Ethnomethodologically informed

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The research field of CSCL is ethnomethodologically informed, or at least ethnomethodologically influenced. This has not always been the case, although there is a logic to this growing tendency.

Ethnomethodology (EM) is an approach to conducting research in the human sciences founded by Harold Garfinkel (1917–2011) and largely defined by his *Studies in Ethnomethodology* (Garfinkel 1967; Garfinkel & Rawls 2012).[1] EM addresses the 'methods' that people within a given linguistic community use to establish and maintain intersubjective understanding. Since CSCL can be characterized as being focused on joint meaning making,[2] the analysis of prevalent meaning-making methods seems particularly relevant to the methodological quandaries of CSCL research.

Ethnomethodology has been slow to catch on in CSCL, in contrast to its role in allied fields like CSCW, where it seems to be a dominant research paradigm (e.g., see Crabtree 2003). There are a number of theoretical and historical reasons for this. For instance, as discussed below, practitioners of EM eschew research questions and theoretical framings because these could obscure the meaning-making perspective of the people whose interactions are under investigation. This injunction against guiding theory makes it difficult to integrate EM studies into the educational and design agendas of CSCL investigators. In addition, the case-study approach of EM to analyzing naturally occurring events is at odds with the traditional emphasis in educational and psychological research on controlled experiments and statistical generalizations.

On the other hand, there are strong arguments for viewing the ethnomethodological approach as especially appropriate for analyzing computer-supported collaborative learning. In particular, a major stream of research within EM has been conversation analysis. This is

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[1] Garfinkel died in April 2011. Michael Lynch (2011) wrote an obituary reflecting on his life. His work is outlined in his Wikipedia entry (2012). This issue of *ijCSCL* is dedicated to his vision.

[2] Timothy Koschmann (2002) presented a programmatic description of CSCL in his keynote at CSCL 2002: "CSCL is a field of study centrally concerned with meaning and the practices of meaning making in the context of joint activity, and the ways in which these practices are mediated through designed artifacts."

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the analysis of talk-in-interaction, as pioneered by Harvey Sacks (1962/1995) and other colleagues of Garfinkel. An early finding of conversation analysis was the system of turn taking in face-to-face informal conversation. While this system does not apply directly to such CSCL interactions as online text chat about an academic topic (Zemel & Çakir 2009), the underlying techniques of sequential analysis (systematized in Schegloff 2007) seem highly applicable to the analysis of meaning making in CSCL settings (for an example, see Stahl 2011). Such sequential analysis explicates the evidence embodied in instances of discourse that reveal meaning-making processes taking place in small groups. It looks at the semantic, syntactic and pragmatic details of how utterances respond to each other and elicit new responses in the flow of group cognition.

The historical traditions of CSCL research

To paint a simplistic picture of the development of CSCL research, let us say that early investigators turned from inspirations in computer science and artificial intelligence to the fields of educational psychology and sociology to find methods of studying the effects of using CSCL systems in classrooms or in laboratories. The theories and research paradigms that they brought in from these established fields focused on either the individual student or the larger society as the unit of analysis. Educational theory operationalizes learning as a hidden change in mental state of student knowledge from before an intervention to after, as measured by pre- and post-tests of individual students. At the other extreme, social science approaches hypothesized societal forces that could not be observed directly, but could be inferred and measured by controlled experiments using statistically significant numbers of randomly selected subjects.

Ethnomethodology—drawing on philosophical influences from phenomenology and reacting against functional approaches to sociology—takes a different tack, centered on what is made visible in the interactions between people. EM argues that one can observe the meaning-making processes at work by carefully studying the discourse between people; one does not have to make inferences about hidden changes in mental models or invisible social structures. Furthermore, EM studies can focus on the small-group unit of analysis, which seems most appropriate to analyzing collaborative learning. While other areas of education and of sociology may seem centrally concerned with individual or societal units of analysis and while collaborative learning may also involve processes and phenomena at those levels, the meaning making in contexts of joint activity which is definitive of CSCL takes place primarily at the small-group level, even if a complete understanding will need to tie all the levels together (Stahl 2012).

The ability to conduct microanalysis of interaction was historically made possible by recording technologies. Conversation analysis arose in the age of the tape recorder. That technology made it possible to hear exactly what was said and how it was articulated. It allowed the production of detailed transcripts, which encoded intonation, pauses, emphasis, restarts and overlaps so that the mechanisms of verbal interaction could be studied. Subsequent development of video recording led to analysis of gesture, facial expression, gaze and bodily posture as important but generally unnoticed aspects of interpersonal interaction. For online communication typical of CSCL, computer logs and even the ability to replay synchronous interaction can provide adequate data sources necessary for the study of how students actually engage in computer-supported collaborative learning.

