Education for digital libraries: library management perspective

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Abstract

The paper examines three Master's programmes in digital libraries: Digital Library Learning (Oslo University College, Tallinn University, and University of Parma), Digital Library and Information Services, and Digital services – culture, information and communication (Swedish School of Library and Information Science). The author uses her direct experience of developing one of the programmes, collaborating with another and evaluating the third, for comparison of their conceptual basis, goals, curricula, students admission and study process, teachers experience, and several aspects of the students' satisfaction. The author concludes that all three programmes build their programmes on the notion of change management, either through innovation, organizational change or project implementation. This perspective cultivated in library management for several decades since introduction of computer technology into libraries unites all three programmes on the common foundation of library management.

Key words
Digital library, LIS education, information management, digital resource management, Europe

Introduction

Today we have a recognisable situation with digital librarianship: digital libraries have arrived without prior announcement and librarians started working with digital library resources, creating digital library services, using Web 2.0 tools for interacting with their users before LIS education started reacting to it. We had the same situation with integrated library systems or electronic resources. As a previous student and a lecturer in the LIS department of a university I can witness the efforts to forecast the future at least in the institutions that I know. As a (Soviet) Lithuanian student at the beginning of 1970s I was studying literature on MARC and electronic catalogues, later (in the middle of 1990s) I enthusiastically preached information service delivered to customers through any channel, encouraging students to use telephone or emerging e-mail. It does not help much when the reality does not provide opportunities to apply what students call "theoretical knowledge", meaning that something does not exist in the workplace. And in a second, the scene changes: the future has arrived and requires more and different competencies instead of what was anticipated. This is a constant catch22 for many educational areas, not only for LIS. Nevertheless, the educators always remember that they teach for the future and try to develop flexibility and thirst for permanent learning in their students using the means available today.

This ICDLM conference in India is one of several international conferences in the world focused on the development and research in digital libraries. Most of these conferences include also papers on digital library education, though it usually is a small proportion of the total content. Nevertheless, the importance of the topic is rarely questioned. More and more attention is paid to

the place of digital library education in LIS and computer science (e.g. Coleman 2002; Meera 2010), to the basic elements of the digital library curriculum and the skills that it should be developed (e.g., Abrizah *et al.* 2009), or to finding general approaches for teaching digital librarianship (e.g., in the panel on digital library education in European Conference on Digital Libraries – ECDL2009).

Recently there has been a growing interest in digital library education in Asian and African countries (Boamah 2009, Bakeri Abu Bakar 2009). In one recent article I found the following statement: "only the Department of Computer Science at the National Chiao tung University in Taiwan offers a Master Programme of Digital Libraries in the world" (Bakeri Abu Bakar 2009: 458). This is not exactly the case. It is true that full Master's programmes directed only towards digital libraries are very rare, though courses on various aspects of digital libraries proliferate in LIS and computer science departments. However, there are quite a number of these programmes already available for the students (see e.g., the Information School of the University of Sheffield, Drexel University, Media University in Stutgart, etc.). I myself have direct experience of three Master's programmes in digital librarianship in Europe delivered in Library and Information Science departments. They are listed here in chronological order of the start of the programme:

1. *International Master's programme Digital library learning (hereafter referred to as DLL)*: programme started in autumn 2007 (ERASMUS MUNDUS joint degree programme by Oslo University College, Tallinn University and Parma University)
2. *Digital libraries and information services (hereafter DLIS):* first experimental intake of students in autumn 2008, official start of the programme – autumn 2009. (Swedish School of Library and Information Science)
3. *Digital services – culture, information and communication (hereafter DiSe)*: programme started in autumn 2009 (Swedish School of Library and Information Science)

All three programmes are quite young, but they are advertised, running and recruiting students for about four years, i.e., as long as any other Master's programme in this area. The goal of this paper is to present these programmes to a wider audience. I would like to concentrate on the curriculum structures and the common concept underlying them, though all three were developed rather independently of each other. The other element that could be interesting to introduce is the experiences of the students and teachers that are beginning to accumulate and highlight the strengths of digital library education as well as difficulties met on the road.

Contemporary higher education for digital librarianship

Surveys of digital library education have been conducted by Spink and Cool (1999), Saracevic and Dalbello (2001), and Liu (2004). These authors have formulated approximately the same research questions and used the same methods to collect the data. In fact, the two later investigations may be treated as the continuation of the first one, though Saracevic and Dalbello had a wider perspective and investigated more issues.

