Descriptive Standards for Serials Metadata and Standards for Terms of Availability Metadata

Two related eLib Supporting Studies commissioned by UKOLN

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Contents

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1. Management summary

1) This report was commissioned by UKOLN from Book Industry Communication in March 1997 in response to two related eLib supporting studies, arising from recommendations made at the first MODELS workshop in December 1995.

2) It reflects the new relevance of metadata standardisation as the network becomes the primary medium for the dissemination of many types of content.

3) Although there is nothing new about standards for metadata, there is now a broad recognition of the benefits which could be derived from widely-adopted standards for a greater range of metadata.

4) The two studies into different aspects of metadata were approached as a single piece of work, involving an analysis of existing standards and current practice; confirmation of current practice was based on a broadly distributed email questionnaire and through database searches; interim conclusions were presented at a well-attended Workshop in June 1997 and final recommendations were refined in the light of the discussion.

5) The definition of serials metadata adopted for this study is "data in machine readable form which identifies a journal title, a journal issue, or a journal article".

6) The importance of unique identifiers as a key element of metadata in systems interoperability is well recognised; only the ISSN and its derivative identifier, the SICI, have the necessary characteristics to meet the requirement for unambiguous identification of the serials at the title, issue and article level.

7) Standards for descriptive data elements are well established at the title level but less so at issue and article level; a BNBRF study in 1994 led to the development of an SGML standard, the SSSH, for the interchange of full journal "header" data which (although widely endorsed) has not become widely established in practice. The Dublin Metadata Core Element Set, while of considerable value in providing minimum standards for identifying online resources which otherwise have no metadata standards, does not provide enough structure to support the potential use of rich serials metadata.

8) Our research demonstrates the very wide variety of practice with respect to the expression of journals metadata. The title *as printed on the journal* and the ISSN were the only elements on which there turned out to be broad agreement.

9) The title *as printed on the journal* may not be an unambiguous identifier: there are several instances of different serials with identical titles.

10) There are even some questions about the ISSN. How many serials do not have ISSNs – even some of those which do not have ISSNs printed on them may have had an ISSN assigned? What is the potential for confusion between identical documents where publishers follow ISSN rules and use a separate ISSN for their (parallel) electronic journal from the one they use for their print publication?

11) At the article level, the richest metadata is held by the primary publishers, increasingly in machine readable (SGML) format; however, this metadata is rarely used by others in the information chain.

12) We recommend that the eLib programme should adopt the SICI as the unique identifier for serials articles and the ISSN and the ISDS Key Title as standard for the identification of serials titles.

13) To support this, we recommend that steps should be taken to make the ISDS database available as an authority file to all potential users in the information chain.

14) We recommend that the eLib programme should consider adopting a set of serials data elements compatible with generating and matching SICI codes; and developing a recommended format for on-screen metadata display.

15) We recommend that the SSSH should be adopted for communicating rich serial metadata sets through the serials information supply chain.

16) We recommend that carrier formats should be modified or amended as necessary to accommodate the recommended data element set (including the ISDS Key Title).

17) We propose that these recommendations should be widely promoted among organisations which participate at any level in the serials supply chain.

18) The definition of terms of availability (ToA) adopted for this study is "data accessible to customer or users which includes any or all of: financial terms of sale; copyright or other conditions of use; and terms for interlibrary loan, photocopy supply or downloading in electronic form".

19) Standards for ToA are less well developed than those for metadata. Outside EDI transaction messages, which are highly structured but non-specific, standards are either informal or non-existent.

20) From our survey, there is strong recognition of the need for international standards. These are more important for system-to-system communication than they are for human-readable interfaces, although increasingly the latter depend on the former.

21) Where terms of business are well understood and standardised (in, for example, primary commerce in books) EDI standards to support ToA information are well developed; similarly, progress has been made in developing standards for the dissemination of serials pricing data.

22) Document delivery has similarly well-understood terms of business; subject to the wide spread adoption of unique identification standards, it would not be difficult to develop the standards to support electronic commerce using standard EDI messages. However, there is little point in developing standards in the absence of systems to support them.

23) Much ILL is as simple as document delivery. The systems to support that part of ILL which involves the delivery of photocopies of serials articles would be essentially identical to those needed to support document delivery and much less complex to implement and maintain than systems designed to support the full ISO ILL protocol.

24) The development of ToA standards for electronic resources is much more complex. In the absence of wide agreement on standards of the terms of business for licensing electronic resources, the development of a standard would be premature although it is possible already to recognise the type of matrix of "uses and users" which would be necessary. This also implies the development of standards for user authentication.

25) We recommend that EDI messaging should be developed to support Document Delivery transactions to the extent that there is demonstrable market demand which would lead to the development of systems to implement such standards.

26) Serious consideration should be given to the extent to which such a standard, appropriately extended, could fulfil the requirements to support a high proportion of ILL transactions.

27) The development of standards for ToA for electronic resources would be highly desirable, but is contingent on continuing work on the development of more standardised commercial licensing models and the specification of systems which would make use of ToA metadata combined with user authentication to automate access control to content.

28) In the light of continuing work on standardisation in these areas, the development of ToA standards should be kept under review. It would be premature to start work at this stage.

2. Introduction

This report was commissioned from Book Industry Communication in March 1997 by UKOLN, in response to two calls for eLib supporting studies on (1) descriptive standards to enable and/or facilitate exchange of title, issue and availability metadata and (2) standards for terms of availability data. These studies arose from recommendations made at the first MODELS workshop in December 1996.

Metadata is rapidly becoming one of the most used (some would say over-used) words in the vocabulary of digital content dissemination. It is a term so all-encompassing in its scope that some doubt whether its use actually adds much to our communication. However, there can be little doubt that we need a term which describes "information about information" or "content which describes content" and the word "metadata" serves a useful purpose.

There is nothing *new* about metadata (not even the term itself). Library catalogues, bibliographic records, tables of contents, abstracts, indexes, cover blurbs, even publishers' editorial and production file records: whether on paper or in electronic form, whether structured or unstructured, all fall within a broad definition of metadata.

There is, however, a new relevance to metadata, as we look into a future in which the network is rapidly becoming *the* primary medium for the dissemination of many types of content. Structured metadata in digital form becomes an increasingly essential tool for the "discovery, location and request" of content (as defined in the Terms of Reference for the first part of this report). Those responsible for organising and disseminating content (typically, but not exclusively, people who regard themselves as "publishers") are coming more-and-more to recognise that one of the key elements of the process of content management lies in ensuring that adequate and appropriate metadata is developed and maintained, linked to the content. In its absence, the utility of the content itself can never be maximised.

There is a long history of developing metadata for the location of content in the physical world. Library catalogues must be almost as old as libraries themselves. However, metadata that was adequate to discover, locate and request content stored in physical format is no longer adequate for the same processes in a world of "bits rather than atoms"[1]. We can see several reasons for this:

- The explosion in the volume of information available to every user when physical possession (in their own or their institutional library, for example) ceases to be a limiting factor

- The increasing granularity of the information to which they wish to gain access

- The wide availability of tools to help them to discover, locate and request

However, like much technology, those tools have long imposed a discipline on the way in which metadata is collected and stored. There is nothing new in the pursuit of metadata standards: neither MARC nor identifiers like the ISBN or the ISSN represent what we would call exactly "new" technology. However, the time has now arrived when, in some sectors at least, there is a real need to consider the extent to which we will all benefit from imposing standardisation on a greater range of metadata.

Descriptive metadata for serial publications is the particular focus of the first part of this report. There has been serials metadata in digital form available from secondary publishers for many years. This has always been proprietary – both in terms of the format used and in terms of much of the

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[1]With appropriate acknowledgement to Nicholas Negroponte.

value-added content.

However, there is now another potential source of serials metadata, from the primary publishers themselves. Metadata, in the form of article "headers", is being produced by an increasing number of primary serials publishers as an integral part of their publication process. This is very "rich" metadata, although not normally enhanced in the same way as metadata from secondary publishers.

The precise implications for "resource discovery" within the information chain of the availability of such rich metadata near the "head" of the chain in digital form are unpredictable. How primary publishers will choose to exploit the resource that this metadata represents is still unclear – they may sell it to intermediaries, they may give it to subscribers, they may make it freely available for anyone to use, they may charge for access to metadata and give away access to content. All of these models are either being used or have been seriously suggested.

It is, though, clear that many of the ways in which this (meta) data can best be used depend on the ease with which it can be transferred between different members of the chain – a prima facie opportunity for the development of standards.

Standardisation will almost inevitability lead to *some* loss in the richness of the data. At the same time, we believe that (with such rich data available at the head of the chain) we should be wary of developing standards so low that much of the original value is lost. Thus, while standards for serials metadata need to be compatible with lower-level metadata protocols, we do not see these as an adequate replacement for much richer formats.

Having "discovered" the content they seek, the user then needs to be able to "locate" and "request" it. This is analogous to many other processes with which we are all familiar. We have already mentioned the importance of unique identifiers (like the ISBN and the ISSN) in the context of locating and requesting physical manifestations of content. Unique identifiers are themselves a crucial form of metadata in this context.

The second part of this report turns to another special form of metadata, Terms of Availability (ToA) metadata. Although as a subject ToA goes well beyond the confines of serials, much current attention is focused on serials because of their increasing availability in electronic form (alongside other digital content resources).

The terms under which physical information products are made available to others (whether for sale or for loan) are usually well understood. The example which we use in the report is that, when you buy a book, you well understand that you are not acquiring the right to print additional copies of it. However, when a librarian licenses access to an electronic resource, there is currently little consensus or consistency between publishers on the terms under which that licence is granted.

This part of the report considers the extent to which we have and need standards for defining the Terms of Availability. Where does the standards development process sit in a rapidly evolving but very diverse domain like this?

We are very grateful to all those who helped us in the preparation of this report: to all those who filled in and returned the very complex questionnaires which we sent out; to those who came to the seminar organised by UKOLN and BIC in London on 2 June 1997 at which we first discussed the tentative conclusions of our study and received some very valuable feedback; to Anne Ramsden of the International Institute for Electronic Library Research at De Montfort University for carrying out a series of online searches; and to Rosemary Russell of UKOLN and Brian Green of Book Industry Communication. As always, the responsibility for any errors in interpretation of what they told us is ours alone.

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3. Terms of reference

3.1 Descriptive standards to facilitate exchange of title issue and article metadata

Library catalogues usually describe serials at the title level only, with the assumption that all the issues in the subscribed years are held unless the holdings statement specifies missing issues. (Often the last received is noted, using data from check-in.) Differing practices for transcribing and abbreviating serial titles have been an ongoing problem in library catalogues and other services. This is compounded by the tendency for journal titles and issue sequences and frequencies to change. There is no consistent approach to the recording of serials holdings (although this is the subject of another supporting study). Abstracting and indexing and tables of contents services typically describe individual articles; however, they have different approaches to the description of resources. There is no consistency across the range and services.

With the move towards distributed systems, linked via search and retrieve protocols, there is an increased need for standard serial descriptions at all levels. A desirable scenario is for a user to be able to carry out a distributed search across a range of resources, discover and retrieve metadata for a relevant article, then locate several alternative sources for obtaining the article (by matching the retrieved metadata against metadata in holding resources) and request the document from the preferred source. The links between these systems depend on standardised metadata which can be mapped to each service.

The study will:

- Define the minimum level of description required for title, issue and article in order to effectively support the functions of discovery, location and request

- Examine existing practices

- Examine relevant existing standards (formal and de facto)

- Identify areas which are not covered by existing standards

- Consider the advantages of standardisation

- Identify required standardisation effort

- Recommend how standardisation could be taken forward

- Recommend appropriate use by eLib projects

3.2 Standards for terms of availability data

ToA data is potentially relevant to local library lending, inter-library lending and document supply services. Documents could therefore be returnable hard-copy documents, non-returnable photocopies or electronically delivered files. However, it is appropriate to concentrate on document supply services for this study, as users requesting articles over a network are more likely to be using this type of service rather than a local or inter-library returnable loan (partly because journal issues are not usually loanable). There is also an increasing number of electronic document delivery services becoming available.

Despite the concentration on issues for serials in this group of studies, it is recognised that the recording of ToA data is likely to be generic to a range of media types (monographs, A/V etc). The study should take this into account. However, as a result of their format, there is more scope for

journal article delivery services than other material types.

In the discovery-locate-request cycle for journal articles, users are likely to need to know ToA at several stages. It is particularly important where multiple potential suppliers are being consulted simultaneously. If there are several options, the terms will naturally influence choice.

It is important that solutions developed here should not unnecessarily reinvent wheels. The study should be aware of related work currently being carried out.

- Identify desirable data elements to be included in ToA statements

- Examine existing practices

- Consider the advantages of access to uniform ToA data and the implications of continued non-standardisation

- Consider any implications for electronic journals

- Identify any existing standards (formal or de facto) which may cover some elements of ToA data (eg UKMARC)

- Identify areas which are not covered by identified standards

- Identify required standardisation effort

- Recommend how standardisation could be taken forward

- Recommend appropriate use by eLib projects

4. Methodology

The two studies which are the subject of this report were approached essentially as a single piece of work. The first stages required an analysis of existing standards and current practice. Existing standards were identified from the literature and from our own knowledge, and confirmed from subsequent consultations and questionnaire responses.

We divided our analysis of current practice into two parallel investigations: a study of stated practices and expectations based on direct contact with a small group of key organisations, followed by a questionnaire to a rather larger number to represent all sectors involved in access to journal articles; and a practical analysis of journal article records on a variety of available databases.

4.1 Survey

By initial contact with a group of eight key organisations, we developed two versions of a questionnaire designed to establish (a) what standards, if any, were being used for serials metadata in existing systems, (b) to what extent, if at all, terms of availability for serial items were currently expressed as structured data, and (c) what developments were expected in the near future. The questionnaire was sent to or discussed with a total of 36 organisations, including journal publishers, abstracting and indexing services, subscription agents, document supply services, library systems suppliers and libraries. 27 responses were received, including multiple responses from two or three organisations.

In addition, another version of the questionnaire was sent to the Project Managers of the eLib programmes. The questionnaire was sent to about 60 Project Managers, from whom we received ten responses; only five of these made use of metadata for serials or TOA. Their practices reflect those of our other respondents, and as such are covered in the text that follows.

The three questionnaires and the list of organisations contacted are attached as Appendices A to D.

4.2 Database searches

We were fortunate in being able to arrange with Anne Ramsden of the International Institute for Electronic Library Research at De Montfort University for a supporting investigation to be carried out on our behalf. A small set of recent journal articles was selected, including some in which full text and/or headers were available in electronic form. Online searches were carried out to locate references to these articles in a variety of databases, and the results were collated and compared to provide evidence of the divergences in content and presentation in different systems.

The report on these investigations by De Montfort University is attached as Appendix F. The conclusions we drew from analysing responses to the questionnaires and the results of the database searches are summarised in sections 5.2 and 6.2.

4.3 UKOLN/BIC Workshop

From this research, we were able to formulate a rather clear view of the present position, and a provisional view of what recommendations we could make. We presented our interim conclusions at a Workshop (*"Standards for serials"*) organised jointly by UKOLN and BIC on Monday 2 June. The workshop was well attended by representatives of most of the sectors we had consulted, and we found that there was definite support for the general thrust of our report.