Applied to CSCL, the approach of EM implies that we can observe and report on the ability of given technologies and pedagogies to mediate collaborative interactions between

students in concrete case studies. EM suggests ways to do this systematically, with intersubjective validity, and to generalize the findings. Insights from this can be used to critique the designs of interventions and to suggest redesign criteria. To make these claims about EM plausible, we will need to review some of the principles of EM (see also, Stahl 2006, Chapter 18).

The theoretical framing of CSCL research

As mentioned above, there is a prevailing notion that EM is atheoretical or even anti-theoretical, that it rejects all theorizing. Yet Garfinkel and Sacks (1970) were highly theoretical thinkers, influenced by philosophy, sociology and communication theory. In fact, EM represents a strong theoretical position about the nature of human reality and the possibilities of comprehending it. EM claims that human social behavior is structured by a large catalog of 'member methods'—patterned ways of making intersubjective sense with other members of one's linguistic community. Furthermore, these member methods are 'accountable' in the sense that they provide an observable account of their own character. People's actions are designed so that the meaning of the actions will be recognizable by others within the given discourse situation. This accountability is necessary for intersubjective understanding among members. But it has the secondary consequence that researchers can understand the methods as well (given certain conditions). The theory of EM thereby explains how EM is possible as a scientific enterprise.

The member methods of a linguistic community contribute significantly to the social order of activities within the community. The social structure is enacted in the very interactions of the members by virtue of their use of these methods; the accountability of the methods, as they are realized, reveals to the other participants (and potentially to researchers) evidences of what is being enacted. As Garfinkel put it, "any social setting [should] be viewed as self-organizing with respect to the intelligible character of its own appearances as either representations of or as evidences-of-a-social-order" (Garfinkel 1967, p. 33). There is reflexivity at work between the meaning of an elemental interaction (e.g., an utterance response pair) and the local context of the on-going discourse, in which the utterances are situated within a context whose significance they interpret in a continuously emergent way. The theory of EM is formulated in its concepts of member methods, accountability, reflexivity, etc.

The reason that EM is often considered atheoretical is that it systematically rejects the kind of theoretical framing that is associated with many other research approaches. For instance, in other paradigms an experiment and its analysis are motivated and structured by a theory or conceptualization of the phenomena to be studied. There may be a specific research question that the researchers have in mind. There may even be hypotheses about how the experiment will turn out based on preconceptions. While scientific researchers must remain open to their hypotheses being disproven by the evidence, the posing of research questions and hypotheses define a research perspective within which the evidence is interpreted. For instance, CSCL discourse data might be coded according to a set of codes designed to make distinctions relevant to this perspective, experimental conditions will be structured to test these distinctions and coders will be trained to categorize their data from this perspective.

EM, in explicit contrast, wants to understand the data from the perspective of the participants in the study (e.g., students). Because the analysis of discourse is a human science, it must take into account what the discourse means for the speakers and audience. The participants are viewed as people engaged in meaning making, and EM researchers want

to understand the meaning that the participants are making. EM researchers do not want to impose a perspective on the data analysis that is based on their own preconceived theories about the interaction. Rather, they want to engage in 'thick description' (Ryle 1949) of the discourse to explicate the meaning making that is taking place in the discourse and that is displayed in the accountability of how it is formulated. The fact that the discourse is accountably intersubjectively understandable allows the researcher to analyze the meaning that is implicit in the discourse as it sequentially unfolds.

This is the sense in which EM rejects theory: that it adopts the participant perspective on understanding the meaning in the data, rather than imposing a perspective based on a theoretical research framing. There has been considerable debate within CSCW about how EM analysis can be used to guide design of collaboration systems if it cannot be directed toward theoretical issues (e.g., see Crabtree 2003). But the stricture against theory in EM is only against imposing an a priori analysis framework, not against drawing theoretical consequences from case studies. So one can, for instance, study the discourse of students embedded in a computer-supported interaction, and analyze the nature of the methods they use—which they enact, adapt or create—for achieving their collaborative tasks. The details of these methods can have design implications, such as addressing technical barriers that resulted in unnecessarily cumbersome behaviors. Thus, EM can contribute to the analysis phase of design-based research (Design-Based Research Collective 2003), which is a widespread approach in CSCL to the design of effective collaboration technologies.

