

Interdisciplinarity and Infrastructure

Mediation and Knotworking in Communication Research

KNUT LUNDBY

Abstract

In the Nordic region the field of media and communication research has appeared fairly coherent despite the underlying broad interdisciplinarity. The reasons can partly be found in the support of biennial regional conferences, national research associations, and the Nordicom documentation centre. A similar relationship between interdisciplinarity and infrastructure can be studied at the single university performing research in this area. The case is the author's home base at the University of Oslo. Units and networks of media and communication research are analyzed as 'activity systems'. To what extent can the concepts of 'mediation' and 'knotworking' in 'activity theory' be useful in analyses of interdisciplinarity and infrastructure of media and communication research? How would this apply on a European level?

Key Words: communication research, media studies, Nordic, activity systems, mediation, knotworking

Introduction: The Importance of Shared Objects¹

Communication research has to develop infrastructure under the pressure of evolving interdisciplinarity in order to cope with changes and demands of society. I will discuss this with media studies in the Nordic countries as the case.² Media and communication research in the Nordic countries goes back approximately 50 years (Vroons 2005).

In order to handle the relationship between interdisciplinarity and infrastructure, the participants in the research field have to develop shared objects. Drawing on 'activity theory', I argue that these necessary collective structures could be developed in processes of mediation and 'knotworking'. The concepts will be introduced below, but first some remarks on *levels* of infrastructure and interdisciplinarity.

Shared objects are prerequisites on the local as well as on the global level. 'Local' here means the single research institute or centre making up the basic organisational unit of communication research. 'Global' means the infrastructure these research units relate to above university or national level. In Denmark, Finland, Iceland, Norway and Sweden there is a working 'Nordic' community within media and communication studies, through which these researchers may approach the rest of Europe and the wider world.

Nordic Co-operation

Besides Denmark, Finland, Iceland, Norway and Sweden, the Nordic region consists of the three autonomous territories; the Faroe Islands, Greenland (both part of the kingdom of Denmark) and Åland (part of the republic of Finland). The three last have a certain self-governance, symbolised in their own flags, as have the Sámi indigenous people in the north of Finland, Sweden and Norway. The Nordic region, with an aggregate population of about 24 million, has strong common historical and cultural bonds. However, a deep and committed political co-operation across all five countries has never materialized. Today, Denmark, Finland and Sweden are members of the European Union while Iceland and Norway are not, although integrated into the European Economic Area (EEA) as well as into the EU programmes on research and higher education.

There is regular political consultation and co-operation infrastructure between Nordic ministers and parliamentarians.³ The Nordic Council was formed in 1952, consisting of members of the national parliaments. The Nordic Council of Ministers, established in 1971, is the forum for Nordic governmental co-operation. Following the collapse of the Soviet Union, the Baltic countries, and especially Estonia, have been able to trace their Nordic roots; hence, the Nordic Council of Ministers now includes the Baltic area as well as Northwest Russia in the concept of the Nordic, as 'adjacent areas.' As does the Nordic Research Board⁴ within the Nordic Research Area.

Although with limited powers, the Nordic Council of Ministers has been instrumental in the development of a joint Nordic research community on media and communication.

Co-operation between Nordic communication scholars developed because of the proximity between the countries. People in the three Scandinavian countries, Denmark, Norway and Sweden, fairly easily understand each other. Although Finnish has other language roots than the remaining countries, most Finns have some knowledge of Swedish and most Icelanders know some Danish. Hence, 'Nordic languages' may work for communication within the region. However, these days English is taking over as a common language of communication in this research area.

After some 20 years of individual exchange and contacts, a Nordic community of media and communication research was formally established in the mid 1970s. The first Nordic conference for researchers in this area was held in 1973. Two years later Nordicom was established. This Nordic documentation and information centre for media and communication research is a co-operation between the Nordic Council of Ministers and the five governments. Nordicom is a network organization and has been abstracting all Nordic media research since 1975.

From 'Mass Communication' to 'Media and Communication'

For the first three decades of the emerging Nordic research community, 'mass communication' was the key term for the field. The new field mainly grew out of the emerging social sciences, particularly political science and sociology. From the outset, media studies within the humanities were not particularly visible. The same applies to social-psychological research. This implies that there were communication scholars left out in the emerging Nordic community of media researchers. For example, in Norway, Ragnar Rommetveit's internationally acclaimed work on social-psychological aspects of communication and mediation (Rommetveit 1974; Wertsch 2003) was not discussed and documented in this context.

Nevertheless, the academic and intellectual base of the new field expanded. When the former Institute of Press Research at the University of Oslo merged with a new initiative for humanistic media studies, to form the interdisciplinary Department of Media and Communication in 1987, Professor Rommetveit was on the committee to select the humanities chair for the new media studies department. Rommetveit's work was also cited with acclamation by the senior social scientist of the same department, Svennik Høyer (1989), in his book on small talks and big media. Further, Rommetveit (1991) was invited to be the first writer in a celebratory volume to demonstrate the breath of the new department (Rønning and Lundby 1991).