Saracevic and Dalbello (2001) included the results of the survey into the context of a wider investigation. They were looking into more general questions of why universities should teach digital library topics, what these studies should consist of and how they should be taught. This survey also used a wider understanding of digital library studies and investigated courses that

were related to the digital libraries (but did not include the words 'digital library' or 'electronic library' in the title).

All three surveys used the same methods of data collection: e-mail survey and the analysis of the material provided on the Web-sites of the higher education departments or schools.

The surveys provided data on the gradually at first and later rapidly increasing number of schools offering modules and study programmes on digital libraries in different countries. In 1999 the authors have found 20 modules in higher education institutions (HEIs) in 8 countries (Spink & Cool 1999)

Saracevic and Dalbello received data from the USA, Canada, Australia (2 schools), and UK (1 school). As they have widened the meaning of digital library courses for the USA and Canada, they have found that

> "Of the 56 LIS programs, 47 (89%) include digital library in some form or another or to some degree in their curriculum; for 5 (9%) programs, this cannot be determined and 4 (7%) programs show no presence of digital library education. This analysis shows that digital library education is included in the curriculum of most LIS programs. However, the degree of inclusion varies widely. When considered closely, the inclusion ranges from a full course or courses on digital libraries to metadata standards being covered in organization of information courses to cases in which digital library focus is relegated to continuing education. Participation of the students in a local digital library project is another way of including the digital library topics within LIS education." (Saracevic and Dalbello 2001: [6]).

The Internet survey in 2004 revealed that

> "42 educational institutions offered courses on digital libraries. (It is possible that more institutions offered courses but did not post any information about the courses on the Web.) Most of the educational institutions were located in North America, and some countries in Europe and East Asia. As Spink and Cool (1999) only located 20 institutions offering courses on the subject, it appears that since 1999, the amount of courses on the subject of digital libraries has more than doubled, from 20 in 1999 to 42 in 2003." (Liu 2004: 61).

While the first survey found that most modules on digital libraries were delivered at the graduate level, the other two also found courses at the undergraduate. The number of schools providing more than one course on the subject is slowly growing. At present a number of universities offer full programmes in digital librarianship as was stated at the beginning of this article.

Most of the courses on digital libraries were found in library and information studies departments, some in computer departments and a few in other departments (e.g., media studies).

Basic differences in teaching approaches can be traced along the lines of the type of schools that offer them:

"The Technocrats"… teach the mechanics of computer architecture and programming that will 'house' the digital libraries of the future (akin to library architects and designers), and "The Librarians-As-Guides"… teach the technical side of digital libraries only as an adjunct to operational/user-oriented understanding of the potential of digital libraries. In many cases, aspects of digital librarianship are incorporated within traditional library materials courses, for instance, library missions and collection policy." (Liu, 2004: 65).

Saracevic and Dalbello identify four broad *areas of application* in. the general domain of digital library education:
- *tools* (technologies and technology based processes);
- *environments* (the context in which digital libraries operate),
- *objects* (representation, structure and life cycle of documents in various formats), and
- *combined* (several areas of applications present without any one being distinctive).

They also state that "digital library education in the two areas, library and information science on the one hand and computer science on the other, do not have any relation that we can see. This exactly follows the practice of development and operation of digital libraries in library institutions on the one hand, and the research in digital libraries as funded by programs identified in the section on rationale, on the other hand. While they are in the same planetary system, one is from Venus and the other from Mars" (Saracevic and Dalbello, 2001: [14]).

Since these big surveys were completed, we may find the supplements to them in many later articles on the digital library education. For example, Abrizah et al. have found that the DL education in LIS schools can be categorised in three types:
"a) an independent or full library course,
b) an integrated digital library course with other LIS topics,
c) courses with close relation to DL processes." (Abrizah 2009:91)

This paper is looking at the three full digital library programmes conducted by four European universities (in Library and information science departments) and can throw some light on the reasons behind some solutions taken by developers of DL curricula. Some effort to bring Venus and Mars together can be witnessed in some of these programmes.

