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Contact, Community and Multilogue.

Electronic Communication in the Practice of Scholarship.

Eva Ekeblad
Göteborg University
Department of Education &
Educational Research
Box 300, SE 405 30 Göteborg,
SWEDEN
eva.ekeblad@ped.gu.se

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Abstract

This paper describes the computer mediated activity on a cluster of related mailinglists - the xlists - subscribed by researchers and practitioners with a common interest in cultural-historical activity theory. Ten years of archived electronic messages form the basis for an archaeology of collective as well as individual development and learning within this virtual community, which has been very generative through the years.

The ultimate motive for studying this electronic environment is to produce a realistic picture of the conditions and timescales for the development of an online community of learners. This is dearly needed in these times when much untempered enthusiasm is expressed concerning the merits of computer mediated communication for higher education.

It is suggested here that a nested model of three interrelated activity systems constitutes a productive tool for research into computer mediated scholarly communication. Due to the character of the e-mail medium the archived text is a patchwork or web produced through the activity of all the nested systems. The model of three nested activity systems serves as a powerful aid for discerning salient units of analysis, for describing the development of prevalent practices within the community, and for locating important contradictions.

In overview the model suggests that the activity system where various aspects of cultural-historical activity theory are taken as the objects of a transformative multilogue depends on the functioning online community of scholars, which is produced as an outcome of the activity system taking academic networking as its object. This community building system in its turn depends on the functioning of the connection or channel kept open through the practices in the activity system taking the communications technology itself as its object.

Attention will be given to how the traces of the three nested activity systems are interwoven in the web of archived text, and some of the observed signs of learning and development in the archived text will be pointed out, together with some of the problems arising from internal contradictions in the system-of-systems.

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Electronic Communication in the Practice of Scholarship.

Let me start this on a personal note. In the late sixties I worked as an apprentice in a tapestry weaving workshop in Stockholm, on the top floor of an old building on, in a part of the central city that has now been totally re-developed - in the seventies the whole ridge with its triangular square was turned into one huge bulldozed pit. As I climbed up the back stairs every morning I passed by a door on one of the floors below that was usually standing ajar for the purpose of ventilation. Inside could be glimpsed this huge grey metal cabinet, almost filling the room. There were a couple of relatively small windows on the cabinet, revealing sturdy reels of magnetic tape. This was the first computer I ever saw, and on my way to the soft and colorful yarns upstairs, I certainly did not associate it with my own life [1](#). But in the middle of the eighties, when I returned to Academia to go through training to become an elementary school teacher, I was introduced to a seductive machine of modest size, which could be programmed to produce softly glowing, colorful, dancing patterns on its screen. My extracurricular romance with this personal computer running LOGO was the little bump on the road that knocked me off the path to schoolteaching and made me stumble into educational research on the use of computers.

For much of the past decade my pursuit of the educational benefits of computer mediation has been fairly introverted: a continuation of that first romance with the machines (although LOGO soon fell out of the picture.) But even from the enchanted corner where I was wrestling with a virtual world of elementary number concepts and transcribed children it was evident that national and international authorities were increasingly expressing enthusiasm for New Information Technologies on the behalf of educational institutions. In Sweden the introduction of computers on the primary and secondary levels of the educational system went into a "third wave" in the middle of the nineties (Riis et al. 1997), due not least to the massive funding made available from

the Foundation of Knowledge and Competence Development. While the trend has been more linear on the tertiary level the main effect has been similar. In the present situation New Information Technologies have become an obligatory concern of all educational practitioners, who must now either find ways to incorporate computer use in their teaching practices or else develop good counterarguments. So what do computers offer?

In a sweeping generalization the computer mediation of learning may take two analytically distinct forms: the computer may either serve as a mediator between learner and subject matter or as an intermedium between a community of people. In the first case the computer-cum-software offers immersion in the object of learning, and multimodality of this virtual object may be crucial. In the second case the computer-cum-software offers a virtual environment for communication. Once the two forms have been distinguished, all kinds of combinations and hybrids are, of course, possible. This is not my purpose here, the distinction is just intended to indicate an awareness of all that is left out in focusing on computer mediated written communication as a learning environment, which is one of the uses of New Information Technology that has evoked my own enthusiasm and involvement. I have "been there" and I have learned a lot that I would love to convince others it is worth having. On the other hand, I have also come to understand the difficulties of transposing features from virtual environments of sustained discussion between voluntary contributors, into temporary virtual environments arranged for short-term use. This paper does not propose solutions, it is entirely an analysis of the nature of mailinglist activity, prefaced by this cautionary suggestion of underlying concerns for systematic education.

Learning and development

What is learning, what is development, if not modes of change? And the ways of viewing what constitutes modes of change, worth counting as learning and development are also undergoing change ²: there is no way that the world will stand still. So as human ways of being in the world are changing constantly, scholars are obliged to do regular maintenance work on their conceptual/terminological systems. This is by necessity to a great extent communicative work, a collective labour of learning and development. And this joint wrestling with the words and the world must be performed in all participant categories: by the newcomers to a domain as well as by oldtimers, by the maintainers of the domain as well as by its expanders or subverters.

The main medium for these webs of semiotic labour is language, in all its spoken and written forms: a mighty chatter, constantly reverberating throughout the academic world in generic channels of scholarship and education - or in less irreverent words a progressive discourse (Bereiter, 1994). In the process traditional channels come to be crowded, and their

genres to chafe. A new channel like computer mediated communication offers new and attractive possible shapes for this semiotic interfacing between multilevel learners - a virtual environment where a communicative culture with some unique properties has been evolving for some three decades (if we take the small-scale distribution lists on local networks of the late 60s (Bennahum, 1998) as a starting point). Perhaps, in time, education at large will be changed by what we learn with these new media (Lemke, 1993).

With reference to textbased electronic discussion fora Shank (1993) argues that Net communication is neither oral nor written, but semiotic, as it certainly proceeds by means of potentially durable written signs, but in nimble modes of interaction permitting a multiplicity of players to join the spinning of a semiotic thread. He proposes the term *multilogue* for this computer mediated form of significant interaction. In the same publication Shank suggests that the most effective and unique forms of scholarly Net communication emerge where the multilogue is used for the *abductive* activities of grappling with issues of meaning: for fostering shared understandings of circumstances and phenomena. In this paper I have adopted Shank's term *multilogue*, allowing it to absorb into itself the characteristics of the *abductive multilogue* described by Shank, so that when I go on to explore the conditions of emergence of this form of joint transformation of meaning in computer mediated communication *multilogue* serves as the name of activities oriented towards the concepts and practices of an academic target domain, in contrast to other aspects of the joint construction of a virtual environment.

The present paper is part of a study of the developmental conditions of a sustainable multiloguing culture, a longitudinal study of a particular virtual environment that has served as a meeting place for scholars with a common field of interest for more than a decade. The object of study is the computer mediated activity on a cluster of related mailinglists - the xlists - subscribed by researchers, graduate students and practitioners with a common interest in cultural-historical activity theory (CHAT). The question in this section of the enterprise is one of how to analyse the development over time of this object: what is it that develops? and my answer is that it is an activity system, or to be more precise: a system of three interrelated activity systems.

Virtual spaces for communities of learners

As noted above, computer mediated communication has emerged as an attractive channel for education, not least higher education. Firstly, the textbased modes of the computer medium offer the learning advantages potentially contained in all active text production - writing confronts us palpably with our thoughts as they are emerging and thus mediates their further development (John-Steiner, 1985; Lemke, in press). Secondly, computer mediated multilogue does so in an expressly interactive form,

further enhancing the mediational process by offering both amplification and resistance in our struggle for tenable understandings of circumstances and phenomena (Bereiter, 1994). From an educational perspective these affordances of CMC brings to mind Vygotskian theories formulating learning as a mediated process in the Zone of Proximal Development. This Zone, first named by Vygotsky (1978) is the space of psychological mobility between what an individual may perform unassisted and what she may perform in joint activity, and it is this "performance before competence" that enables her imminent development (Cazden, 1996; Cole, 1996). What was merely outlined in Vygotsky's seminal idea about the sociocultural situatedness of human learning and development has later been explored in its consequences not just for the developing individual, but for the whole community involved in educational activities. Notably, it has been observed and emphasized (e.g. Rogoff, 1994, Wells, 1996) that processes in the Zone of Proximal Development are not unidirectional, affecting only the least competent individual(s) in the system. Rogoff (1994) argues for an approach that studies (and tries to build) communities of learners within educational systems. If virtual - computer mediated - spaces are devoted to abductive multiloguing (Shank, 1993) they may serve as Zones of Proximal Development for communities of learners in Rogoff's sense: places where all participants, each after their kind, may learn.

The xlists have already been proposed as a virtual community in the sense of Rheingold (1993), with a potential for learning and development (Herrmann, 1995, 1998), and described as a community able to survive through serious conflict (Syverson, 1994). The xlist archives themselves are also a rich source of selfreflections on the nature of electronic discussion fora and of examples of how xlist contributors orient reflectively to the list activity as a setting where learning and development are relevant aspects, and all participants, each from their perspective, may contribute as well as benefit from the contributions of others. The demographic history of the xlist population over ten years places the forum in the category of dynamically balanced fora (Rojo, 1995), i.e. electronic discussion groups growing fairly slowly and with a continuing dynamic equilibrium between new and old contributors, providing both for cultural continuity and renewal.

However, there is still a long way to go from enthusiastic visions, evoked either by personal experience or in the service of salesmanship, to workable models of how to create sustainable virtual environments for learning communities - even when a promising example has been located. In working out a model for how to create sustainable virtual environments for learning communities it is necessary to steer clear of the trap of technological determinism (Jones, 1997). There is nothing about CMC technology that inevitably gives rise to multilogical learning, new, splendid forms of community, and other goodies like those envisioned by Rheingold (1993). Indeed we must beware of both extremes of determinism in our analysis: the cultural and technical systems we help to develop are neither determined by

technology nor by sheer human willpower (Latour, 1993). It may be illustrative to contemplate for a moment that with our enthusiast/ /salesman hats on we tend to forget (or make little of) the more unpalatable sides of Internet activity, those aspects that in other contexts give rise to outbursts of moral panic. Otherwise the mere existence of child pornography and neo-nazism on the Net should make it clear that the neighbourly and educationally attractive cultures that have emerged in some regions of Cyberspace are no deterministic outcome. Rather, the virtual cultures of Cyberspace are the fruits of an interweaving of technologies in the making and social formations in the making, showing, so to speak, the symptoms of all kinds of sociotechnological contradictions, individual and collective desires.