This single chapter, 'On epistemic responsibility in human communication', is the only work by Ragnar Rommetveit referenced in the Nordicom database, and Nordic media and communication research still does not delve deeply into this psychological area of communication studies.

However, the field grew and became more interdisciplinary. Terms to characterize the field changed as well. In 1989, when this Nordic research community was in the process of substituting 'mass communication' with 'media and communication' or 'media studies', there was a count of how many scholarly traditions were feeding into this still-growing field: 29 different disciplines were found represented within the said departments at the universities in Denmark, Finland, Iceland, Norway and Sweden.⁵

Coherence Despite Interdisciplinarity

In the Nordic region this field of study and research has appeared fairly coherent, despite the underlying broad interdisciplinarity. The reasons are partly to be found in the support by three distinct aspects of a joint Nordic infrastructure. All three help to shape and share a common object, namely 'Nordic media and communication research.'

First, there is the biennial media researchers' conference, rotating between the countries since the first in Oslo in 1973. A large portion of the Nordic media researchers, seniors and young scholars alike, attends these conferences. They help build a 'community of practice' (Wenger 1998).

Second, the national associations of media and communication research are acting as national sub-communities, taking their share of work with the biennial Nordic conferences. The Finnish were first. They established their association, TOY⁶, in 1974. The Danish colleagues created SMID⁷ in 1975. The Swedes came up with FSMK⁸ and the Norwegians with NML⁹, both in 1977, to mention the associations by their acronyms.

Third, there is NORDICOM, the Nordic Information Centre for Media and Communication Research.¹⁰ Nordicom has national documentation centres attached to universities in all five countries as well as a Nordic main office. Nordicom has the status of a formal 'Nordic institution' under the auspices of Nordic Council of Ministers, and, in addition, a link to the ministry of culture in each of the countries. Besides public funding, Nordicom is financed through payment for services, and revenue from sales.

Abstracting all media and communication research by Nordic scholars since 1975, the Nordicom publication base, by 2006, contains some 39,000 references. There are databases on institutions as well as on media researchers and projects in the Nordic countries. To date, they report on 300 media research institutions in the Nordic region and have 900 media researchers, with 700 ongoing or recently finished projects. Nordicom publishes a journal in Scandinavian languages, primarily for internal communication within the research community, and also publishes several book series, in English and in Nordic

languages, and the international renowned journal *Nordicom Review*. Nordicom presents statistics on media consumption and ownership for the whole of the Nordic region, made available and analyzed in the series *Nordic Media Trends*. Finally, Nordicom runs the International Clearinghouse on Children, Youth and Media at the request of UNESCO.

Such a coherent infrastructure of services and functions works inwards as well as outwards. It helps the research community to ‘remember’ and operate on common standards. It also make it possible to ‘speak’ to the rest of the world with a ‘Nordic’ voice in these matters, and to map out the Nordic media landscape within a coherent frame, as done by Helge Østbye (2001) for Norway and Lennart Weibull (2001) for Sweden in a Nordicom report on *Media Trends*. Nordicom outlined its role on its website (2005):

Nordicom has the character of a hub of Nordic cooperation in media research.

Making Nordic research in the field of mass communication and media studies known to colleagues and others outside the region, and weaving and supporting networks of collaboration between the Nordic research communities and colleagues abroad are two prime facets of the Nordicom work.

Nordicom’s activities are based on a broad and extensive network of contacts and collaboration with members of the research community, media companies, politicians, regulators, teachers, librarians, and so forth, around the world.

Nordicom gives the Nordic countries a common voice in European and international networks and institutions that inform media and cultural policy. At the same time, Nordicom keeps Nordic users abreast of developments in the sector outside the region, particularly developments in the European Union and the Council of Europe.

Nordicom’s work aims at developing media studies and at helping to ensure that research results are made visible in the treatment of media issues at different levels in both the public and private sector.

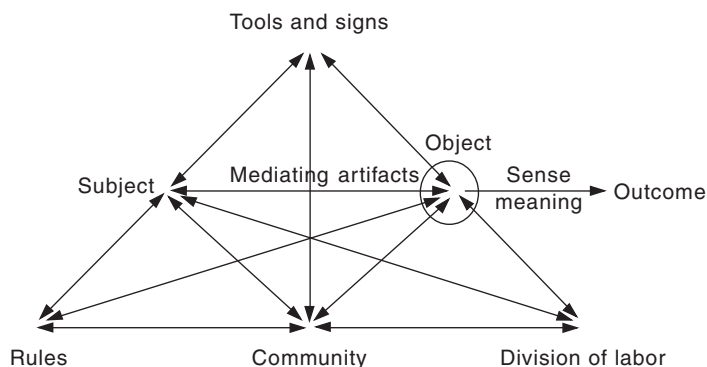
This tripod infrastructure, with the conferences, national associations and the documentation and information service, gives Nordic media and communication research a solid footing to handle the diversity in its field, as well as academic relations with the wider world.