Data base for the paper

The data for this paper was collected through different channels mainly during my own involvement in various activities related to these programmes. I have been involved in the development of the DLIS programme from the very conception of the idea in 2004. At present I coordinate the delivery of the programme. The programme DiSe was developed a little later and with a different target group in mind, but the coordination of two similar programmes provided by the same department is important from the point of view of resources and mutual interests. At present I am a member of the Steering and Operational group of this programme. The International DLL programme was within the circle of interest of the SSLIS for a long time as well. For a number of legal and administrative reasons the school could not participate in this Erasmus Mundus project, however, the proximity of interests and location brings us together quite often. In addition, I was invited to serve as a subject expert evaluating the Erasmus Mundus

programme in 2010 and visited Oslo University College and Tallinn University looking quite close into the documentation of the programmes, interviewing students and teachers, talking to the heads of the universities about the programme.

Thus data base for this paper consists of the conceptual documents and programme documentation, teachers' experiences, students' focus groups transcripts, data of course evaluation and study tracks.

Master's studies in digital librarianship

The origin and nature of the Master's programmes.

All three Master's programmes have originated roughly during the same period of 2003-2004 mainly in relation to previous experience in LIS education.

Parma University has initiated the DLL Master's after acquiring expertise in running a joint programme for working librarians with Northumbria University. A consortium of three universities (Oslo University College, Tallinn University and Parma University) received financing for the delivery of the Master's programme in 2007. The programme has a web site introducing it to potential students and in general (http://dill.hio.no/).

The international Master's programme in DLIS – Digital Library and Information Services was initiated in 2004 by a group of senior academics at the Swedish School of Library and Information Science. Swedish universities were preparing for a big change according to Bologna agreement among the members of European Union. It was one of the elements in the introduction of new study structures and programmes and was seen as a possibility to widen the influence of Swedish library studies internationally. The survey of information specialists was conducted to understand the demand for skills on the labour market and curriculum was developed in 2006-2007, but the University had to wait for the structural change in all Swedish Universities and the rights for delivery of Master's programme (until then Master's programmes did not exist in Sweden). Thus the programme was announced to start in 2008 with a pilot group of students. The programme site is available at http://www.hb.se/wps/portal/bhs/digitallibrary.

In another two years, there was a possibility to apply for financing the development of Master's programmes together with companies or public organizations from the big Swedish funding organization, The Knowledge Foundation. SSLIS capitalized on that and acquired support for running another Master's programme in digital services for cultural heritage for Swedish students. The programme was started in autumn 2009. The programme site is available at http://www.hb.se/wps/portal/bhs/.

The goals of the Master's programmes in digital librarianship

All three Master's programmes have developed courses for full-time two year Master's programme. The universities and the departments dealing with these programmes as well as the developers of the curriculum have been and are active in discussing education for digital librarians (Dahlström 2009; Tamaro 2007) and investigating requirements for information specialists and digital librarians (Maceviciute 2005; Maceviciute *et al.* 2009). All three

programmes have been developed pursuing the same idea – education for future librarians, however, all three followed a slightly different aspect of this education and this resulted in specific curriculum structures.

The DLL programme had to follow the requirements of ERASMUS MUNDUS programmes and targeted the non-European countries in Asia and Africa seeking to satisfy their needs for research and leadership in modern librarianship. A consortium of three universities took into account the educational competence existing in the participating departments and built the curriculum on the basis of it.

The developers of the DLIS Master's programme targeted a different audience. First, they wanted to attract working librarians and specialists in different organizations who would need to update their professional competence to manage digital resources and develop digital information services. Therefore, the education was conceived in a distance half-time mode. It was planned to reach the world-wide audience and to attract new groups of students to the SSLIS, therefore, English was selected as the language of course delivery.

The DiSe programme had to satisfy the requirements of the funding agency (Knowledge Foundation) that mainly seeks to strengthen relations between academia and professional practice. Thus, the main goal of the programme was to satisfy the need for competence in a library sector related to digital heritage creation and maintenance. Professional organisations, such as the Swedish Royal Library and Gothenburg City Library took part in curriculum development and work together to ensure that the students acquire not only theoretical knowledge but practical skills.

However, each programme was also affected by general university strategies of the parent institutions. For example, Tallinn University has a vision to increase the number of foreign students from 4% to 10% in five years. The main aim is to create international intellectual environment at home for the students and teachers that may be comparable to the one found by Tallinn students when they study abroad. To achieve all these objectives Tallinn University is using an internationalization funds to finance international priorities and the ERASMUS MUNDUS programme was one of these opportunities. Similar considerations of international visibility guided the other partners in the project. Somewhat different university strategy influenced the two programmes delivered by SSLIS. The internationalisation goals were less important even in the development of the English language programme. The orientation of the University of Borås toward professional practice and a goal to become a university of professions as well as the general context of re-organization of the whole higher education system in Sweden to meet Bologna requirements were driving and directing the creation of DLIS and DiSe.