We completed the study by further refining some aspects of our recommendations in the light of discussion at the Workshop.

5. Serials Metadata

The definition of Serials Metadata which we have adopted for this study is:

> *Data in machine-readable form which identifies a journal title, a journal issue, or a journal article, in any medium.*

Content description, subject access and other elements which might be included in a journal article database were clearly outside the requested scope.   They would require a further and much larger investigation.

5.1 Existing standards

Our review of existing standards for serials metadata fell into two parts: identifiers, and descriptive data elements. Identifiers have already received a good deal of attention within the MODELS programme, but we make no apology for having trod this path yet again, since it was apparent to us from the beginning that an agreed standard identifier would be the single most powerful and necessary tool for connecting information derived from different databases and computer systems.

5.1.1 Identifiers

We are aware of two coded identifiers for serial titles (ISSN and CODEN) and at least six identifiers for serial issues and/or articles.

ISSN

The International Standard Serial Number (ISSN) is the accepted unique identifier for a serial title. It is an eight-character code, usually written as two groups of four separated by a hyphen, eg 0048-721X. The first seven characters are numeric. The eighth is a check character which may be the letter X, as in this example, or a numeric digit.

ISSN are assigned and maintained by the International Serials Data System, consisting of a network of national centres (usually - but not always - based in national libraries), and an International Centre in Paris, which has a worldwide database of serial titles to which ISSN have been assigned.

For the purposes of ISSN assignment, a journal is regarded as having a "key title" to which the ISSN is linked. There are clear rules as to what constitutes a change in the key title which requires the assignment of a new ISSN. It is likely, however, that these rules are not always entirely consistently applied; and there is some concern that the rules require changes to be made when on a commonsense basis the journal is still "the same". But, when almost any attribute of a journal can change without a real change in the underlying identity, it is essential that there should be a reasonably simple key with which the ISSN is uniquely associated.

Many current journals carry the ISSN on the cover, title page and/or elsewhere. ISSN can be and have been assigned to "dead" titles, ie those which ceased publication before the ISDS system was instituted in the early 1970s. Some ISDS national centres have done so systematically, others less so or not at all.

A recent and important ruling of ISDS is that electronic versions of print journals must be assigned a separate ISSN. This has proved slightly controversial where the electronic version is identical in content to the printed version, but the trend is for electronic versions to "add value" by incorporating material which does not appear in print. Any other, more complex, criterion for requiring a separate ISSN would be far more difficult to administer.

The data elements used in the ISDS database are discussed in Section 5.3.1 below.

CODEN

The CODEN is an alternative serial title identifier which predates the introduction of ISSN. CODEN are five-letter alphabetic codes to which a sixth character may be added as a check character. They were first developed by the American Society for Testing and Materials (ASTM) and maintained by the Franklin Institute in Philadelphia. Chemical Abstracts Service subsequently assumed the maintenance responsibility. The main usage has been in the STM information community, particularly in secondary information services, and particularly in the USA. As a generally-applicable international standard, they are not a real alternative to ISSN.

Serial Item and Contribution Identifier (SICI)

The SICI is the most widely accepted identifier for journal articles and other items forming part of a serial publication in any medium. It was developed as ANSI NISO Standard Z39.56, and a revised and extended version has recently been published.[2] All references to the SICI in the present report are to this version.

The detailed structure of the SICI will be reviewed in section 5.3 below, since it has important implications for the metadata from which the SICI may be automatically generated. Broadly, there are three segments: an *item segment* which identifies the journal and issue (by ISSN, chronology, and enumeration); a *contribution segment*, null when the SICI is used at the issue level, and based on pagination, a title code, and/or a publisher-assigned identifier when used at the article level; and a *control segment* which carries coded information to enable the rest of the string to be interpreted. The following format illustration is taken from the standard itself:

1234-5679(19950221)1:2:3<123:ABCDEF>2.0.TX;2-A

Version 2 of the SICI has clarified issues which were found to be ambiguous when Version 1 was put to "real life" use. The standard is not merely theoretical. It has been tested and used, and been revised and strengthened as a result. It therefore commands a high level of credibility.

The SICI has been adopted by SISAC, ICEDIS, and EDItEUR (the three bodies concerned with the development of standards for serials EDI trading in the US and internationally) as the fundamental identifier for serial issues in various transaction messages, including orders and claims. At article level, it is already generated by a number of publishers in their internal systems, and it is included systematically in records created by some abstracting and indexing services, for example INSPEC.

Publisher Item Identifier (PII)

The Publisher Item Identifier was developed in 1995 by a group of STM publishers, initially for internal use and for exchange between partners in publishing consortia. A key requirement was for an identifier which could be generated very early in the "life" of an article, possibly before it had been allocated to a specific journal or issue.

The PII is a string of 17 characters, comprising:

> Source publication type (1 char)
> ISSN plus last two digits of year, or ISBN (10 char)
> Identifying number assigned by the publisher (5 char)
> Check digit (1 char)

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[2] ANSI/NISO Z39.56-1996 (Version 2) *Serial Item and Contribution Identifier (SICI)* NISO Press, Bethesda, Maryland (1996)

The PII is a "dumb" number. In this context, the ISSN or ISBN carries no meaning; it is included solely to ensure that the whole string is guaranteed to be unique to the publisher concerned. The number can only be assigned by the publisher, and there is no retrospective assignment.

Digital Object Identifier (DOI)

The Digital Object Identifier, which is currently being developed by the Association of American Publishers in conjunction with R R Bowker and CNRI Inc,[3] is designed to provide a solution to the problem of locating publisher-owned (or author-owned) electronic resources across the Internet. It presupposes the maintenance of one or more "switching centres" which will match a DOI to the current URL of an Internet location at which either the document itself or detailed information about the document is held. It is envisaged that by a plug-in extension to a standard Web viewer the process will be made transparent to the enquirer. Once a document has been assigned a DOI, this will be its permanent identity, unaffected by any change of ownership or location.

The DOI can in principle identify any type of document at any level of granularity. It is therefore applicable to individual journal articles.

The DOI has three components in the form: 10.1234/5678. The first component ("10" in this case) identifies the DOI directory on which a linking record will be found. The second component ("1234"), joined to the directory number by a period, identifies the person or organisation which registered the DOI (the registrant). The registrant number is a unique code assigned by application to the body responsible for administering the directory. The third component "5678", joined to the registrant number by a forward slash, is the registrant's own number for the document. This number can be of any length, structure, or meaning chosen by the registrant. In particular, it can be, and it is envisaged that it frequently will be, an already established number like the SICI.

Note, however, that although the DOI identifies the original registrant of the document, the number, once registered, is treated purely as a unique character string with no information content other than the identification of the directory where a linking record is to be found. There is nothing, for example, to identify the current rights owner, who may well not be the registrant. The linking system will if necessary locate the current owner.

ADONIS number

The ADONIS number has been used for a number of years as a unique article identifier for the ADONIS project and its continuation as an operational service. Under ADONIS, a group of major STM journals publishers has collaborated to make available the full text of articles on optical storage media, with access licensed either to individual subscribing organisations or to document supply centres such as the British Library. ADONIS numbers consist of the ISSN of the source journal (which guarantees the uniqueness of the overall number), the last two digits of the year of publication, and a unique article number assigned by the publisher.

The ADONIS number is not seen as a candidate for any wider application outside the ADONIS system.

CCC number

The US Copyright Clearing Center also administers a numbering scheme for journal articles to facilitate the process of reporting and paying for photocopying. The CCC number is often printed on

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[3] The most up-to-date source of information about the DOI and its development is the project website at http://www.doi.org

the journal page, eg: *0048-721X/96/040331 + 12 $25.00/0*. The scheme includes not only a unique article number but also the number of pages, the copying fee, and a code (0 or 1) to indicate whether the fee includes an author royalty (although the last piece of this coding appears to be frequently omitted in practice). Again, the format of the article number is somewhat similar to the PII and the ADONIS number.

BIBLID

The BIBLID was defined as an ISO standard in 1987 (ISO 9115:1987). It was conceived as providing for the "bibliographic identification of contributions in books and serials". For serial articles, its components are:

The ISSN for the journal	*0172-9926*
Year of publication, in parentheses	*(1984)*
Volume and issue designation	*12:6;2*
Pagination	*p.7-26*

giving, in this example, the complete BIBLID: *0172-9926(1994)12:6;2p.7-26*.

Clearly, the BIBLID can be seen as a precursor of the SICI in its general approach; but the definition fails to tackle all the complexities of journal "behaviour", and the scheme has never been significantly used.

Discussion

Apart from the SICI, and its over-simplistic predecessor the BIBLID, all the article numbering schemes which we have examined suffer from the weakness that they depend on pre-assignment by the publisher. They cannot therefore be derived retrospectively from examination of the journal, or from metadata which describes it. On the other hand, some publishers have felt that they need a numbering scheme which allows them to identify an individual article before it has appeared in a journal, and even before a decision has been taken on where it will appear.

Uniquely, the SICI responds to these two needs by providing precise rules for generating an identifier from the published article without a pre-assigned number, at the same time as it allows a publisher's own identifier to be included as part of the SICI code.

The DOI is in a category of its own. For the time being, at least, it should be seen as a routing device rather than an alternative identification system. It will co-exist with, and indeed can incorporate, other numbering systems including the SICI. NISO have recently launched an initiative to consider the place of the DOI and other identifiers in a broadly drawn standards scheme tentatively named the ISDI (International Standard Digital Identifier).

5.1.2 Serials metadata formats

We turn now from identifiers to descriptive data elements.

ISDS data elements for serial titles

Key elements in the ISDS database for the identification of serial titles are:

ISSN	Place of publication
Key title	Publisher
Abbreviated key title	Issuing body(ies)
Variant title(s)	Date(s) of publication (start date - end date)
Title proper	Type of publication

The database also carries additional information not primarily related to identification, particularly on links to related titles.

The "key title" may include a qualifier in parentheses to distinguish it from other identical titles. For example, the qualifier may be an edition statement or the place of publication, as in:

> *Newsweek (International, Latin American ed.)*
>
> *System (Oxford)*

The "abbreviated key title" is abbreviated in accordance with ISO 4: *Documentation - Rules for the abbreviation of title words and titles of publications*, and the *List of serial title word abbreviations* which the ISDS International Centre itself maintains.

"Variant titles" include forms which the journal has used but which do not, under ISSN rules, require the assignment of a new number.

"Type of publication" (eg "p" = periodical) gives a general indication of the nature of the serial. There is, however, no coded indication of the medium in which the title is published (eg paper, microform, CD-ROM, online), surely an increasingly necessary piece of information. This has been recognised by ISDS. We understand that a code list for "medium of publication" has been adopted, is in the process of being applied by ISDS national centres, and should appear as part of the database in 1998. The code values are the same as those used in constructing the SICI.

The importance of the ISDS database is that it carries a single form of the journal title, the "key title", which uniquely and authoritatively identifies the journal, and which is actively maintained as journals change from year to year. This is precisely what is needed in order to ensure that the same journal is named in the same way in different networked databases.

The ISDS record format is not, however, concerned with the identification or description of journal issues, let alone journal articles.

Under the EU's *Telematics for Libraries* programme, the first phase of the CASA project[4] (Co-operative Action on Serials and Articles) has during 1997 been investigating ways in which the ISDS database could be more widely and effectively used in a networked environment. The project is led by the University of Bologna. The ISDS International Centre is a key participant. The UK partner is the University of Edinburgh, which hosts the SALSER database of serials in Scottish libraries. We will refer to CASA in our recommendations.

MARC serials formats

MARC formats come from a tradition of library cataloguing in which, again, the entity described is the journal title, not the journal issue or article. In most library practice, individual issues and parts are identified only as part of a holdings statement. A parallel study has investigated standards for library holdings statements[5], and we refer the reader to its report.

This is not to say that MARC formats cannot be used to catalogue items at the issue and article level. They can, and US MARC in particular contains some elements explicitly supporting such cataloguing. It is rather that the library world does not generally catalogue at this level, and the MARC structure was not primarily designed for it.

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[4] The project website is at http://www.casa.org:1999/

[5] Hopkinson, Alan *Standards for serials holdings, the issues* Study commissioned by UKOLN with support from eLib (1997)

Both UK and US MARC carry specific field tags for ISSN and ISDS key title, and for information on the way in which issues are numbered or otherwise designated. US MARC has more fully developed provisions for holdings information in the 85X and 86X field tags.

UNISIST Reference Manual

Abstracting and indexing services are concerned with the description of, particularly, journal and conference literature at the individual article level. There has not, however, been any widespread adoption of a single unifying standard among such services. Beginning in the early nineteen-seventies, some attempts were made to develop and promote such a standard, and one manifestation of these efforts is the UNISIST *Reference manual for machine-readable bibliographic descriptions*[6]. This manual was followed by some internatiional agencies, but was not in the end adopted by the independent abstracting services who originally helped to create it.

The manual made an effort to formalise the description of journals, journal issues and parts, and journal articles, and it is worth summarising the set of data elements which it identified:

Journal title	ISSN
	CODEN
	Short title of journal, based on the ISDS key title, abbreviated in accordance with ISO and ISDS rules.
Issue or part	Chronological series designation
	Volume number "caption"
	Volume number
	Year as volume designation
	Subdivision of volume
	Issue or part number "caption"
	Issue or part number
	Subdivision of issue or part number
	Other identification of issue or part
	"Normalised" date of issue
	"Date part"
	Date of issue in full
Article	Title of contribution
	Person associated with a contribution
	Page numbers
	Page fragment number (multiple items on one page)
	Additional page number information

The approach is open to some criticism, but with hindsight it represents a real attempt to tackle the problems of describing journal issues and articles, and illustrates some of the complexity.

SGML serials formats

SGML has been widely adopted by journals publishers as the convention within which to create and

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[6] *Reference manual for machine-readable bibliographic descriptions* 1st ed, Unesco, Paris 1974, compiled by M D Martin; 2nd revised ed, Unesco, Paris 1981, compiled and edited by H Dierickx and A Hopkinson

communicate machine-readable texts at various levels. In the present context what concerns us is its application to serials metadata, in the form of tables of contents or of what are commonly referred to as article "headers". There have been several efforts to establish a standard, most recently by BIC and PIRA, who, following a BIC/BNB Research Fund study into electronic tables of contents (EToCs) for serials[7], have prepared and published an SGML DTD for article headers under the title *Simplified SGML for Serial Headers (SSSH)*[8]. SSSH is not intended to supersede the more complex SGML formats which publishers use in their internal processes, and which must meet specific local requirements. It is designed to provide a common format for communicating a rich set of journal article metadata in a standard way. Currently, SSSH has been endorsed in principle by a number of major publishers, but it has not yet established itself in regular practice.