Interdisciplinarity and Infrastructure

Communication studies, even under the more limited term of ‘media and communication’ studies, are interdisciplinary: it is a field of research, not a discipline and in this field several disciplines meet and merge. The various disciplinary roots of media and communication studies can be traced; however, although they partly mix, and communication scholars from different backgrounds learn from each other, it does not make a new discipline. Such interdisciplinary university or research units occur in other fields as well. Here the discussion is related to the field of communication studies.

The kinds of infrastructure I look for within this field are the elements and links that keep the said interdisciplinary area of research together. These structures coincide with those outlined in general by Yrjö Engeström (1987) as the minimum elements of an ‘activity system’: the common or shared object, the subjects taking part, the mediating artefacts (signs and tools) applied, the rules, the community, and the division of labour. These elements have been put into an activity system, as shown in Figure 1.

Figure 1. The Activity System Triangle: The Structure of a Human Activity System, from Engeström (1987:78; also in 2001:135)



How could the field of communication studies be analysed as activity systems?

I will use my own trajectory through the interdisciplinarity and infrastructure of three different generations of communication research units at the University of Oslo as empirical cases for this discussion on the ‘local’ level. Commenting briefly on the national level, I will then return to the ‘global’ level of Nordic communication research. Before I embark on this analysis I will briefly introduce the relevant aspects of activity theory.

Activity Theory

‘Activity theory’ was developed by Russian socio-cultural oriented psychologists from the 1920’s and onwards (Kaptelinin and Nardi 2006). It was initiated by Lev Vygotsky (1978) and further structured by Alexei Leont’ev (1978; 1981). Since the mid 1980’s, activity theory research has gained broad international attention and is ‘transcending its own origins’ (Engeström 1999:19–20; Engeström 2001:134; Engeström and Miettinen 1999:1–2). The recent explication of activity theory has a Nordic stronghold at the Center for Activity Theory and Developmental Work Research, University of Helsinki, Finland. Yrjö Engeström is their main interpreter of contemporary activity theory, primarily into work environments.

Engeström (2001) distinguishes three generations of activity theory research. The first generation centred around Vygotsky and his idea of ‘mediation’. Vygotsky created the basic model behind Figure 1 above. Parallel to the overthrowing of simple stimulus-response models in communication research, Vygotsky (1978:40) introduced ‘a complex mediated act’ between stimulus and response. Vygotsky’s idea of cultural mediation is commonly expressed as the triad of subject, object, and mediating artefact, Engeström holds. In the second generation, Leont’ev (1981:210-3) took activity theory research beyond the individual focus of the first generation, explicating the difference between individual action and collective activity. Mediation by other humans and through social relations was included (Engeström and Miettinen 1999:4). However, Leont’ev did not expand Vygotsky’s original triangle into a model of a collective activity system, as depicted by Engeström in Figure 1 above.

The third generation of activity theory needs to develop conceptual tools to understand networks of interacting activity systems, Engeström (2001:135-7) maintains. Interacting activity-systems should be understood as the prime unit of analysis. They

should be interpreted through mediation by artefacts and their object orientation. Further, interacting activity systems should be understood through their history, and by how contradictions and structural tensions foster change and development within and between activity systems. An activity system is always a meeting place for multiple points of view, traditions and interests. This ‘multivoicedness’ (cf. Wertsch 1991) multiplies in networks of interacting activity systems. It is a source of trouble as well as a source of innovation, reminds Engeström. There are always possibilities of ‘expansive transformations’ in activity systems. This is accomplished “when the object and motive of the activity are reconceptualized to embrace a radically wider horizon of possibilities than in the previous mode of activity”, Engeström (2001:137) writes.

These principles or dimensions of complex, contemporary activity systems fit the interdisciplinary infrastructure of communication research to be analyzed here, with vertical relations between systems on ‘local’ versus ‘global’ level as well as horizontal interaction on each level. However, before embarking on this analysis, some key concepts of activity theory have to be explicated.

Shared Objects

Activity system analysis must be oriented towards the object of activity. This is a moving target, Engeström (2001:135-7) holds. The object existing as ‘raw material’ in one activity system may become a ‘collectively meaningful object’ when this activity system merges and interacts with another one. The outcome may be a shared or ‘jointly constructed’ object. The object of one activity system is, from the outset, a common object within that system. When two or more activity systems interact they may shape a shared object.

A shared object is a prerequisite for intersubjective exchange and collaboration. Interdisciplinarity could not succeed unless there is a shared object for the scientific activity. The infrastructure must support the cultivation of a shared object. If not, the intended interdisciplinary project may fail. The shared object gives a common focus or identity within a department, institute or centre. In a network on a ‘global’ level, the shared object may be a joint understanding of what the networking is about, as in the concept of a ‘Nordic media and communication research’. A shared object has to be constantly cultivated in the ongoing interaction between the various related activity systems.

Mediation of Media Studies

The cultivation of the shared object takes place in the mediation processes of the activity systems. Engeström and Miettinen (1999:13) regard the idea of mediation as the ‘germ cell’ of the activity approach. The key dimensions of activity systems are gathered in the idea of mediation (Engeström 1999).

