Great Expectations

The computerization of research and educational literature in Swedish university libraries 1960-1980

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Abstract: Searching for information in databases or on the world wide web to enhance our knowledge has become an everyday task. The internet is a major source of information for education. When we want to make new material available in digital form, we examine how contents can be made searchable by the creation and attachment of metadata. We now have expectations that most educational material, literature and research will be described and to a great extent also readable as full-text in digital form. For the benefit of future university research and teaching the digital global university library is a prevailing image. The work of organizing and representing information with metadata and make it searchable and usable for education and research started already in the 1960's. A vision of the global library was presented during the same period originating from the Library of Congress in Washington DC.(Library of Congress,1963)[1] Some of the expectations, discussions and choices which took place during this period can be recognized as having meaning for processes 20-40 years later.

1. Information Overflow – A Problem for Research Libraries in the 1960's

Research and university education had become important issues in society after the WW 2. Researchers started to compete for positions by increasing their publishing. University libraries all over the world faced the problem of coping with an escalating growth of scientific and educational publications and thus storing and handling big collections and make research literature physically accessible. (de

[1] Library of Congress, Automation and the Library of Congress,1963

Solla Price, 1962.)[2] The cost of cataloguing and managing the collections were rising out of proportion. Swedish university libraries had, during the 1950's started a process of modernization with the help of available office technology, typewriters, copying techniques and microfilm. When the computer arrived, it provided a promising solution to the handling of bibliographic data and the administration of the growing collections. Mastering the information overload became a main task for librarians. The information explosion was used as an argument to introduce the new technology.

There were two lines of computerization for application in libraries. One aimed at automating and computerizing routines such as cataloguing, circulation of loans and interlibrary lending through networking between libraries. Another was aimed at information retrieval which was made possible by the introduction of bibliographical databases such as Medline and Chemical abstracts. Originally bibliographic databases were developed by NASA as a means of competing with scientific information in the cold war of the 1950`s – 1960's.

2. Libraries and Their Professional Differences

What is a library? A library shall provide physical access to literature of various forms of publication and provide intellectual access to the contents of literature. (Shera, J.,1966)[3] Various scientific disciplines differ and used to differ even more in their research methods and publication practises. This has implications for how librarians were handling literature collections as well as managing and retrieving bibliographic data. The targeted literature for computing in the university libraries was on one hand, monographs that represented the main big collections of humanities and social sciences. Journals and research reports were on the other hand at the core of the medical, science and technology literature at the special libraries. A monograph could be classified and catalogued as a piece and put on a shelf as a physical artifact; a journal article could be indexed but was part of a larger package. These differences inspired different professional practices.

At the turn of the century a new professional group, the documentalists, had argued for a new concept, concerning bibliographic description, documentation which was aimed at retrieving information out of journals and research reports.(Shera, J.1953;)[4] Information retrieval for the benefit of the user was of more interest to them than describing a monograph as an item which was part of a bigger collection. Since these practices also were represented by different libraries/librarians it affected how university libraries/librarians and special libraries/librarians expected the computerization to solve their respective problems.

[2] De Solla Price, D., Science since Babylon. New Haven, 1962
[3] Shera, J., Documentation and the organization of knowledge, London, 1966
[4] Shera,J., A review of present state of librarianship in Bradford, ed, Documentation;

We shall se how their various practices and expectations influenced the development of the system.

3. Expectations on Technology

Already during the 1960`s computer technology was introduced as a means of modernizing some of the problems in research libraries. Library of Congress published 1963 a visionary ten-year plan for rationalizing all library work by one integrated system (Library of Congress, 1963)[5] A standard format was established, MAchine Readable Catalog, MARC.

The Swedish Royal library had the task of organizing a union catalogue for Swedish research libraries. There were problems with back logs and an increasing number of libraries participating in the union catalogue as well as demands from most research libraries for more personnel to handle collections. This was the cause of looking to automation for solutions and thus establishing a committee for ADP 1964 that worked until 1969. The proposals from the committee were aimed at automating the union catalogue by using principles for shared cataloguing. A standard MARC format entry of bibliographic data was to be executed by one participating library and was then to be copied by other participating libraries. This could be extended to an international cooperation of libraries, thus creating a global catalogue.