The curricula of the Master's programmes in digital librarianship

The curricula of all three Master's programmes reflect the goals and the situation of the participants working on them. All three of them have a modular structure. Table 1 shows the sequence of the modules in the programmes.

For the DLL programme the modules were coordinated already during writing an application for ERASMUS MUNDUS. In 2007, a meeting for module coordination has taken place. The partners

presented their modules in detail, agreed about learning objectives and outcomes, discussed contributions of each partner.

The similarities of the curricula are quite easy to observe. There are four basic building blocks that one can notice in each of them: users and use of digital information, technological issues related to creation, maintenance and access of digital collections, research related and theoretical modules, and organizational management issues. For the DLIS, the module structure and units were selected in relation to the professional demands of the Swedish labour market for information professionals (Maceviciute 2005) and the recommendation of the European LIS curriculum results (Manzuch *et al.* 2005, Georgy *et al.* 2005). Later the experience of the Digital Library Curriculum Project conducted by University of North Carolina at Chapel Hill and Virginia Tech (http://curric.dlib.vt.edu/) was taken into account. For the DiSe the modules and the structure of the programme followed the requirements not only of the partners, but also of other Swedish institutions concerned with digitisation and digital cultural heritage. The latter two programmes had also to follow the requirement of coordination and module sharing between the two programmes at the same institution.

The differences between the study programmes are also quite obvious. DLL is mainly concerned with research into digital libraries (though they provide practical experience during the second year), while two other programmes are much more practice oriented. Both Swedish programmes devote more time to the technology issues. DLIS especially emphasises significant expertise in such areas as information retrieval and digitisation. They also introduce digital library technologies, databases and programming. Though competence and skills provided within these courses remain on the basic level in comparison to digital library courses provided by computer departments, it is quite extensive in comparison to the DLL and some other programmes offered by LIS departments in different universities. The DLIS and DiSe programmes also differ in approach to the practice: while DiSe devotes significant attention and a 15 ECTS module to Workplace-related project and Project management, DLIS incorporates smaller practical projects into each module. Both programmes offer a Master's thesis or an extensive Examination project as options for the final examination, while DLL concentrates on traditional Master's thesis.

DLIS	DiSe	DLL
1. Digital library management (15 ECTS)	1. Digital media in the culture and information sectors (7,5 ECTS)	1. Research methods and theory of science (15 ECTS)
2. Users and information behaviour in digital environments (15 ECTS)	2. Technology of digital libraries (7,5 ECTS)	2. Digital document (15 ECTS)
3. Information retrieval for digital libraries -1 and II (15 ECTS)	3. Users and information behaviour in digital environments (15 ECTS)	3. Information and knowledge management (15 ECTS)
4. Technology of digital libraries – I and II (15 ECTS)	4. Project management (7,5 ECTS)	4. Human resource management (15 ECTS)
5. Digitising cultural heritage material (15 ECTS)	5. Elective courses (22,5 ECTS)	5. Access to digital libraries (15 ECTS)
6. Digital library research methods (15 ECTS)	6. R & D methods within digital services (15 ECTS)	6. Users and usage of digital libraries: Quantitative and qualitative evaluation (15 ECTS)
7. Master's thesis (30 ECTS)	7. Workplace-related project (15 ECTS)	8. Master's thesis (30 ECTS)
	8. Masters' thesis (30 ECTS)	

Table 1: The modules in Master's programmes for digital libraries

Despite clear differences, the three programmes share significant similarities. These similarities most probably are born of the common understanding of the requirements and situation of digital librarianship in Europe as well as of the educational traditions existing in LIS departments of the European and more specifically Nordic-Baltic higher education institutions. The originators of the programmes have carried out a labour market analysis of one or another kind before launching the programmes (examination of existing LIS curricula for DLL, a survey of professionals for DLIS or the consultations with leading experts working in partner institutions for DiSe).

Delivery of the Master's programmes

These differences of the programmes manifest themselves in certain aspects of similar modules and in the delivery of the Master's programmes in digital libraries is specific in several respects.