Dublin Core

Dublin Core is a developing initiative aimed at providing a simple way of describing an electronic resource to facilitate its discovery and location, particularly for those types of resource which might otherwise fall outside of any traditional bibliographic control (although more traditional forms of bibliographic record, eg MARC, are already being used to describe network resources). The Dublin Metadata Core Element Set[9], to give it its full title, includes these fifteen elements:

Title	Format
Author or creator	Resource Identifier
Subject and keywords	Source
Description	Language
Publisher	Relation
Other contributors	Coverage
Date	Rights management
Resource type	

The approach allows a data element to be entered in free form, or in accordance with a stated scheme or controlled vocabulary, in which case the data field itself will carry an identification of the scheme which has been used, eg:

Identifier (scheme = ISBN) = 0-8330-2355-9

In itself, the Dublin Core defines no particular syntax for the representation of the data elements, so that the above example is merely illustrative; but subsequent developments have included a methodology for embedding Dublin Core data elements into HTML and an SGML DTD. The Warwick Framework defines a "container architecture" for various different types of metadata packages. The Dublin Core initiative has strong links with the WorldWideWeb Consortium's plans for a new standard Resource Description Framework (RDF) for web-based resources.

In spite of the very strong interest and support which Dublin Core has stimulated, we have to say that from our perspective it makes no direct contribution to the identification and description of serial articles. The real problem of describing any "bibliographic" entity is not solved by a core list of data

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[7] Bide, M *Electronic tables of contents (EtoCs) for serials* Study for BIC with support from the British National Bibliography Research Fund (1994) Report available from Book Industry Communication

[8] Cave, F (Pira International) *Simplified SGML for Serial Headers (SSSH)* (1996) Available from Book Industry Communication

[9] See http://purl.org/metadata/dublin_core_elements/ for the data element set. The Dublin Core home page is at OCLC, http://www.oclc.org:5046/oclc/research/dublin_core/

elements, with no control over their content. (Of course such control can be, and is being, overlayed on to the Dublin Core set, but it is not integral to it.) The real problem of achieving standardised bibliographic description lies precisely in the content. If the Dublin Core is used as a framework into which other established schemes for controlling data content are inserted, it risks merely perpetuating in a new format the Babel of differing approaches which already exists. If it is used in free form, it provides a modest but useful discipline in structuring a set of metadata for the human eye, and perhaps in encouraging the non-specialist to include a basic set of descriptive elements as part of an electronic "document", but it does rather little to address issues of switching between systems and databases.

None of this is intended to deny the significance and likely continuing role of Dublin Core: rather we want to sound a note of caution, that the well-known problems of standardisation of bibliographic data do not go away when the record is given a new name. It is important that the academic, library and publishing worlds should work together to ensure that the implementation of Dublin Core meets the practical needs of all parties.

5.2 Current practice

Unsurprisingly, the survey demonstrated a very wide variety of practices in the ways in which the different groups we surveyed describe journals in their systems. The set of examples in Appendix F illustrates some of this diversity. We will choose to describe current practice in the logical sequence: the title, the issue and the individual article. Because another report commissioned as part of the same process as the present study has focused on library holdings data, we will say little about the way in which libraries represent title and issue data in holdings statements, since this would simply be repetitive. We refer our readers to that report.[10]

5.2.1 At the level of the title

All our respondents use the full title of the journal *as printed on the journal* as part of their record. Primary publishers (and some secondary publishers) typically also include in their records a number of secondary or alternative title identifiers. These may be subtitles, previous titles or similarly qualified information; publishers often include translations of foreign-language titles.

Almost all our respondents also use the ISSN. Many of those with an international dimension (both primary and secondary publishers) also use the CODEN which remains a significant identifier at title level in the United States. Few (except the original primary publisher) explicitly identify the publisher.

Several mentions were made of the difficulty of handling serials which do not have ISSNs, although none of the publishers we surveyed published titles without them. As far as we can ascertain, there is no reason why every serial should not have an ISSN, since even the assignment of ISSNs to "dead" titles is encouraged (although how systematically this is done depends on national centres). BLDSC apparently use their position to ensure that every title they handle does have an ISSN, so there may not actually be as many titles without ISSNs as some respondents appear to believe.

We found that only relatively few publishers appear to be applying new ISSNs to their (parallel) electronic journal titles. Although this is now an ISSN rule (see Section 5.1.1), we can understand why publishers may be reluctant to follow it – there is considerable risk of confusion where the electronic version is a *precise* analogue of the print version and there is no explicit linkage between electronic and print ISSNs.[11] However, if there is, as there may in future be, increasing divergence

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[10] Hopkinson, Alan *op cit*

[11] Most seriously, this implies that the print and electronic versions of exactly the same article would have

between print and electronic versions of the "same" journal, there is considerable opportunity for confusion here.

We found some anecdotal evidence of lack of confidence that publishers consistently follow ISSN rules with respect to changing the ISSN following a change of title. There was also some challenge to the necessity to change the ISSN for a title where the change is relatively trivial or even where it is more major but where the new title is clearly a straight continuation of the older title. This causes some difficulties in using the ISSN as the key identifier of a title.

Journal title abbreviations are also a little troublesome. One publisher said: "We use ISO abbreviations for [the journal title abbreviation] as far as we can establish what the ISO abbreviations are. The easily obtainable rules are *very* general indeed, but we've made our best guess…." A secondary publisher, in response to the query on what standards are followed for abbreviations, replied "Various". An intermediary's response to the same question was "Internal". The majority of respondents are not using abbreviated titles.

Publishers' records also often include (typically three letter) identifiers for their journals. These identifiers will be unique within the records of a particular publisher but are clearly not unique in any other context.

Some respondents maintain data elements which are unique to them. Examples include the BLDSC shelfmark. BLDSC also has a system of publication frequency codes which, so far as we know, are not used by anyone else. Some secondary publishers follow sector-specific rules (eg CASSI) for abbreviations. One is bravely including URLs in their records[12] and one intermediary told us that they are also planning to do the same thing.

5.2.2 At the issue level

The identification of descriptive information about journal issues is rather more problematic. Primary publishers do typically maintain the necessary data elements at the issue level (enumeration and full cover date) to enable the construction of an item level SICI.[13]

A few secondary publishers also record the same detail, but do not field encode it in ways which would make it easy to generate an item identifier. Other secondary publishers and intermediaries record only limited enumeration and the year of publication which is inadequate for entirely unambiguous issue identification.

5.2.3 At the article level

Many primary publishers are now maintaining article-level metadata to a considerable depth of detail. An example of typical SGML-encoded data can be found in Appendix E.

Typically, primary publishers use their own SGML DTD structure within their own systems.

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different article SICIs. This would be particularly confusing where publishers are now planning to print SICIs on the first page of articles. This number would then have no value in discovering the electronic version online, despite the fact that, if the electronic version is in PDF (the commonest format for online serials), the "print" SICI must appear in the electronic version of the article. These are complex issues indeed and we recommend that they be revisited if our view that the SICI should become the primary identifier at the article (contribution) level is widely accepted.

[12] We did not ask them how they plan to ensure that these remain accurate and up-to-date.

[13] Bearing in mind that an "item" in this context is an issue.

However, a common interchange standard, the SSSH,[14] was developed with the co-operation of major serials publishers and none of the publishers who hold this data should have any significant problem in converting data defined in their own DTD into the SSSH structure. Usage of the SSSH appears to have been extremely limited, something for which we are unable to account satisfactorily. We must surmise that either there is currently little exchange of serials metadata of this complexity or that the relatively small number of relationships so far involved has reduced the need for a standard format.

These SGML "headers" are typically derived from the same files which are used in the publishers' typesetting process and are therefore a very accurate reflection of the printed article. The structure of the record includes not only the obvious information (like article title, author and location, language of the article, full abstract as published,[15] keywords where used) it also carries a number of additional bibliographic fields such as an "article type" code, and the number of pages, illustrations and tables in the article. Critically, the record also allows for the algorithmic generation of the contribution-level SICI, which is becoming the article identifier of choice for *most* primary publishers.

Some primary publishers also use in-house generated identifiers at the article level, although the PII appears not to have been as widely adopted as at one time appeared likely. A few publishers use only in-house generated identifiers. We found that some publishers appear to regard file names as equivalent to unique identifiers but we do not think that this is a significant problem.

Secondary publishers do not generally maintain quite such richly <u>structured</u> data, although their data typically has a number of added-value elements. These may include items like thesaurus-controlled keywords or proprietary subject coding. They also typically include some forms of (often proprietary) unique identification.

Some secondary publishers expressed reservations about the uniqueness of SICI, although on further investigation this appeared to be a problem which could not be exemplified and is probably mythic. We believe that any problems which might theoretically have existed with the contribution-level SICI are likely to have been resolved by the recently published revision to the standard. One intermediary is successfully generating contribution-level SICI from data aggregated from different sources as a deduplication key.

Another intermediary told us that they are using the Adonis number as an article identifier. We see this as slightly eccentric for anything other than purely local administrative purposes – the Adonis number is only relevant for articles in those journals which are part of Adonis and cannot therefore satisfy any broad requirement for article identification.

5.3 Issues relating to serials metadata

5.3.1 Discovery, location and request

The terms of reference for the serials metadata study referred to the need to support the functions of "discovery, location and request" with respect to journal articles and in the context of network access to metadata databases, to primary resource databases, and to document delivery services.

We interpret "discovery" as meaning the determination of the existence of a serial article which

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[14] See section 5.1.2 above

[15] We recognise that it is arguable that an abstract does not qualify as metadata under the terms of the definition used for this study, but serials metadata as usually understood certainly does include the abstract.

matches certain retrieval criteria specified by an enquirer. The criteria may be subject-based, in which case they are outside the scope of this study, which relates to metadata elements which *identify* a journal title, issue or contribution, not to those elements which *describe its content*. However, if the enquirer is looking for a particular article to which s/he has been referred, the process of discovery will be based on finding a match between a serial article identification "in hand" and serial article metadata held on a searchable database. The identification "in hand" may be incomplete or partly inaccurate. It may be based on a citation from another article or a recommendation from a colleague.

The result of an act of "discovery" should be the delivery to the enquirer of a set of complete and accurate metadata identifying a serial article which matches the retrieval criteria, and providing sufficient content description for the enquirer to confirm the relevance of the article.

"Location" means the identification of one or more places where a known serial article is held and may be available for consultation. The result of an act of location should be the delivery to the enquirer of details of the "place" in question, the type of availability which is offered (consultation within the library, photocopy supply, electronic delivery), and the terms of availability which apply to the enquirer.

Following "discovery" and "location", "request" is self-evident.

Discovery is essentially an interaction between the enquirer and one or more information sources. Depending on the nature of those sources, discovery and location may be combined into a single step (eg when the database searched is that of the BL Document Supply Centre or of a commercial document delivery service). Request will always or almost always be a separate step.

Once discovery has been made, location and request are about interconnecting different steps in a process which may be handled entirely within a single supplier's computer system and database, or may be carried across two or more such systems. For example, discovery may be through a subject search on a discipline-oriented A&I service database, with location then checked across a number of alternative document suppliers' systems, one of which is eventually selected for a request to be sent.

Finally, we should not forget the need within the discovery-location-request cycle for the user to be able to confirm that at each stage a correct match has been made, and that the item located or for which a request has been accepted is the one which was originally discovered. This brings us back to an interactive process with metadata being displayed to the enquirer.

The first requirement to facilitate these processes is that the act of discovery should include the delivery of a unique standard identifier for the serial article which is recognised across other systems and databases. Such an identifier need not be particularly "user-friendly": it could and probably should be concealed from the user in normal use.

5.3.2 Serial article identifier

Our analysis of existing standards and practices leads naturally to the conclusion that the SICI is overwhelmingly the strongest candidate to meet the need identified in the last paragraph. Both its intrinsic qualities (see section 5.1.1) and the extent to which it is already supported for a wide variety of related applications, particularly in EDI transaction messages, make it uniquely suitable to be used as a linking mechanism between different serials databases.

This does not necessarily mean that individual systems and databases should carry SICI explicitly as an additional data element, although many will no doubt choose to do so. It means that, if the SICI is used as a standard means of communicating the identity of a journal article from one system to another, both of those systems must be able to map the component parts of the SICI code into the structured data elements which they use internally.

In other words, adopting the SICI has very specific implications for the granularity of serials data element structure within participating systems, and for the conventions which are used to hold such data. To consider these implications, which we will do in section 5.3.3, we need first to look in some detail at the make-up of the SICI code.

The following are the key elements in order of their appearance in the code (details of the syntax of the code need not concern us here):

ISSN   9 characters, including a hyphen.

Chronology   YYYYMMDD, where YYYY = year; MM = month, season or quarter, numerical codes being defined for seasons and quarters; DD = day. Combined chronology, as in "Spring-Summer 1997", requires the first and last elements to be entered.

Enumeration   An unlimited number of levels of enumeration, from the highest or most inclusive to the lowest. Combined enumeration within a level, as in "Issue no 3-4", requires the first and last elements to be entered. A convention is defined to allow supplements and indexes to be handled. All numbers are converted to their arabic form. All letters forming part of an enumeration designation are entered in upper case. Where both a structured scheme of enumeration and a continuous number scheme are used side by side, the structured scheme is adopted for the SICI. "Captions" such as "vol", "no" etc are omitted.

Location   An indication of the site within the journal issue at which a contribution begins, eg a first page or frame number. The number is given exactly as it appears on the piece, without "captions" such as "p." or "page". In this case, roman numerals are *not* converted to arabic.

Title code   A code of up to six characters constructed from the article title in accordance with rules defined in the SICI standard.

Local number   A number assigned by the publisher to the article (eg a PII or CCC code).

CSI   Code structure identifier: 1 = serial item (eg issue); 2 = serial contribution (eg article), not identified by a locally-assigned number; 3 = serial contribution identified by a locally-assigned number.

DPI   Derivative part identifier: 0 = serial item or contribution; 1 = table of contents for a serial item or contribution; 2 = index from a serial item or contribution; 3 = abstract of a serial item or contribution.

MFI   Medium/format identifier: a code identifying the medium of publication.

Clearly, the code can only be generated or checked by computer algorithm if the data recorded in the database concerned can be manipulated at the same level of granularity as is implied by the SICI structure.

5.3.3 Serial article metadata set

We turn now to the consideration of a standard metadata set to identify a serial article, in the light of this analysis of the SICI structure. In doing so, we must bear in mind that any underlying set of data elements must be able to deliver not only a correct SICI but also an intelligible screen (or even paper) display of the article reference for a human user.

5.3.3.1 Journal title level

At the journal title level, ISSN and title are clearly required data elements. But it does not take us

very far to say that we must include the title. What title? According to what cataloguing rules? How can we assure some level of consistency in title description? Our view is that it is unrealistic to expect established practices to change, or to expect that in complex or difficult cases consistency can be achieved by very different groups of people, from publishers through to librarians, trying to describe the same things from rather different perspectives.

We believe that the best prospect for achieving standardisation is through the general adoption of an "authorised form" of the title, and in particular a form which corresponds to the ISSN. We have in mind the ISDS "key title". This has the merit not only of being controlled by a network of competent agencies, but also of including where necessary a qualifier to assure the uniqueness of titles which are common to more than one journal. Widespread adoption of the ISDS "key title" would require that the ISDS database be made publicly available, preferably over the Internet[16], with ready access for all parties concerned with affording access to serials, including, not least, their publishers. We understand that there are plans to do something along these lines in the near future, but we do not know how far any existing plan would meet the requirement which we have proposed.

We are under no illusions that this is an easy solution. There are no easy solutions; but it is at least easier to envisage the *addition* of an externally standardised form to existing systems than the *revision* of existing database content in accordance with some agreed set of cataloguing rules.

