Scholarly Monographs: The Unacknowledged Dimension of Electronic Publishing?

R E Lonsdale and C J Armstrong

Department of Information and Library Studies,
University of Wales Aberystwyth and the Centre for Information Quality Management
lisqual@cix.compulink.co.uk

Introduction

Lancaster has been looking forward to paperless scholarly communication since 1976 but more recently the terms “virtual library”, “digital library” and “hybrid library” have been coined, and we can begin to conceive of a new library-concept within not too many generations. Lancaster (1994) has also speculated on what will be meant by collection development by the year 2025, and has cited Dowlin who wrote of the need to move the library from a “fortress” model to an “information pipeline” model. Any such model would have to embrace the electronic forms of today’s paper-based publications.

It is evident from the literature and from an International Publishers Association survey, in particular, that scant attention has been paid to the publishing of electronic monographs (Müller, 1997), indeed, for a number of years electronic scholarly publishing has been synonymous with electronic journal publishing (Treloar, 1996 135). However, while very little work relating to electronic monographs and textbooks per se has been undertaken, other forms of electronic publishing have been the subjects of investigation. In particular, the Joint Information Services Committee (JISC) eLib projects such as Eurotext, SCOPE and EDBANK have looked at on-demand publishing and offer substantial insights into the problems of creating and using electronic texts. eLib identified a need to conduct a supporting study in the field of electronic scholarly monographs and textbooks and the project was undertaken between October 1997 and April 1998 (Armstrong and Lonsdale 1998). It explored several interrelated areas:

I. The nature of the general publishing context of scholarly monographs and textbooks was investigated to ascertain the current status of academic book publishing. This aspect of the investigation addressed such issues as incidence of provision, management structures, costing mechanisms, authoring and editorial responsibilities.

II. An analysis of the issues associated with the characteristics of CD-ROM and Web monographs was undertaken, together with a delineation of the nature of the narrative content, added value components, subject orientations, rights issues and quality control. File formats, document authority and identification, publication security and metadata were considered for both CD-ROM and Web monographs.

III. The project also explored the implications of electronic monograph publishing for those involved in collection management, and provided an analysis of the current nature of bibliographic access and delivery.

IV. The final area of investigation comprised a cursory examination of the
provision of electronic monographs in British university libraries, and was conceived as the precursor for a further in-depth study.

Given the international nature of academic publishing, and the fact that the professional literature suggested a higher incidence of activity within North America, the study was extended to encompass publishing beyond the UK. This afforded a comparative context by which to view UK initiatives.

The project focused on publications used in tertiary education or for research, and ‘electronic publishing’ was taken to mean texts made available in any computer-mediated format: diskette, CD-ROM or via the Internet. This paper offers an overview of the structure of the publishing trade, their nature and content, subject orientations, bibliographical access, quality control and charging mechanisms.

Owing to the constraints on the length of this paper (and in keeping with the spirit of electronic publishing), we have made available a full version of the paper, the references and a range of additional information including the URLs of the web monographs investigated as part of the project at <URL http://www.i-a-l.co.uk/Ronn_99.htm>.

Methodology
To satisfy the terms of reference of the project several methodologies were employed for the collection and analysis of data. These included a comprehensive literature search and review using as a focal point Charles Bailey’s bibliography on electronic publishing (Bailey, 1999); a survey of 304 UK and non-UK publishers of electronic monographs by means of an interrogation of their Web sites, and case studies conducted with five selected UK publishers. A separate investigation of the publishers of national bibliographical sources and services was undertaken by telephone, and 125 UK university libraries were surveyed by email questionnaires.

Structure of the electronic monograph publishing trade
The study sought to explore the structure of the electronic monograph publishing trade in the UK through data gleaned from our analysis of the literature and the publishers’ survey. Three discrete modes of publishing were identified.

1 University presses
The North American experience suggests that there is a variety of types of publisher who have elected to enter the electronic monograph arena. Predominant in the US are the university presses, many of whom have been led into experimenting with electronic monographs as a result of the fears about the future of the scholarly monograph elucidated above, that is, in order to make scholarly monograph publishing economically viable.

Our search suggests that in excess of 14 North American university presses are currently active in the field. Furthermore, there is a widely held belief that, for electronic publishing of monographs to be successful and to reduce risks, it is necessary for publishers to establish partnerships to support research and production. An example is the Committee on Institutional Cooperation (CIC) which is an academic consortium of the Big Ten universities and the University of Chicago.