Both Swedish programmes are delivered on distance and half-time mainly because they are targeting working librarians. In addition, both programmes target specialists spread over the vast areas in Sweden and in the world. According to the targeted audience DiSe programme uses Swedish, while DLIS uses English. The main vehicle for programme delivery is the e-learning platform PingPong used by the University of Borås. The teachers create an internal course site for each module. Most of the modules run over the whole term. The main building block of each module is a unit devoted to a certain topic. The modules in DLIS tend to be quite large, exhaustive and diversified. Some wider topics may be covered in several modules (e.g., the issues of the collection development are present in *Digital Library Management*, *Information Retrieval* and *Digitizing cultural heritage material* modules). The modules in DiSe are smaller as a rule. The other difference is also determined by the student population. While DiSe tends to organize two-three short (one-two days) meetings a term, DLIS organizes one longer (at least one week) residential period. Both programmes were running free of charge till present, but the Swedish government has introduced tuition charges for students from the non-European countries to take effect in autumn 2011.

The difference of these programmes in delivery from the DLL is evident. The DLL programme is full-time and delivered on campus of the three universities. The students move to a different university for each term (Oslo – during the first; Talllinn – second; Parma – third) and choose one of the partner institutions for their final course in writing the Master's thesis. In addition, students attend summer schools organized before the official start of the school year and have an internship period by the end of the third term. Students also may use the opportunities to attend international digital conferences organised in Europe. Significant resources required for this particular model of programme delivery are covered by ERASMUS MUNDUS project. The language of delivery is English. In addition, the students have a possibility to take local language course at the partner universities. However, it is interesting that the cohesiveness of the programme throughout the three universities is ensured by using the IVA e-learning platform of Tallinn University.

Teachers and students in the Master's programmes

Teachers
All three programmes have assembled a competent team of teachers with strong research profile and teaching experience. Quite a significant percentage of the all staff working on these programmes conducts research project in the area of digital libraries, digital publishing, digitisation and digital preservation, information retrieval, information literacy or other related topics. The most important structural element in each programme is collaboration among the teachers through a variety of formal and informal meetings, the coordination of various course elements and creativeness in programme delivery.

The coordination of the courses and activities between partner universities in the DLL demand also quite close collaboration of the teachers in Norway, Estonia and Italy and they participate in regular coordination meetings. Both teams of Swedish programmes work together, share teaching resources and are involved in each others governing structures.

Another important feature is the educational experience of most of the teachers and communication style. Most of the teachers are regarded by the students on all programmes as professional, accessible, helpful and resourceful, though, of course, some personality clashes or dissatisfaction moments appear occasionally in surveys or quality monitoring exercises.

Admission and drop out
One should not be surprised that modern digital library studies in English attract a considerable number of students. However, one should also bear in mind that educational programmes need a significant time to earn reputation. Sometimes the reputation is provided by external bodies, e.g. in form of accreditation. To some extent ERASMUS MUNDUS is a label that guarantees the quality of a programme to a large extent. Therefore, it should not be surprising that DLL attracts over 300 candidates for 12 scholarships available for the students from Asian, African and some European countries.

The number of students attracted by a programme delivered by a single institution would be subject to change in relation to a variety of factors, but in principle the number of applicants to a successful programme with good reputation should be growing and stabilizing at some point. The first admission to the DLIS programme was announced in 2008 and there were 32 applications. The department considered this to be rather low number for a distance programme and decided to start an experimental run to which only 12 students were admitted. In 2009 the number of applicants increased to 55 and the programme was started officially. The third intake in spring of 2010 attracted almost 200 applicants, for the autumn 2010 SSLIS has received over 400 applications, and for the intake that will start in spring 2011, 1742 applications were sent in. The school has to select the best students to 30 positions out of 500 eligible students. It is difficult to establish the factors that have influenced the number of applicants for the current intake and we will have to wait to find out if the trend proceeds.

The Swedish DiSe programme is in a different position. It neither offers an attractive scholarship nor appeals to the world-wide public. Therefore, the numbers of applicants remain on the level with other Swedish Master's programmes in the LIS and similar areas – on the average around 30 students apply and are admitted to it annually.

The admission criteria for DLL are: academic record (40%), experience (20%), statement of purpose (30%), and references (10%). The DLIS and DiSe have chosen a more formal criterium: the number of academic credits. In borderline cases, the work experience is taken into account. For DLL and DLIS the English language proficiency is an important requirement.