Thus, in research motivated by concerns for viable applications of CMC in higher education and taking the creation of virtual environments for sustainable multiloguing as its object, there is a need for an analytical model with the capacity to integrate technical, social and psychological aspects. A model meeting those requirements, so as to avoid the Scylla and Charybdis of Technological Determinism versus Omnipotence of the Rational Mind, is the activity systems model (Engestr m, 1987). This model was developed on the basis of activity theory, which forms one of the branches of post-Vygotskian psychology. The model acknowledges the mediated character of human action, which was introduced by Vygotsky in his developmental psychology as a triadic relation between the acting subject, the object acted upon, and the mediating artifact (tool or sign). Even this core triad in Vygotskian thinking should not be taken as a causal chain, but as a presentation of the interweaving entities involved in the process of action. However, although it may be implicitly present there, the core triad does not display the profoundly cultural character of human action. In order to make this explicit it is necessary to make the distinction between *action* and *activity*, and regard individual actions (semiotic as well as material) as always part of and embedded in some culturally defined activity. In Engestr m's activity systems model this is accomplished by representing the subjectmediator (artifact)object as the top of a triangular iceberg with a community, its rules, and its division of labour along the basis.



Fig. 1. The model of an activity system (after Engestr m, 1987)

Obviously the distinction between action and activity is crucial to this model, and to activity theory in general. However, as a semiotic immigrant from Russian (with some German ancestry), the action/ /activity-pair usually encounters difficulties in the confrontation with cultures of English-derivative lexical habits. It seems reasonable to spend a couple of paragraphs here in an attempt to untangle the skein.

Following one of the paths opened but not elaborated in Vygotsky's work Leont'ev (1978, 1981) developed the concept of *activity* as one of the three main units of psychological analysis. Reconstructing the evolutionary emergence of human psychological functions all the way from the first appearance of specialized sensory and motor cells in primitive organisms, up through the problem solving abilities of the great apes, Leont'ev (1981) argues that it is with the emergence of a division of labour within collaborative tool-using activity that human psychology acquires a qualitatively different character from the mental functioning of animals. According to this line of reasoning human consciousness was produced when tool use and the division of labour in a group of hominids allowed the actions of an individual to be oriented towards a goal which was the total opposite of the desired object, precisely because this desired object remained as the motive of the activity of the collective. Leont'ev illustrates this with the way that "the beater" in a hunting team performs an action with the goal of frightening the herd of animals away from himself. This goal-oriented action is paradoxical when viewed in isolation, as it achieves the mission of propelling prospective food further out of reach for the acting individual. However, in the context of a team hunting activity where other members of the group are waiting in ambush, the action is an effective component in the collective acquisition of the hungrily desired object. In this way the collective activity serves as the precondition for the emergence of human abilities to inhabit an environment which proleptically extends into the future by detours into the past (Cole, 1996) and into the non-existent - exploring the boundaries between what is possible and what is not.

Although the evolutionary narrative outlined by Leont'ev (western publication 1981) draws an oversimplified boundary between animal and human sociocognitive abilities (Cole, 1996 Ch 6) the distinction between action and activity remains viable as parts of a conceptual system of units for psychological analysis. Leont'ev (1978) proposed three types of these units: *activities*, *actions* and *operations*, where *activity* designates recurring, culturally defined, types of "human business," *action* designates completable, contextually defined, types of recognizable individual performance, and *operation* designates the analytically separable moments of how, in detail, something is done under specific circumstances. In my current context the unit of operations leads to an analysis that is far more fine-grained than necessary, so I will leave it aside to the benefit of further clarification of the distinction between activity and action.

In Leont'ev's definition any type of activity is characterized by its specific motive, the satisfaction of some recurring natural/cultural need. In particular instantiations of the activity, this is accomplished by means of the productive, reproductive or communicative transformation of the specific object towards which the activity as a whole is oriented - an object which in its ideal state is what fulfils the collective motive of the activity. Due to the internal counterdynamics of the objects of activities, or to their consumption in fulfillment, activities do not come to other than temporary closure. As an activity is also typically characterized by a particular division of labour within a community of practice it is not simply constituted by chains of actions, but rather by complexes of inter-action between participants whose roles are not necessarily symmetrical. On the other hand actions, in Leont'ev's system, are defined by their goal - a potentially reachable state, which constitutes the completion of the action. Goals, while serving to orient an action through its phases, are still emergent, rather than fixed, as they are necessarily modified in the course of an action, when the process of realization encounters the counterprocesses of the environment.

While an activity is characteristically collective in nature, an action is by definition carried out by an individual, that is: this is the specific perspective on joint activity that this unit of analysis provides. The whole point of making the activity/ action distinction, as far as I understand; is to permit different kinds of analysis of, in principle, the same sequence of events, regarding it in the first case as the temporally open (un-bounded) process of an autopoietic system, and in the second case as a network of interacting, ideally finite, processes of which some may be of greater interest than others for the specific purpose of research.

In this paper the activity systems model will be applied to the problem of analysing the conditions for sustainable multilogue through the archived xlist texts, viewing them as the sedimented products of a communicative process between actual people in a virtual environment - a Cyber-archaeology (Jones, 1997). The focus will be on the multiloguing process as a collective activity, the character of which is to be clarified through research, rather than on the process as a chain of individual actions or on the categorization of types of action. I will argue that the multilogical activity system of a scholarly mailinglist depends on the productive outcomes of two more basic activity systems, and that the traces of these three systems are conflated in the sedimented texts of the list archive.

The virtual research setting

The xlists hosted at the Laboratory of Comparative Human Cognition at the University of California, San Diego provide a computer mediated channel for discussion among scholars with an interest in cultural-historical, sociocultural

and activity-theoretical approaches to learning, development and communication. Today, in 1998, this cluster of related lists has been a communications channel for researchers, practitioners and students for more than ten years. There are archives reaching back to November 1987, but the collective electronic history of this academic network goes back to 1984 (Cole & Griffin, 1987). In the early days a complex and work-intensive routine of portage between a number of different electronic networks was necessary for connecting all the participants in a fairly small but nevertheless international community (Gack & Finkelstein, 1992), and it was only with the advent of somewhat more convenient facilities in the end of the 80s - BITNET and the budding Internet - that more systematic archiving was started. There is currently an archive of compressed monthly files from November 1987 up to May 1996 reachable by FTP, and the more recent discussions have just been made accessible by automatic archiving on the WWW.

A short pre-history of the xlists is given under the title "An Origin Myth" in the informative Welcome Document that was composed (collaboratively and on community demand) in 1991. According to this document the Laboratory of Comparative Human Cognition was founded as a research unit at the Rockefeller University in the early 1970's and moved to the University of California, San Diego in 1978. There was initially an ethnically diverse faculty that conducted an active post-doctoral program in the use of comparative methods for studying culture and cognition with special interest in problems of learning and development in school and non-school settings. However, by 1984 the LCHC was caught in a funding double-bind with political origins, which meant that the Laboratory had lost most of its minority group faculty, and consequently most of its post-doctoral funds. In this situation the new electronic media offered hopes for a telemediated continuation of collaborative LCHC exchanges among scholars of diverse backgrounds sharing interests in "research on learning and development with a general concern for issues of education in modern technological societies and a special concern about the ways in which educational systems are a source of socially engendered social inequality" (xfamily, 91-09-23). The electronic discussion forum was called XLCHC, and the Welcome Document provides a "mythical" explanation of the dual significance of the 'X': it stands as a sign both for the function to keep up a communication channel for ex-LCHCers and for the function to allow ex-tended ex-ternal participation by scholars and graduate students from all around the world. Due to its signifying potential the 'X' has become a signature for the whole cluster of computer mediated activity centered at the LCHC.

The beginnings of the xlists were modest - the Origin Myth of the Welcome Document claims an initial number of XLCHC participants of "a dozen or so". As documented by Gack & Finkelstein (1992), and richly evidenced in the first years of the archived material, the list beginnings in the late 80s were encumbered by a certain unwieldiness of inter-site network connections. Nevertheless, over the years the network of participants grew, and in 1989 the

idea of multiple, parallel, lists was introduced, addressing concerns about how best to stimulate a wider circle of active contributors to the electronic discussions. In the following years a number of new xlists were instituted. Some of these were active for only a short period, others had a fairly stable function as thematic communication channels. In 1994 there were more than 600 subscribers, and the the number of lists, used by overlapping participant communities, had proliferated so as to be quite confusing - messages sent to one list were often responded to on another. A structural reform was carried out in May 94, merging similar lists and pruning away inactive ones. The number of lists was cut from 10 or 11 down to 5. Then, in the summer of 1995 another restructuring merged all the remaining lists into one single list, the XMCA, which is still in 1998 a very active electronic forum, with around 250 subscribers.

Neither the messaging frequency nor the number of active contributors have followed the rise and decline in subscriber population. There has rather been a fairly even increase over the years. In terms of messages there has been a change from an average of one message per day in 1988, over averages of four to six messages per day in the early 90s, until in the last couple of years there has been an average of eight to nine messages per day ³. In terms of active contributors there were in the early years an average of around 40 active contributors per quarter, and around 100 contributors per quarter in the middle years while for the last few years there has been an average of slightly over 130 active contributors per quarter.

ACTIVITY SYSTEMS OF THE XLISTS

On email-based discussionlists messages with quite different functions in the activity of the subscriber community must pass through one and the same channel. Profound or playful multilogues on central ideas, reactions to political developments bearing on education, calls for conference papers, job announcements, encouragements to listmembers in the final throes of their dissertation, as well as messages announcing a temporary shutdown at the mother node or educating the community about the mechanisms of bounced messages, are all posted to the same server address and distributed from there to all the subscribers of the list. The subscribers thus receive - and may freely contribute to - a sequential stream of textual utterances constituting a textweb where multiple communicative actions with different functions in the activity are woven together, in and across messages. When the mainstream is archived in files month by month, list by list, this complexly interwoven nature remains relatively intact, while the temporal dynamics is severely distorted. The chronology of the message sequence can be reconstructed from message headers, but this is only the most visible part of the interactive dynamics in the system with its distribution over time zones, and its specific ecology of

readers, writers and texts (Syverson, 1994). When unravelling the patterns of list activity from the complex web of texts in the xlist archives I suggest that it is useful to consider them as the sedimented products of three interrelated activity systems with contact, community and multilogue as their respective motives.

