Formalizing a Discipline: The Institutionalization of Library and Information Science Research in the Nordic Countries

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Research paper

Purpose

To analyze the social organization of LIS using the Nordic countries as example, focusing on organizational setting, research work and relations between LIS and academia as well as the field of professional practice.

Design/methodology/approach

Based on a framework for analyzing scientific fields, as well as its application on LIS, aspects relating to the impact of contextual factors on research was identified and discussed based on information from e.g. LIS institution websites. The results were discussed, not only in relation to the framework primarily utilized, but also from a less disciplinary view on research organization, for analytical contrast.

Findings

A close connection between academic affiliation and research orientation was found, reflected in organizational issues, media for communicating research and access to resources. This relates to general issues of levels of independence from other disciplines and lay groups, to what extent research is evaluated by intra-disciplinary standards and to the level of consensus on terminology and research processes.

Research limitations/implications

Limiting the study to institutions in one particular geographical area, where several

institutions being at an early stage of formalization, the possibility of reaching generalizable conclusions is limited. The strength of the conclusions is also somewhat restrained due to the nature of the empirical material, being based on web-documents with varying levels of exhaustability in terms of data provision.

Originality/value

The intellectual organization of LIS research is well known, whereas social and institutional aspects have been analyzed to a lesser degree; and with the differences in age and size of Nordic LIS institutions, they provide an interesting case of contemporary institutionalization of LIS research.

Keywords

Library and information science, Academization, Institutionalization of research fields, Organization of research fields, Science studies, Informetrics

Introduction

As part of the pursuit to define and describe Library and Information Science (LIS), empirical investigations on the intellectual development and organization of the discipline have been performed (e.g. White & Griffith, 1981; White & McCain, 1998), identifying research areas within the field. The social aspects of the organization of the discipline have been analyzed to a lesser extent. However, there seem to be some common traits among academic LIS institutions – the concept of institution being used as an umbrella term for academic departments, sub-units and schools. One is the organizational background, with many institutions originating as practice oriented professional schools, with weak – if any – connections to the wider academic system. Another aspect is a great variation in terms of academic affiliation: LIS institutions can be found with affiliations ranging from university faculties of humanities to engineering, at universities and university colleges as well as being independent schools. A recent trait is how LIS institutions to an increasing degree have started merging with related disciplines, e.g. computer science and communication studies, forming 'Information Schools' gathering fields dealing with various aspect of information related topics. Simultaneously, there is also an increased competition from other academic fields, with a growing interest in the organization and transfer of knowledge and information. All these traits are visible in the development of Nordic LIS, an academization process that is fairly recent, starting in the early 1970's and ending with full university status for LIS institutions in all four mainland Nordic countries in the late 1990's. This makes it possible to analyze the academization process of LIS in a contemporary setting.

The social development of LIS in the Nordic countries has been analyzed before. In the early 1990's, Vakkari (1996; Vakkari *et al*, 1993) studied Nordic LIS at a time when Finland was the only Nordic country with a fully developed academic research infrastructure. The analysis found a research environment with weak ties to Academia and a scattered institutional structure. Nordic LIS research has also been analyzed in a number of overviews and evaluations of Nordic LIS education, research and departments (e.g. *Evaluering*, 1999; Harbo & Pors (Eds.), 1998; Pors, 2000; *Research*, 2005), describing the development of Nordic LIS research and education during the last 15 years; and how the field has gone through a process of formalization in terms of research organizations at universities, professorial chairs and PhD programs.

The aim of this study is to analyze the formalization of an institutionalized Nordic LIS research. The organization of Nordic LIS research is discussed through four sets of questions. What are the different organizational settings Nordic LIS research has developed within, in terms of size and structure of institutions as well as sources of research funding? How are research activities communicated; and how do e.g. media of communication of research and research cooperation reflect the organization of research activities? What are the relations between the organization of LIS institutions and the wider field of academia, as well as in relation to the field of practice; and how is this reflected in terms of organizational affiliations, co-authorships and cooperation? A wider question is how the organizational features identified here relates to two contrasting theories on research organization; and how social conditions relates to the actual research being performed at the institutions being studied?

Method and material

Based on the concepts of task uncertainty – reflecting the intellectual dimension through the extent to which research outcomes can be predicted by a common use and understanding of methods, theories and terminology – and mutual dependency – reflecting the social aspect by determining how much research projects needs to be coordinated with the intellectual goals of the field to get access to resources – Whitley (2000) have developed a framework for analyzing research fields; and a typology of eight general kinds of research fields. This typology makes it possible to escape the dichotomizing view on the sciences reflected in Kuhn (1970) and his followers, making distinctions between e.g. mature and immature fields.

However, Whitley can also be criticized for building his framework on a discipline based and somewhat out-dated view on the organization of the sciences. Many aspects identified by Whitley as risks or threats, such as impact on research from other research fields and fields of professional practices, can also be seen as a natural part of the development of the sciences since 1945, as expressed in 'Mode 2' research by Gibbons *et al* (1994). According to Gibbons *et al* (1994), the organization of post-war research has developed into crossing disciplinary boundaries, towards cooperating with non-academic agencies; and into focusing more on applications oriented research.