The ubiquity of methods

Ethnomethodology posits the existence of member methods pervading all of social life. EM research for the past fifty years has documented many such methods, for instance in informal conversation, in doctor-patient discussion, in mathematical proof, in criminal interviewing and in workplace communication (Lynch & Sharrock 2003). These methods are often sedimented in the traditional design of the tools we use and in the clichéd turns of speech within our vernacular. They constitute our myriad overlapping cultures.

Sacks (1962/1995) argued that the pervasiveness of member methods meant that one could profitably study almost any interaction and learn from it about the nature of social existence. He argued that the universal application of these methods was necessary if people were to understand each other. In the CSCL literature, one often talks about the establishment and maintenance of 'common ground' (Clark & Brennan 1991) as providing the foundation for intersubjective understanding. But, according to EM, it is not a matter of the participants having corresponding mental models of propositional knowledge; rather, intersubjectivity is founded on sharing a world through using shared methods of communication (see also Stahl et al. 2011). These methods provide 'resources' for engaging in specific domains of the social world. According to the EM viewpoint, collaborative learning does not consist in the storing of propositional knowledge as mental contents in individual minds, but in the increasing ability to enact relevant resources or shared practices in interactions with others.

By looking carefully at interactions in CSCL settings, we can analyze the methods being applied. Because the acceptance of these methods is widespread within a culture, the results of a single case study can have quite general ramifications. Of course, to accept the implications of a single case study—or even a small catalog of case studies analyzing variations on a method—as valid and of general applicability, we need to ensure lack of bias or idiosyncrasy. This is usually addressed in EM by 'data sessions' and other

mechanisms to involve multiple analysts (Jordan & Henderson 1995). If discourse under analysis displays an account of itself, then a group of experienced analysts who share the relevant cultural understanding with the discourse participants should be able to reach a consensus about the meaning being created in the discourse. EM case-study publications frequently include very detailed transcripts of the relevant discourse excerpts to enable readers to confirm the analysis based on their own cultural understanding. Because meaning and meaning-making methods are always situated in unique, evolving, emergent contexts, the case study is the preferred genre of presentation for EM studies of CSCL.

In previous issues of *ijCSCL* there have only been a couple of explicitly ethnomethodological case studies, such as those of Lymer et al. (2009) or Cakir et al. (2009). The following contributions to CSCL research all also adopt case-study approaches. They identify with EM to varying degrees, suggesting a range of approaches to informing CSCL with the EM influence. It is perhaps noteworthy that even though EM originally developed in the US and despite the fact that it spread primarily through personal teacher-student or mentoring relationships, none of the articles in this issue are from the US. In particular, the most strongly EM-informed of these studies are from the UK and Scandinavia (Sweden, Denmark and Finland). A similar geographic pattern seems to be present in CSCW research, despite notable exceptions in both fields.

Case studies of ethnomethodology in CSCL

In this issue, we open with an EM case study by *Christian Greiffenhagen* that looks at the teacher's role in CSCL. While previous CSCL research has shown the dramatic difference that the teacher role can play in a CSCL classroom through statistical contrasts, this study looks at what the teacher actually does and says in interaction with the students.

This paper highlights the ways in which the teacher repeatedly guides the students in ways that realize the goal of the day's lesson. These methods of interaction while making classroom rounds are primarily taken-for-granted actions that are neither premeditated by the teacher nor surprises to the students. They are natural responses to the situation, where the teacher acts intuitively to make the lesson more effective. Anyone who has been a teacher making these kinds of rounds in a classroom where students are working in collaborative small groups—or any researcher who has observed such rounds—will probably feel that the author has articulated the sorts of actions that one had experienced without putting them into words. The actions were natural for the students as well; the students in the study not only responded to the teacher's actions, but they actually anticipated them and even looked out for them.

The paper assembles a catalog of examples of different kinds of typical moves that the teacher made in this session. We can imagine that very similar interactional moves—or communication methods—take place everyday in classrooms around the world. Yet, the specifics of these interaction excerpts are completely situated in their unique setting. Not just the pedagogy of the lesson, the characteristics of the technology, the concern about the future test, but even the details of the posture of the student and the path of the teacher contribute to what is said, to whom it is said and how it is said.

What takes place and what is stated is full of meaning. It is significant in terms of the life of the teacher, the students and the school. Despite its situated, indexical and fragmentary articulation, what is said displays for all concerned its accountable meaning. The meaning of the day's lesson could not be fully articulated in an initial statement; it had to be worked out as the lesson unfolded. That was the role of the rounds. The teacher had to reorient the

students to the important aspects of the lesson and limit their distraction by other aspects. The need to do this was not clear from the outset, but emerged through the reflexive process in which the students enacted the lesson and the teacher responded to signs that the experienced teacher could see to be problematic.