There may be justifiable criticisms of the accuracy and consistency of the ISDS system: no large database is perfect. But they pale into insignificance alongside the inconsistencies which are unavoidable in the absence of an authority file; and the best way of ensuring that errors in a database are corrected is to place it in the front line of access and use.

Many systems, including the ISDS database itself, carry an abbreviated form of the journal title as well as the title in full. We understand why this has seemed necessary in traditional printed listings, and perhaps in computer systems when storage space was still an expensive luxury. With today's technology, and for use on-screen, we regard abbreviated forms as both unnecessary and undesirable, and do not recommend their adoption as a future standard data element.

Finally at title level, a coded indication of the medium and/or format of the journal is an essential element, both for SICI generation, and for information and identification.

5.3.3.2 Issue or item level

At issue or item level, the three key elements which are required in order to generate a SICI code are chronology, enumeration, and a controlled indication of the nature of the item if it is other than a regular issue, eg a supplement. However, behind this very simple statement lies some much more complex detail.

"Chronology" must accommodate year, month, day, quarter and season, in a controlled form. This means that each of these elements must be treated as a distinct subfield. In order to handle combined chronology (eg December 1997 – January 1998) we must allow two occurrences, referred to here as *Chronology 1* and *Chronology 2*.

"Enumeration" may be of two kinds: the continuous, single-level, enumeration of issues; or a structured enumeration on two or more levels(volume, part, issue etc). These two forms may coexist on the same journal, in which case the SICI rules determine that structured enumeration takes precedence. Typically, a numeric designation is accompanied by a "caption" such as Vol., Heft, Part, No. Captions play no part in the SICI, but they may be wanted as part of the information which will be displayed to a human enquirer. As with chronology, we may have a combined

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[16] We understand this to be one of the main goals in phase 2 of the CASA project (see section 5.1.2)

enumeration at any level. While it may be unusual to go beyond two or three levels, neither the SICI nor real life places any fixed limit on the number of successive levels of enumeration.

We need, therefore, a non-repeatable data element set for continuous enumeration, including an optional caption, enumeration 1, and enumeration 2; and a repeatable data element set for structured enumeration, including level number (1, 2, 3 etc), optional caption, and again enumeration 1 and enumeration 2.

Clearly, the detailed structure of chronology and enumeration should remain concealed from the user. In tandem with a recommended set of data elements, it would be appropriate to define a recommended approach to their presentation on screen or paper.

"Additional item identification" must include a code to indicate a supplement to the regular numbered issues or parts, and optionally the title of the supplement.

5.3.3.3 Article or contribution level

At article or contribution level, we need a location data element set, including an optional caption (eg "Page" or "p." for page number), the starting location number, and, optionally, the ending location number. These last two elements may be treated as a repeating pair if full details of discontinuous pagination are wanted as part of the record, but only the starting location number is needed in the SICI.

The title of the article, in full, is both a necessary display element and the basis on which a SICI title code is generated.

A publisher-assigned article number is strictly unnecessary if SICI are properly applied, but we have seen (section 5.3.1) that there are valid reasons why some publishers may need a code which is independent of the journal in which the article appears.

Finally, we need a coded indication of the nature of the article or contribution, to enable the SICI DPI element (derivative part identifier) to be generated, and for information; though in practice this may be implicit in the nature of the database – ie all items in the database may by definition be articles, and not abstracts, tables of contents, etc.

5.3.3.4 Summary of data element proposals

The following is a summary of the metadata elements which we believe are required for a properly structured identification of serial articles, in a form which will support automatic generation and matching of SICI codes. We know of no existing standard which goes near to matching this set in terms of the granularity of the data element structure or the precision with which the elements can and must be used in order to create accurate coded identification of individual articles. But nothing less than this will handle the unruliness of all too many real-life journals (though publishers have it in their power to impose good behaviour on the journals in their stables, and may, if they do so, be able to adopt a much simpler metadata set).

Journal title level

ISSN

ISDS key title (in full)

Medium/format code

Issue or item level

Chronology 1: year, month, day, season, quarter.

Chronology 2: year, month, day, season, quarter (Chronology 2 applies only when an issue has a combined chronology, eg Jan-Feb 1997).

Continuous enumeration: caption (optional), enumeration 1, enumeration 2 (applies only when an issue has combined enumeration, eg No 1253-1254).

Structured enumeration: enumeration level, caption (optional), enumeration 1, enumeration 2 (applies only when an issue has combined enumeration, eg No 3-4). Structured enumeration is repeatable for as many levels as may be required.

Additional item identification: supplement code, title (optional)

Article or contribution level

Location: caption (optional), starting location (eg page) number, ending location number.

Title of article or contribution

Publisher-assigned article number (eg PII, CCC code)

Derivative part code (item or contribution, table of contents, index, abstract)

5.3.4 Standards for distribution of serial article metadata

With data of this relative complexity, the arguments for avoiding rekeying at different points in the supply chain become even more compelling – and so do the arguments for the adoption of a common standard or standards for the distribution of structured serial article metadata. Here there is at least one potential standard, the SSSH DTD for communicating serial article headers in SGML format. It, and indeed any other existing format, will need to be revisited in the light of the metadata set which we have identified.

5.4 Recommendations

In summary, we recommend that:

1) The eLib programme should adopt the SICI (Serial Item and Contribution Identifier) as a unique identifier for communication between systems and databases which contain descriptions of serial articles.

2) The eLib programme should adopt the ISSN and the ISDS key title (in full, not abbreviated) as standard for the identification of a journal title in serials databases and in eye-readable displays.

3) To support the practical implementation of the preceding recommendation, steps should be taken to make the ISDS database available as an authority file, accessible to all levels of the serials supply chain, from publishers through to libraries. The EU-funded CASA project (see section 5.1.2) plans to develop Internet access to the ISDS database in its next phase. We would encourage eLib to liaise closely with CASA in this context.

4) The eLib programme should adopt a set of serials data elements, down to the issue and article level, compatible with generating and matching SICI codes (see section 5.4.3 above).

5) Consideration should be given to developing a recommended format for representing the proposed metadata set in an on-screen display.

6) Consideration should be given to adopting SSSH (Simplified SGML for Serial Headers) as a standard for communicating rich serial metadata sets through the serials information supply chain.

7) Consideration should be given to the carrier formats within which the data elements proposed in this study may need to be transported (eg MARC, SSSH or other SGML), and to ways in which those formats can be modified or extended to accommodate the recommended data element set.

8) These recommendations should be widely promoted among organisations which participate at any level in the serials supply chain and in the supply of serials metadata.

6. Terms of Availability (ToA) Data

The definition of Terms of Availability which we have adopted for this study is:

> *Data accessible to customers or users which includes any or all of: financial terms of sale; copyright and other conditions of use; and terms for interlibrary loan, photocopy supply or downloading in electronic form.*

Such a definition covers information which is required to support a very broad range of relationships between publishers/creators, intermediaries, librarians and end-users of "content".

This question of definition is clearly very important. Even with the definition and the questionnaire (see Appendices A and B) in front of them, many of our respondents told us that they did not really understand what they were being asked. A surprising number of them never answered this section of the questionnaire.

6.1 Existing standards

Standards for ToA data are much less well-developed than those for metadata, except in the one area of EDI transaction messages, where there are highly structured data elements for prices though not yet for other conditions which fall within our definition of "terms of availability". We examined three families of standards: MARC, EDI and SGML.

6.1.1 MARC formats

UK MARC traditionally records "price or terms of availability if not for sale" in a very informal way in a single non-repeating subfield, 350 $a, though curiously "hire fee" is singled out separately as 350 $c. Recently, however, the format has been augmented by two new fields, 355 and 356, specifically for book trade use. Tag 355 allows a UK price to be described in a much more structured way, including a VAT breakdown and net/non-net status (no sooner added to the MARC record than rendered obsolete by the abolition of the Net Book Agreement!). Tag 356 allows prices to be specified in other currencies.

US MARC no longer uses the 350 field for book prices, which it places in tag 020, linked to an ISBN and parenthetical qualifying information, indicating for example the binding, format or presentation. This information can be repeated, so that one record will list several ISBNs and prices for different manifestations. Tag 350 continues to be used for journal subscription prices in US MARC records for serials.

UK MARC makes little or no explicit provision for terms other than price, unless it is entered as free text in 350 $a. US MARC has a number of other fields which are relevant in specific circumstances. Tag 018 is used for what is designated as a "Copyright article - fee code", which is what we have described as the US CCC (Copyright Clearance Center) code.[17] Tags 506 and 540 can be used for a mainly free text statement of "Restrictions on access" and "Terms governing use and reproduction", the distinction being drawn between, on the one hand, *who* may have access and *how* they may obtain it, and, on the other hand, *what* they may do once they have obtained access – an approach which will not, however, easily cover situations where there may be different *whats* depending on the *who*.

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[17] See section 5.1.1 above

6.1.2 EDI formats

EDI formats, whether national (US X12, UK TRADACOMS) or international (EDIFACT), naturally make provision for highly detailed price information. Since the underlying message structures were designed originally from a very general industrial/commercial viewpoint, they tend to need some reinterpretation in order to express the particular complexities of pricing which occur with books and serials. However, experience has shown that it is possible to use standard EDI formats to define prices in a fully structured way to meet the needs of publishers, booksellers or journal subscription agents, and libraries. Other financial terms (eg payment method, credit period allowed, settlement discount, tax calculation) are also fully covered in EDI messages.

But because EDI messages were formulated in a business context concerned mainly if not exclusively with the outright sale of physical items, they make no explicit provision for non-financial terms relating to intellectual property. On the other hand, EDIFACT in particular provides a range of possibilities for carrying industry-defined coding at almost any level of a message. We believe that, given a clear definition of need, it would not be difficult to add industry codes to established message formats to enable non-financial terms to be expressed. This is exactly what BIC and EDItEUR have already done so that, for example, a standard EDI order response message can carry availability status codes which make sense to a publisher or a bookseller.

6.1.3 SGML formats

As far as we are aware, the only SGML DTD which has the status of a potential standard is the BIC/PIRA SSSH. The only element of ToA information included in SSSH is a field for a copyright notice, specifically *not* used for copyright clearance information or fees.

6.2 Current practice

Although the significance of ToA runs well beyond the serials domain, we focused our research on current practice on serials. Our reasons for doing this were simple. It seemed likely to us that serials would pose many of the most significant problems. Furthermore, because of the amount of activity in the provision of online journal resources, we thought it was likely that more thought would have been given to the issues involved in dealing with ToA for serials and particularly individual papers in serials. It might then be possible to generalise from serials to other types of publication.

In the event, we found from the responses to our questionnaire that, although many people were indeed thinking about the issues, there is no evidence that anyone has actually implemented ToA metadata systems beyond straightforward listings and simple interactive screens. There is however real evidence of the recognition of a need for standards in some of the responses we received*:*

> *...locally defined...*

> *...no acceptable formalised way of doing this...*

> *...don't know of any such standards and would like to be kept informed...*

> *...only available if stored on the MARC record in the notes field...*

> *...aware of the issues involved...but these have not been fully explored...*

> *...an EU contract...formulating and piloting ToA...*

> *...will follow any international agreed standard in future...*

> *...mainly available as WWW pages...*

The current application of ToA standards for products other than serials will be discussed below.

Primary publishers do typically capture one essential element of ToA data – the copyright notice – as an integral part of their metadata (see Appendix E). However, very few others in the information chain appear to regard this as crucial data, even when they are collecting and storing data at the level of the individual article.

BLDSC have proprietary standards for identifying certain ToA elements for which they have a specific requirement in their *Inside* products and include:

- Loan restrictions expiry   (date)

- Item available on loan only   (indicator)

- Royalty rate   (value)

- Copyright status   (code)

- Temporarily not available   (indicator)

Some intermediaries carry ToA data in the form of a note appended to another field, eg "Full text available" (displayed to users, in at least one instance, in the ISSN field!).

The Archeology Data Service have published a report of the findings of a Workshop held in March 1997 which discusses in some depth the application of the Dublin Core initiatives in initial resource discovery. This includes the definition of a mandatory local vocabulary for Dublin Core field 15, the Rights Management Label, RIGHTS. The five "types" included in this definition are:

- Free

- NotProfit

- Education

- UK_HE

- Restricted

The first "type" is obvious; the next three restrict free access to a particular category of user; the final "type" is restricted in some other way. All the types require further expansion by the user via a URL to a specific "rights page" for each content resource. This page carries further information (including for example, even in the case of free resources, the required wording for citation). In the absence of any standards for what will appear at the pages resolved by these URLs (or clarity about who will be responsible for their establishment and maintenance), we believe that there is a considerable way to go before a comprehensive rights maintenance infrastructure can be established in this direction.

6.3 Issues relating to ToA

We should perhaps begin by stating the obvious: the authors of this report approach the topic of ToA with what may be clearly perceived to be an "electronic commerce" bias. We see TOA as essentially commercial in nature, even where access to a particular resource may be free. This does not mean that there are no implications for non-commercial organisations. However, if all content resources were freely available to everyone, there would be little requirement for TOA within the academic environment. To the extent that access is constrained, that constraint is in almost every case a commercial matter[18].

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[18] The one exception to this that we can identify relates to maters of taste and decency. Standards in this

6.3.1 Do we need Terms of Availability standards?

The question of the extent to which the development of standards for ToA is an urgent requirement deserves some consideration. It seems to us that there are two possible generic justifications for the development of standards in support of electronic commerce:

1. To allow interoperability in system-to-system communication

2. To assist in the development of consistent human-readable interfaces

Although there is a very distinct overlap between these two applications, we see it as important to distinguish between them. In the former case, standards are mandatory if reliable communication is to be established; in the latter, standards may be desirable but are by no means essential. Individual users are capable of assimilating a great deal of information presented in essentially non-standard ways – we can all make our way through printed catalogues which follow only the broadest conventions for the presentation of information. However, it is now essential to recognise that there is an increasing area where systems with human-readable interfaces depend on interoperability between systems in the background. Z39-50 provides us with many examples of this.

It will be the requirements for system interoperability which will drive the development of standards for ToA (and have driven the standards which have so far been developed).

However, what has prompted this study is the layer of complexity which accompanies the broad availability of local and remote access to *electronic information* resources. This complexity comes about as a result of the requirement to understand and impose additional levels of access control to these resources – controls which must be based both on *who* is making the access and *what* use that they wish to make of the resource.

ToA data will therefore have an essential role to play in "gate-keeping", even in an interactive environment. It goes well beyond the Terms of Reference for this report to consider the issue of standards for user authentication, but the two issues are clearly to some extent inter-dependent.

On this issue of complexity, it is vital to recognise that there are at least two core criteria that need to be met in assessing the desirability of developing standards to support interoperability. The first of these is that standards for the transactions which you seek to support must have developed before the standards for systems to support the transactions can be developed. Very complex relationships are extremely difficult to reflect in a way which would mean that computer systems would be capable of managing them automatically. The second criterion is that systems are likely to be developed which will make proper use of the standards. Simply developing the standards themselves is not enough. They need to be used.