An operationalization of Whitley's framework for analyzing LIS has been suggested by Åström (2004), identifying a set of central aspects to analyze: the definition of the field, the institutional structure, the organization of LIS research work and the communication infrastructure of the field. On the basis of these aspects, but with a primary focus on the

institutional structure and the communication infrastructure, the research questions for this article has been developed to investigate how the social and intellectual organization interacts and is expressed in different settings. To answer the questions, information on a selection of LIS institutions was synthesized from a number of sources, primarily institution websites, but also e.g. personal contacts. This information is discussed in relation to Whitley's (2000) framework; and, in the interest of analytical contrast, to the theories of Gibbons *et al* (1994) on the organization of the sciences.

LIS institutions are a widely heterogeneous group, in the Nordic countries as well as internationally, making a variety in organizational affiliation a main criterion when selecting institutions to analyze. Another criterion was the degree to which the institution had established at least some level of formalized research activities. The selection process starts with institutions being part of the Nordic Research School in Library and Information Science (NoRSLIS, 2007). NoRSLIS is an initiative to pool the resources of 15 LIS organizations in the Nordic and Baltic countries, to create a research environment – albeit a scattered one – with great levels of competence distributed in-between the participating institutions. The first step was to eliminate institutions outside the mainland Nordic countries, focusing on countries represented in the Vakkari analyses (1996; Vakkari *et al*, 1993), leaving eleven LIS institutions (Table I). Among these, five main types of institutions could be identified: independent schools, schools at university colleges, university departments or units affiliated with faculties of either social/behavioral sciences, humanities or information/information technology (also including e.g. computer sciences as well as mathematics). The first two types of faculties are more or less traditional university faculties, but the information

oriented faculties have ties to the social sciences as well as engineering (through computer sciences) and sciences (through mathematics). All these institutions are presented in an overview, but for the full analysis of the social development of academic LIS research, one institution from each category of academic affiliation was selected (marked in italics in Table I).

[Take in Table I]

The main source of empirical material was the websites, which were browsed for annual reports or other general information about the institutions, such as their history, statements on research strategies, organizational structure, employee lists and websites of faculty members; and in addition to the websites, information was also gathered from personal contacts at the institutions being studied, as well as reports from external evaluations of Nordic LIS institutions. The most in-depth analyses were performed on the publication lists of all faculty members at the five institutions, gathering information on 1,849 documents published 1990-2005. The analysis identified type of authorship; and in cases of co-authorships, the type of research cooperation. Further, the language and type of publication was also identified.

The method of data collection has both strengths and weaknesses. One of the strengths is the immediate availability and quick retrievability of the information; another is how faculty publication lists makes it possible to identify all kinds of documents published by faculty members, whereas bibliographic databases only covers a selection of document types, often in a limited amount of languages. A major problem is how some

scholars only publish a selected bibliography, focusing on prestigious publications such as international research journals, while other list all their publications; and there is also the matter of discrepancies in how often the websites are updated. Another issue is the social mobility of scholars, bringing up problems of scholars listing documents published prior to joining the current institution. There is also the matter of how publishing activities of individual faculty members can inflate the counts of a department or institution, e.g. by frequently publishing often in international journals or cooperating with scholars from other disciplines in a way atypical of the department.

However, it can also be argued that analyses made on data from traditional bibliographic databases also suffers from a lack of completeness; and although publications dates back to times before joining a particular faculty, by listing the publications at the website of the present employer, one could argue that they become part of the intellectual capital of the employing institution. Different kinds of skewedness can be found in all types of bibliometric analyses; and is cause for cautiousness in the conclusions drawn; and there are also examples in the material here where extreme outliers has made it necessary to refrain from drawing conclusions on certain issues.

An overview of Nordic LIS

Vakkari (1996; Vakkari *et al*, 1993) makes a distinction between LIS institutions being part of the university structure and separate schools with little or no affiliation to the academic system. This study, however, suggests three categories of institutions, from

autonomous schools, over schools at university colleges, to university departments; and in addition to that, a dimension of faculty affiliation for units at universities (Table II).

[Take in Table II]

The majority of the institutions are university affiliated, although most are small units, employing few researchers and PhD students, while the Royal School of Library and Information Science (RSLIS) in Denmark, and the Swedish School of Library and Information Science (SSLIS) are by far the two largest Nordic LIS institutions. Furthermore, 50% of the university based LIS institutions are located at humanities faculties. The only totally independent institution is RSLIS in Denmark, not only being independent from universities and university colleges, but also in some sense separated from the rest of Danish academia, being subordinated the Danish Ministry of Cultural Affairs instead of the Ministry of Education.