Barry Kort's three-layered model

As observed by the reflective Micro Muse practitioner Barry Kort ^{*} in his three-layered *Communitas* model (1997) there is necessarily a foundational layer of *Communications Technology* in any online community, because if there is to be any Computer Mediated Communication in the first place, the channel must be accessible and reliable enough to be useful for the purposes at hand. In an initial stage a great deal of communication tends to be about the channel itself, and Kort confesses that in his own career he has spent some 20 years on "preparing the soil" of this layer.

However, once the communications technology layer has reached a certain stability it may support the layer of *Community Building*. This layer comprises the construction and maintenance of the social structure of an online community, not least the building of trust between participants. The work of community building involves getting to know colleagues in the community, identifying issues of concern to the community and understanding its goals and missions. Kort claims to have devoted his main energy for the next 10 years after the establishment of the technological channel to the building of community, and admits that a functioning community, actually using communications technology for educational purposes, was basically all he initially expected. However, he discovered that given that Community Building has produced a substantial level of participation, interaction, and trust a third layer may emerge. This is the layer of truly transformational relations of people to people and of people to ideas which Kort names *Communion*, while I have preferred *multilogue* as a term with more interactive than coalescent connotations.

The xlists as a three-layered activity system

The character of the xlists is presumably more scholarly than the online educational communities that Kort bases his model on. Nevertheless the three-layered model has an intuitive appeal in relation to the structure and history of the xlists. An analysis of three nested activity systems with the respective motives of communications technology, professional/ /academic networking and multilogue would seem to be useful and appropriate for the purpose of discerning patterns of learning and development in the virtual environment of

the xlists as they can be excavated from the x-archived texts.

The educationally most interesting activity on the lists is the multiloguing quest for transformation of understandings. This is an activity system with the motive of knowledge generation where various aspects of cultural-historical activity theory are taken as the focal objects of episodes of activity. However, the virtual environment where half-baked ideas can safely be exchanged in this fashion depends crucially on the existence of a cooperative community. This concrete virtual community, which is analytically a precondition of the multiloguing activity system, is built and maintained through an activity system with online, on-list, academic networking as its motive. This system with community building as its motive also anchors the virtual environment in the wider academic networks of publishing, conference-going, and career pursuit. Finally, both the preceding xlist activity systems depend on the continuing operativity of the computer mediated communications network - that is, the specific components and aspects of the Great Net that sustain the xlists. This activity system, which is concerned with the communications technology itself, is not only a necessary precondition for multilogue and community building but it also, just like the other two, leaves its traces in the archived textweb. Thus, with the primary research interest in the creation of online multiloguing the three-layered model on the one hand allows a discernment of the multilogical patterns in the textweb, while, on the other hand, providing a constant reminder that this activity system cannot be had without the support of the two embedding activity systems.

The following section will construct the triangular activity systems diagrams (Engestr m, 1987) as a tool for eventually unravelling the textweb. The diagrams serve to force the specification of each of the six nodes integrated in this relational unit of analysis, which is how they support the reconstruction of the systemic processes that have combined to produce the archived textscroll. In addition to unpacking the nodes of subject, tool, object, division of labour, community and rules I will also make brief use of the four different subtriangles that may be seen as the center of gravity for different aspects of the activity:

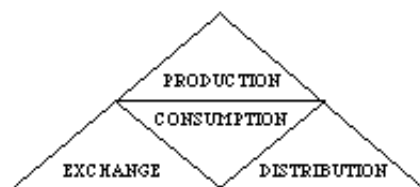


Fig. 2. The aspects of activity in an activity system (after Engestr m, 1987)

Three nested activity systems by their object

An activity system is most appropriately defined through its common object, i.e. its focus and the foremost outcome of its processes. This object is also the motive for the continuation of the system, as the object of an activity system is something that continuously has to be produced anew. In the case of the xlists the outcome of the activity system of communications technology is a reliably open channel of communication, the outcome of the activity system of community building is a collaborative network of academics, and the outcome of the system of online multilogue is the transformation of shared funds of knowledge. Miettinen (1997) describes a network of activity systems where the *object* of one system comes to serve as a *tool* in the next one when it has enough stability. Similarly, the principal relations of dependence between the three nested layers of xlist activity could be portrayed as a cascade, where the outcome of one system feeds into the next system as a mediating artifact:

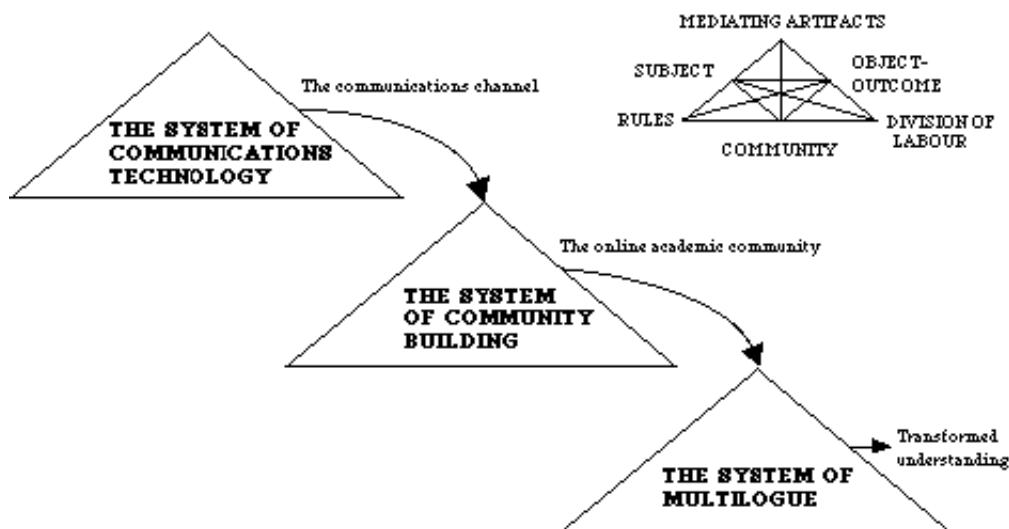


Fig. 3. Three cascading activity systems of an academic mailinglist

The most basic layer is the activity system of communications technology, which has a functioning communications channel as its outcome.

Channel maintenance. The xlist system of communications technology.

The common object of this activity system, which forms the basic sociotechnical condition for the existence of the xlists, is the dedicated communications channel serving to propagate messages sent by one subscriber through a central node and further to each individual subscriber on a many-to-

many basis. This channel is not cast in iron once and forever, but needs constant maintenance work, which is what motivates the existence of the xlist activity system of communications technology.

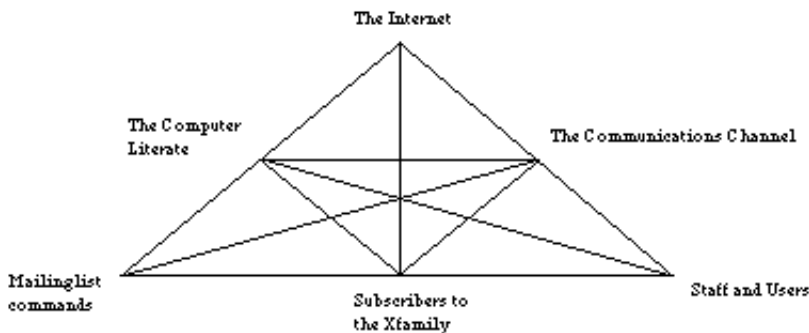


Fig. 4. The xlist activity system of communications technology

The mediating artifacts in this activity system belong to the complex global network of cables, machinery and communications software constituting the Internet. The Internet furnishes the general set of mediators, while the particular machine(s) running the xlist server(s) and the diverse computer equipment of the xlist participants and their internet service providers provide the particular set of mediating artifacts actually used in this activity system. As computers are symbol processing machines the mediating artifacts are, even in this basic layer of the system-of-systems, a combination of tools and signs.

The subject of this activity system is on one hand the individual xlist participant as a computer literate person - i.e. a person equipped and capable to use the channel in a way that ensures its continued functioning. On the other hand, as there is a pronounced division of labour in this system, there are also functionaries in the xlist community who make their online appearance more or less exclusively in the channel maintenance activity system. These are the people who perform the actual maintenance of the subscriber list and the server on location. There is even a collective subject for this purpose, the xfamily account, which has been in existence since the beginning of the 90s. Messages from this account are produced by the different people, to whom the authority and the chores of list management has been delegated over time. All in all, however, a minimum level of computer literacy is the smallest common denominator of the individual subjects in the xlist activity system of communications technology.

The rules of this activity system in its current form are typically inscribed in the technology in a fairly fixed form. Many of them are codified as computer commands. This includes recommended procedures for subscribing, unsubscribing and posting to the list. ⁴ This definition blackboxes the elaborate

overlapping systems of effective rules materialized in the computer codes of Internet protocols, and takes notice only of those rules that directly confront members of the xlist subscriber community. In any case, to the extent that these rules are materialized as standard procedures for interaction with the networked computers, for the individual participant there is little scope for negotiation about them: the network of machinery is a fairly inflexible actant.

The community of practitioners of the channel maintenance activity system is, as indicated, heterogeneously constituted by the international community of xlist participants - the ordinary subscribers - and the xfamily staff maintaining the list. In delimiting a community it is also relevant to acknowledge its position in relation to larger communities of external stakeholders. For the xlist communication channel the most important of these would be the institutional or commercial communities enabling the existence of the channel by providing its particular hard and soft components of the communication. These wider communities are not part of the xlist activity system, but connected to it through activity chains of varying length, and technical practices in these communities inform practices on the xlists.

The division of labour in the dispersed activity system of channel maintenance makes a small local group within the community responsible for most of the actual work of keeping the channel functioning reliably. This includes the chores of keeping the re-distribution software upgraded and appropriately configured as well as the chores of keeping track of problems with subscriber addresses to prevent bounced and looping mail, and other daemonic incidents (troubleshooting in transaction with the subscriber owning the problem, or the system administrator of a problematic node). The traces left in the x-archives by this work are just the tip of an iceberg: much of the maintenance work, even when performed in the electronic medium, takes place "backstage," positioning the xfamily as a crew of "stage hands" to the virtual stage upon which the xlist community performs. ⁵ The xfamily crew is also responsible for keeping the wider community of ordinary subscribers informed about the state of the channel, and what the subscribers, from their side, need to do to keep the channel open. The work demanded in this system from the ordinary subscribers consists mainly of coping with the basic necessary operations for subscribing, unsubscribing, and sending their postings to the right address. They are also responsible for keeping their account in such a shape that it does not disrupt the channel by causing loops or bounces, and for telling the public channel apart from private, one-to-one messaging between list participants.