The current diversity and fluidity of business models for commerce in content in electronic formats may defeat attempts to codify these models in well-defined standards. Without apology, to illustrate the point that we are making, we will start by looking at simpler ToA cases, on the basis that these may enable us to illuminate some underlying principles before we turn to consideration of more complex cases.

6.3.2 ToA for primary sale of books

ToA information for the primary sale of books is already well catered for by existing book-trade EDI standards (although how widely implemented these are in this particular application is a different question). Essentially, the only ToA issues are: (a) is this available and (b) how much does it cost?

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area will clearly be driven from elsewhere.

We fully recognise that there are problems with respect to the accessibility of real time inventory information, particularly from publishers, but these are *systems* rather than *standards* issues; we expect to see some further developments in this area during 1997.[19]

Why do we *not* need more complex ToA data to support these transactions? Essentially, all other aspects of Terms of Availability are broadly covered by standard terms of trade which both parties to the transaction implicitly understand. Everybody who is party to the transaction knows and understands the copyright implications of the transaction – when you buy a book, you know that you do *not* buy the right to print more copies of it. There is simply no need for any communication on that issue.

In this context, most EDI messaging is carried on closed VANs, so there are few issues regarding user identification – access to the network is in itself adequate proof of authenticity. Most potential purchasers will, in any event, be known to the seller (and readily identifiable). It is perhaps worth noting that, with the migration of EDI to the Internet, this is becoming a more complex issue and one which we believe will start to absorb an increasing amount of attention.

We will raise one other general point here, about a topic which is discussed in considerable detail elsewhere in this report: unique identification. The extraordinarily ubiquitous support for electronic commerce in books in the UK depended completely for its development on the existence of a standard for unique identification of the items which are being traded. The early adoption of the ISBN on an international basis was *the* key to the very early adoption of a form of EDI in the book trade in the UK (although it should be noted that until comparatively recently the TeleOrdering service was based on proprietary data formats and only supported order messages). We believe that there is a critical issue to be recognised here – without standards for unambiguous unique identification, electronic commerce is too cumbersome (or too uncertain of outcome) to be useful.

6.3.3 ToA for subscriptions: print and electronic

In a sense, print subscriptions are an even easier case. There is no real question of *availability* – it is simply a question of pricing (although there is nothing simple about serials pricing!). ICEDIS have devised a mechanism for transmitting price list information electronically, although it could be argued that this makes somewhat eccentric use of X12 message standards to deal with the complexity of serials pricing (with over 30 different categories of price defined). It is intended primarily to communicate between the larger publishers and subscription agents (few-to-few) so some degree of unorthodoxy in the way that messages are constructed may not be a substantial problem.

However, even this is not as straightforward as it might seem. The increasing development of "package" pricing for journals has not (so far as we are aware) brought with it any standards for the "unique identification" of those packages. In the book world, publishers are relatively used to the idea of issuing ISBNs unambiguously to identify packages which involve the bringing together of items which may themselves have individual ISBNs – this is a particular (but not unique) requirement in school book publishing. This is a common use of the ISBN system; it is certainly not permissible to use the ISSN system in the same way.

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[19] For example, a number of publishers and distributors in the UK have already announced an intention to adopt a WWW interface to their systems that will allow their customers (in this case, primarily book shops) to enquire about current price and availability in a "self-service" mode. The intention is that this group – whose systems are all supplied by Vista Computer Services – will adopt a consistent Web page layout for displaying this information (despite the fact that underlying data structures may be different). This is intended to make life easier for customers who will not have to hunt around different interfaces for essentially the same functions and information.

Publishers and subscription agents create their own in-house identifiers for such packages of content. However, this may not be an entirely satisfactory solution, since it must make it more difficult for a library seeking to make comparisons between alternate sources of supply.

However, this is a problem which may be becoming beyond resolution. We observe a growing trend towards forms of electronic licensing which effectively seek to abolish the price list at least for institutional sales. Several journal publishers are now actively offering subscription access to a complete repertoire, with a pricing formula relating to "base year" expenditure. If this were to become a widely accepted norm (where the cost of access is essentially completely decoupled from the content being supplied), then subscription price lists will become increasingly irrelevant in the institutional market place and every purchase will need to be individually negotiated.

Alongside this decoupling of price from content comes the next layer of complexity with electronic resources – what are the terms being offered? The difficulty with devising standards for expressing ToA is the lack of standardisation of publishers' own offers. In the absence of standard terms of trade (or even agreement on a standard *vocabulary* for terms of trade) it would be a pointless exercise to devise ToA standards to define the terms of a particular offering.

Precisely the same problem exists with respect to CDROM titles as with online access. What access rights is the library purchasing and on what terms?

We are cautiously optimistic that there is a growing recognition on all sides of the desirability of the increased standardisation of licences, at least in the UK. A working party of publishers and academic librarians, established jointly by JISC[20] and the PA,[21] has recently completed work on a form of standard licence which either has or will shortly be distributed for comment. While this still falls short of establishing a completely fixed-format licence or series of licences, it does take us a some way in that direction and, invaluably, contains a set of standard definitions which will be essential to underpin any standards in this area.

We will discuss issues relating to access to electronic resource at greater length in a later part of this report.

6.3.4 ToA for Document Delivery

Document Delivery closely mimics the sale of books in terms of the requirement for ToA information. As with books, there is a need unambiguously to identify the item about which information is being sought: unique identifiers are therefore an essential element within any system which supports ToA. As far as we can see, the ToA questions which need a response are the same as those which are needed to support the purchase of a book: is it available and how much will it cost? Slight complicating factors might be perceived in the need to consider different delivery mechanisms and formats, and the different financial terms that may apply to them, but these considerations also apply to many other transactions which are regularly supported in EDI.

Since the terms under which commercial Document Delivery is offered are broadly standardised, no supplementary information is required to support the transaction. It is worth noting that, as with systems to support the sale of books, there may be a requirement for a set of standard "answer codes" which would provide standardised information about reasons for non-availability and perhaps to forecast future availability.

There does not seem to be any fundamental difference between the requirement where the document

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[20] The Joint Information Services Committee

[21] The Publishers Association

delivery service is being provided by the publisher or by an intermediary. Intermediaries frequently display their price as made up of two separate elements, the service fee and the royalty. However, this is essentially a marketing issue and we do not see it as an essential ToA distinction. All the necessary "charge components" can be found in existing EDI message standards (this list is illustrative, being selected from a typical EDI message set):

R	M	Charge type (service charge, publisher copyright fee, etc)
|	M	Charge amount
|	O	Currency
|	O	Charge rate
|	O	Unit of charge (article, page etc)
|	O	Number of units
|	O	Tax type
|	O	Tax rate
|	O	Tax amount
	M	Total amount
	O	Total tax

(where R = repeating sequence, M = mandatory component, O = optional component).

The implementation of automated commerce for document delivery depends more on the broad acceptance of standards for unique identification of individual documents (see above) and the demand for the development of automated systems than it does on the development of messaging standards. One of the advantages of developing an EDI message set for Document Delivery is that this would go far beyond simply Terms of Availability to support the complete transaction (including the payment cycle).

If there is a demand for EDI messaging (including ToA) to support Document Delivery, it can be met relatively easily. However, we are not entirely clear that such a demand exists.

6.3.5 ToA for Inter-Library Loan

At least some aspects of ILL are as straightforward as Document Delivery. Where what is being requested is a photocopy, rather than the loan of a physical item, we can see no discernible difference from a systems standpoint.

There is a question of unambiguous identification and of matching this with information about holdings; these are both dealt with elsewhere and fall outside the terms of this part of the study. Having solved questions of identification and holdings information, it then begins to look more like a systems issue than a standards one.

We would suggest that the extent to which ILL can be successfully automated must greatly depend on the extent to which the terms under which it is carried out can be standardised. The complexity of the ISO ILL protocol[22] suggests to us a degree of complexity which may make automation either impossible or pointless. If every transaction has exceptional terms, you either need messaging standards and systems which are of immense complexity (and therefore extremely difficult and costly to maintain) or you need intelligent human intervention in every transaction (in which case, standardisation becomes less important although not altogether without value).

We believe that there may well be a real priority for libraries to attack the cost of ILL, particularly if

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[22] ISO 10160 *Interlibrary Loan Application Service Definition* and ISO 10161 *Interlibrary Loan Protocol Service Definition* Version 2, currently in draft, may be found at http://www.nlc.bnc.ca/ifla/II/illprot.htm

the ARL Study carried out in the United States is correct in its assertion that ILL costs the institutions involved nearly $30 per article.[23] However, we question the extent to which it is the standardisation of the communications protocol which will deliver substantial cost savings (if such are perceived to be desirable).

It seems to us that there may an opportunity here for a very simple protocol, analogous to that which we propose for commercial Document Delivery, which would support that (high) proportion of the requirement for ILL which is made up of requests for copies of individual articles. Systems to support such a simple protocol would be much less complex than those which will be required to support the full ISO ILL protocol. It should be noted that most systems for electronic commerce are not designed to deal with 100% of all possible requirements automatically. If the bulk of transactions (typically 80% plus) can be processed automatically, handling the remainder manually becomes a much less troublesome burden.

6.3.6 ToA for electronic resources – internal to the organisation

As we have already discussed, with the considerable differences between what is permitted and what is not permitted under the terms of individual publisher's licences, there is a growing requirement in many libraries to be able to identify ToA unambiguously for their users. This is not only a matter of information for their users; it is also an essential element for the development of automated access control mechanisms.

We have already referred to the work of one of the JISC/PA working parties which were established in 1996. Another working party (there were five in total) was charged with investigating charging mechanisms for digitisation. A supporting study was commissioned by JISC in support of this working party.[24] The significance of this report in the context of ToA is that the authors attempted a simple, generic matrix of "users and uses" in the context of rights clearance. This was based in part on the earlier work of the European Copyright Users Platform (ECUP)[25] which also proposed a series of matrices of users and uses, although the ECUP matrix was intended more to identify potential areas of "fair use" than to define licence terms.

As far as we can see, any standard for ToA would need to adopt a similar matrix. One axis of this matrix will classify users. Within an academic environment this might distinguish between library staff, other academic staff and students. Any of these groups might be further broken down: we have, for example, seen a requirement to distinguish between full-time and part-time students. There may be a further requirement to distinguish between users in different locations: in the library, on campus, in halls of residence, for distance learning at home…

The other axis of the matrix incorporates the uses which the user might make of the resource. These range from making back up copies, through access to different levels of the data (for example, some users might have access to metadata but not to full text), read-only, print single copies, print multiple copies, download to local disk… The list of potential uses is at least as complex as the list of potential users.

At each point of intersection of this matrix there is a potential "availability" message, ranging from

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[23] *ARL/RLG Interlibrary Loan Cost Study* ARL Washington DC (1993)

[24] Bide M, Oppenheim C, & Ramsden A *Copyright Clearance and Digitisation in UK Higher Education* Supporting Study for the JISC/PA Clearance Mechanisms Working Party (March 1997)

[25] For more information, see http://www.kaapeli.fi:81/~eblida/ecup/

"freely available" perhaps through various charging models to "forbidden".[26]

The design of a useful standard which formalises this ToA matrix will depend first on the development of an agreed, standardised approach to licensing. We believe that, for reasons we have already discussed, it will also depend on some simplification of the commercial business model. However, as we have already suggested, we see some reasons for optimism that such an approach might be getting closer. Since we are here talking about ToA which are being controlled by an internal library system, and users are likely to require an interactive, real time response, the requirement may be more system than standards related.

However, it is possible to envisage that the content could be tagged with appropriate ToA metadata which would allow its automatic loading into such a system when developed. A set of ToA attributes which could be associated with SGML-encoded data would be a possible implementation of such a standard.

It is important to recognise that these ToA apply not only to locally held resources but also to remote resources to which a library has access. Again, an interaction between ToA metadata associated with the data and unambiguous user authentication would create the necessary information to support secure access.

6.3.7 ToA for electronic resources – external to the organisation

Similar considerations apply to the ToA controlling access to electronic resources to users who are external to the organisation. However, here there could be a requirement for remote, non-interactive access which would imply the need for a standard query/response mechanism. However, the requirement for an underlying standardised matrix of uses and users remains just as central to its implementation.

Such remote access includes access to a publisher's site by a user who is a member of a subscribing institution. The user will expect to be able to check access rights and then to exercise them. Again, this is more a question of user authentication than one of ToA standards.

6.4 Recommendations

1) We believe that there would be real merit in developing EDI messaging to support Document Delivery transactions, including Terms of Availability, if there is a genuine market requirement for such a development which would lead to the development of systems to support it. On the basis of our research, we are unconvinced that such a requirement actually exists. However, we recommend that Book Industry Communication should be asked actively to canvas its members, and the wider information community internationally, to assess demand and to take action at the point when demand will translate into working systems. The standards development effort would be very small.

2) Should such a development be put in hand, serious consideration should be given to the question of whether the same protocol, appropriately extended, could usefully be adopted to support the high proportion of ILL transactions which are analogous to document delivery.

3) The development of standards for Terms of Availability would be highly desirable, certainly in terms of a set of agreed definitions of users and uses and a standardised way of expressing these, probably in the form of a matrix. However we believe that, if they are to be useful, the development of such standards depends on the development of:

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[26] The last of these is particularly likely to apply to any commercial exploitation.

- more standardised commercial licensing models which could be succinctly expressed in standard terms and

- specifications for systems which would make use of ToA metadata combined with user authentication to automate access control to content.

4) We believe that both of these developments are likely to happen in the foreseeable future and that the question of ToA standards should thus be kept continually under review. At this stage, we think it is too early to start to formulate a proposed standard. We believe that the speed of development being made in a number of related initiatives (not least W3C's RDF proposals and the work of the BIC Rights Metadata Sub-group) imply that even limited activity in trying to define basic data elements, for example, could substantially turn out to represent duplication of effort.

APPENDIX A: Questionnaire to organisations which create or hold serials databases

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eLib / Book Industry Communication                    1 May 1997


STUDIES ON SERIALS METADATA AND TERMS OF AVAILABILITY



QUESTIONNAIRE to primary and secondary publishers, subscription agents
and other suppliers, and libraries.

YOU SHOULD HAVE RECEIVED A SEPARATE MESSAGE GIVING YOU THE BACKGROUND
TO THE STUDY AND THIS QUESTIONNAIRE.  PLEASE GET IN TOUCH IF IT HAS
NOT REACHED YOU.


Please annotate and return by email to david@bookdata.demon.co.uk or by
fax to David Martin on 0181 892 9109.

-------------------------------------------------------------------



1.   SERIALS METADATA

`Serials metadata' means data in machine-readable form which identifies a
journal title, a journal issue, or a journal article, in any medium.

1.1   Do you maintain a journal database accessible to customers or
      users (directly or through a third party) at the level of:
            1.1.1  The journal title?
            1.1.2  The journal issue or part?
            1.1.3  The individual journal article or contribution?

1.2   What are the primary functions of this database:
            1.2.1  External to your organisation?
            1.2.2  Internal to your organisation?

1.3   What is your primary identification of a journal title?

1.4   What are the key data elements which you use to identify
            1.4.1  The journal title (and any subtitles or qualifiers)
            1.4.2  The journal issue or part?
            1.4.3  The individual journal article or contribution?

1.5   What standards do you follow in entering these data elements?
      Do you use abbreviations?  If so, following what rules?