Most of the applicants for DLL and DiSe have either previous degree in LIS or related disciplines, while DLIS attracts a significant number of students with computer science, economics and business as well as technology background.

The origin of the students in DLL and DLIS is quite different. While the DLL is dominated by the students from Asia and Africa with a very low number of applicants from European countries, the DLIS attracts mostly European citizens and residents. However, the applicants come also from the USA and Canada, Australia and New Zealand, African, Middle East and Asian countries.

In the on-campus, full-time programme DLL over the three intakes, only two drop-out cases were registered. The high quality of students is ensured by highly competitive admission process, which is one of the factors of high graduation percentage.

For distance studies a very high drop-out rate of the students is one of the main problems. On the average only one-third of the students manage to finish the first course (approximately one-third never shows up on the site at all). The drop-out rate slows down only during the second half of the studies. At present we have five students following the last courses in the DLIS from 12 students who started in 2008.

It is not easy to deal with this problem, especially regarding the economics of programme delivery. Therefore, SSLIS has developed several methods to solve the problem and at present tests their effectiveness.

One of the solutions may be to concentrate the demand for the programme and to admit larger number of students every second year. Another is to take in the students every term and introduce flexibility into the system allowing the university to accumulate students from different intakes in one course. This approach was taken by DLIS and is tested right now. It may occur that high demand for the programme and severe competition will result in admission of highly motivated and very good students. This may solve the drop-out problem without additional efforts, but it is yet to be proved. Meanwhile the SSLIS tries to increase the flexibility of the programme for individual students by providing a possibility to take more courses per term than planned and finish sooner or on the contrary, slowing down the pace of individual studies. So far, the school has improved the economic foundation of each module, but the problem of the drop out persists.

Student satisfaction
Despite high drop-out from both distance programmes DLIS and DiSe, the level of student satisfaction registered in each course is quite high. The first courses on the programme are rated especially high for the delivery mode and the educational forms as well as for the content. The technologically-oriented modules in DLIS that were expected to scare away the students with humanities orientation do not produce this effect on a worrisome scale, i.e., the drop-out from these courses is not higher (sometimes even less) than from the other ones.

The content of the programmes is seen as relevant and logical, building on the previous knowledge and/or practical expertise. It is also experienced as innovative and up-to-date. The students expect that the studies will enhance their possibilities to find good jobs or advance in career. In this respect it is important to note that the DLL students see their future in research and most of them after graduation plan further doctoral studies. They also have expressed the opinion that their professional careers may be inhibited by the lack of technology-related courses. The students in distance programmes DLIS and DiSe seem to cope quite well with technology subjects and some have expressed the opinion that they "have provided exciting challenges". How useful these courses will be in their future work remains to be seen, though most of the job advertisements ask for technology-related and programming skills.

The course literature in all three programmes seems to be consistent with the trends established by the Digital Library Curriculum Project team: "there is no core set of readings assigned in DL courses, but there is a core set of authors whose works are assigned. This study also found that there is a core set of journals from which readings are assigned" (Pomerantz et al. 2006). The literature is also constantly renewed. The students seem to be appreciative of the assigned readings and become active information seekers sharing their findings with their course mates on regular basis.

Another high satisfaction factor is cohesiveness of the student groups. In the DLL programme this cohesiveness is achieved quite quickly because of the proximity among the groups of individuals living in alien environments and experiencing studies and change of scenery together. In the distance programmes it is not easy to achieve the same level of closeness. Residential periods seem to be the main element that helps to build relationships in the groups. Quite a significant number of students prefer to attend both residential periods each year, though only one is obligatory. However, the resources needed for this are quite beyond financial capacity of our students from African countries. They especially value the interaction possibilities created on the PingPong platform, the blog of DiSe, by e-mail and other means.