In short, the functions of this system are the following:

- **Production** of the communication channel.
- **Distribution** of responsibilities for keeping the channel open,

and of resources for doing so.

Responsibilities and resources are asymmetrically distributed.

- **Exchange** of information about the state and maintenance of the channel.

This can be a monological broadcast or dialogical negotiation.

- **Consumption** of bounded internet resources and limited work hours.

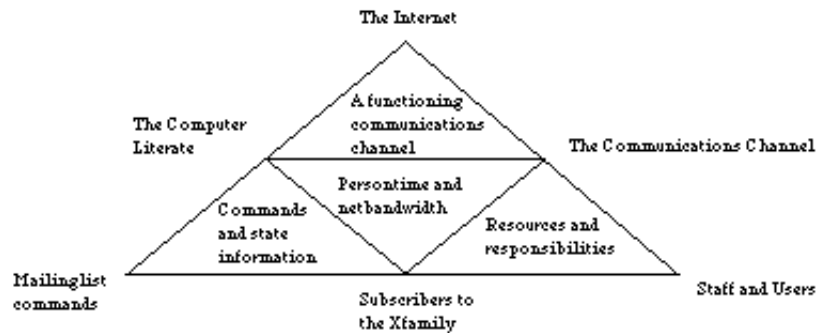


Fig. 5. *Production, distribution, exchange and consumption in the xlist activity system of communications technology*

Activity motivated by the communications technology leaves three types of traces in the archived textweb. It appears as the ubiquitous "envelopes" of messages: the mailheaders prefacing each message with its history of travel through the electronic channels. It appears as message content serving purposes of channel maintenance (I-am-here-are-you-there?). Finally it appears as the "daemonic" products of channel malfunction - messages appearing in the wrong places or distorted due to bugs in the conglomerate of symbolic machinery or mishaps in its interaction with human users. So the traces of the communications technology serve either as boundaries in the granular flow of messages through the channel, or as signs of actual or imminent breakdown of the channel.

The activity system of communications technology requires some minimum of learning from each user (to get computer literate). Historically speaking, the sociomaterial formation of CMC has developed considerably in the timespan of the archived xlist decade. From an educational point of view, however, these changes, are just the foundation upon which a computer mediated ZoPed may be built. A channel is not enough, there also has to be a community of practice using it for more than sequences of channel testing - although in the early stages of a new communications technology channel testing may, indeed, be a prominent activity.

Academic networking. The xlist system of community building.

The common object of this activity system is the online community of scholars and practitioners from diverse disciplines with a common interest in sociocultural or cultural-historical theories of learning, development and activity - the academic network of people with a craving for CHAT perspectives. Again this community is not cast in iron once and forever, but has to be continuously re-constructed through the coming and going of participants. As already noted, 'community' in this context does not only refer to a concrete collective, coordinated through a common activity. The object of xlist community building activity is a collectively developed and maintained culture of candid collaboration: an inviting place for multilogue. Thus what motivates the activity in this system of xlist community building is the enduring concern with the transformation of the changing subscriber collective into a collaborative community of people with some measure of commitment to the virtual environment they share, some awareness of its anchoring in wider offline academic networks, and some competence in the shared field of CHAT research, theory and applications.

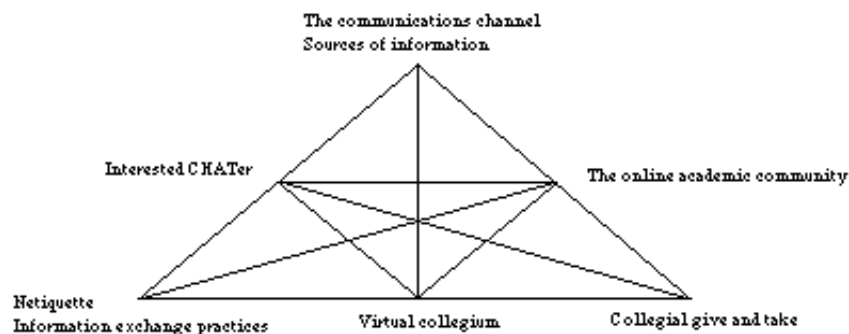


Fig. 6. The xlist activity system of community building

The mediating artifacts in the activity system of xlist community building include, first of all, the electronic communications channel produced in the Communications Technology layer. Then the whole complex of textual practices serving to build "virtual community" (Rheingold, 1993; Smith, 1992) function as mediating artifacts in this layer of the system-of-systems. In line with Kort's placement of matters like getting to know colleagues in the community, identifying common issues, and developing understanding of community missions and goals in the category of community building I see the share of the mailflow that consists of offers and exchanges of information that is academically relevant to the xlist community members as academic networking within the activity system of community building. Job announcements, conference announcements, article previews, newsclips about educational matters, mailinglist addresses, bibliographic material, etc. serve both to indicate/ /negotiate the legitimate domains of xlist interest, and to

anchor the lists in offline academic activities and networks of interest to CHATers. This anchoring in offline academia serves an important function in establishing the reality of the virtual community on mailinglists of the scholarly variety.

On a more fine-grained level of "ethnomethods" the virtual community is built through communicative practices serving to construct a shared virtual environment with a certain character. These mediating artifacts are general discursive resources inherited from wider contexts and applied so as to create a virtual place with a local culture. Herrmann (1995ab, 1998) gives a sampler of discursive moves aimed at sustaining a neighbourly culture in the xlist community: acts of naming the community, forms of civil language use, the collective resolution of conflicts. These practices, and others like them, are what serve to hold the cultural environment of the xlist community together. The texts produced through these practices contain many of the features characteristically found in found in interactive messages but not in reactive or noninteractive ones (Rafaeli & Sudweeks, 1996), in that they contain references to self by the use of first-person singular, references to the collective by the use of first-person plural, expressions of agreement (and polite disagreement) and attempted employment of humour.

The subject of the academic network that is constituted through the community building activity system of the xlists is thus a person with an interest in keeping up with the developments in the field of sociocultural, cultural-historical and activity theory. The subject of xlist community building activity is also a person with with a measure of commitment to the shared virtual environment. As observed by Strate (1996) the social ties in a virtual community are a function of patience, growth, and continuity, i.e. behaviour patterns over time, rather than a matter of spatial proximity. On the other hand the presence of a large proportion of silent participants (lurkers) is a regular feature of successful mailinglists (McElhearn, 1996; Rojo, 1995), and the xlists are no exception. The function of silent participation would seem to be somewhat contradictory. The silent participant obviously does not contribute actively to the building of community, and so might threaten the mutual trust in the community. It has been suggested that in MUDs the treatment of lurking as a marked category shows that the community ideal is active participation (Marvin, 1995). However, silent participation on a mailinglist (with its more asynchronic character) may also be construed as civil listening: a patiently present potential resource.

The rules of this activity system are the social rules of the xlist virtual commons. These rules are mostly informal, derived from the fact that xlist participants in general are already socialized into Greater Academia - they know how to behave within the institutional cultures of their affiliations. Another source for informal social rules pertaining specifically to suitable behaviour in the CMC environment is the general Netiquette that has evolved since the inception of electronic networking, some of which was incorporated

in the Xfamily Welcome Message (1991). In one case, however, the social rules of the xlists have been formalized by being inscribed into the automatic subscription routine since September 1995. You do not gain access to the list as a subscriber simply by sending a subscription request to the listserver. Instead there is a two-step routine with a certain gate-keeping function: In order to be put on the subscriber list you have to submit a selfdescription, which is posted as your first contribution to the list.

The community of practitioners of the activity system of the xlist academic network consists of international scholars with CHAT leanings, at any step in their career from graduate student to full professor, from an assortment of academic disciplines, and also from careers in domains of CHAT application outside Academia. The external stakeholders for the xlists considered as a virtual academic community would be on the one hand the affiliated institutions of the xlist members and on the other hand other, potentially competing, scholarly networks - the communities of other academic activity systems where members of the xlist community spend some of their time.

The division of labour in the activity system of online networking is, in terms of academic information, mainly a situation-based configuration of participants requesting and receiving some particular information and other participants offering and providing this information. In principle any participant will have some resource to offer the community, and correspondingly some use for the information resources offered by the community. In practice the division of labour may be more uneven, as, for example, some contributors of information are in official positions of responsibility for the information they are offering or requesting while others merely aid the propagation of informational material authorized by other sources.

In terms of the social aspect of academic community building - the maintenance of a candid collaborative culture - there would be a corresponding situation-based division between participants offering and receiving support. This, however, does not necessarily have to be formulated as an exchange. It might be more fruitful to regard it as voluntary contributions to the community: "taking the time to be friendly" and thereby contributing to the building of the virtual commons and preparing the virtual soil for a multiloguing Zone of Proximal development.

There is also a division of labour between xlist newcomers and xlist oldtimers that could be empirically studied - list experience seems to have an interesting dialectic with academic position as it may both overlap and stand in opposition to it. Nevertheless the general division of labour between contributors in the xlist academic network is based on egalitarian principles: any subscriber may launch their products for xlist consumption.

- ***Production*** of an online academic community cogent in CHAT and related theories.

- **Distribution** of relevant information resources and community building competences.

Competences and resources are heterogeneously distributed in a variety of ways.

- **Exchange** of academic information and trust-inspiring communicative acts.

Information exchange would tend towards a seller-buyer asymmetry, while the maintenance of social cohesion would tend towards the symmetry of an exchange of gifts.

- **Consumption** of renewable academic information and social support, limited person time and bounded network time.