The concept of mediation is used in media studies as well. Jesús Martín-Barbero (1993) proposed the conceptual move from the ‘media’ to processes of ‘mediation’ within contexts of culture and hegemony. John B. Thompson (1995) focused on symbolic forms in modernity and their modes of production and circulation, as they are transformed in mediation processes. Recently, Nick Couldry (2003) has contributed to mediation analyses of ‘media rituals’ in society and Roger Silverstone (2005) outlined “The Sociology of Mediation and Communication”, to mention a few works.

In this paper I stick to the concept of mediation as formulated by Vygotsky and his followers, mainly as interpreted and presented by Engeström.¹¹ Activity theory looks for

the mediating artefacts, for the 'tools' and 'signs' that are applied. Tools and signs are cultural artefacts (Wertsch 1985). Symbolic and material artefacts make up means of mediation in activity systems.

Interdisciplinary practice in scientific communities, related to shared objects, requires active mediation within as well as outside the said field. Mediation makes communication possible and keeps an activity system – or interacting activity systems – together.

'Knotworking' in Activity Systems

However, there are work organizations 'when the center does not hold' (Engeström *et al.* 1999). These are the fluid and flexible work practices of 'co-configuration'. Then 'knotworking' becomes important, Engeström and his colleagues (1999) state.

Traditionally, university departments have relied on continued figuration of practices. However, even universities have, today, partly to adapt to the conditions of co-configuration. Courses are configured and customized continuously to adapt to students' and society's demands in a more market-driven system. Research, more and more, is undertaken in complex project structures with larger groups of researchers, where configurations change from project to project, and may be run simultaneously. Such co-configuration is more prevalent in research units heavily dependent on external funding. Hence, public funded universities will not be as affected as private funded research labs.

Co-configuration in research is not happening as rapidly as in customer-related business simply because research takes longer. However, the structural tendencies are the same. Easy access to re-configurations in research partnership via the Internet has accelerated this development in the academic world. "We refer to work that requires active construction of constantly changing combinations of people and artifacts over lengthy trajectories of time and widely distributed in space" (Engeström *et al.* 1999:345). This is close to the object-oriented practices Karin Knorr Cetina (1999) describes in 'epistemic communities': laboratories of high-energy physics or molecular biology, which could be used as a model for knowledge organization.

In co-configuration the actors perform 'knotworking'. "The notion of knot refers to a rapidly pulsating, distributed and partially improvised orchestration of collaborative performance between otherwise loosely connected actors and activity systems", Engeström *et al.* write. Knotworking, then, is characterized "by a pulsating movement of tying, untying and retying together otherwise separate threads of activity". Knotworking could be individually-based as well as collectively-based (Engeström *et al.* 1999:346-7). I am concentrating on the second, the collective, perspective.

Experiences from the University of Oslo

The concepts are now set up for an empirical analysis. As noted, I will use my own experience from three different units of communication research at the University of Oslo, Norway, as 'data' for the analysis on the 'local' level, before connecting to the 'global' Nordic level. Local cases may have greater significance and validity:

According to activity theory, any local activity resorts to some historically formed mediating artifacts, cultural resources that are common to the society at large. Networks between activity systems provide for movement of artifacts. These resources can be combined, used, and transformed in novel ways in local

joint activity. Local, concrete activities, therefore, are simultaneously unique and general (Engeström and Miettinen 1999:8).

For each local research unit, and later for the ‘global’ network, I will look into key elements and principles of activity systems: First, *Historicity*: the historical background and location. Second, the *Subjects*: the participants or actors in the unit or network under analysis. Third, the degree of *Multivoicedness*: the interdisciplinary repertoire. Fourth, the *Rules, Community, and Division of labour*; i.e. the infrastructure of the unit/network. Fifth, the *Interacting activity systems* with collaboration and relations. Sixth, the *Shared object*: what the activity is centring on. Seventh, the *Main mediation processes*: the key processes to shape and sustain shared object. Eighth, the *Mediating artefacts*, i.e. the main tools and signs that are applied. Ninth, the *Changes and Co-configuration* with the main contradictions and structural tensions. Tenth, the *Knotworking*: the handling of fluidity and demands for flexibility. Finally, the *Expansive transformations*: the re-conceptualizations of possibilities.

A full account of all of these dimensions is not possible within the frames set here. However, the following briefly sketch the development of (media and) communication studies at my university:

The Institute of Press Research

Historicity: The Institute of Press Research was established within the University of Oslo in the mid-1950s on the initiative of press and governmental bodies. The institute did not offer its own courses in mass communication until mid-1980s, and then only at undergraduate level.

Subjects: The Institute had a core group of a few senior scholars plus some project funded researchers. A few students did research at graduate level in the institute. Undergraduate students, however, were not really integrated into the main activity system of the institute.