Two institutions are situated at university colleges: the department of Journalism, Library and Information Studies at Oslo University College (OUC) and the SSLIS at Borås University College. The Norwegian department originated out of the State Library and Information College founded in 1940, but there were no formal LIS research institutions in Norway until the establishment of the OUC department, together with departments in Trondheim (NUST) and Tromsø (UoT). The SSLIS originated as an independent trade school located in Borås since 1972. In the late 1980's, the Center for Library Research at the Faculty of Humanities, Gothenburg University was established, including a professorial chair and a PhD program. In 1999, the Center

transformed into the Department of Library and Information Science and was relocated to the Social Sciences Faculty. At the same time, the department also merged with the SSLIS in Borås, forming a shared unit located in Borås, thus establishing the SSLIS as a formalized academic research unit.

The largest number of institutions is found at humanities faculties. However, all being small units; and, with the exception of the UoT department, not forming departments on their own. Instead, they share institutional infrastructure with a broad range of other fields, from language studies and logopedics, via history of science and ideas, to archive studies and museology.

Social science faculties used to host the two oldest LIS research institutions: the UTA department, established in 1971; and ten years later, the Department of Information Studies at Åbo Akademi University (ÅA), both in Finland. However, the UTA department has formed a new information sciences faculty together with e.g. engineering and science oriented fields such as computer science and mathematics. At Umeå University (UmU), Sweden, the Inforsk Research Group has been performing information science research at the Department of Sociology since the 1970's, but when the masters program in LIS started in 1993, it was located at the Faculty of Humanities. However, when the professorial chair was installed in 1999 at the Sociology Department at the Faculty of Social Sciences, the masters program was transferred from the humanities faculty. Today, there are two institutions at information/information technology oriented faculties: the Department of Computer and Information Science at the Norwegian University of Science and Technology in Trondheim (NUST) being part

of the Faculty of Information Technology, Mathematics and Electrical Engineering; and the aforementioned UTA department at the Faculty of Information Sciences. In both these cases, the LIS department has formed larger units with related fields such as computer science, information systems and so on.

The Social organization of research at Nordic LIS institutions

Out of the eleven mainland Nordic LIS institutions, five were selected for closer analysis: the Royal School of Library and Information Science (RSLIS) representing independent institutions, the Swedish School of Library and Information Science at Gothenburg University/Borås University College (SSLIS) located at a university college, the Department of Information Studies at University of Tampere (UTA) as an example of an institution at an information/information technology faculty, the Department of Information Studies at Åbo Akademi (ÅA) at a social science faculty and Library and Information Science at the Department of ALM at Uppsala University (UU) representing institutions affiliated with a faculty of humanities.

Organization

Research at both RSLIS and SSLIS developed out of practice oriented library schools, forming more or less independent organizations: RSLIS as their own school and SSLIS at the University College of Borås. RSLIS was founded in 1956 and in 1985; research became one of the main activities of the school as decreed by the *Royal School of Librarianship Act* of 1985; and through allocating 20% of the total annual resources of the school to research and development activities (Harbo, 1998). However, the school did not receive full university status or was able to develop a PhD program until the late

1990's. The school is divided into three departments: Culture and Media Studies, Information Studies and Library and Information Management, together employing some 70 faculty members. Research at the RSLIS is governed by a research committee comprised of members from the three departments of the school, three external members and the school's Pro-Vice-Chancellor. The three departments are also organized in research committees; and within the departments, two to three research agendas has been formulated to provide a framework for research work at the school (Ingwersen, 2000; Vakkari *et al*, 1993).

The faculty of SSLIS is slightly smaller than RSLIS with about 50 faculty members, however; at the school there are also some 20 PhD students. There is no formal division into departments, but they state four research foci: libraries and cultural policy, knowledge organization, information sharing and information management; also being the basis for a structured list of faculty members. In addition to those, the school also hosts two research centers: Cultural Policy and Information Technology Studies as a Human Science. The establishment of SSLIS in Borås as research institution was gradual: first by connections – e.g. common faculty members – to the Center for Library Research at Gothenburg University (GU), founded in the late 1980's, then by the SSLIS and the GU-department merging. At the same time as the two institutions merged, the GU center transformed into a university department at the Faculty of Social Sciences. Although the department at the GU Faculty of Social Sciences still exists, the merger and the formation of the joint unit, has led to most of the work *de facto* being done at the SSLIS in Borås. Most workplace addresses are located in Borås and the defense of

most PhD dissertations has been held in Borås since 1999, making the connection to Gothenburg primarily a formal one (Vakkari *et al*, 1993).

Both the ÅA and the UTA departments developed within the academic system, starting of as university departments at social sciences faculties. The UTA department in Finland was founded in 1971 at the Faculty of Social Sciences, but is since 2001 part of a new Faculty of Information Sciences. Unlike the RSLIS and SSLIS, research was a priority from the start. However, the process was slow: the first professorial chair was installed in 1971 but not appointed until 1977; and the first PhD graduation was in 1983. Now, the department employs about 15 faculty members; and in addition to that: they also lists some 15 researchers/research assistants affiliated with the department. Research activities are divided into four research groups: two oriented towards information retrieval, one information management group and one focusing on information seeking. In addition to these groups, the department also states the history and nature of LIS as a research specialty. These groups does not serve as any kind of departmental structure; and several faculty members are also members of more than one research group. The structure is similar at Åbo Akademi University's LIS department, where six research areas are identified as specialties of the department. There is no formal organization inside the department, which is not surprising, considering the department having a total number of 5 faculty members and about ten listed researchers. Thus, the stated specialties are represented by few – sometimes even individual – faculty members (Vakkari *et al*, 1993).