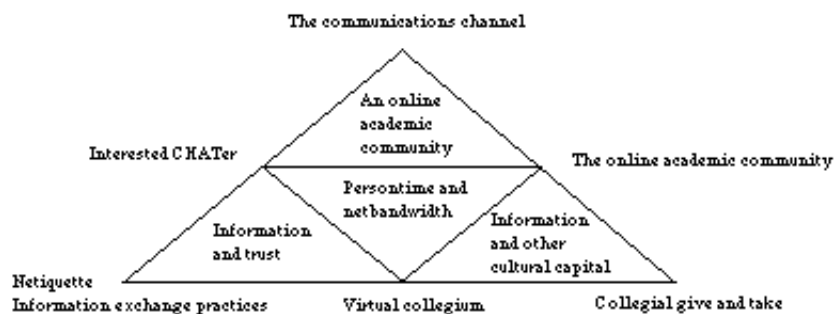


Fig. 7. Production, distribution, exchange and consumption in the xlist activity system of community building

Activity motivated by the concerns of academic community building leaves at least two types of traces in the textweb. It appears as presentational message content serving purposes of academic networking, and it appears as orientational (Lemke, 1998) message features serving the purposes of discursive community building (Herrmann 1995ab, 1998). While the former type is characteristically concentrated to a limited part of the mailflow where it constitutes the bulk of the messages concerned, the second type is an abundantly occurring feature framing all but the most formalized message genres (like conference announcements) and weaving together the virtual environment.

The activity system of academic community building contains its own learning demands. A newcomer to the xlists can presumably be regarded as going through an apprenticeship into the xlist community of practice, learning while participating. Advice concerning Netiquette for electronic discussion fora is currently available all over the World Wide Web, and according to these documents it is common sense to "lurk before you leap". So being an xlist consumer before being an xlist producer may be an important stage in entering the activity of community building: a way of learning who is who, and what is discussed in what ways to what effect. Presumably the

characteristics of the xlist culture has also developed through the years - exactly how remains to study.

Now, a well-oiled distribution channel and a collegial community oriented towards candid collaboration in exchange of academic information is not all there is to be had on the xlists. There is also the layer of online productive work in the system of multilogue, which is the layer in focus of the research that this paper is a part of.

The multithematic abductive multilogue is the leading activity of the whole system-of-systems. It should naturally be observed that xlist discussions, although always polyphonic, go through phases of varying intensity and varying productivity. To my intuition multilogue constitutes the bulk of the xlist textweb [6](#), although this may depend on some active orientational alertness from the reader, much like a reader who is concentrated on a newspaper article more or less disregards the surrounding advertisements, although their bulk may in places be greater. In the context of discussing participants' complaints about irrelevant content in electronic fora Rojo (1995) notes that the practices of "filtering" information in more traditional media have been automated so that users are not conscious of them, while this may not yet be the case in CMC.

Knowledge transformation. The xlist system of online multilogue.

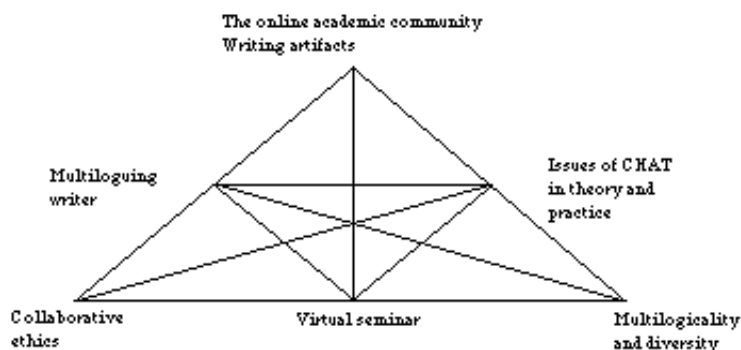


Fig. 8. The xlist activity system of multilogue

The common object of the online multilogue will be some aspect of some issue that is pertinent to the CHAT community. Engestr m (1998) explains, using his own preparation of a speech for ISCRAT II as his illustration, how the outcome of individual and collective toil with ideal matter [7](#) consists of new intellectual tools and patterns of collaboration. Thus the lasting motive of the activity system of multilogue is the transformation of understandings (individual as well as collective) of the theoretical perspectives of Cultural-Historical psychology and Activity Theory and their applications in research and practice.

What will, more concretely, be the object of online multilogue varies from episode to episode in the mailinglist local history. Indeed, the activity system of multilogue may itself be regarded as a transient phenomenon recurrently emerging from the foundations laid by the two previously discussed activity systems, and from the dynamics of multilogical progression from one topic to another. It is, in this sense - by being transient, recurrently emerging and distributed over the network of the system - the component of the xlist system-of-systems that is most obviously virtual in nature.

Characterized in this way as virtual, the online multilogue as a concrete activity system must be delimited with regard to the emergence of a specific shared object of the multilogical activity. The objects of multilogue generally fall in the category as relations between concrete phenomena and their applicable theoretical concepts. In the form that these objects of multilogue appear on the xlists they may appear closer to one or the other of the two poles of theory and practice, and they may be objects of contention just as well as objects of agreement. Any combination is possible. There have been quiet periods without multilogical, knowledge-transforming activity in the xlist history, but there have also been times when more than one multilogical activity was going on in parallel on the different sub-lists. The concrete boundaries of this activity system are thus far from always clear - it is rather a topic of research to study reasonable ways of making delimitations. The emergence of a shared multilogical object is, in general, a matter of the internal self-organizing dynamics of the xlist system-of-systems (Syverson, 1994). There have, on the other hand, been occasions of more intentionally planned online knowledge production in different forms. [8](#)

The mediating artifacts in this activity system include the communications channel and the academic community produced in the preceding two activity systems, without which no knowledge production in candid collaboration between electronically connected colleagues could take place. They also include all the artifacts of writing that come to use in the productive elaboration of CHAT ideas, from the keyboard-and screen mediated communicative and auto-communicative actions of an individual contributor unraveling a stretch of reasoning by means of the semiotic feedback loops between the writer and her unfolding text, to the textual genres employed in multilogical communication and the wide field of literatures that may be taken recourse to for multilogical purposes.

The written works in several fields of literature (activity theory, cross-cultural psychology, situated cognition, cognitive anthropology, educational and developmental psychology, critical theory, feminism...) provide important conceptual tools for the xlist multilogue. Often these literatures also provide the initial material for an emergent object of discussion, although in other moments the sources of multilogical material are in ongoing research or everyday experience of participants, reaching the xlist textweb through other mediational means than through already-printed scholarly publications. The textual genres serving as mediating artifacts in this activity system range from debate over discussion and reflection to the poetically innovative. The pace of interaction offered by the electronic medium and put to use by the community has a tendency to transform old genres and produce new ones (Agre, 1995; Shank, 1993).

The subject of the multilogical activity system is the xlist member as a learner, and a text-

mediated producer of ideas, that are shared in their half-baked textual form with the xlist community. The productive nature of activity in this system makes it appropriate to describe the acting subject as a person acting in the Zone of Proximal Development, which indicates a multifaceted participation in the developmental multilogue of the collective (Wells, 1996), where the learner is simultaneously a teacher, and the builder simultaneously unravels old structures (Engestr m, 1996).

This definition of the subject of xlist multilogue again positions the silent participant as an analytically problematic category. The lurker to the multilogue can hardly be a teacher, but does he qualify as a learner? The archived textweb does not reveal much about who among the non-contributing subscribers actually follow and engage with a given multilogue. Silently active participation is only visible in later contributions that contain self-confessions of lurking, or that refer cogently to past discussion. There is fairly ample evidence of this kind, but it probably under-represents the shades of silent participation in any given episode. However, although problematic for the researcher, the silently participating subject would not seem to be a problem for the activity system of multilogue. Silent participation is rather a condition for the smooth functioning of the system - always there as a potential resource but also-always not yet competing for the bandwidth. Nevertheless, for analytical purposes it seems most reasonable to regard subjects who participate in the multilogue read-only as external to the multilogical activity system, as they rather participate in the fashion of subscribers-to-the-newsletter, i.e. in the mode of participation belonging to the activity system of academic networking.

The rules of the xlist multilogue are informal and open-ended. To the extent that they appear in written form they have the character of good advice, like that given in the old Welcome message, or suggestions in the recurring self-reflective discussions on the lists. In its concluding paragraphs the Welcome message explicitly encourages negotiation of rules:

THE CONVENTION OF LAST RESORT:

All conventions can be changed at the will of participants. (xfamily, 1991)

Notably the XORGAN list has been a periodic channel dedicated to rule negotiations of various kinds. Metacommunication about list rules has been taken as a potential threat to fruitful discussion both by researchers (Lewenstein, 1995) and in Net lore (Nagel, 1994): when contributors start discussing who has the right to post what in which way, this runs the dual risks of turning into a flame war and crowding out all other topics. However, on the xlists where the scholarly community has an explicit professional interest in communication, these self-reflective moments stand a good chance of being productive in the development of multilogical culture. Many rules and forms of multilogical organization suggested by participants have also been temporarily applied in episodes where the xlist community was oriented towards more cumulative forms of discussion. However, it is not obvious to what extent they have left lasting traces in the xlist culture. The norm of tolerance for "halfbaked" ideas is one aspect of the rules for xlist multilogue that is frequently brought into the textflow. Another feature is the orientation towards trying to distinguish between misunderstandings and disagreements.

The community of practitioners of the xlist activity system of online multilogue is a community of learners (Rogoff, 1994), attending a virtual seminar where in principle everybody, independently of how long they have been subscribers to the xlist or of their position in the academic system at large, may have something to contribute and something to gain from participating. This principle of openness results in a practice where, on the one hand, participants from grad students to full professors may indeed contribute and be heard. On the other hand, through the years there has been a relatively small and slowly changing core of frequent multilogue contributors. The observation has been made by Syverson (1994) that the posting frequency of mailinglist participants can be described by a power law. This seems to be a fairly general mailinglist phenomenon: within a given period of time a few subscribers post a very large number of messages, a somewhat larger cluster post a moderate number of messages each, and about half of the contributors only post a single message (Rojo, 1995; Rafaeli & Sudweeks, 1997).

The ambiguity of lurkers has already been indicated. In the system of multilogue it seems warranted not to include lurkers in the community, but to regard them as external stakeholders to the activity system of a particular multilogue. In relation to a particular multilogue, those participants who read it but never write a contribution could be categorized as subscribers to the local community newsletter. They are acting as community members of the electronic network but not of the emerging multilogue.