Multivoicedness: The graduate students had to submit their theses either in political science or sociology. The senior researchers all had such a background. Hence, the interdisciplinary repertoire was not wide. In addition, the research was mainly quantitative.

Rules, community, division of labour: The Institute had to abide by the rules of the host university, since 1963 within a new Faculty of Social Sciences. The Institute made a small working community of its own, with a rather informal and project-driven division of labour.

Interacting activity systems: The initial close interaction with the press organizations weakened over the years, as the Institute became more integrated into the university. Government research grants opened up interaction with ministries as well as with the state Telecom.

Shared object: The shared but changing object throughout the Institute’s thirty years of existence was that of research projects and findings on production, organization and consumption of media in Norway; initially about the press, but later on, other media as they evolved.

Main mediation processes: The collection of data and the quantitative and interpretive analysis, as well as the writing, presentation and discussion of research results. Informal mediation behind these processes took place round the table in the middle of the office space.

Mediating artefacts: Type written, xeroxed reports, yearly since the 1970s, based on data punched into stacks of cards and run on the university's mainframe computer. There were hardly any non-centralized computing facilities available.

Knotworking: The Institute had no need for knotworking, although the externally funded research projects required attention to the task-givers. However, they were mostly governmental, and the projects were long-term.

Changes and co-configuration: Changes in the media scene from the 1950s to the 1980s required changed research strategies. However, demands within the university for more interdisciplinary media studies put even more heavy pressure for re- and co-configuration.

Expansive transformations: The Institute resisted strategies from the university leadership to cross the line from a fairly narrow social scientific approach to co-operation with the humanities. The re-conceptualizations of possibilities or expansion of scientific categories were forced upon it.

The Department of Media and Communication

Historicity: The new Department of Media and Communication was put in place by the leadership of the University of Oslo in 1987 as part of a strategic move to cater more broadly for the media developments in society, and to bring the Faculty of Arts into this loop.

Subjects: The new unit doubled the number of staff compared to the former Institute, as professors from the humanities were brought in alongside the social scientists, and it continued to grow. Students became a defined part of the department, also at graduate level.

Multivoicedness: The new department is by definition interdisciplinary. The new staff brings competences from literature, film and media history. The selected students added a variety of experiences and backgrounds to the department.

Rules, community, division of labour: The department was initially organized under the Faculty of Social Sciences as well as the Faculty of Arts, a complicated regime that had to end. However, internally the staff built one community, without divisions.

Interacting activity systems: The media department in Oslo built relations with similar new units in Bergen and Trondheim. In research collaboration, the Oslo department chose to work in extensive programmes with universities in Southern Africa and the Baltic states.

Shared object: The shared object of the interdisciplinary Department of Media and Communication became the teaching of students in a new or expanded field, with adjacent research explorations of this field. Media Studies became a regular university programme.

Main mediation processes: New teaching programmes became a main mode of mediation, further formalized under the national 'Quality Reform' from 2003. The Baltic and African co-operations, as well as larger Research Council projects, mediated research in new ways.

Mediating artefacts: The department explored the World Wide Web from its inception and, early on, got used to computerized and networked mediation. A departmental video library and multimedia lab facilities were made available to professors as well as to students.

Changes and co-configuration: The new department avoided in-fights, but continuously met new challenges in a changing media environment and from a growing number of graduate students. The department was located in a Research Park adjacent to the university campus.

Knotworking: An emerging tendency towards knotworking came with the growing electronic network opportunities. However, the department was not really under pressure to knotwork until a recent squeeze on funding created demands for project flexibility and acquisition.

Expansive transformations: The said Quality Reform re-conceptualized possibilities as the department had to take on more students. Re-organization within the Faculty into larger units put pressure on the media department to extend collaboration in order to keep a critical mass.

The Interdisciplinary Centre: InterMedia

Historicity: While the Department continued its course, I was asked to establish InterMedia, at the University of Oslo, from 1998. This centre came to define itself as part of communication research in terms of ‘design, communication and learning in digital environments.’

Subjects: Through InterMedia, the University of Oslo wanted to make a research hub, linking up applied research into ICT and digital media in almost all faculties throughout the university. The centre grew to some 20 researchers by 2005, among them post-graduate fellows.

Multivoicedness: InterMedia was established to move further into interdisciplinarity in this area. The centre relates to education sciences, informatics and research on computers, and law, as well as media studies and other disciplines of the social sciences and humanities.

Rules, community, division of labour: As a centre in-between faculties and departments, InterMedia had to play by the rules of balancing acts. Teaching and disciplinary research should be done in those units, while, at the same time, InterMedia built a research community of its own.

Interacting activity systems: InterMedia, then, got a range of interfaces with other activity systems. The centre was also expected to build relations and project collaboration with external partners as well, on behalf of the university. It takes part in several EU projects.

Shared object: The shared object in this case became collaborative: more complex research projects with hands-on lab-work related to ‘new media’ and ‘net-based learning’, as a kind of brand. The shared object is the mode of operation as much as the content area of the research.