Library and Information Science at UU originated as a masters program at the Department of Literature Studies, but moved to form the ALM department together with Archival Studies and Museology. There were some research activities from the start in 1994, but it was through a donation from the Swedish Library Association (SLA) that a PhD program was established. The LIS unit employs 6 faculty members and four PhD students. There is, however, no professorial chair in LIS at UU. There is no division of research activities into groups, units or research areas presented as specialties. However, when studying the presentation of ongoing research projects, some common themes can be discovered, such as knowledge organization; and historical and cultural studies.

As can be seen, the institutional structure and academic affiliation of the Nordic LIS institutions are widely heterogeneous, displaying a range of organizational types from large independent schools where different research orientations are organized in departments or other sub-groups, to small units at humanities faculties sharing departmental structure with other disciplines without any formalized structure in terms of research organization, as well as lacking a fully developed research infrastructure. When comparing these institutions, the organizational structure seem to have an impact on the extent of which research strategies and goals needs to be coordinated with LIS research in general: although variations in terms of research orientations is as noticeable at e.g. both RSLIS and UU, the level of coordination at the two institutions is widely varying from organizational to a personal levels. Furthermore: at mid-sized departments at social and information science faculties, coordination is retained by focusing research on a limited set of research areas.

One organizational aspect is how a larger research environment with stronger foci on particular research areas needs to formalize quality assessment to deal with the competition for recognition, e.g. through dependency on scientific criteria for evaluation, whereas small units with ties to more than one research area or even research field, it becomes easier to exercise collegiate control through personal connections rather than field related or extra-institutional criteria. This relates to the levels of coordination and 'reputational autonomy'. With a formal organization of quality assessment and criteria for collegiate control, it becomes easier to keep the power of definitions, assessment and distribution of resources an intra-disciplinary affair (Whitley, 2000). From a 'Mode 2 research'-viewpoint (Gibbons *et al*, 1994), this is not a problem: research being organized inter-disciplinary, with extra-disciplinary research funding and evaluation criteria, is a central part of Gibbons theory on the organization of research since 1945. However, how a low level of reputational autonomy and control over definitions have a strong impact on individual units can be seen at UU, where the already existing LIS unit did not become part of a later formed information science department at the Faculty of Social Sciences, including e.g. computer sciences and communication studies.

Furthermore, reputational autonomy and control over criteria for research evaluation is how research is also related to the allocation of economic resources (Whitley, 2000). In general, there are two main ways of financing research: by appointed positions financed by the institution, including time for research; or by external funds from e.g. research councils. The first kind is the most common at the RSLIS in Denmark, but less common at other departments. Almost 2/3 of the research activities at RSLIS are financed

through faculty positions (30 man years distributed on 46 authors in 2003). In addition to that, one of the main contributors of external research funds is the Ministry of Cultural Affairs Research Grants Scheme, i.e. the same government authority being responsible for the school.

The second alternative is the more common one, although with large variations as to the origin of the research funds. At the ÅA, the main part of research funds comes from the Finnish Academy – a research council – supporting research projects conducted by senior faculty members, while PhD students seek their own funds by scholarships from various organizations (Mariam Ginman, personal email communication, 2006/08/01-07). The Finnish Academy is also the largest single contributor of external funds for UTA, providing 28% of the external resources in 2002. However, the European Union and both Finnish and international companies were also contributing between 17-22% each that particular year; and with a permanent position as university teacher, 35% of the time is allocated for research (Pertti Vakkari, personal email communication, 2006/09/27). At the SSLIS, research is also largely funded externally, but from a wide variety of sources: from research councils and institutes, over private foundations and enterprises, to professional organizations. The largest effort to promote Swedish LIS research was put forth by the Swedish Library Association (SLA) in the late 1990's, donating funds for a number of professorial appointments and PhD candidate positions at Swedish LIS institutions. These funds provided the bulk of research financing at UU for a short period, but since then, research financing has been scarce, with one project funded by The Swedish Research Council, one through a private enterprise and two

through PhD candidate positions at the department (Janne Backlund, personal email communication, 2006/08/28).

With an independent institution financing a majority of research through appointments, the local organization is relatively free to set its own standards for what can be considered important research issues; whereas a central funding organization like the Finnish Research Council is financing research in all academic fields. In both cases, there is a matter of intra-disciplinary competition, although in the case of e.g. RSLIS, the competition is also intra-institutional. However, even though research applications submitted to research councils are evaluated by peers, there is also an element of competition between LIS and other research fields; and with an increase on variety of sources for external funding, authority over assessment criteria and definitions also becomes more distributed in-between the various funding agencies.