No such trend is evident in the UK. Only four university presses: Cambridge, Oxford, Exeter, and University College London (an imprint of Taylor & Francis) offer, or plan to offer, electronic
These presses are working independently, and if co-operation does exist, it is on an informal *ad hoc* basis.

2 Non-University commercial publishers

There appears to be a similar pattern of electronic publishing activity from within the non-university publishing sector. A range of North American and international commercial publishers was identified. With respect to the UK, nine mainstream, commercial publishers and eight minor presses were listed reflecting a diversity of disciplines with a slight and expected bias towards the sciences.

3 Specialist publishers

A final category comprises small-scale individual publishing initiatives, again evident both in North America and in the UK. This is typified by academics publishing monographs directly on the Web. The one British example is Process Press, established by a member of the academic staff in the Department of Psychology at the University of Sheffield. A set of his scholarly Web monographs has been published using the computing facilities of the University of Sheffield for the Web site.

One issue that we sought to explore in the survey of UK university libraries was evidence of this form of specialist electronic publishing of monographs by academics or departments within their own universities. Of the 76 returns, 29 libraries were uncertain as to publishing activity within the institution. Whilst not unsurprising, given the potential implications of electronic publishing for academic libraries, this raises the question of the effectiveness of communication between academic departments and library staff responsible for the selection and acquisition of electronic resources.

Eight universities reported the publishing of monographs by departments for internal use and nine for external use. No further information was sought at this juncture since the aim of the survey was specifically to identify the incidence of provision with a view to undertaking a more detailed investigation of the provision and use within academic institutions.

New publishing structures

Whilst individual publishing initiatives by large and small commercial publishing houses will continue, there is a body of opinion in the literature which suggests that for electronic publishing, in general, to succeed, an inevitable synergy will have to be effected between the various “actors” involved in the electronic publishing process. Oakley, Kueter and O’Hea, (1997) identify the actors as comprising the authors, publishers and information providers. This concept could be expanded, we believe, since the publisher portion of the information chain contains links between publishers and libraries, users-as-authors and publishers, users and libraries, and publishers and users-as-readers.

Carbo (1997) feels that partnerships between producers and users of information services are essential to define, teach, learn and acquire the knowledge and skills (“mediacy”) needed to be successful in a networked environment. Such a synergy is already evident in some of the North American initiatives concerned with electronic journal publishing, for example, TULIP and Red Sage (Scovill, 1995 appendix E). The International Association of Publishers also makes reference to a number of electronic publishing projects in which other actors are involved, “among which [are] universities and software vendors” (Müller, 1997).

Whilst co-operative ventures in the electronic publishing of journals have been established in the UK (for example, PILOT), there is no evidence that the “synergistic environment for
cooperation” for the publishing of scholarly monographs envisaged by the CIC, or the authors of the EU publication, *The Future of Content*, is emerging in the UK. Statements supporting the advisability of establishing “virtual companies” have been made, however, by British multimedia publishers who perceive the need for publishers to work with software developers and designers (Arnfield, 1996 17). It is our belief that there is a need for a national mechanism to be put in place to ensure that:

- The field of electronic monograph publishing in the UK is given due cognisance as a dimension of electronic publishing and that it continues to develop in a structured and synergistic way;
- All parties concerned with production, distribution and use of electronic monographs share research and expertise.

**Physical characteristics**

Our research sought to identify comparative use of CD-ROMs and the World Wide Web for monograph publishing. The data revealed a markedly higher figure for CD-ROM use in the UK and nearly equal figures for complete Web text and CD-ROM monographs in North American that together demonstrate the established position of CD-ROMs over Web publishing at this point in time (see Table 1).

<table>
<thead>
<tr>
<th>Respondents</th>
<th>CD-ROMs (%)</th>
<th>Complete Web texts (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>60.87</td>
<td>8.7</td>
</tr>
<tr>
<td>USA</td>
<td>47.37</td>
<td>42.1</td>
</tr>
</tbody>
</table>

*Table 1: Publishers’ use of Web and CD-ROM*

Whilst the publisher’s survey demonstrates that CD-ROM is currently the dominant medium, the data revealed that there was significantly more movement towards the use of the Internet for publishing than had been predicted in the literature. While only 30.6% of all publisher sites examined offered complete scholarly monographs or textbooks online, Table 2 shows that the figures for publishers offering partial monographs to add value to their catalogues are relatively high – given the general acknowledgement that in the UK, at least, publishers are only just tentatively moving into the field. The amount of added-value use correlates with arguments in the North American literature for Web monographs (Winkler, 1997). Partial texts and tables of contents lie only slightly below the ubiquitous abstract while sample pages and sample chapters featured in about a third of all sites. Curiously, significantly fewer UK sites offer tables of contents and sample pages.

