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## Electronic Theses: some recent developments.

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### Abstract

The Autumn 1999 edition - LIRN 75 - included an article by the author which examined activities relating to the production and use of electronic theses in the UK and the USA. Since that review was written there have been several significant developments in terms of progress with existing projects and enthusiasm for new ventures. This article considers the expansion of the Networked Digital Library of Theses and Dissertations (NDLTD) over the past two years, UNESCO support for developments in this area, the 'Digital Dissertations' project at Humboldt University in Berlin, the Australian Digital Theses project, and related activities in the UK.

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### Introduction

In the Autumn 1999 edition of *Library and Information Research News*, the author described the achievements of the Networked Digital Library of Theses and Dissertations and, in particular, the production, management and use of electronic theses at Virginia Polytechnic and State University<sup>1</sup>. Since that article was written, the scale of the NDLTD, and the electronic theses and dissertations (ETD) project at Virginia Tech., has grown. So, too, has international interest in the subject, and a large amount of information is now available about related work that is being undertaken in countries as geographically distant as Germany and Australia.

### The NDLTD

The Networked Digital Library of Theses and Dissertations is a federation of members, mainly universities, with aims to increase the availability of student research through the use of digital library technology.<sup>2</sup> In the Autumn of 1999 there were 57 member universities and 6 other member institutions. By June 2000 membership had risen to: 4 'Consortial Regional or National Efforts', 13 'Supporting Institutions' and 83 Universities / Libraries (including those that are part of consortia).<sup>3</sup>

The agenda of the Spring 2000 meeting of the Steering Committee reveals the range of activities in which the NDLTD is involved, and the organisation goes to a considerable amount of effort to share the experiences of its members.<sup>4</sup> Its Web pages list the many articles and press releases that have been published, and they include advice for those who are in the early stages of implementing an ETD initiative. (For example, there are guidelines available which cover the process from the planning stage, and the gaining of approval from the appropriate authorities on campus, to joining the NDLTD, setting up systems to support students, and dealing with the technical issues).<sup>5</sup>

Members of the group speak at conferences and seminars. The programme for the recent 'Third International Symposium on Electronic Theses and Dissertations', which was held in Florida, provides evidence of the scale of international interest in research in this area.<sup>6</sup> Indeed, the enthusiasm associated with the project is reflected in the fact

that information about the fourth symposium, which is scheduled to take place in California in March 2001, is already available on the Web (from a link on the NDLTD Home Page).

### UNESCO involvement

Many developments associated with the production and use of electronic theses and dissertations are now taking place outside the USA. Of particular significance to researchers is the information on the UNESCO Web pages about a workshop that was held at their headquarters in September 1999. The purpose of the meeting is described as being: "to review existing electronic theses and dissertations (ETDs) projects, to define the needs of developing countries in this area and to discuss possible international action".<sup>7</sup>

The Web page report on the above workshop provides details of UNESCO's interest in facilitating the transfer of expertise in this area to developing countries, and it identifies further action that should assist in the realisation of this goal. The list of participants in this workshop shows that many different countries (including Brazil, Canada, France, India, Portugal and Russia but not the UK) were represented.<sup>8</sup> Amongst the organisations represented were the NDLTD/Virginia Tech., the University of New South Wales (Australia), and Humboldt University (Germany). The creation and use of theses in electronic format is now clearly of interest throughout the world and it is encouraging to see the extent to which efforts are being made to share expertise between institutions and across national boundaries. Indeed, a Web page with the title "UNESCO Clearing House on Electronic Theses and Dissertations (ETD)" has now been established to provide access to lists of institutions and experts involved in work in this area.<sup>9</sup>

### Project at Humboldt University

**Context** The 'Digitale Dissertationen' project at Humboldt University, in Berlin, is being undertaken in liaison with both the NDLTD initiative and the 'Dissertationen Online' project in Germany. Details of the latter are available (in English) at [http://www.educat.hu-berlin.de/diss\\_online/englisch/index1e.html](http://www.educat.hu-berlin.de/diss_online/englisch/index1e.html); a paper which summarises the background and structure of the project is available at <http://www.unesco.org/webworld/etd/contributions/dfg.htm>.

**Aims** The Digital Dissertations project at Humboldt University was launched in September 1997 and has funding until the end of August 2000.<sup>10</sup> Organised by the University Computing Centre and the Library, it aims to build up a digital library of theses and dissertations, access to which is available via the Internet. The project has a number of objectives upon which effort is being concentrated. These include:

- Ensuring that security and archiving issues are addressed - through the use of digital signatures, electronic time stamping services, and the appropriate use of SGML / XML standards.
- Implementing a high quality retrieval system.
- Ensuring that support is available for authors who are producing their work in electronic format - through the provision of courses and guidelines as well as the provision of special services for scanning and preparing audio and graphical information.
- Developing a workflow model for the submission and handling of digital publications within the university - giving consideration to the cataloguing, storage, and organisation of the theses, and the work involved for the staff of the Library and the Computing Centre.

**The work** To achieve these aims, the project team at Humboldt has drawn on existing work at Virginia Tech. and has adapted and developed the U.S. model to suit German conditions. Attention has been given to the technology involved in both the conversion process and the retrieval process, and a significant amount of effort has been devoted to ensuring that the results of the research are disseminated. Details of the progress of the work, statistical information about the numbers of dissertations involved, and

lists of associated publications and press-releases are publicised on the Web.<sup>11</sup> Moreover, an international workshop, was organised in Berlin, in May 2000, in order to provide an opportunity for the experts working in this area to meet to pool their knowledge.<sup>12</sup>

**Incentives** Traditionally, German students have been obliged to publish their doctoral theses and, particularly where reciprocal arrangements exist with other universities, they may have to submit multiple copies. (At Humboldt University the number of copies required varies according to the subject area; sometimes the figure is thirty, occasionally it is as high as sixty.) In February 1998, Humboldt University Academic Senate decided to allow the submission of theses in electronic format as a means of publication. Although a paper version is still required for the Library (for archival purposes), the new arrangements provide students with an option that allows them to make significant cost savings. The scheme has several attractions, in addition to the financial aspect, in particular for those who wish to make their research available quickly to a wider audience.