These suggestions were criticized by a well known documentalist, Björn Tell, who meant that the technology should be used not as a way of rationalizing internal routines but be used as a means of support for decision making and qualitative development directed towards the researchers not the librarians. (Tell, B., 1966)

4. A Vision of the Modern Library

Normally the computerization processes were designed to automate single routines, often starting with the circulation of books. But there was a more interesting option to the Swedish Agency for Administrative Development (SAFAD) and the systems designer Mr Lindberg. SAFAD got the commission to examine the feasibility of a library information network for university libraries. The civil servants from SAFAD were interested in finding a way of rationalizing the libraries with the latest technology as well as implementing bureaucratic reform. Long term planning, mainframe computers and strong belief in radical change inspired the system development plan. The ultimate solution to library automation was to create the totally integrated system, which would be achieved by applying a total systems

[5] Library of Congress, *Automation and the library of Congress*, 1963

approach. By this approach it was planned that an organization and its various functions should be computerized to work as an interacting whole, which meant that work processes and information flow would be facilitated and easy to control. The concept of a totally integrated library system was introduced in visionary terms as the Library Information System, LIBRIS (Statskontoret, 1972)[6].

The original plan for LIBRIS had utopian features such as a lack of historical perspective i.e. not growing out of a familiar reality, an assumption of universal consensus of values or institutional arrangements, being characterized by social harmony which helps maintain stability, following recurrent patterns and and being isolated in time and space from other parts of the world.(Boguslaw,R.1965)[7] Thus the development of the system was planned according to given standards without much consideration to context.

5. Developing of a National Library System

LIBRIS developed through three phases: the design phase, 1970-1973; the implementation phase 1974-1979; the use phase 1980 and onwards. The first phase was dominated by the promotion of the totally integrated system accompanied by the rational planning ideology of SAFAD, responsible for systems development and with an interest to rationalize and implement bureaucratic reform of the research libraries. Through LIBRIS the librarians at various libraries would be able to perform all functions, acquisition, cataloguing, circulation of books as well as communicate with international databases. A master plan was set up and the project would start with the cataloguing routine. Mr. Lindberg, the systems designer was able to enroll head librarians and cataloguers in the implementation. The new online technology gave the librarians and their librarians immediate contact with the central database and they could process shared cataloguing which means that a book could be catalogued at one library and then copied at all the other libraries which purchased the same item. This was a major effort of rationalization: less personnel would be able to perform the same duties.

But LIBRIS did not advance according to the master plan. During the implementation phase, the practical efforts of establishing common rules and methods undermined the initial vision of a total system. The cataloguers who struggled at accomplishing the perfect catalogue were able to enforce their standards of alphabetical representation to a level far exceeding normal computional praxis. In fact they argued that all different alphabets should be represented. They succeeded however in forcing the developers to a full Swedish representation, which we very often do not have today! Other problems arose due to the choice of hardware; LIBRIS ran on a Saab machine D22. Saab had replaced IBM in several

[6] Statskontoret, LIBRIS, ett informationssystem för bibliotek, 1972. p.14

[7] Boguslaw,R., The new utopians, A study of system design and social change,. 1965

national applications. Computer problems were frequent and opening hours were too short. The diffusion of LIBRIS was slow.

6. Technological Development as Processes and Conflicts

As opposed to following a rational plan, technological development can, as be understood as a conglomerate of developmental phases, of constellation of actors, problematic situations and conflicts. (Rammert, W.1992)[8] The development of LIBRIS can be seen as various processes which led to the diminishing of a national totally integrated information system to a mere union catalogue. During the design phase, the technology was envisioned as open, potent and capable of developing into a fully computerized library: During the implementation phase, technological flexibility was narrowed to a cataloguing system in the form of a bibliographic utility.

The general idea of LIBRIS invited the actors to various interpretations of what the system could accomplish. According to their various interests different actors attributed different meanings and goals to the system and had different reasons for taking part in and supporting LIBRIS:

- The university librarians wished to keep their autonomy. They were on the other hand enthusiastic about the modernity and status, which LIBRIS represented.
- At the Royal Library, the librarians wished to use LIBRIS as a central function and to rationalize the production of the union catalogue.
- The documentalists wanted to shape LIBRIS according to the norms of their standard UNISIST, which suited their professional purposes.
- The SAFAD systems designers wished to develop an advanced technological project as well as succeeding in implementing bureaucratic reform.

