from the original set of submissions coordinated by Dan Suthers. In this paper, the author problematizes the

effect of technologies like scripts and computer-based work spaces for group argumentation. He insists that one sees how group practices emerge when a certain technology in a specific situation is appropriated (enacted) and reproduced (structuration) in group interaction. The paper provides a micro-analysis of how small groups of students visually organize their contributions in a graphical argumentation space. The particular characteristics of this collaboration medium force the students to adopt or invent procedures for placing their contributions next to each other. Different groups establish differing social practices and to various degrees negotiate or adopt group practices. The diverse appropriations of the technology both reflect and support varying degrees of collaboration or inter-animation of contributions from the members of the group. In the data provided in the paper, one can see that some teams develop group arguments through responses to each other while others mainly state individual beliefs, depending on their adoption of specific practices for communicating through the technological medium.

Individuals enact scripting of group processes

Pierre Tchounikine continues our flash theme on scripting, coordinated by Barbara Wasson. A macro-script, as defined in previous papers on this theme in *ijCSCL*, structures phases of the group process without interfering in the discourse that takes place within small groups during each phase. It may, for instance, specify how the groups are formed, what roles are assigned, which technologies and media are to be used, where the task is defined. All of these scripted factors can influence as well as enable the interaction of individuals within the structured group processes. Conversely, the script itself must be locally enacted and interpreted by involved individuals, such as students, teachers, researchers. As one reads this detailed paper, one realizes that there is an unlimited number of considerations entering into the process of operationalizing a macro script—and that these factors must be conceptualized in a flexible way to allow them to be adapted to concrete situations and people. The theme of scripting flashed up within a network of researchers steeped in computer science. Technology is central to their perspective. Although ideas like jigsawing groups of students originated in unmediated classroom practices, the scripting approach is particularly interested in ways to support theories, models, development tools, scripting and scripted interaction with computer software. In this way, the dialectic of lone wolf and pack becomes more complex in our case, transforming it into Vygotsky's triangle of mediation involving technology as well as the personal and the social.

The CSCL book series as part of our group knowledge

Not so long ago, it was difficult for individuals to find and access the CSCL community's research literature. Important contributions were scattered in diverse un-indexed journals, out-of-print edited volumes and unavailable conference proceedings. Thanks to efforts coordinated with ISLS, Springer, the ACM and others, things have improved dramatically. The first major advance was the establishment of a CSCL book series at Kluwer (now Springer), primarily for edited collections around specific themes. Then *ijCSCL* was founded explicitly to provide a home for new research publications on CSCL. CSCL conference papers have recently been made available in the ACM digital library. Of course, the world—driven by technological innovations—has also changed in the meanwhile, with increased copyright freedom for authors to make their publications available on the Web, well indexed by Google Scholar. In addition, overviews of CSCL research are available (Stahl, Koschmann, & Suthers, 2006; Strijbos, Kirschner, & Martens, 2004), with CSCL-related books for sale on Amazon (http://www.amazon.com/Books-collaborative-learning-CSCL/lm/R2OYK7US8LYVPN/ref=cm_lmt_srch_f_2_rsrsrs0).

The leadership of the CSCL book series published by Springer has recently transitioned from *Pierre Dillenbourg*—the founding editor—to *Naomi Miyake* and *Christopher Hoadley*. Coincidently, Pierre, Naomi and Chris are all on the *ijCSCL* Board of Editors and have been active in many ways in the

building of the CSCL community, cognitive science, the learning sciences and ISLS. Under Pierre's editorship, the CSCL book series has published the following volumes covering many important themes in the CSCL research field:

1. *Arguing to Learn: Confronting Cognitions in Computer-Supported Collaborative Learning Environments*. Andriessen, Jerry; Baker, Michael; Suthers, Daniel D. (Eds.). 2003.
2. *Designing for Change in Networked Learning Environments: Proceedings of the International Conference on Computer Support for Collaborative Learning 2003*. Wasson, Barbara; Ludvigsen, Sten; Hoppe, Ulrich (Eds.). 2003.
3. *What We Know About CSCL: And Implementing It In Higher Education*. Strijbos, Jan-Willem; Kirschner, Paul A.; Martens, Rob L. (Eds.). 2004.
4. *Advances in Research on Networked Learning*. Goodyear, Peter; Banks, Sheena; Hodgson, Vivian; McConnell, David (Eds.). 2004.
5. *Barriers and Biases in Computer-Mediated Knowledge Communication: And How They May Be Overcome*. Bromme, Rainer; Hesse, Friedrich W.; Spada, Hans (Eds.). 2005.
6. *Scripting Computer-Supported Collaborative Learning: Cognitive, Computational and Educational Perspectives*. Fischer, Frank; Kollar, Ingo; Mandl, Hans; Haake, Jörge M. (Eds.). 2007.
7. *Dialogic Education and Technology: Expanding the Space of Learning*. Wegerif, Rupert. 2007.
8. *The Teacher's Role in Implementing Cooperative Learning in the Classroom*. Gillies, Robyn M.; Ashman, Adrian; Terwel, Jan (Eds.). 2008.
9. *The Role of Technology in CSCL*. Hoppe, Ulrich H.; Ogata, Hiroaki; Soller, Amy (Eds.). 2008.
10. *Interactive Artifacts and Furniture Supporting Collaborative Work and Learning*. Dillenbourg, Pierre; Huang, Jeffrey; Cherubini, Mauro (Eds.). 2009.
11. *Studying Virtual Math Teams*. Stahl, Gerry (Ed.). 2009.

Conferences remain important community events to share among individuals the knowledge being pursued in research labs around the world. Enjoy ICLS 2008!

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