The variety of institutions, types of funding and organizational structure makes it harder for the discipline to achieve reputational autonomy and monopolizing intellectual goals and standards. This leaves LIS research issues open for competition from other disciplines as well as influence from lay groups, affecting the level of independence in relation to both other disciplines and groups of professional practice, but also the degree of co-ordination of work processes and goals (Whitley, 2000). As with the other aspects of the institutional organization, these traits of LIS can be seen as typical for the post-war development of research (Gibbons *et al*, 1994) and more or less a non-issue. However, it reflects a lack of space for LIS in the general academic infrastructure, e.g.

as seen in the lack of special assessment groups, typical for most academic research fields, at the research councils.

Research activities

The organization of research is not only reflected in institutional structures, it can also be analyzed through research output, as represented in publication data. The first aspect studied was what media was chosen for publishing research (Table III).

[Take in Table III]

The dominating way of publishing research is referee journal articles, making up a quarter of all publications over the last 15 years. This follows a trend in the social sciences in general, increasingly moving towards scientific journals for communicating research. The most active in this respect are the three largest units – RSLIS, SSLIS and UTA - whereas UU is the smallest institution and the one with the smallest relative and absolute amount of referee journal articles. On the other hand, UU is the institution with the highest percentage of book chapters. The type of publication with relatively high numbers for all institutions is conference proceedings. In some sense, these can be said to serve as a bridge between the book chapters and referee journal articles, being the broadest 'genre' of publications. Conferences is a way of presenting research common to most, if not all, fields of research; and with great variations in how proceedings are presented and how content is selected. However, at the RSLIS and SSLIS, there are also significant differences between departments. At the RSLIS department of Information Studies, 29% of its publications are found in referee journals, whereas the figures for

the two other departments are 16-17%. At the department of Culture and Media Studies the figures for book chapters are 25%, while ranging between 3-10% at the other departments. The same trend can be seen at the SSLIS, where the Libraries and Cultural Policy unit has published 24% of its research in book chapters, whereas the other units have between 7-16% of its research in that particular form.

Language is also a marker on how research is organized, and what audience or audiences the research is intended for. The differences between the institutions are relatively small, and most of them also have a 50-50 distribution between domestic and foreign language publications (Table IV). There are two outliers, the UTA department at an information/information technology faculty, with a strong tradition of publishing systems and behavior oriented research in scientific journals; and the UU department at a humanities faculty, primarily performing cultural and historical studies published in book-chapters. At the RSLIS Information Studies department, the number of foreign language publications is 61%, compared to 31-41% at the two other departments at the school.

[Take in Table IV]

Out of the total of 1,849 documents, the aggregated level of single author publications was 65%; and with the exception of UTA, ranging between 67% (RSLIS) and 89% (UU) at the institutional level. However, at UTA, the level of single author publications is only 39%. Table V presents the distribution of different kinds of co-authorships, first in terms of national-international co-authorships, then in terms of whether the co-

authorships were done at the local institution, with scholars at other LIS departments, with scholars in other academic fields or with professionals in the field of practice (Table V). The distribution between internal and external co-authorships is even more homogeneous, with a vast dominance of internal research cooperation. Some large variations, such as types of co-authorships at UU, can be explained by the small number of co-authored documents. One reason co-authorships are so common at UTA might be a tradition of professors co-authoring papers together with their PhD students; another being a relatively large and well established research institution, making it easier to establish working relations with scholars outside the school. The high number of external and international cooperation at SSLIS is to a large degree explained by extensive publishing activities of a few outliers, of which one is also listing a vast amount of documents published prior to joining the SSLIS faculty at her personal website, making it hard to draw any broader conclusions on the external cooperation at SSLIS.

[Take in Table V]

As with the types of publications, types of authorship show large variations in-between departments at RSLIS. The Information Studies department produced 2/3 of all co-authored documents; and the figures for international and external LIS co-operation are 22% (compared to 0-4% and 6-8% at the other departments). At the Culture and Media Studies department, 20% of the documents were co-authored with representatives of the field of professional practice, the only instance where the percentage is significantly higher than 10%.

In general, the selection of media for communicating research is following a stable pattern; and the same trends can be seen in terms of choice of language. The type of publication showing relatively high figures at all institutions is conference proceedings, whereas referee journal articles receive the highest percentage of the total amount of publications. However, articles in referee journals are also the publication type – together with book chapters – with the largest variation depending on institution. Documents published in foreign languages and in refereed journals are more likely to originate out of institutions focusing on mainstream LIS issues like information seeking and retrieval while humanities oriented research is predominantly published in book chapters and in the domestic language. This trend is also visible when looking at the outliers in the analysis of the institutions: while the department affiliated with an information/information technology oriented faculty primarily published its research in international peer review journals, the department located at a humanities faculty primarily published in domestic language book chapters.