<table>
<thead>
<tr>
<th></th>
<th>Publishers with Complete Texts (%)</th>
<th>Publishers offering Tables of Contents (%)</th>
<th>Publishers with Partial Texts (%)</th>
<th>Publishers offering a Synopsis or Abstract (%)</th>
<th>Publishers offering Sample Chapter (%)</th>
<th>Publishers offering Sample Pages (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UK</strong></td>
<td>8.70</td>
<td>56.52</td>
<td>30.43</td>
<td>30.43</td>
<td>47.83</td>
<td>21.74</td>
</tr>
<tr>
<td><strong>USA</strong></td>
<td>42.11</td>
<td>55.26</td>
<td>65.79</td>
<td>31.58</td>
<td>57.89</td>
<td>42.11</td>
</tr>
</tbody>
</table>

*Table 2: Publishers’ use of Web sites*
Nature and content of monographs

The literature suggested that the authors of scholarly electronic monographs may take advantage of the inherent hypertext non-linear qualities of the Web, drawing readers into an essentially non-linear approach to their topic (Atkinson, 1993; AVCC, 1996). Cambridge University Press is compiling an “asset management store” – a kind of jukebox from which users can select necessary components for a book: “Just For You” publishing. The book will be totally fragmented and some parts may be published before the whole is ready, confirming some of the findings of Winkler (1997). However, it would appear that the influence of electronic publishing on the intellectual content and structure of monographs, perceived in the literature and manifest in non-linear narratives, does not yet appear to be evident in British electronic monographs.

Added value

One of the major attractions of the electronic publishing of scholarly monographs for scholars and students lies in the added value (AVCC, 1997; Boson Books). However, this is not borne out in a recent study of authors and electronic journals (McKnight and Price, 1998) where less than a third of authors felt that the addition of multimedia in a publication would be of use to them in their subject field.

Added value can either offer easier access and visual processing or an enhanced intellectual content. The features which offer added value and are necessary to maintain the presentation at a level which is comparable with, or better than, the book fall into the former category. The electronic linking to additional resources or the provision of moving images (for example, a rotating anatomical image) clearly are beyond the capabilities of the printed book and are truly added value.

Constraints of added value components

Whilst acknowledging the contribution of multimedia and added value components, certain constraints do have to be recognised. Very few publishers hold all the intellectual property rights that they need in order to add multimedia value to Web sites, as hard-copy rights do not necessarily confer equivalent electronic rights (Arnfield, 1996 16, 17). The complexities surrounding copyright and the need to involve a variety of actors in the electronic design and publishing process mean difficult decisions. Routledge noted the considerable difficulties surrounding rights issues; the potential pitfalls in not maintaining control over added value links and the financial burden of developing and maintaining resource links. Another issue which the McKnight and Price study (1998) identified with respect to electronic journals – and one which might have a bearing upon authorship in monographs – concerns the skills required to produce the multimedia content. Less than one fifth of their sample of authors felt that they possessed the requisite skills.

There is surprisingly little discussion in the literature as to the pedagogical rationale underlying the development of Web sites containing links that move readers outside the current document. Two issues seem to need further study. When the links are to an external resource, does this move the reader away from the source never to return – the possible beginning of a chain of links each moving the user further away from the publisher? Do publishers already lessen the impact of such negative marketing by refusing to link to “opposition” sites even if this refusal might lessen the value of their own site?

Secondly, are lists to additional resources of any real value? Do they enhance the pedagogic nature of the document or are they simply a waste of time? For example, the pressures on
student users of textbooks are such that there are natural constraints on the amount of additional readings they can manage or absorb. Lecturers are sufficiently aware of this, and sometimes only single chapters are included in reading lists. In this context, is it likely that resource links will be exploited? The McGraw-Hill economics title mentioned above has 168 links in the professor zone (16 syllabi, 26 “teach links”, 86 data sources, 28 publications, 10 simulations and 2 software) and a further 50 in the student zone. It is interesting to speculate on how many of these are followed by readers.