1.6   Where do you source the data:
            1.6.1  From the printed journal?
            1.6.2  Elsewhere (please specify)?

1.7   Do you regard the ISSN as a required data element when
      available?  How do you handle titles without ISSN?
```

1.8   Do you use the SICI or the PII or any other special identifier
       for journal contributions? If so:
           1.8.1   How do you use them?
           1.8.2   Have you found any problems with their application?

1.9   Can you provide two or three examples of records at the most
       detailed level of description which you currently support?
       (By email or by fax to David Martin at 0181 892 9109.)

1.10   Do you make any special provision for describing electronic
       journals at the level of:
           1.10.1   The journal title?
           1.10.2   The journal issue or part?
           1.10.3   The individual journal article or contribution?

1.11   Under what terms, in what form, and to whom, do you allow
       electronic access:
           1.11.1   To journal article metadata
           1.11.2   To complete content of journal articles

1.12   What developments do you anticipate in the next two or three
       years in the way you handle or provide user access to journals
       metadata?

2.   TERMS OF AVAILABILITY DATA

`Terms of availability (TOA) data' here means data accessible to
customers or users which includes any or all of: financial terms of sale;
copyright and other conditions of use; and terms for interlibrary loan,
photocopy supply or downloading in electronic form.

2.1   Do you maintain or process TOA data for journals at the level of:
           2.1.1   The journal title (including multiple title
                   subscription packages)?
           2.1.2   The journal issue or part?
           2.1.3   The journal article or contribution?

2.2   For what purposes do you maintain or process TOA data?

2.3   What are the key TOA data elements which you use?

2.4   Are your TOA data formats locally defined, or do they follow an
       industry convention or standard?
           2.4.1   If you follow your "own" standards, can we have a
                   copy?
           2.4.2   If you follow an industry standard, what is it?
           2.4.3   Where do you source the data?

2.5   Can you provide us with two or three examples of records
       showing journal TOA data? (By email or by fax to David Martin
       at 0181 892 9109.)

2.6   Have you made any special provision in your data formats to
       handle TOA for journals or single articles which are supplied
       electronically?

2.7   What developments do you anticipate in the next two or three
       years in the way you handle or provide user access to TOA data
       for journals?

3.   OTHER COMMENTS

      Do you want to add any general comments on the topics covered in
      this questionnaire? If so, please do so here:

4. RESPONDENT

4.1   Name?

4.2   Organisation?

4.3   Phone/fax numbers?

APPENDIX B: Questionnaire to library systems suppliers

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eLib / Book Industry Communication                      1 May 1997


STUDIES ON SERIALS METADATA AND TERMS OF AVAILABILITY



QUESTIONNAIRE to library system suppliers.

YOU SHOULD HAVE RECEIVED A SEPARATE MESSAGE GIVING YOU THE BACKGROUND
TO THE STUDY AND THIS QUESTIONNAIRE.  PLEASE GET IN TOUCH IF IT HAS
NOT REACHED YOU.


Please annotate and return by email to david@bookdata.demon.co.uk or by
fax to David Martin on 0181 892 9109.
----------------------------------------------------------------------



1.  SERIALS METADATA

`Serials metadata' means data in machine-readable form which identifies a
journal title, a journal issue, or a journal article, in any medium.

1.1    Do you supply systems to enable your customers to maintain
       journal databases at the level of:
            1.1.1  The journal title?
            1.1.2  The journal issue or part?
            1.1.3  The individual journal article or contribution?

1.2     What are typically the primary functions of such databases?
            1.2.1  For library staff?
            1.2.2  For library users or others?

1.3    What do your systems use as the primary identification of a
       journal title?

1.4    What are the key data elements which your systems use to
       identify:
            1.4.1  The journal title (and any subtitles or qualifiers)
            1.4.2  The journal issue or part?
            1.4.3  The individual journal article or contribution?

1.5    What standards (if any) do you expect your customers to follow
       in entering these data elements?

1.6    Do your systems treat the ISSN as a required data element when
       available?  How do they handle titles without ISSN?

1.7    Do your systems use the SICI or the PII or any other special
       identifier for journal contributions?  If so:
            1.8.1  How do your systems use them?
            1.8.2  Are you aware of any problems with their application?

1.8    Can you provide two or three examples of records at the most
       detailed level of description which your systems currently
       support?  (By email or by fax to David Martin at 0181 892 9109.)

1.9    Do your systems make any special provision for describing
       electronic journals at the level of:
            1.10.1  The journal title?
            1.10.2  The journal issue or part?
            1.10.3  The individual journal article or contribution?
```

1.10   What developments do you anticipate in the next two or three
       years in the way your systems handle or provide user access to
       journals metadata?

2.   TERMS OF AVAILABILITY DATA

`Terms of availability (TOA) data' here means data accessible to
customers or users which includes any or all of: financial terms of sale;
copyright and other conditions of use; and terms for interlibrary loan,
photocopy supply or downloading in electronic form.

2.1   Do your systems maintain or process TOA data for journals at
       the level of:
           2.1.1   The journal title (including multiple title
                   subscription packages)?
           2.1.2   The journal issue or part?
           2.1.3   The journal article or contribution?

2.2   For what purposes do your systems maintain or process TOA data?

2.3   What are the key TOA data elements which your systems use?

2.4   Are TOA data formats in your systems locally defined, or do they
       follow an industry convention or standard? If they follow an
       industry standard, what is it?

2.5   Can you provide us with two or three examples of records
       showing journal TOA data? (By email or by fax to David Martin
       at 0181 892 9109.)

2.6   Have you made any special provision in your data formats to
       handle TOA for journals or single articles which are supplied
       electronically?

2.7   What developments do you anticipate in the next two or three
       years in the way your systems handle or provide user access to
       TOA data for journals?

3.   OTHER COMMENTS

       Do you want to add any general comments on the topics covered in
       this questionnaire? If so, please do so here:

APPENDIX C: Questionnaire to eLib project managers

STUDIES ON SERIALS METADATA AND TERMS OF AVAILABILITY

First of all, can I apologise if this message turns out to be entirely irrelevant to the work of your eLib project.

As you may be aware, David Martin and I have been commissioned by UKOLN to prepare a report on standards for "serials metadata" and for "terms of availability metadata". The definition of these terms which we have adopted for this study will be found below. In moving towards the completion of this report, it would be very helpful for us to understand present practice adopted by eLib projects.

We have prepared a simple email questionnaire, which you will find below. We would be extremely grateful if you could complete and return this to me. It will come as no surprise to you that we are under pressure to complete our report, and it would be very helpful if we could have response within a couple of weeks.

Please could you return it to me, *mark_bide@compuserve.com* any queries can be sent to me at the same address.

Thanks very much for your help.

Mark Bide

Mark Bide & Associates.

───

1. SERIALS METADATA

'Serials metadata' means data in machine-readable form which identifies a journal title, a journal issue, or a journal article, in any medium.

1.1   Does your project involve you in dealing with serials metadata?
      If the answer is 'No', please move to question 2. If the answer is
      'Yes', please answer the following questions:

1.2   What data elements do you store at the level of:
            1.2.1 The journal title?
            1.2.2 The journal issue or part?
            1.2.3 The individual journal article or contribution?

1.3   What standards do you follow in entering these data elements?
            1.3.1 If you follow your "own" standards, can we have a copy?
            1.3.2 If you follow an industry standard, what is it?
            1.3.3 Where do you source the data?

1.4   Under what terms, in what form, and to whom do you provide access
      to journals metadata?

1.5   What developments do you anticipate in the next two or three years
      in the way you handle or provide user access to journals metadata?

2. TERMS OF AVAILABILITY DATA

'Terms of Availability (TOA) data' here means data accessible to customers or users which includes any or all of: financial terms of sale; copyright and other conditions of use; and terms for interlibrary loan, photocopy supply or downloading in electronic form.

2.1   Does your project involve you in maintaining TOA data?

If the answer is 'Yes', please answer the following questions:

2.2   What are the key TOA data elements which you use?

2.3 Are your TOA data formats locally defined, or do they follow an
     industry convention or standard?
            2.3.1 If you follow your "own" standards, can we have a copy?
            2.3.2 If you follow an industry standard, what is it?
            2.3.3 Where do you source the data?

2.4   What developments do you anticipate in the next two or three years
        in the way you handle or provide user access to TOA data for
        journals?

2.5   Do you anticipate making any further developments in the way you
        handle or provide user access to TOA metadata?

APPENDIX D: Organisations contacted with the questionnaire

Publishers

Academic Press
Blackwell Publishers
Blackwell Scientific
Carfax
IoPP
Routledge
Sage
Wiley

Secondary information services

CABI
INSPEC
PIRA
Royal Society of Chemistry

Subscription agents

Blackwell
Dawsons
EBSCO
Swets

Document suppliers

BIDS
British Library Document Supply Centre

Uncover

Library systems/networks

BLCMP
Dynix
GEAC
OCLC
Sirsi
SLS

Libraries

Bristol University
British Library
Brunel University
City of Westminster Public
    Libraries/EARL
COPAC
EDINA
Loughborough University
National Institute for Medical Research
Southampton University
University of London Union List of Serials
University of Westminster

eLib project managers

Some 60 individuals

APPENDIX E: SGML metadata created by a journal publisher

This example of SGML metadata taken from a publisher's database of journal article headers is reproduced by kind permission of John Wiley & Sons. It is included as an appendix to this report to give an illustration of the kind and level of highly structured information which publishers are increasingly generating as a by-product of the publishing process, and in order to inform users of the content of their journals.

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</AU>
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<FNMS>Stella</FNMS>
<SNM>Varley</SNM>
</AU>
<AU ORF="a3">
<FNMS>Aine</FNMS>
<SNM>Belton</SNM>
</AU>
<AFF CNY="GB" OID="a1">City University</AFF>
```

```
<AFF CNY="GB" OID="a2">London School of Economics</AFF>
<AFF CNY="GB" OID="a3">London School of Economics</AFF>
<CORR ID="a4">Psychology Department, City University, Northampton
Square, EC1V 0HB, United Kingdom, or at D. B. Wright@City.AC.UK</CORR>
</AUG>
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<P>The reason why misleading post-event information affects later
recollections is the subject of a heated debate within cognitive
psychology. One series of studies that is often cited is when subjects
are allowed a second guess. Loftus (1979) found that the second guesses
of errant misled subjects were not above chance levels. This, she
argued, suggests that the memory for the original information cannot be
accessed at testing. Four studies are reported in which subjects were
allowed second guesses. In these studies errant misled subjects' second
guesses were better than chance. We discuss how these findings inform
the debate about why misinformation affects memory.</P>
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METHOD AND ASSUMED STRESS HYBRID METHOD BASED ON THE
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<AUG><AU CORRESP="1" CORF="a1" ORF="a1"><FNMS>S. T.</FNMS>
<SNM>YEO</SNM>
<DEGS>Ph.D. Student</DEGS>
</AU>
<AU ORF="a1"><FNMS>B. C.</FNMS>
<SNM>LEE</SNM>
<DEGS>Associate Professor</DEGS>
</AU>
<AFF CNY="KR" OID="a1">Engineering System and Design Lab, Department of
Mechanical Engineering, Korea Advanced Institute of Science and
Technology, 373-1, Kusong-dong, Yusung-gu, Taejon 305-701, Korea</AFF>
</AUG>
<ABS><P>SUMMARY An equivalence between the enhanced assumed strain
(<HUC>EAS</HUC>) method based on the Hu&ndash;Washizu principle,
recently proposed by Simo and Rifai, and assumed stress hybrid
```

```
(<I>hybrid</I>) method based on the Hellinger&ndash;Reissner principle
is investigated. It is proved that not only the displacements but also
the stresses of the <HUC>EAS</HUC>-elements calculated from the strains
are identical to those of the corresponding hybrid-elements at least at
the Gauss integration points provided the spaces of the trial functions
for enhanced assumed strains and for assumed stresses satisfy the
orthogonality and the inclusion or the invertibility condition. By
virtue of this equivalence, a stress recovery procedure of the
<HUC>EAS</HUC>-elements is devised. This procedure is variationally
consistent and more efficient than those proposed by Simo and Rifai and
Andelfinger and Ramm. Since the classical method of incompatible
displacement modes is a special case of the <HUC>EAS</HUC>-method, this
procedure also can be used to evaluate variationally consistent stresses for
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Bio-Pharmaceutical Sciences, University of Leiden, P.O. Box 9502, 2300
RA Leiden, The Netherlands</AFF>
<AFF CNY="NL" OID="a2">TNO Centre for Structure Elucidation and
Instrumental Analysis, P.O. Box 360, 3700 AJ Zeist, The
Netherlands</AFF>
<AFF CNY="NL" OID="a3">TNO Biological Toxicology Institute, P.O. Box 360
3700, AJ Zeist, The Netherlands</AFF>
<CORR ID="a4">Division of Analytical Chemistry, Center for
Bio-Pharmaceutical Sciences, University of Leiden, P.O. Box 9502, 2300
RA Leiden, The Netherlands</CORR>
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<ABS LANGUAGE="EN">
<P>A mass spectrometric method providing qualitative site-specific
information regarding covalent modification of proteins is described.
The method involves comparison of unmodified and modified proteins by
matrix-assisted laser desorption/ionization mass spectrometry (MALDI MS)
peptide mapping in combination with site-specific mutagenesis of
possible target amino acids. The approach is demonstrated through the
mapping of glutathione-<I>S</I>-transferases (GSH transferases) before
and after inhibition with the glutathione conjugate
2-(<I>S</I>-glutathionyl)-3,5,6-trichloro-1,4-benzoquinone (GSTCBQ). The
results demonstrate the utility of site-specific mutagenesis in
combination with MALDI MS peptide mapping. Evidence is presented that
three residues in or near the active site, including the hydroxyl groups of
Tyr<INF>6</INF> and Tyr<INF>115</INF> and the sulphydryl group of
Cys<INF>114</INF>, are target sites for GSTCBQ. Although only one GSTCBQ
molecule per active site was detected, it appears to be distributed among all
three target sites. In addition, MALDI MS peptide mapping covered 81% of the
cDNA deduced amino acid sequence for GSH transferase and site-directed
mutagenesis corresponding to a single amino acid substitution were
verified.</P>
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APPENDIX F: Database searches carried out at De Montfort University

Searches by Anne Ramsden, International Institute for Electronic Library Research, De Montfort University Milton Keynes

The Articles

Nine articles were selected from academic, popular and scholarly journals with a view to examining the standards for metadata in use by publishers, subscription agents (EBSCO and SWETS), document delivery services (BIDS Journals Online); and Abstracting & Indexing services (DIALOG, BIDS (Science Citation Index (SCI), Social Sciences Citation Index (SSCI), IBSS, British Library's Inside Information (BL II)).