The EM analysis was accomplished by analyzing the meaning-making processes that took place in the classroom during the rounding. There was no need to impose criteria for judging the actions or utterances of the teacher, the students or the schoolwork. Yet, one could derive many useful suggestions for redesigning the pedagogy and/or technology of the lesson. One could take away insights into the role of the teacher during small-group sessions and the nature of a collaborative-learning classroom—all from a single case study.

Against generalization

In the next article, *Ulrika Bennerstedt*, *Jonas Ivarsson* and *Jonas Linderoth* address the idea of educational gaming. As they document, there are two dominant and diametrically opposed positions about the educational potential of videogames. On the one hand, some CSCL researchers wonder if we can harness for educational aims the motivational power that videogames exert over many students; some of these researchers even claim that gamers learn important collaboration and learning skills by playing massively multiplayer online games. At the other extreme, parents are worried that the games primarily teach violent behaviors. The paper authors propose that one should refrain from prejudging this issue and conduct an ethnomethodologically informed examination of how gamers actually manage their collaborative gameplay activities. In EM terms, this involves describing the ways in which gamers display skills and produce the social order of the multiuser game.

The paper takes a sequential-analysis approach by following key interaction sequences step by step. Doing so requires an understanding of gameplay. That is, the researcher must become acculturated in the gaming community of the particular game (Lord of the Rings Online) in order to make sense of possibilities, actions and consequences from the perspective of a player. The analysis even adopts some of the terminology used by players to describe their actions. Without this, it would not even be possible to understand how characters in the game collaborate or what their motivations are.

The authors argue against generalizing from the collaborative or violent aspects of the behavior they analyzed. The form of collaboration in the game is quite sophisticated, but totally specialized to the technical details of the game environment. Furthermore, it is entangled in the issue of violence. While on a superficial visual level the game involves players in violent interactions with various kinds of monsters, the portrayed aggression is highly mediated by strategic considerations in the face of complex game rules and definitions. The arousal that players feel probably has much more to do with the challenge of competing against the complex rule system, presented in terms of imaginative representations, and interacting socially in a fantasy world. The detailed look at what actually transpires in the game suggests little basis for generalizing the skills involved either to learning in school or to violence in the streets.

Resources for learning

The notion that learning centrally involves the acquisition of knowledge structures, mental models or mental faculties that can be applied generally, across diverse contexts is far

removed from an ethnomethodological approach. Instead, EM analysts look for 'resources' that people skillfully adopt in concrete interactional situations. Rather than trying to infer 'transfer' of knowledge, they look for the uses of resources that may display the take-up of issues from beyond the current local situation. In this manner, *Kenneth Silseth*, in his case study, explores the role of resources from outside the classroom—both from global politics as portrayed on television and from gaming experiences or personal hobbies—on a student's learning trajectory in a school lesson.

Here, we see the impact of gaming on a student and on his interactions and inscriptions—not as a generalized influence, but as a resource that can be brought to bear in specific ways. Similarly, the violence of televised global conflicts can enter into the student's meaning making as a displayed resource rather than as a general structure or hidden societal force. Relatedly, the learning trajectory of the student is observable in sequences of utterances (in discourse with other students as well as in successive writings submitted to the teacher), rather than being a measurable but unseen change of mental contents or state. The paper analyzes in some detail how the student's interactions in gameplay become constituted as resources for academic discussion of a social studies topic.

This paper takes a dialogic approach. This is in certain significant ways similar to EM, in that it focuses on close analysis of the meaning making and discourse of dyads and small groups. The context of on-going interaction provides the context for situated analysis. Building on the writings of Bakhtin, dialogism stresses the inter-animation of perspectives and the dialectic between self and other (see references in the paper). As Koschmann (2002) argued, both dialogism and EM are potentially productive for CSCL analysis of meaning making.

Interestingly, this article demonstrates the role of the teacher in guiding the students. The detailed analysis of teacher interventions and interactions with the student show how the teacher supported the student to adopt a multifaceted perspective on the topic. It thereby makes visible the way in which collaborative learning among students can involve technology and teacher scaffolding in the situated process of bringing in resources from outside the classroom situation. In turn, the dialogic perspective on the Israeli-Palestinian conflict, which emerged in the student's learning trajectory, will presumably provide a resource for his subsequent meaning making around issues of global politics.