The division of labour in the online multilogue is situational, flexible and in principle egalitarian in terms of who performs what kind of discursive acts when and in what manner. On the other hand the community is international and its members come from a variety of disciplines and traditions within these, which makes for heterogeneities in competence, shifting divisions of labour in accordance with the current object of multilogue. So in the particular episodes contributors are positioned in different relations within the ZoPed, contributing different types of questions, anchoring their contributions in different readings of different literatures. Engestr m (1998), who is concerned with the theoretical advancement of Activity Theory in a historical period of challenges, spotlights the disciplinary compartmentalization and the fragmentation originating in divisions between nations and traditions as one of the urgent contradictions in his activity system of Activity Theory. In the context of the activity system of xlist multilogue the same diversity seems to play a different and more generative role. However, the productivity of the xlist multilogue is characteristically divergent, rather than converging on agreed conclusions. The xlist multilogue is a transformation of diversity into diversity rather than of diversity into conformity, and it is very possible that this is a characteristic of electronic multiloguing in general. Lewenstein (1995) argues that in spite of great expectations for CMC as a medium for advancement of scientific knowledge, the channel is not actually used in this way. His results point rather towards an educational, autodidactic function of electronic discussions as fora for "qualified amateurs". The drifting tendencies of online multilogues may make them splendid virtual environments for individual learning and development, but less efficient if what we expect is convergence on conclusions to the issues under debate. However, the case may also be made that there is a certain fractal self-similarity between the way that ideas develop in an online multilogical activity system, and the slower and more complexly branched network of systems where the concepts of tomorrow are made.

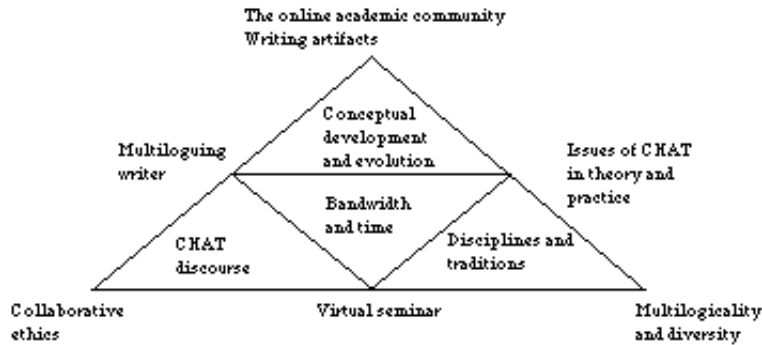


Fig. 9. Production, distribution, exchange and consumption in the xlist activity system of multilogue

- **Production** of transformed ideas, transformed subjects and transformed participation
- **Distribution** of resources, experience and theoretical positions
- **Exchange** of ideas and their contexts
- **Consumption** of renewable cognitive and emotional resources, limited person time and bounded network time.

RELATIONS OF INTERWEAVING AND TENSION

The preceding sections present an analysis of the xlist activity into three cascading activity systems. Each of the three activity systems has its specific motive in the grappling with a specific object, which is actually in all cases an object consisting in relations, distributed in time and space. Each of the activity systems places somewhat different demands on its subjects, and the community of practitioners in each system is composed in a somewhat different way. On the other hand they share the same communications channel, and form the same virtual space, which makes for a characteristically tangled textweb as their sedimented product. Jones (1997) argues for mailinglist research that utilizes the sedimented textual products of a virtual community for the study of the Net archaeologist. In this analytical unravelling the three activity systems that I have described will be a productive tool for reconstruction of the living system-of-systems that has left the textual traces.

Traces in the textweb

While the three cascading activity systems are analytically discernable as activities with different motives and different structures, in the archived textweb they are usually tightly interwoven. A message with its main content belonging in any one of the activity systems may or must contain features serving functions in the other systems. Even technical messages are, on the xlists, often enriched with community building flourishes, and the communications technology regularly appears as a relevant object in multilogues reflecting on it as a mediational means and a tool for education

The hierarchical character of the layering of the systems with the communications channel as the basis of the system-of-systems and the community building system as a supporting layer for the multilogues gains some corroboration from the observation that while it is possible to send and receive messages belonging entirely, in all their features, to the activity system of communications technology, messages with their main content produced within the other two activity systems at least bear the obligatory traces of the technology as their "envelopes" (introductory headers). Further, while it is not out of the ordinary for messages publishing academic information to be devoid of any multilogical feature (by being monological and addressing a general public, not just the xlist community), a contribution to multilogue would seem to canonically bear traces of the civil, trust-inspiring features of xlist community building discursive acts. Before this hunch is established as a truth, negative cases must naturally be sought for and examined. This paper, however, is not the place for doing so. An analysis of how traces of the three cascading activity systems are woven together in an actual multilogical message will serve here as an illustration of the positive case.

The message in question is one of the last contributions to a conflicted multilogue extending across two weeks in time, and braided together out of three different strands with (as usual) somewhat complicated interrelations. In being spun by a plurality of more than thirty contributors, and by seriously grappling with issues of meaning, this xlist episode presents an authentic example of multilogue. In taking both the communicative practices on the XLCHC and the potential hazards of the electronic communications channel as topical, this particular multilogue strikingly binds the three layers of the system-of-systems tightly together. The episode had started with an alarming issue of political threat to the independence of the sciences and then branched into one strand discussing new media (CMC in particular) in their potential as new spaces for either democracy or political control, and another strand concerning implications of gendered language, both to some extent still framed by their relation to the original topic.

As in the course of the multilogue there had been a fair amount of discord, with attributions and confessions of emotional reactions, occurring both in the initial sequence on McCarthyism and in the gender strand, there had also been a measure of corresponding metadiscussion about list communicative practices and their psychology. Chosen [10](#) for the somewhat arbitrary reason of being both short and available with full header information on my hard disk at a crucial time of writing, this message yet serves well to illustrate the interwoven character of a multilogical message, both in terms of interweavings between activities and in terms of multilogical interweaving between messages.

From @VTVM2.CC.VT.EDU:PO61170@DHHUNI4.BITNET
Thu Nov 21 14:10 PST 1991

Thu, 21 Nov 91 17:07:26 EST 4178;
 Thu, 21 Nov 91 22:56:13 CET
 From: PO61170%DHHUNI4.bitnet@VTVM2.CC.VT.EDU
 To: xlchc@ucsd.edu
 Date: 91-11-21 22:57:14 MEZ

XLCHC-Subject: Language, rules of conduct, politics...

I found the exchanges in the last two days very rich in thoughts and rememberings of futures that seemed already lost. Somehow the whole stream of notes showed that it is possible to flame on the net, but also be gradually better understood through distancing.

And, as regards the prospects, or affordances of the technical means, I agree with Joe Glick's exegesis of activity theory. If we look back to the last great wave of change in media (printed books in Europe a couple of hundred years ago) this indeed made possible the modern democracies and dictatorships alike. (See Michael Giesecke's recent volume, published by Suhrkamp).

The historical look back is not without dangers, though. Somewhere in Heinrich Mann's "Henri Quatre" there is the sentence: "Looking back also prolongs the travel that we will have to go through".

On the other hand, there are nice means to find in history, as Gary Shank has hinted at: There was once a culture of letter writing. It seems that it would be a nice project to do a collective remembering (hey you Brits! why the silence?) on the art of letter writing. No?

Arne Raeithel
 Dpt. of Psychology
 U of Hamburg, Germany.

First, the essentially multilogical message is framed by parts serving main functions of communications technology and community building.

As always, the beginning of the message consists of header information presenting traces of the transport of the message through the communications channel. In this case it describes a path from the sender's BITNET account at a German university via a specified Internet gateway to the UCSD mailserver and its reflector list of XLCHC subscribers. At different stages of the route, time information has been attached to the message, tracing its propagation. This part of the message does not only serve to inform the receiver about the history of the message. It has also taken part in the performance of the actual technical work of getting the message from its source to its multiple destinations in one piece. A selection of the information in the header, depending on how the header information is handled by the mailing system of the individual user, also serves at the multiple destinations as a "bid for the floor", a phatic signal to open the communications channel from sender to receiver and also frame the channel as connecting specifically to the xlist virtual space and time. ¹¹ The beginning of this specific message also contains a "home-made" subject line, which was at the time a strategy recommended on the xlists for users whose home systems did not provide an automatic slot for this part of the message envelope. So, this line serves both as a part of the phatic opening signal and as a civil gesture to the community.

The end of the message is demarcated in a similar way, by a sign-off presenting name and

professional affiliation of the sender, thus anchoring the message in off-line academic networks and doing its part in maintaining the academic community. In contrast to the header information which contains mandatory parts, provided or forced by the communications technology, it is entirely possible to send messages without a signature part. It is not at all unusual to find un-signed messages in the archive. However, the practice of non-anonymity is well established among the rules of xlist community building, even if it has been re-negotiated many times. There is considerable variation in the actual methods of complying, from simply signing a message on a first-name basis, to elaborate automatized signature files containing contact information for multiple channels: visiting address, paper mail address, telephone and fax.

Then, between the framing traces of communications technology and academic community building the message is essentially a contribution to the ongoing multilogue. Even so, it is shuttled through by fibres of community building and channel maintenance. So, for example, the parenthetical interjection in the last paragraph - "(hey you Brits! why the silence?)" - is simultaneously a move in the multilogue and a phatic signal for testing the channel. As a multilogical move it aims to pull a specific group of colleagues into the projected continuation of the multilogue: this specificity of "you Brits" is not made explicit, but hinted at by the appropriation of a formulation of one of their central research concerns - "collective remembering" - in the sentence where the parenthesis is embedded. As a phatic signal the parenthesis serves the function of checking whether a particular branch of the channel is open. Its formulation, mimicking in its first part a shout - the "hey you" and exclamation mark - and in its second part positing an absence of contributions as "silence," evokes the image of an aside to the main presentation, shouted down the empty shaft to Britain. The interpretation of this aside as bearing on potential channel trouble (as opposed to defection from the community) is borne out through subsequent channel maintenance exchanges occurring in the following weeks, concerning intermittent malfunctioning of the London gateway. The silence of the Brits was at least partly due to obstructions of the channel.

The features of community building discourse are even more intertwined with the means for participation in the multilogue. Expressions of agreement with named contributors are tied to past and future elaboration of the shared object of this multilogue. The community is invoked by being named -in the customized header line declaring the topic to be an "XLCHC-Subject" - and referred to in first-person plural - "If we look back..." Opinions are brought forth as items taken personal responsibility for - "I found the exchanges..." - and the opinions of others are explicitly invited: the "No?" following the suggestion of how to continue the multilogue. Conflicts in previous exchanges are framed as opportunities for development. The contribution is also anchored in the practices of off-line Academia by referring to the printed sources of a fact - the historical impact of print media - and a quote from a historical novel. However, the informality of the rules of the multilogical community is maintained, as the references are less detailed than conventional citations.