The articles selected for the analysis were:

1. Incidence of insulin-dependent diabetes mellitus among
Sardinian-heritage children born in Lazio, Italy.
Sa Muntoni, M T Fonte, S Stoduto, G Marietti, C Bizzarri, A Crino, P
Ciampalini, G Multari, M A Suppa ...
The Lancet (The Lancet Ltd), 18 January 1997, vol 349, no 9046
No ID

2. Trusted systems. Special report.
Mark Stefik
Scientific American, 1997, vol 276, no 3, pp 78-81
No ID

3. Reading about women in world history textbooks from one feminist
perspective.
Michelle Commeyras and Donna E Alvermann
Gender and Education (Carfax), March 1996, vol 8, no 1, pp 31-48
0954 253/96010 031-18

4. Two sociological approaches to religion in modern Britain.
Timothy Jenkins
Religion (Academic Press) , October 1996, vol 26, no 4, pp 331-342
ID r1960027

5. How successful were China's state sector reforms?
Yipang Huang, Ron Duncan
Journal of Comparative Economics (Academic Press), February 1997, vol 24, no 1, p 65-78
ID JE961413

6. Can the introduction of markets help solve the problems facing the National Health Service today?
Beretta R and W S B Yeung
Journal of Nursing Management (Blackwell Science), March 1996, vol 4, no 2, p 63-67 (5)
No ID

7. Electrical and chemical consequences of point discharges in a forest during a mist and a thunderstorm.
Borra J P, Roos R A, Renard D, Lazar H, Goldman A, Goldman M
Journal of Physics D-Applied Physics (Insitute of Physics), 1997, vol 30, no 1, pp 84-93
PII: S0022-3727(97)70 626-0

8. What are they doing? Dilemmas in analyzing bibliographic searching: Cultural and technical networks in academic life?
Matthew David and David Zeitlyn
Sociological Research Online (Kennedy Society, University of Surrey), 1996, vol 1, no 4,
<http://www.socresonline.org.uk/socresonline/1/4/2.html>

9. Cattle, co-wives, children, and calabashes - material co symbol use among the Il-Chamus of West-Central Kenya.
A J Osborn
Journal of Anthropological Archaeology (Academic Press), 1996, vol 15, no 2, pp 107-136

AA960004

The journals

The journals represented a wide range of subject areas (Economics, Religion, Physics, Medical and Health Administration, Anthropology, Science, Sociological Research and Education). One journal is an electronic scholarly journal (Sociological Research Online) and the others are conventional printed academic journals, which are available also as full text PDF files at the publishers' websites.

Identifiers

The following publishers used identifiers on their web sites for the target articles: Institute of Physics (PII), Academic Press and Carfax (and via Catchword). Academic Press' IDEAL web site gave identifiers which appeared on the table of contents, metadata and first page of article.

The remainder (Blackwell Science, The Lancet, Sociological Research Online, Scientific American) did not use identifiers.

The Lancet	No identifier
Scientific American	No identifier
Gender & Education	0954 253/96010 031-18
Religion	r1960027
J Comparative Economics	JE961413
J Nursing Management	No identifier
J Physics D Applied Physics	PII: S0022-3727(97)70 626-0
Sociological Research Online	URL http://socresonine.org.uk/socresonline/1/4/2.html
J Anthropological Archaeology	AA960004

Abstracting & Indexing Services

Dialog, BIDS ISI and IBSS databases, British Library's Inside Information were searched by author's name mainly.

None of the A & I services used the identifiers for IoP, AP or Carfax articles.

One database producer, **Current Contents Search** (Dialog) included in the record header the name "Genuine Article" (which is a document delivery service I suppose?) with an article identifier code.

All of the A & I services used metadata composed of typical bibliographic information (eg author, title).

Subscription agents

EBSCO's Master file of journal titles contained four of the target journals: Religion, Gender and Education, Scientific American and The Lancet. EBSCO include SICIs (and will include PIIs if publishers provide them) in underlying data, but these are not accessible to general users.

SWETS do not hold any of the target journal titles.

Document Delivery Services

Uncover is accessed using Telnet, so there was no means of printing or copying screen displays. I hope I have copied the text ok with the correct SICI codes. The service was very slow and searching by author's name was very laborious.

Catchword is a very difficult web site to use and access documents (Realpage software viewer has to be loaded for access to the full text articles)!

BIDS Journals Online: Blackwell Science titles are available through this service. There was no article identifier in the metadata or full text PDF file.

1. The Lancet

Library catalogues
Loughborough University's Web OPAC

Title The Lancet
   Publisher London:The Lancet Ltd
     Ctrl.no 0023-7507
Shelfmark   Holdings
Serial 610/LAN   No. 6514- , 1948-

Document Delivery Service
UNCOVER

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AUTHOR(s):          Muntoni, S.
                    Songini, M.
TITLE(s):           High incidence rate of  IDDM among Sardinian-heritage children born in
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          In:       The lancet.
                    JAN 18 1997 v 349 n 9046
        Page:       160
   SICI Code:       0099-5355(19970118)349:9046L.160:IIAS;1-
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Publisher's website
The Lancet Web site

http://www.thelancet.com/lancet/User/vol349no9046/articles/article1.html
No metadata

BIDS
ISI

Copyright 1997, Institute for Scientific Information Inc.
Database: Science Citation Index
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        Ciampalini_P, Multari_G, Suppa_MA, Matteoli_MC, Lucentini_L,
        Sebastiani_LM, Visalli_N, Pozzilli_P, Boscherini_B, Muntoni_S

NA: ASSOC MEDICO,CTR MALATTIE DISMETABOL & ARTERIOSCLEROSI,23-29
   VIALE MERELLO,I-09123 CAGLIARI,ITALY
   UNIV ROMA TOR VERGATA,PEDIAT CLIN,ROME,ITALY
   CATHOLIC UNIV,PEDIAT CLIN,ROME,ITALY
   OSPED BAMBINO GESU,IRCCS,REPARTO ENDOCRINOL,ROME,ITALY
   UNIV ROMA LA SAPIENZA,SERV DIABETOL PEDIAT,ROME,ITALY
   BAMBIN GESU PALIDORO,CTR DIABETOL PEDIAT,ROME,ITALY
   UNIV ROMA LA SAPIENZA,IST IGIENE G SANARELLI,ROME,ITALY
   UNIV ROMA LA SAPIENZA,IST CLIN MED 2,ROME,ITALY
JN: LANCET, 1997, Vol.349, No.9046, pp.160-162
IS: 0140-6736
AB: Background The relative importance of genetic and environmental
   factors in causing insulin-dependent diabetes mellitus (IDDM)
   is unknown. We studied this question by assessing the incidence
   of the disease in children, born in a region with a low
   incidence of IDDM (Lazio), but whose parents came from a region
   with high incidence (Sardinia).
   Methods We identified all IDDM cases that occurred between 1989
   and 1994. We used as the denominator the number of children
   aged 0-14 born in Lazio of Sardinian parents to calculate
   incidence. We compared this rate with the incidences of IDDM in
   the populations of Lazio and Sardinia.
   Findings The age-adjusted incidence of IDDM in Sardinian-
   heritage children born and living in Lazio was 33.8 per 100 000
   per year (95% CI 7.0-99.0) for those with two Sardinian
   parents, and 15.9 (8.7-26.6) for those with only one parent
   from Sardinia. The former incidence was not different from that
   recorded in Sardinia (34.4, 31.3-37.9), but was fourfold that
   of Lazio-heritage children (7.9, 7.1-8.8).
   Interpretation Our results show that two different ethnic
   groups living in the same region have a fourfold difference in
   incidence of IDDM. Children of Sardinian-heritage born in Lazio
   have the same incidence as the population of origin, which is
   genetically prone to the disease. Moreover, children with one
   Sardinian parent had a rate half that of Sardinians and double
   that of the indigenous population. We conclude that in a given
   population genetic susceptibility determines the frequency of
   IDDM in response to the environmental challenge.
KP: IDDM, POPULATION

DIALOG:
Health & Wellness Database

1/5/1

DIALOG(R)File 149:IAC(SM)Health&Wellness DB(SM)

01663698   SUPPLIER NUMBER: 19096553
Incidence of insulin-dependent diabetes mellitus among Sardinian-heritage
 children born in Lazio region, Italy.
Muntoni, Sa; Fonte, M.T.; Stoduto, S.; Marietti, G.; Bizarri, C.; Crino, A.

; Ciampalini, P.; Multari, G.; Suppa, M.A.; Matteoli, M.C.; Lucentini, L.;
Sebastiani, L.M.; Visalli, N.; Pozzilli, P.; Boscherini, B.; Muntoni, S.
The Lancet, v349, n9046, p160(3)
Jan 18, 1997
PUBLICATION FORMAT: Magazine/Journal   ISSN: 0099-5355 LANGUAGE: English
RECORD TYPE: Abstract TARGET AUDIENCE: Professional

ABSTRACT: Children born to Sardinian parents may be more prone to
insulin-dependent diabetes mellitus (IDDM) than other children growing up
in the Lazio region of mainland Italy, a region with traditionally low
rates of IDDM. The high incidence of IDDM in Sardinia apparently remained
high in 17 Sardinian children born in Lazio. Compared to children of Lazio
heritage, the rate of IDDM was four times higher in children with Sardinian
parents. Proneness to disease was reduced by half in children with only one
parent from Sardinia. Genetic factors may outweigh environmental influences
in some populations.
SPECIAL FEATURES: illustration; table; map
DESCRIPTORS: Environmentally induced diseases--Research; Diabetes,
  Insulin-dependent--Genetic aspects; Medical geography--Health aspects;
  Sardinia--Health aspects
FILE SEGMENT: HI File 149

2. Scientific American

Library catalogues
Loughborough University's Web OPAC

Title Scientific American
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    Ctrl.no 0036-8733
Shelfmark   Holdings
Serial 500/SCI   Vol. 200- , 1959-
Microfilm - AV are.. Vol. 171-199, 1944-58

Document Delivery Service
Not held in **UNCOVER**

Subscription agent
EBSCO

Subject:	INTERACTIVE computer systems; ELECTRONIC publishing; INTERNET (computer network)
Title:	Trusted systems
Source:	Scientific American, Mar97, Vol. 276 Issue 3, p78, 4p, 6 diagrams, 3c
Author:	Stefik, Mark
Abstract	Looks at how trusted systems that enforce machine-readable rights to use the work of a musician or author can create secure ways to publish over the Internet. Different forms of trusted systems. Trusted computer's ability to recognize other trusted systems. Need for publishers to watch out for unlicensed distribution of their property. Exercising usage rights.
AN:	9704276049

ISSN: 0036-8733 **

Publisher's website
Scientific American web site

http://www.sciam.com/0397issue/0397stefik.html
No metadata

BIDS:
ISI

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Database: Science Citation Index

(1) TI: Trusted systems
     AU: Stefik_M
     NA: XEROX CORP,PALO ALTO RES CTR,INFORMAT SCI & TECHNOL LAB,3333
        COYOTE HILL RD,PALO ALTO,CA,94304
     JN: SCIENTIFIC AMERICAN, 1997, Vol.276, No.3, pp.78-81
     IS: 0036-8733

Dialog
Current Contents Search

1/5/2
DIALOG(R)File 440:Current Contents Search(R)
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08208688   GENUINE ARTICLE#: WJ716   NUMBER OF REFERENCES: 3
TITLE: Trusted systems
AUTHOR(S): Stefik M
CORPORATE SOURCE: XEROX CORP,PALO ALTO RES CTR, INFORMAT SCI &
TECHNOL LAB,
   3333 COYOTE HILL RD/PALO ALTO//CA/94304 (REPRINT)
PUBLICATION TYPE: JOURNAL
PUBLICATION: SCIENTIFIC AMERICAN, 1997, V276, N3 (MAR), P78-81
PUBLISHER: SCI AMERICAN INC, 415 MADISON AVE, NEW YORK, NY 10017
ISSN: 0036-8733
CURRENT CONTENTS JOURNAL ANNOUNCEMENT: CC AGRI, V28, N12; CC LIFE, V40,
N12
   ; CC PHYS, V37, N12; CC ENGI, V28, N12
LANGUAGE: English   DOCUMENT TYPE: ARTICLE
GEOGRAPHIC LOCATION: USA
SUBFILE: SciSearch; CC PHYS--Current Contents/Physical, Chemical & Earth
   Sciences; CC LIFE--Current Contents/Life Sciences; CC AGRI--Current
   Contents/Agriculture, Biology & Environmental Sciences; CC ENGI--
   Current Contents/Engineering, Computing & Technology
JOURNAL SUBJECT CATEGORY: MULTIDISCIPLINARY; ENGINEERING
MANAGEMENT/GENERAL

3. Gender & Education

Library catalogues
De Montfort University's Web OPAC

Gender and education. - Abingdon : Carfax Publishing Co. - 0954-0253
Location   Shelfmark   Holdings
Kimberlin Lv..   Periodicals   Vol.3-, 1991-

Subscription agent
EBSCO

Subject: WOMEN in literature; FEMINISM
Title: Reading about women in world history textbooks from one feminist perspective
Source: Gender & Education, Mar98, Vol8 Issue 1, p31, 18p, 1 chart
Author: Commeyras, Michelle; Alvermann, Donna E.
Abstract   Analyzes the content on women in the three secondary school world history books used in the United States from one feminist perspective. Perspective on feminism and inquiry; Positioning of women in the textbooks; Educational significance of the findings for literacy educators.
AN: 96052023684
ISSN: 0954-0253 Full Text is available**

Publisher's web site
Carfax website

http://www.carfax.co.uk/gee-con.htm
No article identifier in TABLE OF CONTENTS

Document Delivery Service
Catchword website

http://www.catchword.co.uk/
Article identifier appeared on the first page of the article only

UNCOVER

---UnCover----------------------------------

AUTHOR(s):   Commeyras M
TITLE(s):   Reading about women in world history

              In: Gender and education.
                    1996 v 8 n 1
              Page: 31
    SICI Code: 0954-0253(1996)8:1L.31:RAWW;1

DIALOG
ERIC

1/5/1
DIALOG(R)File   1:ERIC
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EJ526906   UD519316
  Reading about Women in World History Textbooks from One Feminist
Perspective.
  Commeyras, Michelle; Alvermann, Donna E.
  Gender and Education; v8 n1 p31-48 Mar 1996
  ISSN: 0954-0253
  Available from: UMI
  Language: English
  Document Type: REVIEW LITERATURE (070); POSITION PAPER (120); PROJECT
DESCRIPTION (141); JOURNAL ARTICLE (080)
  Journal Announcement: CIJNOV96
  Analyzes, from one feminist perspective, the content on women in three
secondary school world history textbooks used in the United States. Results
are interpreted in light of contemporary feminist themes, revealing how
textbook language and content socially construct gender. Suggestions
regarding the educational significance for teachers and students are
provided. (GR)
  Descriptors: Criticism; *Feminism; *Perspective Taking; *Secondary
Education; *Sex Role; Socioeconomic Status; *Textbook Content; Textbook
Research; *World History
  Identifiers: *Women in History

4. Religion

Library catalogues
Loughborough University Web OPAC
De Montfort University Web OPAC

No entry

Subscription agent
EBSCO

Subject:	RELIGION & sociology – Great Britain; GREAT BRITAIN -- religion
Title:	Two sociological approaches to religion in modern Britain
Source:	Religion, Oct96, Vol. 26 Issue 4, p331, 12p
Author:	Jenkins, Timothy
Abstract	Compares the approach adopted by sociological accounts of religion in Great Britain. Parallelism between sociological and religious approaches; Contrast between sociological and religious approaches in erms of narrative of decline and diversity; Indigenous patterns of meaning.
AN:	9705022500
ISSN:	0048-721X **

Document Delivery service
UNCOVER

---UnCover----------------------------------

AUTHOR(s):   Jenkins, T.
TITLE(s):   Two sociological approaches to religion in modern Britain

             In: Religion
                     OCT 01 1996, v 26 n 4

        Page: 331
     SICI Code: 0048-721X(19961001)26:4L.331:SARM;1-

Publisher's website
IDEAL (Academic Press) website

http://delta.bids.ac.uk/cgi-
bin/delta.bids.ac.uk_8006/fetch/0103040b010809050f040801035003020f035209020f010d0101020
6530e07040a060a015c04000601015805550a520f0259/130:1096:2813/4

Article identifier (r1960027) appears at the end of the abstract but not on the full text PDF file

BIDS
IBSS

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Database: IBSS

(1)   TI: Two sociological approaches to religion in modern Britain
     AU: Jenkins_T
     JN: Religion, Oct 1996, Vol.26, No.4, pp.331-342
     IS: 0048-721X
     DT: Article
     DC: Anthropology
       Sociology
     SD: Religion
       Sociology of religion
       Social theory
     GD: United Kingdom

***** End of Data *****

DIALOG
Searched Current Contents Search, Religion Index and Arts & Humanities Databases without
success.