Neilsen (1997) has established that there are different reading patterns used for electronic/Web documents Our project did not attempt to investigate enduser behaviour, and further research is needed to determine the extent and type of use of web monographs by scholars and students.

Quality control
The issues surrounding the evaluation and quality of data have been a concern of individuals – there has been significant publishing since the late 1980s (see for example, Large, 1989; Fox et al, 1994) – as well as professional bodies such as UKOLUG (the UK Online User Group), The Library Association and the Southern California Online User Group (SCOUUG) (Basch 1990). More recently the EU have demonstrated their concern (Swindells, 1994; Information Market Observatory, 1995). Penniman (1997) notes a trade-off between quality and speed that is evident with the emergence of the World Wide Web and calls for “enhancement of the emerging systems to include some of the screening and selection processes users have relied on in the past”.

Quality control is generally seen as being a part of content management and thus the publisher’s task (Oakley, Kueter and O’Hea, 1997), although clearly the authors are responsible for the intellectual rigour and authority of the content itself. One of the publishers surveyed saw it as a collaborative issue with the publishers taking final responsibility, particularly in terms of the control of the content.

At the most basic level, a degree of concern for quality is manifest in the appointment of a Webmaster, a cost centre or a directorate with special responsibility for electronic publishing. Chadwyck-Healey, John Wiley and Cambridge University Press all had appointed a Webmaster although Wiley stated specifically that it is not the Webmaster’s responsibility to look after quality control of the content – this is covered by normal peer review and copy-editing procedures. It is the Webmaster’s responsibility to ensure that house rules are followed, that README files make sense, that links lead to correct locations, and that any software provided works in the appropriate way. Routledge, Cambridge and Chadwyck-Healey integrate the management into their existing management structures.

In terms of the quality of the data within the resource, that is the monograph, quality is most obviously indicated by the use of metadata. This was considered in detail (see Section 7 of the report) but for the purposes of this paper, we can say that the use of metadata is limited, inconsistent and ad hoc both across the publishers in the survey and within individual publisher sites.

Quality criteria associated with content normally include authority, authenticity, currency, timeliness, consistency, coverage and scope; while additional considerations are linked with the presentation, visual acceptability and ease of use and navigation around the site. There have been a number of attempts to document evaluative procedures and quality criteria for Internet resources, probably the best are Tillman (1997) and Widener University’s Web Site Evaluation Checklists (Widener University, 1996). The DESIRE project also documented Selection Criteria for Quality Controlled Information Gateways (Day, 1997). At present there is no means other
than examination by which users can determine the degree of trust which can be placed in a resource – it may not even be clear who owns the resource or when it was last updated. There is not inconsiderable pressure within the information industry to apply some form of standards, accreditation or validation to resources. This is necessary as the Internet opens up a huge array of resources to untutored or unskilled end users who may not consider the possibility that the resource is less than perfect or that it should be subjected to some kind of evaluation before it is used. DESIRE II has moved on to address this issue, looking at possible methodologies for implementing quality ratings (Brickley, et al. 1999).

Bibliographical access
Access to electronic monographs is of critical importance to the scholar, the student and librarians engaged in collection management, and comprises several dimensions. The first concerns bibliographic access to titles, a matter that has, paradoxically, received scant attention in the international and UK literature on electronic monographs. Our study sought to investigate the current position in the UK with respect to legal deposit and electronic monographs, and to assess the nature and effectiveness of national bibliographic sources and services in identifying and describing monograph titles.

Legal deposit and the British National Bibliography
The issue of extending the law of legal deposit to non-book materials in the UK is well documented in the literature on bibliographic control (Ratcliffe, 1999). A major impetus came in February 1997, when the Government published its long-awaited consultation paper, Legal Deposit of Publications: a Consultation Paper (DNH, 1997). Whilst the document is concerned to explore arrangements for printed materials, it affords an important opportunity for all concerned with the new technologies to re-evaluate the implications of extending legal deposit legislation to electronic formats which are currently excluded from the British National Bibliography (BNB). In considering the issues surrounding the possible extension of legal deposit to electronic formats, a distinction must be drawn between the CD-ROM and Web publications.