Finally, the interweavings of multilogicality. The subject line of the message - "Language, rules of conduct, politics..." - announces it as a contribution to the ongoing multilogue by recombining elements from the preceding stream: "Language" has been a recurring key element in subject lines of the gender strand, the discords of the gender strand have made the list "rules of conduct" an object of discussion, although the specific phrase has not been used. And the strand on McCarthyism has contained many explicit references to "politics" in message bodies, carrying over to the discussion of CMC and surveillance.

The body of the message offers, in its first paragraph, a reflective evaluation of the multilogical events of the recent past as "rich in thoughts" and as leading through conflict to better understanding. In its second paragraph it offers support for an earlier contribution. This message suggested that e-mail may be seen as a structured "space" which in a Gibsonian sense affords, but does not determine what can happen within it. It also suggested that the electronic space is large and complex enough that happenings in it are likely to escape control from the state apparatus even if it is attempted. To this Arne Raeithel adds historical evidence from the history of printed books, which "indeed made possible the modern democracies and dictatorships alike." Then the third paragraph offers a countersuggestive warning about history as a troublesome mediator of the future, which again is turned around in the fourth and last paragraph as a suggestion to bring some recollections from the history of letter writing into the multilogue (again drawing on an idea from a previous message).

Taken out of its context this message is far from transparent - which illustrates the extent of interconnection in xlist multilogue. Particularly the last part, which connects to the gender strand of the multilogue, but does so through layers of mediation without any explicit reference to gender, is distinctly written to be read in the context of the last two weeks or so - "the whole stream of notes" - as framed through some of the most recent contributions - "the exchanges in the last two days." These recent contributions, especially the two messages that are explicitly referred to, are presumably what warrants the framing of conflicted and potentially disruptive communication (flaming) as an opportunity for development - being "gradually better understood through distancing." The invocation of flaming is, in this context, one of the features that serve as mediating links to the gender strand. The parallel strand on the potentially endangered democracy of computer mediated communication cannot be said to have contained the kind of perilous disagreement between contributors that constitutes flaming. And the flaming that took place in the initial episode over McCarthyism cannot be said to have been resolved into better understanding. Rather than resolved, this issue of contention was first dissolved into a minor break of two silent days in the mailflow and then diverted by the emergence of the two successor strands. Contextually the flaming that did reach a certain kind of resolution in the two previous days, was the flaming over gendered language. In this way the explicit linking to the gender strand in the subject line is implicitly woven into the first paragraph of the message.

The linking to the gender strand is taken up again in the last paragraph, in a way which is opaque when the message is presented out of context, but quite transparent in the context of the mailstream unfolding in November 1991, as it explicitly refers to a message from the previous day, which has provided a sensitive unravelling of the bewilderments of the sequence on gendered language. This message fits the description of promoting understanding through distancing, as it has managed to present the conflict both from the perspective of the participating women and from the perspective of the participating men. However, the actual content of the multilogue on gendered language is not the focal object of Arne Raeithel's message. The gender strand rather serves as the material for a meta-discussion of how to assist the emergence of multilogical culture - "rules of conduct" for interactions where participants and issues get "better understood" - in computer mediated communication. So the focal object of this short but complex message is the past and future development of genres of technically mediated communication.

The movement of the line of reasoning in this multilogical contribution starts from a reflection over recent list events. It connects them to non-deterministically framed issues of the future -

"rememberings of futures" and "prospects" - particularly the future of computer mediated communication is invoked. It concludes with a suggestion of historically available resources - "There was once a culture of letter writing" - which could be taken up as a future resource. This movement in the present towards the future by way of the cultural and historical past is the movement of prolepsis (Cole, 1996), and the phrase "rememberings of futures" is another interwoven pointer towards prolepsis, as it echoes the title of a Cole paper on this subject (foreshadowing the 1996 book). This proleptic paper had its momentary presence in the mailstream of the week before Raeithel's message by being responded to in a singleton message - a contribution apparently unconnected to the current multilogue except for this poetic echo, but, on the other hand, construable as an early or late contribution to another recurring xlist theme.

The third paragraph, with its caution that history does not reveal any shortcuts, but makes the road to the future in some sense longer, is another expression of the proleptic movement. The quote from Heinrich Mann with its ambiguous balancing between an optimistic and a pessimistic reading is one that the author of this message has also used on other occasions. Notably it was the title of his own retrospective commentary to his 1988 paper on *The Symbolic Production of Social Coherence*, when it was published in the first issue of the journal *Mind, Culture, and Activity*, in 1994 as the target paper of a symposium - this time in a slightly different and more optimistic translation:

The look back into history prolongs the stretches of travel still lying before us

So the gist of the quote seems to be that bringing history into the present, enables our learning from history, which is, on the other hand a very difficult process of learning. Without learning from history, however, we run the even greater risks of having a much shorter future, indeed. This way it is motivated to bring the quote into the xlist meta-discussion of 1991, as a springboard for a suggested move forward in the development of list culture.

The example above shows the complexly interwoven character of the three activity systems of a scholarly mailinglist like the xlist cluster. However, the acknowledgement of complexity is also the first step towards a justifiable discernment of the multilogical layer as the locus of the type of learning and development of greatest educational interest. It prepares for an analysis that is not primarily aimed at showing the complexity of interconnections between layers of activity but rather oriented towards following the development of core objects of joint attention. This in its turn would be a step towards establishing more precisely to what extent the enthusiasm of xlist participants concerning the forum as a learning environment. is justified, and in what sense the xlist multilogue is a developmental discourse.

Joys and problems of the xlists

The main purpose of this paper is to present the model of three cascading activity systems and suggest it as a useful instrument for the analysis of archived mailinglist discourse. In this concluding section some suggestions are made for interesting paths for continued research into the xlists as a virtual space for a community of learners. When it comes to an analysis of the positive

features of the learning environment, the function of the activity systems model is primarily an instrument for integration of various aspects. When it comes to more problematic aspects of the functioning of a scholarly mailing list the activity systems model serves well to localize spots of trouble, as it allows an analysis of contradictions on a systemic level.

The joys of learning and development

In addition to the multilogical development of core objects of CHAT there are a variety of features in the archived xlist texts that demonstrate the dynamics of the forum as a learning environment. All of these modes of change can be analysed from their traces in the textweb, and their integration ensured through the use of the cascading activity systems model.

First, participants occasionally give testimonials about their appreciation of the richness of the discussions: how they find the xlist conversations enjoyable and learn a lot from them. Meta-discussions of the medium and specifically the organization of the xlist discussions typically stress the rights for everybody to express their opinions and the responsibilities of everybody as learners. The basic assumption is that knowledge about the matters under discussion is always heterogeneously distributed between participants: anyone can contribute to the development of shared understandings. Another feature of the multilogical discourse that indicates the learning intentions of xlist contributors is the abundant use of language that display's the writer's efforts to understand and to negotiate understandings with others. Naturally there are also confident and provocative statements, and sharp disagreements, but tentative discourse is more characteristic: people acknowledge their confusions, and their wrestling with difficult texts. They often invoke personal experience, put forth half-baked ideas for the evaluation of others, and ask if they have expressed themselves in ways that make sense to others. These discursive features reinforce the character of the forum as a learning environment. The features seem to be partly an emergent effect of the multidisciplinary and international nature of the community: a shared language can never be taken for granted. There has also been much conscious community building work to create and maintain these collaborative and egalitarian discursive practices.

Then, apart from the discursive traces of learning and development within individual messages, the dynamics of the mailflow with its waxings and wanings, its more and less dense interconnections between messages provides a picture of where to find the celebrations of multilogue (although an intensive mailflow may also be the result of events of conflict, like the flame war over the Gulf War in 1991 (Syverson, 1994)). Among the core concepts of CHAT, many have been the focal objects of more than one round of multilogue. Signs and tools as mediating artifacts make up one such theme, the dialectic between internalization and externalization another. The Vygotskian Zone of Proximal Development, notions of contextuality and historicity in learning and development, as well as psychological units of analysis - Leont'ev's system of activity, action and operation - are other recurring topics. It is thus possible, and an interesting topic of research, to follow the multilogues around such an object over the years.

Problems of technology, participation, and cumulativity

Although the xlists serve their community of participants well as a channel for communication, academic networking and multilogue, the activity by no means runs without difficulty. In a complicated and distributed activity system like this virtual place there will be many inherent contradictions between nodes of one subsystem or between subsystems. Here I will only take up three of these system-internal tensions and point to some of their characteristics in terms of the model of three nested activity systems.

First, there is the obvious contradiction embedded in the fact that one of the crucial tools, the communications channel itself, is shared between three systems with different motives and thus different criteria for what is a relevant message. Irrelevant information is one of the features that contribute to subscribers leaving an electronic forum (Rojo, 1995), and from the perspective of the multilogue with its constant struggle to keep a shared object in the focus of collective attention, messages dealing with the activity of channel maintenance appear as an intrusion. At the same time the open line produced in the activity of channel maintenance is absolutely necessary for the multilogical activity. This is a general contradiction, pertaining to all electronic mailing lists. In other types of CMC it is often easier to keep the activities separate. However, these may not be as accessible for internationally distributed users, many of whom by economic necessity operate far behind the front line of technology. Developers of listserver software do their best to neutralize the channel conflict by minimizing the intrusion of technicalities into the actual list traffic.

However, as the Internet is more than anything still a conglomerate of several generations of technology, while the mass of potential users still are relatively unfamiliar with the new information technologies there will for a long time yet be more than the absolutely necessary minimum of messages related mainly to the communications technology floating through the main channel of an internationally distributed mailinglist. People simply make mistakes with the technology. Incompatibilities between different parts of the technology also result in channel disturbances incomprehensible to inexperienced users. In many circuits of the Net, there is a great deal of active intolerance towards these events. Inept handling of the technology provokes derogatory comments sent public-to-the-group which may escalate into an episode of flaming that blocks most other communication in the forum (McElhearn, 1996). The inherent tension between technological affordances and community building and multilogical activities snaps into open conflict. On the xlists, however, there are established practices of tolerance, linked to the informal rules of community building. It is recognized that newcomers have a right to learn to handle the technology in the course of their participation and it is recognized that even old hands may make mistakes. Thus, to the extent that misdirected or distorted messages are alluded to later in the mailflow it is usually done in constructive terms, explaining how to avoid common mistakes, or amending possible damages to communicative relations. There is also an established tradition of sorting these problems out in less public channels, without public prompting. The continued existence of this contradiction between several activities sharing one resource is not unique to the xlists, but its patient resolution in this forum - by the xfamily crew and through voluntary work by list veterans - is one of the model features of this virtual environment.