The higher representation of peer review journal articles at the mid-sized to large institutions might be explained by a competition for resources relying more on formalized scientific criteria than on personal connections. More importantly, though, is how the variations are connected to differences in research orientations; and the level of development of a specialized terminology within particular sub-fields. Another aspect of these variations is the number of significant audience groups and reputational autonomy. In humanities oriented LIS research, the vocabulary is less specialized and closer to common sense language than in e.g. information retrieval and bibliometrics.

With a less specialized vocabulary, it become more difficult to reduce ambiguity in a way preferred for formalized communication systems such as referee journals; and hierarchies of audiences and publication types becomes less of an issue. Another aspect of this is how peer review processes maintain the reputational autonomy within the field; while in e.g. book publishing, there is a greater chance of book publishers without necessarily having any formal LIS competencies, exerting influence over criteria on what to publish (Whitley, 2000).

When looking into research cooperation, the institutions are following the same pattern, with the exception for UTA and UU at each end of the scale. UTA is the only institution where a minority of the publications is produced by single authors; while at UU: less than ten publications are co-authored. One reason is traditions within different research areas. However, the level of prioritizing collective efforts reflected in the number of intra-institutional co-authorships; and the levels of individual research efforts; are both related to the dependence on common research goals and mutually accepted standards for evaluation.

The Wider Academic Context

The relation between LIS and the wider academic field can be seen through a set of different aspects. One is the LIS institutions and their organizational affiliation with other disciplines; another is research cooperation visible through co-authorships. A third, more comprehensive, aspect is issues on competition and cooperation between LIS and other research fields.

In this study, three main types of institutional affiliation are identified in terms of relations to other disciplines. The first is independent institutions forming their own schools like the RSLIS, or individual departments like UoT and ÅA. The second is institutions formed with similar or adjacent fields such as computer science at NUST and, to some extent, UTA; or archival studies and museology at UU. The third type is units forming departments with other fields of research without any apparent intellectual connection: such as Finnish and Logopedics at OU or History of Science and Ideas at LU. Traces of this development could be seen for a short period at UU, where the ALM department was joined by an Aesthetics unit. The connection to wider academia is less visible in terms of co-authorships involving scholars from other disciplines.

Although the impact of import and export of ideas between LIS and other disciplines have a low visibility in the LIS literature, the institutional aspects of the wider academic context provides plenty of material for discussing competition and cooperation between fields. The forming of institutions including LIS and related disciplines such as at UTA and UU reflects, to varying degrees, the formation of Information Schools in e.g. the US, gathering various fields dealing with information related issues such as computers sciences, communication studies and so on. This is a strategy towards gathering disciplines dealing with different aspects of information and information transfer in one institutional setting, to make cooperation between e.g. information systems designers and LIS scholars, or in the UU example, gathering disciplines related to the memory institutions of society. In contrast, at UU we also see two competing definitions of Information Science: one represented by the LIS unit, one by the Department of Information Science.

This relates to how variations of intellectual goals can contribute towards making the goals and procedures of the scientific fields less influential, since the ability to maintain boundaries and distinct identities affects the degree of co-ordination of work and integration of research goals with the field as a whole (Whitley, 2000). In connection to relations between disciplines, this means that closer subject relations is associated with a higher level of co-ordination of processes and integration of goals. This contributes to it being easier for the UTA department, with a strong tradition of systems oriented IR research, to find a place in a technology oriented faculty, while the UU unit with a humanities-oriented research profile does not. This is of course, assuming the basic principle for academic research is disciplinary. If we turn to an inter-disciplinary perspective, the emphasis can be moved towards cooperation rather than competition (e.g. Gibbons *et al*, 1994).

The context of the Professional Practice

The impact of the close connection between LIS research and the professional field of practice has been discussed over the years, and is reflected in research contributions from the practice field, the practitioners being an influential audience group, an important source of research funding and also, representing one of the main research objects in LIS.

A strong connection between research and practice field is established at the SSLIS website, describing how several research projects are performed in cooperation with the field of practice. In Denmark, the Danish RSLIS and the Danish public libraries are

both subjected to the Department of Cultural Affairs. Furthermore, the same governmental organization is also one of the main contributors of external research funds for the RSLIS. In Sweden, the main professional organization, the Swedish Library Association (SLA), donated funds for both professorial chairs and PhD positions at several Swedish LIS institutions. For a number of years in the late 1990's and early 2000's, the SLA donation provided the bulk of financial resources in Swedish LIS research.

However, the connection between the LIS research and practice fields is not as reflected in the analysis of co-authorship at the Nordic LIS institutions as could be expected. The exception is the Culture and Media Studies Department at RSLIS, where 20% of the co-authored documents were written together with representatives of the practice field. UU also shows high numbers of cooperation with the practice field, but that is mainly due to the very low number of co-authored documents in total. The percentage of co-authored documents written in cooperation with the practice field for all institutions is 6% of the co-authored documents; and only 2% of all documents. The highest ranking institution in this respect is SSLIS, with 7%; and at the SSLIS Libraries and Cultural Policy unit, the figure is 10%.