CD-ROM monographs
CD-ROMs are defined in the consultation paper as “tangible electronic formats”, and constitute a significant area of electronic publishing in the UK both in general terms and more specifically within the field of electronic monographs. Ratcliffe (1999) defines two uses of CD-ROM, those which reproduce “established printed works”, and those that, “though tangibility fixed in format, represent live or dynamic databases which are subject to updating”. The CD-ROM monographs that have been scrutinised in this study largely comprise the former category. Ratcliffe argues that there is a case for extending deposit to this medium, since the cost of producing the necessary copies for the deposit libraries would be “marginal”. His view is echoed in both the consultation paper and the British Library’s own consultation paper The Future of the National Bibliography (BNB) (British Library, 1997). The latter suggests that a set of “subordinate supplements of the BNB” could be produced that might ultimately appear in electronic format – including one specifically for CD-ROMs. In the short-term, it is envisaged that such a publication might be based upon information from publishers or outsourcing of data. In the longer-term, there is the possibility of legal deposit being extended to the format.

Web monographs
In respect of extending legal deposit bibliographic control, Web monographs pose a much greater challenge. Both consultative papers cited above devote comparatively little space to the discussion of Internet publications and underline the extensive problematic issues “which must be resolved before any system of legal deposit could be introduced” (DNH, 1997). Only
one European country, Norway, has legislated for the deposit of Internet publications, and as Ratcliffe wryly observes “that legislation leaves much unsaid” (Ratcliffe, 1999). These problematic issues are extensively analysed in Ratcliffe’s excellent chapter. The conclusions drawn in the consultative paper about the extension of deposit to Internet publications, including Web monographs, are sensibly open-ended. They recommend that legislation should be constructed so as to facilitate ultimately the extension of deposit to on-line publications, but “at the present time no regulations should be drawn up to give immediate effect to this possibility” (DNH, 1997).

The response from the British Library was more assertive with respect to the need to extend any new legislation to online publications. The Library urges the Government to include enabling powers in any new primary legislation and if such enabling powers are not enacted:

“on-line publications, which are likely to become the major form of scholarly publication in some subject areas in the near future, would not be eligible for deposit. Some countries (e.g. France and Germany) which have taken a piece-meal approach to the extension of legal deposit legislation recognise that they will need to take remedial action to change the legislation” (British Library 1998).

The future of legal deposit

Following responses to the Government’s consultation paper, the Secretary of State for Culture, Media and Sport announced at the end of January 1998 that a working group would be established, chaired by Sir Anthony Kenny and comprising representatives of the British Library, Legal Deposit Libraries, The British Film Institute and publishing sectors, to consider ways of moving forward on the issue of legal deposit. The report of this working party subsequently recommended that a single national archive of non-print material be established based initially upon voluntary deposit. With respect to on-line monographs, however, there is still uncertainty, and it stated that “It would not be feasible to include them at present” (Ratcliffe, 1999). The Chairman has been asked to investigate the issue further.

In view of the fact that the national official bibliography of the UK excludes electronic formats, the study was concerned to explore their status in the major national trade bibliographies.

Trade bibliographies

The trade bibliographies published by BookData and Whitaker constitute important bibliographic sources for collection management in the UK, although there has always been a degree of uncertainty as to their role in capturing non-book materials. Little has been written about this role (Spiller, 1991), thus the data acquired from the interviews conducted with senior personnel of both companies offer unique insights into the bibliographic coverage of electronic formats. Both companies now include CD-ROM and diskette publications in their databases. BookData integrated these media seven years ago, whilst Whitaker has provided access only since October 1997. However, both do acknowledge that the incidence of titles is very low. Neither could say categorically what proportion of titles listed were scholarly monographs, although there was a presumption that it would be small.

To date, few publishers have engaged with BookData in wishing to explore the possibility of placing their electronic titles in the database, and a similar impression was given by Whitaker.

Neither BookData nor Whitaker accommodate Web monographs in their bibliographic databases, although both recognised the inevitability of this, and the capability is probably within
their reach. Such an extension would constitute an important means of identifying Web monographs, given the potential difficulties of extending legal deposit to this medium. Until there is a greater impetus from the market however, this possibility is unlikely to be realised.

Both BookData and Whitaker reported little demand from subscribers for information about electronic monographs, although subscribers’ responses to the inclusion of CD-ROMs and computer disks have been positive.

