The Nordic Landscape of LIS Research: a New Approach for Co-Word Analysis of Research in Three Nordic Countries

Kim Holmberg[1] and Björn Hellqvist[2]

[1] *kim.holmberg@abo.fi*
Åbo Akademi University, Tavastgatan 13, 20500 Åbo (Finland)

[2] *bjorn.hellqvist@abm.uu.se*
Uppsala University, Box 625, 75126 Uppsala (Sweden)

Introduction

This study used a co-word analysis to map the landscape of library and information science in three Nordic countries: Denmark, Sweden and Finland. The results indicated that there are some strong similarities between LIS research in the studied countries and that mainstream LIS research still has a strong foothold, but newer areas of research, such as Library 2.0 and digital libraries, are gaining increasing interest. Furthermore the study showed that the new approach of self-generated co-words can be a fruitful method in mapping current research but also that the collection of data may sometimes be a problem.

Methods

Analyses of Nordic Library and Information Science (later: LIS) research has been done by Vakkari et. al. (1993; 1996) Pors (2000) and Åström (2008). Co-word analysis is an often used content analysis technique that uses both the frequencies of the words used and their internal relationships to each other to give a thematic view of research in a field (Courtial, 1994; He, 1999). The overall goal of this study is to map the landscape of LIS research in Nordic countries using co-word analysis.

A co-word analysis was used to study the landscape of LIS in three Nordic countries: Denmark, Sweden and Finland. In contrast to previous studies (Vakkari et. al., 1993; 1996, Pors, 2000 and Åström, 2008) the publications were not used directly for data collection. Instead researchers in the NORSLIS (Nordic Research School in Library and Information Science) network were asked to index their current research. A total of 94 researchers from 12 institutions kindly submitted keywords but unfortunately the low numbers of responses prohibited further analysis of Norway, Island and the Baltic states. Instead Denmark (22 researchers), Sweden (35) and Finland (25) were used in the final data set.

Software package BibExcel (Persson, 2008) was used to create the co-occurrence matrices and to visualize the data using a statistical technique called Multidimensional Scaling. In the graphs the size of the nodes correlate with the frequency of the words used and the ties between the nodes indicate how often the words have been used together. First a graph of the whole situation was drawn. This gives us a map of the whole landscape of LIS research in the three analyzed countries. Only the most frequently used words (3 or more) were included in the analysis. This means that a single researcher's specialisations won't show up on the maps, no matter how influential that research might be. The map was cleared but the positions of the nodes were left intact and the most frequently used words from the three countries were separately visualized. This gives us a method to qualitatively compare where on the map the studied countries will be placed and what their specialisations are. From these maps we can analyze similarities and dissimilarities between the research profiles of each country.

Results

The map (Figure 1) could roughly be divided into three parts: an upper cluster, a lower cluster and an overlapping cluster. The upper cluster contains somewhat more "traditional" research areas of LIS, like *library history*, *libraries*, *scientometrics* and *information retrieval*. The lower cluster contains areas related to user perspectives, like *information practices*, *information behaviour* and *information use*. The overlapping cluster contains some newcomers to LIS, but also areas of research that form the very basis of LIS. Research areas such as *library 2.0*, *web 2.0* and *digital libraries* have not been around for long, while *public libraries* and *information seeking* are in the traditional core of LIS research.

All of the studied countries have research interests in the overlapping part of the map (Figure 2), but some dissimilarities are also visible. While research in Denmark is focused more on the upper part of the map, research in Finland is focused on the lower part. Research in Sweden covers areas from all parts of the map. LIS research in Denmark is

mainly focused on *knowledge organization*, *information retrieval* and *bibliometrics*. Finland has a strong position in *information needs*, *seeking and use* as well as in research about *web 2.0* and *library 2.0*. Sweden lacks a distinct focus but a tendency towards areas as *cultural policy*, *gender* and *history* as well as an interest in *information practices* and *health information* can be identified.
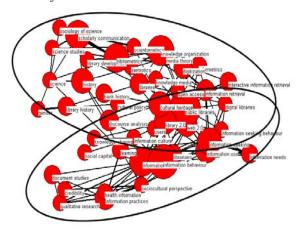

Figure 1. The landscape of LIS research in Denmark, Sweden and Finland

Figure 2. The current LIS research in Denmark, Sweden and Finland

Discussion and conclusions

The results show that Finnish LIS research has slightly shifted from the results of previous studies that suggested that Finnish LIS research was closer to mainstream LIS (Åström, 2008; White & McCain, 1998). Although there still is a strong current interest in mainstream LIS, new research areas such as *Library 2.0* has gained a strong foothold. However, the shift can also be due to differences in the research methods used. Research in Denmark follows to a certain extent mainstream LIS, while research in Sweden is scattered over the map indicating a more heterogenic profile in research interests.

A country level of data collection and the use of the most frequently used index terms give a more general view of the research landscape. However, the subtle differences between LIS departments will not be visible and further research at department level in the Nordic countries would be a natural course of action to continue the present study.
The strength of the present research is also its weakness. The strength lies in the data collection methods as asking the researchers to index their current research gives accurate and timelier data than citation databases or journal specific databases. The method of clearing the map but keeping the nodes intact makes it easy to compare between different datasets as different specialisation are immediately visible. The data collection method is also a weakness because insufficient data from researchers led to the exclusion of some of the countries that were included in the original scope of the study. Also using only the most frequent keywords may have lead to the exclusion of some researchers, even if they were highly influential in their research field. Nevertheless, the combination of self-generated keywords and co-word analysis appear to be a fruitful method when mapping and comparing research interests in a given field or discipline.

Acknowledgments

References

Courtial, J.P. (1994), A Coword Analysis of Scientometrics, *Scientometrics*, 31 (3), 251-260.

He, Q. (1999), Knowledge Discovery through Co-word Analysis, *Library Trends*, 48 (1).

Persson, O. (2006) *Bibexcel - a toolbox for bibliometricians* (Version 2008-10-21). [Computer software]. Retrieved on December 4, 2008 from http://www.umu.se/inforsk/Bibexcel.

Pors, N.O. (2000). PhD Education in Library and Information Science in the Nordic countries: A Report Financed by Nordinfo, *NORDINFO*, Helsinki.

Tague-Sutcliffe, J. (1992). An Introduction to Informetrics. *Information Processing & Management*, 28 (1), 1-3.

Vakkari, P., Aarek, E.A., Järvelin, K., Kajberg, L. and Klasson, M. (1993). Research in Library Science and Informatics in the Nordic countries: A Comparative Study of Cognitive and Social Institutionalization of Research, and Its General Traits Based on Research Publications, Vol. 24, *NORDINFO*, Esbo.

Vakkari, P. (1996). Social and cognitive institutionalization of Library and Information Science in Scandinavia, *International Forum on Information and Documentation*, 21 (3), 25-36.

White, H.D. and McCain, K. (1998), Visualizing a Discipline: an Author Co-citation Analysis of Information Science, 1972-1995, *Journal of the American Society for Information Science*, 49 (4), 327-55.

Åström, F. (2008). Formalizing a Discipline: The Institutionalization of Library and Information Science Research in the Nordic Countries. *Journal of Documentation*, 64 (5), 721-737.