The degree of independence from e.g. laity is an important factor affecting the use of language for communicating research – as well as organizing documents in databases (Åström, 2004) – and assessing the importance of research tasks; and has an impact on degrees of co-ordination of work as well as integration of tools. Influence from e.g. lay groups and everyday goals affect the selection and formulation of both the objectives of

research and conceptual approaches. The diversity of influential groups such as the inclusion of groups of professional practice is also related to a diversification of research goals; and also the strategies on how to reach those goals, reducing the chance of a theoretical integration within the field (Whitley, 2000). However, the relation to the library and information fields of practice is a significant part of defining the *raison d'être*of LIS; and the increased openness towards extra-academic influence groups and applications oriented research is an important aspect of the late 20th century organization of research as described by Gibbons *et al* (1994).

Discussion

Internationally, LIS is a field of research spanning a wide array of research areas; and the same is true for the Nordic LIS institutions. Not only do they together cover a variety of research areas and orientations, but there are also big differences in the organization of the different units. These differences include e.g. academic affiliation, size and structure of the internal organization. But is there a connection between organization and research orientation?

The connection between faculty affiliation and research topics at the university based LIS institutions is apparent. At UU, research is primarily oriented towards the humanities; and there are also several projects closely related to other disciplines. The Finnish departments are closer to mainstream LIS research (Åström, 2007; White & McCain, 1998), e.g. with strong IR and information seeking research groups at the information/information technology faculty housing the UTA department. These research themes are also represented at both RSLIS and SSLIS, but there you can also

find a strong tradition of humanities oriented LIS research. Then, there is of course also the matter of what constitutes mainstream and peripheral LIS research, which can be debated (e.g. Åström, 2002).

Organizing research into focus groups is more common at the social science and information/information technology faculties; and at the larger LIS schools. One obvious reason is the size, with the schools and UTA being the largest institutions in the Nordic countries. However, there is a clear trend in the variation between diverse and focused research topic selection processes, from humanities affiliated institutions and departments, over the social sciences, to the information/information technology faculty institution. The trend is also visible in terms of the distribution of single versus co-authored documents. Single authors are most common at the department located at a humanities faculty and at LIS school departments with humanities oriented research profiles, while research at the department affiliated with an information sciences faculty is primarily executed by more than one author. The same goes for the selection of media of publication, ranging between international peer reviewed journals to domestic book chapters, where humanities oriented research environments tend to publish in the domestic language and in book chapters.

Some caution should be observed when drawing the conclusions, due to the nature of the material: especially in the case of the bibliometric part. One aspect of this is how individual scholars can create a skewed image of departments and institutions; another is how some scholars only have a selected list of publications and the lack of updating information at some websites. Apart from the impact of outliers – where the obvious

cases have been marked in the presentation of the results – the incompleteness of publication lists might contribute to further skewedness, and leaving us with the uncertainty of what individual scholars perceive as important contributions. With these reservations in mind, the level of aggregation should be sufficient for a representative – if not complete – analysis of Nordic LIS research as seen through the literature.

All these issues – how institutions and research work is organized; and the relation between LIS on one hand and wider academia and the field of professional practice on the other – relates to levels of independence from other disciplines and lay groups. Furthermore, they also relate to the extent of which research is evaluated by standards accepted within the discipline in general; and if it is produced using terminology and work processes making it possible using any kind of standardized criteria for evaluation. These are not only issues relating to different scholarly traditions and the intellectual organization of research areas in general; but also to the social organization of singular departments and the work situation for individual scholars. Whereas scholars at the humanities oriented units– especially those sharing department structure with other disciplines – primarily are evaluated on a local basis due to a lack of formalized and disciplinary associated criteria to assess by, scholars at social or information technology oriented faculties are, to a larger extent, competing for resources adhering to criteria common to the discipline in general, thus with a higher demand to show how their research is contributing to the intellectual goals of the whole field.

A main objection against using the framework suggested by Whitley (2000) for analyzing research fields is how his theories are essentially grounded on a view of the

sciences organized on a disciplinary basis. An alternative view is the 'Mode 2' perspective on research (Gibbons *et al*, 1994), where many of the traits visible in e.g. LIS research – the strong connection to fields of practice as well as an emphasis on applications oriented research, a plethora of research perspectives and so on – can be seen as main traits in the development of the sciences since 1945. However, this study shows how issues such as the power of definitions and access to resources (as in the case of the UU information science department and the LIS unit; and the organization of the national research councils) are related to an academic structure still very much organized on the basis of disciplinary boundaries; and with a big impact on academic acceptance and credibility of LIS in academia in general.