Given the comparatively limited array of electronic monographs presumably available in the trade bibliographies, it was not surprising to discover that there were only a small number of university librarians who choose to select from these sources. It is gratifying, however, that there is some degree of awareness within the academic library sector that trade bibliographies are expanding to encompass CD-ROMs.

Publisher sites
The printed catalogues of publishers remain an important bibliographic source for the evaluation, selection and acquisition of printed books; for certain categories of non-book materials they are also a preferred selection tool (Lonsdale and Wheatley, 1992). The evolution of publishers’ Web sites theoretically offers another important medium for gaining access to publications, and our survey of university libraries supported this hypothesis, with a majority of librarians citing publishers’ Web sites as the preferred mode of accessing both CD-ROM and Web monograph titles.

This, however, is no easy task, since there appears to be no guide to UK (or other) publishers who publish electronically. Indeed, producing such a list constituted the first fundamental and time-consuming task of the research project. One recommendation we wish to offer is that the potential advantages and the feasibility of creating a gateway to publishers who are publishing electronically be investigated. Such a gateway would serve the needs of those concerned with the selection and acquisition of monographs, and also act as an effective marketing tool for publishers.

Without doubt, most end users can identify publishers specific to their disciplines and elect to interrogate those sites. However, difficulties arise in locating the smaller specialist publishers, and for those scholars and students researching broader disciplines, for example the social sciences, a long and unpredictable trawl lies ahead.

Admittedly, we have no empirical evidence that end users wish to search for electronic monographs per se. However, anecdotal evidence and our own experience support the supposition that a mechanism for locating electronic titles would be welcome.

A second problem encountered concerns the fact that the majority of publishers sites do not differentiate between print and electronic titles, and our researchers found it exceedingly difficult to identify quickly electronic titles. This is something of a paradox since several of these publishers produce hardcopy catalogues of their electronic titles, for example, Routledge and Chadwyck-Healey.

Charging mechanisms
An issue closely related to bibliographic access is delivery and, consequently, the charging mechanisms adopted by publishers. A range of charging mechanisms has been discussed in the literature (for example, Winkler, 1997 A20), and was evident in the publisher survey and the case studies. As Rohe (1998) suggests, pricing for electronic material is not standardised with each publisher adopting different systems such as sliding scales dependant on the degree of
information accessed, annual subscriptions or Web licences. Given the comparatively low incidence of web monograph publishing in the UK and the fact that we are only in the early stages of discussions between the higher education sector and the publishers about the digitisation of print texts (rather than about electronically-published monographs), it is difficult to pronounce definitively on the pattern of charging mechanisms that may be emerging.

Charging is intimately related to copyright and both ELINOR and the March 1997, Telematics for Libraries Controlled Access to Network Digital Libraries in Europe (CANDLE) project are working on software for rights control and fee management (CANDLE, 1998), although CANDLE’s concern is for library-mediated access to electronic journals. A JISC/PA working party believes that there is a need for a central database of copyright-cleared items to facilitate the one stop shop approach (JISC 1998). This may or may not be appropriate to the scholarly monograph and textbook published electronically, but it seems likely that when these issues have been addressed, the ELINOR and JISC/PA approach may be expected to receive more attention.

**Conclusion**

We are conscious that our study constitutes a small-scale investigation of what undoubtedly is a small but growing area of significance in the UK. The structure of the industry reflects to some degree international initiatives yet displays unique characteristics. Extensive bibliographical problems remain, and there is little evidence of collection management activity in British university libraries. Our findings suggest that there are a number of salient areas worthy of further investigation. In particular, management and use of electronic collections, the pedagogical issues surrounding the nature of electronic monographs and the importance of facilitating a mechanism for bringing together all the actors to ensure co-ordinated development and we are planning to follow up some of these recommendations. We believe that whilst there is discernible activity in some areas of the world, notably North America and Australia, our research could also act as a catalyst for other countries who may not yet have moved beyond a study of electronic journals. This conference could act as a catalyst and we would welcome the opportunity to engage in collaborative research. The authors can be contacted via <URL http://www.i-a-l.co.uk/MailUs.htm>.

**References**


Day, M. *et al.* (1997) *Selection criteria for quality controlled information gateways: report for DESIRE (Development of a European Service for Information on Research and Education)*. Available at <URL http://www.ukoln.ac.uk/metadata/desire/quality/> Visited 09/03/1999