Main mediation processes: This centre mediates through the handling of the complex research projects; mediating between the partners in their various roles. InterMedia also gives priority to mediation of research education through a range of supportive structures.

Mediating artefacts: InterMedia’s facilities in the new ‘Media House’ of the Research Park, next to the University of Oslo, are themselves artifacts for the mediation processes that the centre performs. They include InterMediaLab, with well-developed networked solutions.

Changes and co-configuration: The tensions between strong and established faculties on the one side and new innovative cross-structures on the other will constantly be

a challenge for a centre- and project-based organization like InterMedia, especially in terms of funding.

Knotworking: InterMedia is using knotworking in most of the projects it is involved with. Still, this research centre is not a fully fluid organization that uses knotworking all the time. However, the demands on flexibility, appropriation and tying, untying and retying of knots are growing.

Expansive transformations: The priority on 'enhanced' learning has given InterMedia a sufficiently strong base to be able to play a role in a European Network of Excellence in this area. This scholarly concentration, however, may to some extent contradict the intended interdisciplinarity.

The Local Units within the Global Infrastructure

The three activity systems, the Institute, the Department, and the Centre can be more closely compared on this local level. The differences very much depend on the historicity: the changes in context over time. These changing environments offer different possibilities in terms of the technological mediational means and the dramatic expansion in computer capacity and networking is obvious. However, the changes in these tools and sign-systems between the Institute, the early Department and the contemporary Centre are remarkable. Knotworking has expanded from virtually zero to a prominent characteristic during these three phases of communication research at the University of Oslo.

I will not go into a deeper comparison of these three local units. Rather, I want to discuss them in relation to a 'global', wider, infrastructure of communication research. These activity systems have also changed on national, Nordic and further international levels. I will concentrate, more systematically, on the Nordic level. First, however, I will give just a few remarks or examples on the other levels.

On the wider international scene, stable practices have been gradually replaced by co-configurations. Since about 1980, researchers at the Institute used to go, every other year, to the conference of the then International Association for Mass Communication Research (IAMCR).¹² That was all, apart from the biennial Nordic conferences. This practice lasted into the first years of the history of the Department, until the early 1990s. However, options have multiplied. The tendency towards knotworking, even in universities, encouraged by the easy interaction opportunities on the Internet, has opened new doors. The wider interdisciplinarity of the Centre offered a variety of research communities to link up with. The strong base in socio-cultural learning theory that was developed in InterMedia, led to international conferences of Activity Theory (ISCRAT) and Computer Supported Collaborative Learning (CSCL) rather than to media and communication meetings.

On the national level, the shifting local units at the University of Oslo found their counterparts at the other universities in Norway; during the years of the Institute, there was similar research going on at the University of Bergen. National links with the press organizations were also strong. The establishment of the Department became part of a further institutionalization of media studies in Norway, to be developed in co-operation and through division of labour between the many new units at universities, and in regional colleges. The Norwegian association of media researchers supported this interaction. Again, while the Department carried on these relations within the national media studies community, the Centre found a parallel interdisciplinary construction: InterMedia at the University of Oslo gained a sister in InterMedia at the University of Bergen.

Interactions with the Nordic Level

The Nordic infrastructure of media and communication research is based in the biennial Conferences, the national Associations, and the documentation and services of Nordicom. This infrastructure is in itself an activity system, although it has more of a network character. In brief keywords, following the account of the Nordic co-operation at the beginning of this paper, and related to the three kinds of local communication research units, I have analyzed:

Historicity: The Nordic co-operation was initiated in the mid 1970s during the period of early local institutions, such as the Institute of Press Research, however, was fully developed in interaction with units like the Department of Media and Communication,

Subjects: The Nordic co-operation is built on the individual researchers as well as the variety of media research institutions in the five countries. However, Nordicom adds a group of documentation and information specialists and offices, dedicated to the collective activity.

Multivoicedness: The Nordic collaboration has integrated and adjusted to the growing interdisciplinarity as well as to the gradual professionalization of the field. The Institute and the Department were both part of this; however, InterMedia went beyond the defined scope.

Rules, Community, Division of labour: The Nordic collaboration in media and communication research is built on a fine-tuned system of Conferences, Associations and Documentation with defined roles in relation to each other, in a pre-set time schedule.

Interacting activity systems: Interaction in the Nordic activity system is primarily with local and national activity systems in the same research community. However, Nordicom also takes care of interaction with academics and agencies in the wider international setting.

Shared object: The said Nordic activity system shares the object of 'Nordic media and communication research'. The Institute and the Department fully shares this object. However, InterMedia only partly shares it, as their main objects are elsewhere.

Main mediation processes: The regular Nordic Conferences, the interaction between the national Associations, and not least the Documentation done by Nordicom, are themselves the main mediation processes of the Nordic co-operation in media and communication research.

Mediating artefacts: The Conferences, Associations and Documentation set-up then work as mediating artefacts. They worked even before the advent of today's advanced electronic networked artefacts, which have, of course, made the mediation processes more effective,

Changes and Co-configuration: The hub of the Nordic co-operation, Nordicom, has been under a continuous challenge, or even threat, to adapt to changing requirements regarding funding and productivity. However, basically, the co-operation benefits from Nordic welfare state policies.