The personal as resource

The concept of resources for learning as developed in the next contribution provides a nice corrective to a long-standing issue in CSCL. *Arvaja Maarit* analyses the use of personal and shared experiences as resources for online discussion. Many CSCL studies of the use of threaded-discussion forums for school-based knowledge building have complained that students post too many statements of their personal opinions, based on their past experiences. Researchers often code discussions in terms of a presumed hierarchy of knowledge-building moves—a pre-existing theoretical framework for measuring how student interactions meet an ideal of what they "should" be doing from the researcher's perspective (Chi 1997). Posted descriptions of someone's personal experience are often coded as 'off topic'. The researchers then wonder why it is so hard to get students to build knowledge collaboratively in a discussion forum.

By analyzing the ways in which students in a particular case study make sense of the topic for themselves and for each other, the paper not only provides insight into this student behavior, but also suggests why it is desirable. Rather than viewing the postings as

expressions of rationally calculating individual minds deducing knowledge, the EM or dialogic approach is to look at how potential resources available in the larger contexts of one's life are made actual and relevant within a current discourse, such as a threaded discussion. Potential resources include semiotic, material, social, cognitive and cultural resources, such as past personal experiences that one has had in school, on a job, playing a game or watching television.

In this paper, we see how students discussing philosophic texts that are hard to understand succeed in making sense of the various philosophic positions by connecting them to their own or their peers' past experiences, which they already understand. In particular, the analysis of the students' meaning-making moves highlighted several methods for connecting the philosophic claims with the students' understanding of phenomena in their own professional field: applying, supporting or forming conceptions and critiquing. By engaging in these forms of sense making in discourse with one another, students learned from each other. Dialogic learning involves learning to see from the perspectives of others, rather than necessarily building knowledge together as researchers have often assumed in the past.

Intersubjectivity amidst disagreement

Sarah Pollack and *Yifat Ben-David Kolikant* return us to classroom discussion of the Israeli-Palestinian conflict, but his time involving students whose personal perspectives are already strongly influenced by this conflict. In fact, the two dyads of students bring such opposed perspectives to this discussion that the teachers turn to CSCL technology to mediate the discussion, providing an environment in which the students can feel safe expressing their views and can hope to have some kind of productive interchange.

As in the previous paper, the analysis shows that each perspective evolved as a result of their discourse together, even though they did not build knowledge within a joint perspective. The agents (in this case not individuals but dyads) were able to use the perspective of the other as a resource for their own reflection, without denying the continuing opposition between their perspectives (rooted in strong cultures and long histories). In the analysis, we can see the larger societal context made active and relevant through specific resources brought into the local discourse.

Interestingly, the students establish an intersubjective understanding of their discussion topic through an inter-animation of persistently opposed perspectives. There is no convergence or overlap of mental models or common ground. Just as Israelis and Palestinians share a geographic world without giving up their differences, so the students establish intersubjectivity amidst deep-seated disagreement.

How teachers guide collaborative learning

The final two papers in this issue are not strictly speaking ethnomethodologically informed, but they return to the opening paper's theme of teacher guidance in CSCL settings. The contribution by *Yangjie Song* and *Chee-Kit Looi* is a comparative study of two teachers teaching the same lesson. It reports on research in Singapore (Looi et al. 2011) using the Group Scribbles collaboration software.

Like an EM case study, this paper conducts a fine-grained analysis of moment-by-moment teacher practices. This analysis is oriented to discover the connections among teacher beliefs, teacher practices and student learning. The authors recognize the complexity

in these connections. They emphasize that innovative educational interventions—such as inquiry-based CSCL lessons—are not simply implemented, but are enacted through the practices of specific, situated teachers and students. How teachers enact the lessons and orchestrate classroom interactions has a significant impact on the outcomes of student collaborative learning.

The paper by *Javier Onrubia* and *Anna Engel* undertakes a similar analysis of the connection of teacher practices to student outcomes, particularly the relationship of patterns of teacher assistance, forms of collaborative work in student groups and level of performance of the groups. Here, the pedagogical intervention is structured by a macro-script—see the *ijCSCL* flash theme on scripting in CSCL (Dillenbourg & Hong 2008; Kobbe et al. 2007).

While this analysis employs coding and frequency counts, the aim is not to draw statistical generalizations, but to support the exploratory case study in revealing patterns of teacher practices. The role of these teacher practices leads to the conclusion that what is important is not simply the design of a macro-script, but the teacher's classroom orchestration that enacts and supports the use of the script in particular, unique and unpredictable teaching and learning situations. Something like skillfully making rounds is needed.

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