Emerging library management perspective and its manifestation in the programmes
The three programmes have much in common with one another, in spite of having been devised according to rather different ideas.
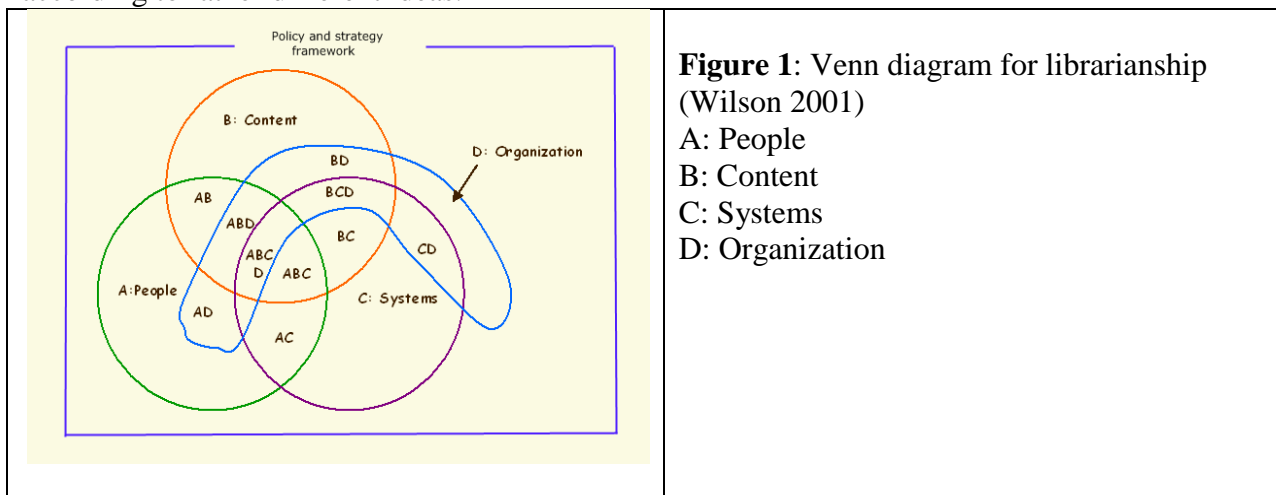

Figure 1: Venn diagram for librarianship (Wilson 2001)
A: People
B: Content
C: Systems
D: Organization

Wilson's (Wilson 2001) Venn diagram of the scope of librarianship (see Figure 1) was used as a guiding concept for the DLIS programme. Given the target market of practicing librarians, the focus of its curriculum planning was on the management of digital libraries as organizations. Consequently, the irregular area labeled D in diagram constitutes the core, since it identifies the organizational framework within which *people* are both served and (in the case of staff) managed, where *content* is organized, digitized and made available for use, and where *systems* are developed and employed to manage the digitized information resources (Maceviciute *et al.* 2009).

The DELOS conceptual model of digital libraries is applied for structuring the DLL programme. Its basic scope is rather similar to the components in the Venn diagram. It includes the following elements: digital contents (including copyright issues), people (librarians and users), and systems. As the first one this model addresses mainly the global scope of the studies and is not related to country context.

The third DiSe programme attempted "to integrate three levels of scale – macro, meso (interpreted as national), and micro – in a master's programme… An important task has been to collaborate closely with partners from libraries and companies with varying local and national agendas." (Dahlström and Francke 2009: 2).

Thus the underlying foundation for modules in each of the programme differs:
- DLIS focuses on the education of the managers and senior specialists of organizations (physical or virtual) organizing digital collections and providing digital services,
- DLL directs main attention to the leaders of innovation and change in libraries with specific focus on developing research abilities,
- DiSe concentrates on providing competence for local institutions for digital media and digital collections management.

Nevertheless, the library and information service management perspective is quite clearly built into all three programmes. DLIS devotes only one course to Digital Library Management, but most of the topics included into it are also present in other courses. The managerial perspective guides the depth and level of the technological courses and service development for the users. The problems for the final Master's examination should also include a managerial aspect.

The DLL programme is clearly stating the LIS management perspective through the courses delivered at the Tallinn University: Information and knowledge management and Human resource management, including leadership issues. Both courses seem to be diverted from the digital library context and addressing more general management areas in organizations. However, as students stated in the interviews: "all the doubts of the necessity of such courses in the programme evaporate by the end of the courses; after all digital libraries are run by people and on information, therefore it is very important to manage both in the most appropriate way."

The third programme puts strong emphasis on project management within the library by including a course and a workplace project. This is clearly related to the organizing of work with digital library resource collections in Swedish libraries. Thus, all elements of LIS management are introduced for this particular purpose.

So, in one way or another all three programmes build their perspectives as the notion of change management, either through innovation, organizational change or project implementation. This perspective cultivated in LIS management for several decades since introduction of computer technology into libraries unites all three programmes as built on the common foundation of LIS management.

Note: Presented at International Conference on Digital Library Management (ICDLM): Extending benefits of modern technology to public, academic, and special libraries, 11-13 January, 2011, Science City, Kolkata.

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