Knotworking: Nordicom has become the knotworking agency of media and communication research on a Nordic level. Nordicom has been able to offer the demanded flexibility and service and, hence, been able to stay in business. The Nordic research community relies on this.

Expansive transformations: There are challenges from neighbouring fields and communities of research, e.g. from Activity Theory as well as from mediated learning from information systems and design systems, as the role of InterMedia in communication research shows.

The three-headed Nordic infrastructure has come to be taken more or less for granted by Nordic media and communication researchers. However, the coherent infrastructure is probably a presupposition for the interdisciplinarity of Nordic research in this area. Through this infrastructure it has also been possible to move the field flexibly into new domains as set out by digital networked media. However, there are still new interfaces to consider.

Discussion

The applied dimensions of activity theory, as developed by Yrjö Engeström and his colleagues, are able to throw light on the relationship between interdisciplinarity and infrastructure in Nordic media and communication research. This goes on at local university level as well as on the overall Nordic level. However, this structuralism approach appears static and superficial as applied in the empirical analysis above.

To get hold of a richer texture of the development of communication research one has to go into the cultural aspects as well. James V. Wertsch (2002) points out a way for this kind of analysis in his book on collective remembering. Starting from Vygotsky's understanding of mediation, as does Engeström, Wertsch puts more emphasis on the cultural artefacts in mediation. He focuses on collective remembering as processes where agents use cultural tools, especially narratives. Language becomes important in this socio-cultural perspective on mediation. The resulting collective memory is 'distributed' between the active agents and the textual resources they employ.

The Nordic system of media and communication research is distributed between the active agents (researchers, institutions) and the textual resources they employ (the interdisciplinary repertoire of this scientific field as well as the resources in Nordicom). To get hold of the collective memory of this research community, one has – according to Wertsch – to get into the processes of collective remembering. One then needs to get hold of the narratives, the stories, where the tensions and tendencies of the field are played out and treated. This would, in the situation I have described, have given a much richer analysis. It would have been easier to trace processes of change.¹³ However, this would go beyond the limits of space for this paper.

I have focused on the technological tools in the mediation of media and communication research. They are important. Computers, digitalization of material and the networks of the Internet offer new options for collective remembering. However, computerized collections, like those by Nordicom, have to be shared – put to work in narratives – in order to make an active memory-base.

Interdisciplinarity in itself does not produce a collective memory in research units and networks. Nor does an existing infrastructure in itself. In such activity systems, the shared object has to be cultivated in processes of ongoing mediation and knotworking.

Conclusion

This analysis has confirmed that, in order to handle the relationship between interdisciplinarity and infrastructure in communication research, the participants in the units and networks of research have to develop shared objects. They could be developed in processes of mediation and knotworking. Such structures and processes were found in the local university units I analyzed, as well as on the overarching Nordic level.

However, such shared objects have limits, as demonstrated by the example of Rommetveit's non-inclusion in the Nordicom database.

Narratives are part of the structuring activities. I have told the story of Nordic communication research. Although I have selected the cases for analysis from my own university, many other institutions in the Nordic media and communication research field follow a similar path.

My narrative may differ from those of others who have taken part in the same history. My narrative may add to the collective remembering of this research community. However, it also challenges this community on the relations to its neighbours, beyond the accepted repertoire of interdisciplinarity.

On a European Level?

If a knotworked and mediated relationship between interdisciplinarity and infrastructure in media communication research could be sustained on a Nordic regional level, one may ask whether this could work on a European level as well. The establishment of a European Communication Research and Education Association (ECEA) is a relevant step. However, there will be a need for mediating mechanisms like Nordicom. Diversity in Europe makes it a seemingly unrealistic task to integrate all media and communication research under one hat, as in the Nordic area. Co-operation between regional infrastructures in this field of research may be more realistic. This said, the new European Networks of Excellence in selected areas of research are actually working. However, they encompass more specific areas of research than the wide 'communication' or 'media and communication' field. Further, these Networks of Excellence leave out researchers and institutions that are not defined as 'excellent'. In comparison, the said Nordic experience has been a rather democratic one.

Notes

1. I am grateful to Professor Sten Ludvigsen at InterMedia, University of Oslo. He pointed out the importance of shared objects to me. He also inspired me to look into the options of activity theory.
2. This article is based on a presentation at the First European Communication Conference in Amsterdam November 2005.
3. www.norden.org
4. www.nordforsk.org
5. See *Nordicom-Information* (1989)4.
6. www.uta.fi/tiedotustutkimus/TOY
7. www.smid.dk
8. www.jmg.gu.se/fsmk
9. www.medieforskerlaget.no
10. www.nordicom.gu.se – I am grateful to Director Ulla Carlsson of Nordicom for stimulating discussions.
11. Engeström and Miettinen (1999) raise a significant discussion in relation to how James V. Wertsch (1991) conceptualizes and approach mediation analysis in the Vygotsky tradition. However, it is not necessary to go into this debate here as they agree on tools and signs as the main mediating artefacts.
12. Now the International Association for Media and Communication Research.
13. I became aware of these options during a seminar on 'Collective memory, social remembering and narratives' at InterMedia, University of Oslo, 26–27 October 2005; especially through the comments from James V. Wertsch.