Second, as already noted, the presence of silent participants may be problematic in several respects. In the sense that many subscribers seldom if ever contribute postings they do not contribute to the production of collective goods on the virtual commons (Smith, 1992; Kollock & Smith, 1994). From the perspective of community building activity, lurkers by watching the activities without offering themselves up for observation may reduce the level of trust in the

community. This would seem to be a more sensitive issue on the xlists with their high proportion of multilogical activity in the mailflow than in the electronic fora studied by Rojo (1995), where most users participated mainly in the "fishing for information" mode, while relatively fewer users were involved in the more interactive modes of "enjoying the debate" or "social networking".

Through the long and well archived existence of the xlist cluster it provides an interesting object for the study of list participation dynamics. The role of lurkers on the xlists needs to be examined, as it is contradictory construed in many ways: as problematic or as non-problematic, and as problematic for diametrically opposite reasons. The presence of non-posting readers on the xlists has occasionally been seen as troublesome, both from the perspective of community trust and as a potential dead-weight in the system. On the other hand, in meta-discussions on the xlist multilogues, there has also been worries of the opposite kind: might there among the silent participants be an alarmingly great number of silenced voices, are there people out there with things to contribute, who are too intimidated by the discourse to dare post their share? Then, discussions on the lists have repeatedly suggested that lurking is not necessarily negative. For one thing, the academic information distributed through this activity system may legitimately be read as a kind of local community newspaper - the newsletter analogy appears, for example, in the Xfamily Welcome Message - where responses from the readership within the same medium are optional to exceptional. There is a logic to this, as the information offered in the activity system where academic community is built basically refers to activities in other, related, activity systems, and the canonical response to an item of information may be the active participation in one of the list-related, offline activity systems. However, the presence of lurkers does seem to introduce a contradiction in the multilogical activity system: a split of the community into performers and audience and a corresponding mismatch in construal of the activity. The performers act within a collaborative activity. Prevalent discursive practices manifestly provide openings for others to enter the stage. The audience of lurkers, however, act within an activity of consumption - keeping up with developments, enjoying the show. On the other hand, with reference to the power law phenomena emerging in the interactive dynamics of mailing lists it could be argued that unevenly distributed rates of contribution is an inevitable logistic outcome.

A third difficulty that has received some attention on the xlists over the years is the predictably unpredictable nature of electronic multilogue. The discussions rarely if ever lead to convergence on shared conclusions, and there is no obvious cumulativeness in the system. Again, the archived textweb contains many examples of how this problem has been described and assessed as problematic by contributors to the forum. There have also been both collective and individual efforts to organize circumstances for more focused discussions and to improve collective memory. These forms of archival evidence - testimonials from participants and traces of forms of organization - can be usefully complemented by data describing the participation dynamic in combination with longitudinal analysis of some of the core concepts of CHAT recurrently taken as the shared object of multilogue. Altogether, a Cyber-archaeology of the xlists, undertaken with the model of three nested activity systems as a guide, promises to throw light on many interesting questions concerning the development of virtual environments for communities of learners.

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xfamily 1991. Welcome document. (posted on the xlists for the first time 91-09-23)

Endnotes

1 The Mðrta Mæes-Fjetterstrøm tapestry workshop was located on Norra Smedjegatan, opposite the Catholic church. Coming up on Brunkebergsgäsen from the direction of T-Centralen I crossed

Brunkebergstorg and went through the buildings on that side of the long narrow block to get to the back door of my destination. I have no name for the company running the computer. [Back](#)

2 Observing that in contemporary history of ideas "development" has been posed in opposition to "learning" in the same way as "nature" to "nurture", and finding the most reasonable current treatment in the complex interweaving proposed by Cole (1996) I would love to see a new word corresponding to this description. In its absence I have settled for using the two as somewhat of an idiomatic phrase: "learning and development". [Back](#)

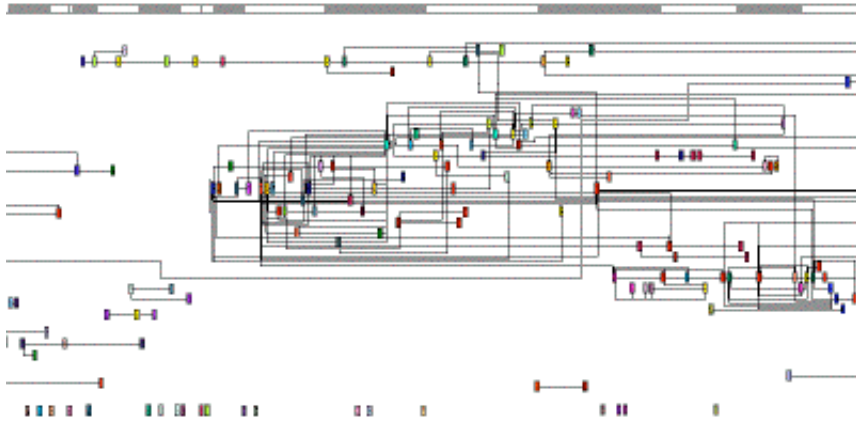
3 In comparison with popular usenet newsgroups, mailing lists for exchange of practical information, and presumably other categories as well, this is not heavy traffic. However, among scholarly mailinglists of comparable subscriber population size the xlists are a very active, dynamically balanced forum in the terminology of Rojo (1995). Excavations in the xlist archives produce ethnographic and ethnomethodological findings indicating that this perception of dense activity is shared by the subscriber community. [Back](#)

* A long message written by Kort about virtual community in cybernetworks and educational uses of virtual reality was forwarded over the XCLASS in November 1992, and also recycled through the systems once or twice later. [Back](#)

4 There will be additional rules governing the work of the xfamily staff, which could, indeed be analysed as an activity system in its own right. For current purposes, however, this system is blackboxed and treated only insofar as it intersects the xlist communications technology system. [Back](#)

5 This observation of the importance and invisibility of the channel maintenance work carried out by the xfamily crew is founded both upon my observations on location in San Diego, my own transactions with the them over my four years of subscription, and traces inadvertently striking through into the archived material. [Back](#)

6 The fact that messages with a discussion content rarely enter the mailflow as isolates (i.e. messages neither responding to a previous message nor receiving later responses) may be a hint towards a more grounded analysis of the primacy of multilogue. Message interconnectivity has been highlighted as an important feature of successful mailinglists (Rafaeli & Sudweeks, 1996). An analysis of the interconnection patterns between 257 messages posted on the XMCA in one specific month found three categories of messages that were potential isolates. These categories of messages, which by definition do not enter the mailstream in response to an earlier message, and which not always are responded to are: A) obvious "technical mistakes" (like short local messages unintentionally broadcast to the list) B) unsolicited messages distributing public information and C) selfdescriptions of new participants. All messages with a multilogical content were either associated to an earlier message or received responses in their turn or they both responded and received responses.

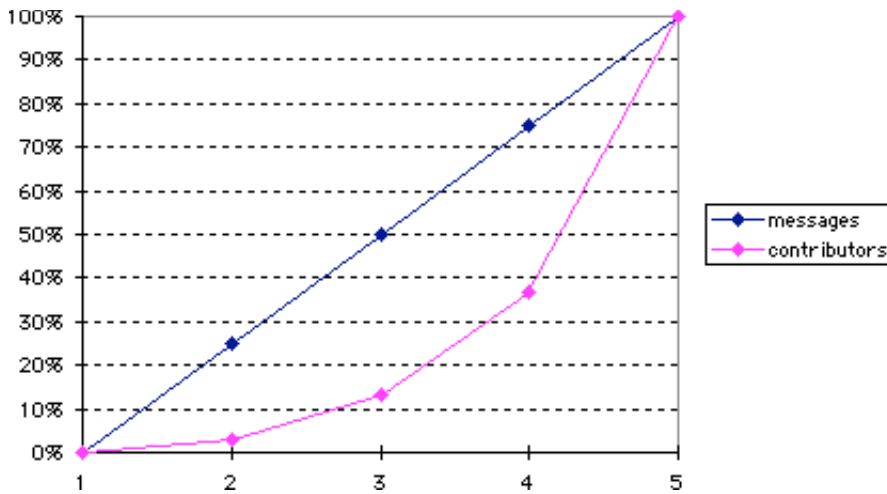


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7 In Engestr m's case this object of intellectual labour is rightly defined as the central issues of Activity Theory. In the case of the xlists these are only a subset of what has constituted the shared object of multilogue through the years. [Back](#)

8 The xpractice list that was run in the first half of 1995 with the purpose of preparing a chapter for the Handbook of Early Childhood Development has probably been the most formalized event of this kind, but I am also referring to other efforts at institutional structuring of the xlists: coordination of literacy courses, exchange of lab reports, having moderators/ /facilitators for sublists, etc. [Back](#)

9 There are 87 months with 30 contributors or more in the xlist archives 1988-1997, all exhibiting this pattern. Looking at it in terms of their average share of the total message production, the first quarter of the message harvest has been produced by 3% of the contributors, the next quarter by another 10% of the contributors, the third quarter of the message harvest by another 24% of the contributors, with the final quarter produced by the remaining 63% of the contributors. The graph shows cumulative frequencies.



Moreover, the small group of heavy contributors usually contains mostly longtime listmembers. This impression is corroborated by the fact that the three most prolific posters in a particular quarter appear as active contributors in, on an average, 23,5 quarters (close to 6 years) of the 10-year database. This measure, however, does not take account of the local specificity in time, as it counts presence both before and after the given quarter. Looking at how much of the past for a specific quarter that its three most prolific posters have been present in the system (assuming unbroken presence from their first archived contribution) we find that they have on an average been "there" for 59% of the timespan. [Back](#)

10 Another reason for choosing a message by Arne Raeithel for this analysis is that although he can no longer be asked for permission to quote, his postings on the xlists through the years give ample evidence that he was of the conviction that information wants to be free. The following quote is only one of the examples:

- One who writes on e-mail should be aware that he gives birth to a text that is like an own child - has its own will and direction
 - Is it really so bad to be quoted with something that one does not hold anymore ?
 (Arne Raeithel; Quotes, Loops, minimal and maximal rounds; 90-08-29)

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11 This function, however, is, or used to be, a common source of glitches in the communication, because the heterogeneous array of mailing systems involved in many cases failed to provide crucial information, like the name and address of the sender. [Back](#)

Eva Ekeblad 1998

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