Finally, we return to the Vakkari (1996; Vakkari *et al*, 1993) studies, where LIS was described a field with weak ties to Academia and a scattered departmental structure. Today, Nordic LIS shows stronger connections to Academia; and all Nordic countries analyzed have gone through at least a first phase in establishing a formal academic research structure (Evaluering, 1999; Harbo & Pors (Eds.), 1998; Pors, 2000; Research, 2005). However, the strength of the connection varies, depending on e.g. faculty affiliation. Nordic LIS has also established a strong presence in the international LIS community, with several research milieus regularly publishing in international journals, books and conference proceedings. The department structure is still scattered, with large variations ranging from strong institutions in the frontline of international research, to institutions without professorial chairs and competition from other disciplines at the same university even for the name information science. In some ways, the variations are even greater now than reported by Vakkari (1996). In both Sweden and Norway, we

now find university affiliated LIS institutions, with great variations in terms of how research is organized and to which extent it is in alliance with 'mainstream' LIS research. These variations, together with the development of publishing activities the independent and university college-affiliated institutions, show that the organization and orientation of research is rather associated with e.g. faculty affiliation or departmental issues, rather than whether the institution is located at a university or in some other organizational setting.

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Table I. NoRSLIS schools in mainland Nordic countries, their academic affiliation and website URL's.

Country	**Department**	**Acad. affiliation**
Denmark	*Royal School of Library and Information Science, Copenhagen/Aalborg (RSLIS): http://www.db.dk/english/*	Independent
Finland	Department of Finnish, Information Studies and Logopedics at Oulu University (OU): http://www.oulu.fi/hutk/info/englishpages/	Humanities
	Department of Information Studies at University of Tampere (UTA): http://www.info.uta.fi/index_en.php	Info./Info. Tech.
	Department of Information Studies at Åbo Akademi, Turku (ÅA): http://web.abo.fi/fak/esf/bii/index_eng.htm	Soc./Beh. Sci.
Norway	Department of Computer and Information Science, Norwegian University of Science and Technology, Trondheim (NUST): http://www.idi.ntnu.no/	Info./Info. Tech.
	Department of Documentation Studies, University of Tromsø (UoT): http://uit.no/humfak/dokumentasjonsvitenskap/	Humanities
	Dept. of Journalism, Library and Information Studies, Oslo University College (OUC): http://www.hio.no/enheter/avdeling_for_journalistikk_bibliotek_og_informasjonsfag	Univ. College
Sweden	*Library and Information Science, Department of ALM, Uppsala University (UU): http://www.abm.uu.se/*	Humanities
	Library and Information Science, Department of Cultural Sciences, Lund University (LU): http://www.kult.lu.se/	Humanities
	Library and Information Science, Department of Sociology, Umeå University (UmU): http://www.umu.se/soc/biv/	Soc./Beh. Sci.
	Swedish School of Library and Information Science, Gothenburg University/Borås University College (SSLIS): http://www.hb.se/bhs/eng/	Univ. College

Table II. Academic setting and faculty affiliation of Nordic LIS Schools.

		Academic setting		
		Independent	*Univ.college*	*University*
Faculty affiliation	*Info./Info. Tech.*			NUST, UTA*
	Soc./Behav. Sci.			ÅA, UmU
	Humanities			OU, UoT, UU, LU
	Independent	RSLIS	OUC, SSLIS**	

* Originally affiliated with a social science faculty.

** Originally situated at a humanities faculty (in terms of institutionalized research).

Table III. Media types and distribution of publication type for publishing research in Nordic LIS Schools 1990-2005.

Department	**Publication type**					
	Referee Journal	Non-ref. Journal	Conf. proc.	Book	Book chapter	Other
RSLIS (N=792)	24%	21%	17%	11%	9%	18%
SSLIS (N=576)	22%*	14%	20%	9%	16%	19%
UTA (N=302)	37%	12%	23%	5%	10%	13%
AA (N=98)	17%	26%	28%	4%	14%	11%
UU (N=81)	10%	13%	15%	12%	25%	25%
All (N=1,849)	**25%**	**17%**	**19%**	**9%**	**12%**	**18%**

* The percentage of referee journal articles is significantly higher due to publishing activities of one individual faculty member.

Table IV. Language of research publications from Nordic LIS Schools 1990-2005.

Department	Language	
	Domestic	Foreign
RSLIS (N=792)	50%	50%
SSLIS (N=576)	41%*	59%
UTA (N=302)	26%	74%
AA (N=98)	42%	58%
UU (N=81)	70%	30%
All (N=1849)	**44%**	**56%**

* The percentage of foreign language publications is significantly higher due to publishing activities of one individual faculty member.

Table V: Distribution of co-authorship in research publications from Nordic LIS Schools 1990-2005.

Department	Type of co-authorship					
	National	International	Internal	External LIS	Ext. acad.	Ext. Prof.
RSLIS (N=260)	83%	17%	74%	15%	5%	6%
SSLIS (N=175)	57%	43%*	38%*	33%*	22%*	7%
UTA (N=183)	80%	20%	74%	14%	9%	3%
AA (N=26)	85%	15%	65%	31%	4%	0%
UU (N=9)	100%	0%	44%	11%	0%	44%
All (N=653)	**76%**	**24%**	**63%**	**20%**	**11%**	**6%**

* The distribution of internal-external, as well as national-international, co-authorships is skewed, due to publishing activities of one individual faculty member.