References

- Couldry, Nick (2003) *Media Rituals. A Critical Approach*. London: Routledge.
- Engeström, Yrjö (1987) *Learning by Expanding. An Activity-theoretical Approach to Developmental Research*. Helsinki: Orienta-Konsultit.
- Engeström, Yrjö (1999) 'Activity Theory and Individual and Social Transformation', in Engeström, Y. , Miettinen, R. and Punamäki, R-L. (eds.) *Perspectives on Activity Theory*. Cambridge: Cambridge University Press, pp. 19-38.
- Engeström, Yrjö (2001) 'Expansive Learning at Work: Toward an Activity Theoretical Reconceptualization', *Journal of Education and Work* 14(1):133-56.
- Engeström, Yrjö and Reijo Miettinen (1999) 'Introduction', in Engeström, Y. , Miettinen, R. and Punamäki, R-L. (eds.) *Perspectives on Activity Theory*. Cambridge: Cambridge University Press, pp. 1-16.
- Engeström, Yrjö; Ritva Engeström and Tarja Vähäaho (1999) 'When the Center Does Not Hold: The Importance of Knotworking', in Chaiklin, S., Hedegard, M. and Jensen, U. J. (eds.) *Activity Theory and Social Practice: Cultural-historical Approaches*. Aarhus: Aarhus University Press, pp. 345-74.
- Høyer, Svennik (1989) *Små samtaler og store medier: en bok om kommunikasjon mellom mennesker og med medier*. Oslo: Universitetsforlaget.
- Kaptelinin, Victor and Bonnie A. Nardi (2006) *Acting with Technology. Activity Theory and Interaction Design*. Cambridge, Mass.: The MIT Press.
- Knorr Cetina, Karin (1999) *Epistemic Cultures. How the Sciences Make Knowledge*. Cambridge, Mass.: Harvard University Press.
- Leont'ev, Alexei (1978) *Activity, Consciousness, and Personality*. Englewood Cliffs: Prentice-Hall.
- Leont'ev, Alexei (1981) *Problems of the Development of the Mind*. Moscow: Progress.
- Martín-Barbero, Jesus (1993) *Communication, Culture and Hegemony: From the Media to the Mediations*. London: Sage.
- Rommetveit, Ragnar (1974) *On Message Structure: A Framework for the Study of Language and Communication*. London: Wiley.
- Rommetveit, Ragnar (1991) 'On Epistemic Responsibility in Human Communication', in Rønning, H. and Lundby, K. (eds.) *Media and Communication. Readings in Methodology, History and Culture*. Oslo: Norwegian University Press, pp. 13-27.
- Rønning, Helge and Knut Lundby (1991) *Media and Communication. Readings in Methodology, History and Culture*. Oslo: Norwegian University Press.
- Silverstone, Roger (2005) 'The Sociology of Mediation and Communication', in Calhoun, C., Rojek, C. and Turner B. (eds.) *The Sage Handbook of Sociology*. London: Sage.
- Thompson, John B (1995) *The Media and Modernity*. Oxford: Polity Press.
- Vroons, Erik (2005) 'Communication Studies in Europe: a sketch of the situation around 1955', *Gazette* 67:495-522.
- Vygotsky, L. S (1978) *Mind in Society. The Development of Higher Psychological Processes*. Cambridge, Mass.: Harvard University Press.
- Weibull, Lennart (2001) 'The Swedish Media Landscape. Structure, Economy and Consumption', in Carlsson, U. and Harrie, E. (eds.) *Media Trends 2001 in Denmark, Finland, Iceland, Norway and Sweden. Statistics and Analyses*. Göteborg University: Nordicom.
- Wenger, Etienne (1998) *Communities of Practice: Learning, Meaning, and Identity*. Cambridge: Cambridge University Press.
- Wertsch, James V. (1985) *Vygotsky and the Social Formation of Mind*. Cambridge, Mass. and London: Harvard University Press.
- Wertsch, James V. (1991) *Voices of the Mind. A Sociocultural Approach to Mediated Action*. Cambridge, Mass.: Harvard University Press.
- Wertsch, James V. (2002) *Voices of Collective Remembering*. Cambridge: Cambridge University Press.
- Wertsch, James V. (2003) 'Ragnar Rommetveit: his work and influence'. *Mind, Culture and Activity* 10:183-275.
- Østbye, Helge (2001) 'The Norwegian Media Landscape. Structure, Economy and Consumption', in Carlsson, U. and Harrie, E. (eds.) *Media Trends 2001 in Denmark, Finland, Iceland, Norway and Sweden. Statistics and Analyses*. Göteborg University: Nordicom.