The researchers, the real users of the system, were invisible actors who probably would have had other ambitions if they had been engaged in the process. The development of LIBRIS can thus be understood by the processes in which actors took part to further their interests. Some processes were connected; others were not. The various interests of the actors extended into various conflicts. They developed between:

- the librarians (in general) and SAFAD. The conflict emanated from different institutional practices and from their different roles; from SAFAD being the reformers and the librarians the ones being reformed; conflicts arose from the parties having different competences and from their lack of insightful communication.

[8] Rammert, W., Research on the regeneration and development of technology in M. Dierkes &Hoffman, eds. New technology on the outset. Frankfurt 1992

- LIBRIS as technological project and LIBRIS as bureaucratic reform: The goals of these activities collided on the one hand and encompassed each other on the other hand. The bureaucratic reform aimed at a coherent organization where as the technological project envisioned using and developing advanced technology. The technological vision inspired the cataloguers to make sophisticated demands, thus undermining the plans for efficiency outlined in the bureaucratic reform.
- Traditionalists and radicals among the library professionals: The heart of the conflict concerned the role of technology. Technology could serve as a means of transforming the library into something qualitatively new, by enhancing the possibilities for action and accomplishing new kinds of services or technology could improve the existing routines and functions of the library by substitution, making them faster or better but mainly maintaining the original routine or method. An example is use of the MARC standard format by the traditionalists. The new MARC-format used for computerized catalogues contained the same information as the traditional catalogue card. A traditional technological style was preserved. A radical alternative would have been to use the indexing format of the documentation databases thus violating the traditional norm but gaining new possibilities of retrieval.

The cataloguers became the winners and the losers of the system. Their routine was originally the main target of rationalization. They managed however to make use of the possibilities and promises of the design phase to enforce their professional norms and rules. The catalogue remained during the whole project period the main task for computerization. In the long run, however, cataloguers diminished in number due to the frequent use of standardized routines and copy cataloguing.

The actors' various interpretations of the LIBRIS system; the various conflicts; the enforcement of professional norms and the institutionalization of practices; inadequate resources and computer incapability, interacted in shaping the system and limiting the alternatives. Finally, the system came to a temporary closure. This was obtained when the remaining alternative, the union catalogue, was agreed upon. The role of closure in technical development can be understood as a punctuated evolution as described by Wiebe Bijker (1990):

> "the combination of stabilization and closure processes makes it understandable that technical change is a continuous process although not occuring at equal rates at every point in time — it's like a punctuated evolution"[9].

Temporary closure occurred when alternatives other than the union catalogue were pushed aside. This depended not only on the strategies or lack of activity from the actors but also because a totally integrated library system could not be achieved within the established institutional framework.

[9] Bijker, Wiebe, The social construction of Technology, Den Haag, 1990, p.97

7. Conclusions

LIBRIS inspired and laid the foundations of library computing during the 1980s. A whole generation of librarians gained computing experience through LIBRIS. LIBRIS can be seen as a cooperative effort and a joint development task. LIBRIS is still developing as the Swedish national library system. The influence of technology on the actors and on library activities, did not originate from the inherent capacity of the technology itself, but the technology presented a circumstance for organizational change, cooperation and learning.

Through the computerization of research libraries, research and educational literature became available on a broader basis. The visibility and use of university collections increased which was valuable for education and research. This development can also be seen as a step towards the virtualization of libraries. We are in fact today approaching the vision of Library of Congress of the global library in the 1960's. There is still however a need for further standardization and cooperation if we are going to accomplish the global digital library.

There are other challenges as well. Today information and literature searches are performed on the internet and on the world wide web. We face problems with how to make critical reviews of sources presented on the web. This is an important quality issue. Open access publication of research and educational material creates a need for new solutions for indexing and coordination

Endnote

In this paper findings from my doctoral dissertation Olsson, L., The computerized library – machine dreams of the 1970's, 1995, have been concentrated and further elaborated. The dissertation has only been published in Swedish.