For the students at Humboldt University who opt to follow the electronic submission route a lot of support is provided. A forty-page booklet which explains the processes involved in creating a digital dissertation is available, and other relevant information may be read on the Web pages. Special workshops are organised for small groups (of approximately twelve people at a time) and the project team has investigated the best means of providing additional help via e-mail, or telephone, or in person.

**Other considerations** The project at Humboldt University appears to have achieved significant results so far, but a number of issues have been identified as needing further consideration:

- The attitude of the authors and their supervisors towards electronic publishing - at present electronic submission is on a voluntary basis and, to date, there are significant variations between subject areas in terms of the number of digital dissertations deposited. So far, the work has concentrated on those who are keen to participate in these developments.
- The integration of the project into the workflow of the University Library - at present five members of Library staff are involved (for approximately two hours per week each) in work relating to the digital dissertations. More staff training will be required as the project expands.
- Resource implications - long term staffing and financial concerns need to be addressed before the current source of funding comes to an end. At present, in addition to the Library staff mentioned above, there are two members of staff at the Computing Centre engaged in the project, and assistance is provided by six (part-time) student helpers. The existing conversion programme is time consuming, particularly where special applications are involved, and some changes to the procedure might be required if the scale of the project increases but the corresponding resources to support it are lacking.

### Australian Digital Theses Project

The April 2000 edition of the *Occasional Bulletin* produced by the Council of Australian University Librarians describes the efforts that are underway to improve access to Australian postgraduate theses. These efforts centre on the 'Australian Digital Theses Project' which involves university libraries collaborating to develop a distributed database of digital theses.<sup>13</sup>

The ADT project has its origins in 1997, and details about its aims, background, plans, and contacts, are available at:

<<http://www.library.unsw.edu.au/thesis/etd.html>>.

The initial stage involved seven participating institutions and took place in 1998/99. The ADT project recognised the work that had already been done at Virginia Tech. Like the project at Humboldt University it aimed to make use of the available software - modifying it to suit local conditions of award. The Australian initiative aimed to establish an electronic archive of frequently requested theses, as well as standards for creating electronic theses and procedures for submitting new theses in digital format (it was to include PhD theses and Masters - by research).<sup>14</sup>

This project, like those described above, maintains a link at international level with other work in this area. For example, the Web pages include links to the NDLTD, Virginia Tech., and the UNESCO Clearing House.<sup>15</sup> With a view to the future, the project appears to have secured support for future development since C.A.U.L. reports in its bulletin that, from July 2000, it will "take on the overall responsibility for the service" and that "other Australian universities will be invited to participate".

The University of New South Wales, the lead institution in the original initiative, provides information, on its Web pages, about its own project to investigate different technical and procedural mechanisms relating to electronic theses and the protection of copyright and students' rights.<sup>16</sup> It also aimed to examine the feasibility of charging for access to the full text of a thesis, and to develop preservation strategies (including a migration strategy).

Browsing through the Web pages of the institutions involved in electronic theses projects, it becomes apparent that there are many different issues to be explored in this area, from metadata, archiving, copyright, and charging mechanisms, to the workflow, training, and promotion of the concept. It is encouraging to see that many of the areas that require research are the focus of specific projects. It is also encouraging to see that these projects are inter-relating and the results are benefiting everyone involved.

### **The U.K.**

Unfortunately, work in this area in the UK falls far short of the progress that has been achieved by some 'centres of excellence' in other countries.

Nevertheless, there have been some relevant developments over the past year, and there is evidence of a rise in enthusiasm for pilot projects. For example, the University Theses Online Group (UTOG) has reconvened, after a period of inaction, and is now involved in monitoring a project that is being undertaken by 'Expert Information'. The latter has been awarded a grant by the Joint Information Systems Committee (JISC) to undertake a pilot programme which has a number of aims relevant to the work of UTOG. Amongst these is the attempt to improve the speed at which information is published

in the 'Index to Theses' (by introducing an electronic submission procedure), and the intention to provide a direct link to the full text of the thesis.<sup>17</sup> At present, the full text is likely to be available from either the British Library or the original institution but, in future, a link could be made to an electronic version in a digital library.

Another potential pilot project has been proposed by the Science & Engineering Library, Learning & Information Centre (SELLIC) at Edinburgh University. This project would involve digitising theses in selected subject areas from four UK universities. Metadata records would be produced and thesis files would be made available for access from the participating libraries (subject to relevant terms and conditions). If this project comes to fruition it might serve as a model for other institutions, and it would certainly be helpful in terms of promoting interest in the subject.

In many ways, it appears that it is only a matter of time until electronic theses become fully accepted in the UK. There are now examples, not only from within libraries, of universities considering the matter seriously. For example, at The Robert Gordon University, which has already accepted a PhD thesis that was produced as a CD-ROM, students at Gray's School of Art are currently engaged in research that may be presented advantageously in digital format. Indeed, a senior researcher has commented on the work of one student that ". . . a web-ready version of her thesis might be a possibility". Greater flexibility is available, in terms of both presentation and structure, when a thesis is produced in electronic format and it may well be in the field of art and design that the major changes initially take place.

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