5. Journal of Comparative Economics

Library catalogues
De Montfort University's Web OPAC

Journal of comparative economics. - New York : Academic Press. - 0147-5967
Location   Shelfmark   Holdings
Milton Keynes   Periodicals   Vol.1-, 1977-

Publisher's website
IDEAL (Academic Press) Website

Article's first page and abstract contain publisher's identifier.

BIDS
SSCI

Copyright 1997, Institute for Scientific Information Inc.
Database: Social Sciences Citation Index

(1)   TI: How successful were China's state sector reforms?
      AU: Huang_YP, Duncan_R
      NA: AUSTRALIAN NATL UNIV,NATL CTR DEV STUDIES,GPO BOX
        4,CANBERRA,ACT 0200,AUSTRALIA
      JN: JOURNAL OF COMPARATIVE ECONOMICS, 1997, Vol.24, No.1, pp.65-78
      IS: 0147-5967
      AB: This paper examines the impact of the various reform measures
        on the productivity performance of China's state enterprises.
        The study applies a Griliches-type production function and uses
        an enterprise panel data set collected between 1980 and 1992 in
        four coastal cities. It is found that while some policies such
        as reductions in the proportion of planned output and the
        introduction of the contract system improved productivity, the
        overall size of reform effects on productivity has been
        negligible. (C) 1997 Academic Press.
      KP: CHINESE-INDUSTRY, EFFICIENCY

BL Inside Information

Copyright 1997, British Library. All rights reserved.
Database: BLII

(1)   TI: How Successful Were China's State Sector Reforms?
      AU: Huang_Y, Duncan_R
      JN: JOURNAL OF COMPARATIVE ECONOMICS, 1997, Vol.24, No.1, p.65
      IS: 0147-5967
      LC: 330.05
      DC: HB90
      EM: BLDSC loan embargo till 22/09/97

**** End of Data ****

6. Journal of Nursing Management

Library Catalogues
De Montfort University Web OPAC

Journal of nursing management. - Oxford : Blackwell Scientific Publications. - 0966-0429

Location	Shelfmark	Holdings
Scraptoft	Periodicals	Vol.1-, Jan.1993-

Document Delivery Service
BIDS Journals Online

Title: Can the introduction of markets help solve the problems facing the National Health Service today?

Author: Beretta R. [1]; Yeung W.S.B.*

Author Address:
[1] Senior Lecturer in Nursing, De Montfort University, Leicester, UK
[*] Department of Obstetrics and Gynaecology, University of Hong Kong, Queen Mary Hospital, Pokfulam Road, Hong Kong.

Journal Name: Journal of Nursing Management
Volume: 4
Issue: 2
Pages: 63-67(5)
Document Type: OA
Language: EN
Publication Date: March 1996
Publisher: Blackwell Science Ltd., Oxford
ISSN: 0966-0429

BIDS
BL Inside Information

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Database: BLII

(1) TI: Can the introduction of markets help solve the problems facing
      the National Health Service today?
    AU: Beretta_R
    JN: JOURNAL OF NURSING MANAGEMENT, 1996, Vol.4, No.2, p.63
    IS: 0966-0429
    LC: 610.73; 65
    EM: BLDSC loan embargo till 19/09/96

**** End of Data ****

DIALOG
HealthStar

1/5/1
DIALOG(R)File 151:HealthSTAR
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02835152   96345383
  Can the introduction of markets help solve the problems facing the
National Health Service today?
  Beretta R
  J Nurs Manag (ENGLAND)   Mar 1996,   4 (2) p63-7,

  ISSN: 0966-0429   JOURNAL CODE: BZY
  Languages: ENGLISH
  Document Type: JOURNAL ARTICLE
  Journal Announcement: 9611
  SUBFILE: NURSING   MED/96345383
  Tags: Human
  Descriptors: *Health Care Reform; *Marketing of Health Services; *Quality
of Health Care; *State Medicine--Organization and Administration--OG; Great
Britain; Organizational Innovation; Organizational Policy

7. Journal of Physics D Applied Physics

Publisher's website
IoP Web site

http://www.iop.org/EJ/0/2371/bin/abstract/jd3000111/
PII appeared on abstract and first page of article

BIDS
SCI

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Database: Science Citation Index

(1)   TI: Electrical and chemical consequences of point discharges in a
         forest during a mist and a thunderstorm
      AU: Borra_JP, Roos_RA, Renard_D, Lazar_H, Goldman_A, Goldman_M
      NA: ECOLE SUPER ELECT,URA 73 NCRS,PHYS GAZ & PLASMAS LAB,EQUIPE
         DECHARGES & ENVIRONM,F-91192 GIF SUR YVETTE,FRANCE
         UNIV PARIS 07,LAB PHYS CHIM ATMOSPHERE,F-75251 PARIS,FRANCE
      JN: JOURNAL OF PHYSICS D-APPLIED PHYSICS, 1997, Vol.30, No.1,
         pp.84-93
      IS: 0022-3727
      AB: The first part of this paper is devoted to the electrical
         characteristics of the air below the canopy of a pine and
         spruce forest. In fair weather conditions, the site influence,
         i.e. the filtering effect of the trees on air conductivity and

electric field, is evidenced. Under disturbed weather conditions, the meteorological influence is depicted to show: (i) that electric fields sufficiently high to produce 'point discharges' occur not only during thunderstorms but also during mist; (ii) that, by taking into account the gaseous ions produced by the point discharges, it becomes possible to understand on the one hand the field divergence with height observed in the mist, and on the other hand the detection of alternatively positive and negative gaseous clouds of charges during the thunderstorm.

The second part presents the results of chemical analysis performed below and just above the canopy on the same site and for the same period. Increased ozone and hydrogen peroxide concentrations were measured during the thunderstorm. It is shown that these chemical species were not only locally produced by photochemistry and/or transported from different (industrial and traffic) sources, but also arose from transient electrical point discharges in the forest under high electric field conditions. Their local concentration is shown to be influenced by the electrical discharge current density on the one hand, and by the local conditions of atmospheric stability and of water content, determining the evolution of the chemical products, on the other hand. Actually, after their production, the initially gaseous chemical products were shown to be involved in the local droplet chemistry.

Under specific weather conditions, ionic densities as well as chemical by-products of a forest therefore depend both on the electrodynamical characteristics of the lower atmosphere and on the local environmental conditions (liquid water content of the air and atmospheric stability) associated with the two different situations investigated, a mist and a thunderstorm.

KP: CHARGE, CORONA, AIR

DIALOG
PASCAL

1/5/1
DIALOG(R)File 144:Pascal
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12899362   PASCAL No.: 97-0164938
Electrical and chemical consequences of point discharges in a forest during a mist and a thunderstorm
BORRA J P; ROOS R A; RENARD D; LAZAR H; GOLDMAN A; GOLDMAN M
Laboratoire de Physique des Gaz et des Plasmas, URA 73 du CNRS, Equipe Decharges et Environnement, Ecole Superieure d'Electricite, 91192 Gif sur Yvette, France
Journal: Journal of physics. D. Applied physics, 1997, 30 (1) 84-93
ISSN: 0022-3727 CODEN: JPAPBE Availability: INIST-5841; 354000062390820110

No. of Refs.: 41 ref.
Document Type: P (Serial) ; A (Analytic)
Country of Publication: United Kingdom
Language: English
The first part of this paper is devoted to the electrical characteristics of the air below the canopy of a pine and spruce forest. In fair weather conditions, the site influence, i.e. the filtering effect of the trees on air conductivity and electric field, is evidenced. Under disturbed weather conditions, the meteorological influence is depicted to show: (i) that electric fields sufficiently high to produce "point discharges" occur not only during thunderstorms but also during mist; (ii) that, by taking into account the gaseous ions produced by the point discharges, it becomes possible to understand on the one hand the field divergence with height observed in the mist, and on the other hand the detection of alternatively positive and negative gaseous clouds of charges during the thunderstorm. The second part presents the results of chemical analysis performed below and just above the canopy on the same site and for the same period. Increased ozone and hydrogen peroxide concentrations were measured during the thunderstorm. It is shown that these chemical species were not only locally produced by photochemistry and/or transported from different (industrial and traffic) sources, but also arose from transient electrical point discharges in the forest under high electric field conditions. Their local concentration is shown to be influenced by the electrical discharge current density on the one hand, and by the local conditions of atmospheric stability and of water content, determining the evolution of the chemical products, on the other hand. Actually, after their production, the initially gaseous chemical products were shown to be involved in the local droplet chemistry. Under specific weather conditions, ionic densities as well as chemical by-products of a forest therefore depend both on the electrodynamical characteristics of the lower atmosphere and on the local environmental conditions (liquid water content of the air and atmospheric stability) associated with the two different situations investigated, a mist and a thunderstorm.
English Descriptors: Atmospheric boundary layer; Atmospheric electricity; Forests; Fog; Thunderstorm; Electric discharge; Electric field; Chemical effect; Vosges
Broad Descriptors: Frankreich; Europa; Lorraine; France; Europe; Lorraine; France; Europe; Lorraine; Francia; Europa

French Descriptors: Couche limite atmospherique; Electricite atmospherique; Foret; Brouillard; Orage; Decharge electrique; Champ electrique; Effet chimique; Vosges

Classification Codes: 001E02D08

8. Sociological Research Online

Publisher's website

University of Surrey Website

Article identifier is URL
<http://www.socresonline.org.uk/socresonline/1/4/2.html

BIDS
IBSS

Copyright 1997, British Library of Political and Economic Science.
Database: IBSS

(1) TI: What are they doing? Dilemmas in analyzing bibliographic
        searching: cultural and technical networks in academic life
    AU: David_M, Zeitlyn_D
    JN: Sociological research online, 1996, Vol.1, No.4
    IT: http://www.socresonline.org.uk/socresonline/
    NT: http://www.socresonline.org.uk/socresonline/
        This paper presents provisional results from research into the
        uses and usefulness of electronic bibliographic databases in
        academic contexts. The research has been carried out as part of
        a British Library funded research project using ethnographic,
        focus group and conversation analytic techniques. Here we
        address the question: What can different varieties of
        ethnography and discourse analysis contribute to our
        understanding of organizational and institutional settings?
        Online and distributed bibliographic services (such as BIDS -
        Bath Information Data Services- and locally networked CD-ROMs)
        have now been available for some years in most universities and
        are thought to be a positive development. Many questions arise;
        some of which we hope may be answered by our results: What are
        they being used for? How are they being used? Are they as
        useful as central and local providers believe? Why do some
        researchers not use them? The research discussed here is based
        upon ethnographic interviews with 93 academics, researchers and
        postgraduates, ongoing observation as well as four focus group
        interviews with members of three departments (from different
        faculties) and with library staff at the University of Kent. We
        shall examine the cultural construction and negotiation of
        order and self-evidence. It is by the construction of cultural
        networks in which routine modes of questioning and criteria of
        relevance achieve the status of self-evidence that normal
        academic research communities establish themselves.
        Nevertheless the failure of this self-evidence to sustain
        itself sheds light on what ethnomethodologists find most
        interesting in any institutionalized discourse; its contingent
        dependence upon negotiations over interpretation and meaning.
    IS: 1360-7804
    DT: Article
    DC: Sociology
    SD: Bibliographies
        Data bases
        Information technology

           Computers
           Ethnographic research
           Academic profession
           Ethnomethodology
           Higher education
           Information
           Knowledge
           Libraries
           BIDS

***** End of Data *****

9. Journal of Anthropological Archaeology

Library catalogues
Loughborough University Web OPAC

No entry

BIDS
SSCI

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Database: Social Sciences Citation Index

Record - 1

TI- CATTLE, CO-WIVES, CHILDREN, AND CALABASHES - MATERIAL CONTEXT FOR
   SYMBOL USE AMONG THE IL-CHAMUS OF WEST-CENTRAL KENYA
AU- OSBORN, AJ
NA- UNIV NEBRASKA,DEPT ANTHROPOL,LINCOLN,NE,68588
JN- JOURNAL OF ANTHROPOLOGICAL ARCHAEOLOGY
PY- 1996
VO- 15
NO- 2
PG- 107-136
IS- 0278-4165
DT- Review
CR- ALEXANDER_RD, 1979, DARWINISM HUMAN AFFA
   ANDERSON_DM, 1988 p.241, ECOLOGY SURVIVAL CAS
   ANDERSON_DM, 1984 Vol.7 p.107, MILA
   ANDERSON_DM, 1981, THESIS CAMBRIDGE U
   ARHEM_K, 1985, UPPSALA RES REPORTS
   BARFIELD_TJ, 1993, NOMADIC ALTERNATIVE
   BINFORD_LR, 1962 Vol.28 p.217, AM ANTIQUITY
   BLEDSOE_CH, 1988 Vol.27 p.627, SOC SCI MED
   BOHANNON_P, 1964, AFRICA AFRICANS
   BONTE_P, 1991 p.1, HERDES WARRIORS TRAD
   BROWN_LH, 1971 Vol.3 p.93, BIOL CONSERV
   CASHDAN_E, 1990 p.259, RISK UNCERTAINTY TRI

CHAPPEL_TJH, 1977, DECORATED GOURDS NE
CLIGNET_R, 1970, MANY WIVES MANY POWE
CODOL_JP, 1981 Vol.20 p.111, SOC SCI INFORM
CONKEY_M, 1990 p.5, USES STYLE ARCHAEOLO
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COPPOCK_DL, 1986 Vol.23 p.585, J APPL ECOL
COUGHENOUR_MB, 1985 Vol.230 p.619, SCIENCE
DAHL_G, 1981 p.200, FUTURE PASTORAL PEOP
DAHL_G, 1976, 2 U STOCKH DEP SOC A
DAWKINS_R, 1978, BEHAV ECOLOGY EVOLUT
DUNDAS_KR, 1910 Vol.40 p.49, J ROYAL ANTHR I
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ELAM_Y, 1973, SOCIAL SEXUAL ROLES
ELLEN_R, 1982, ENV SUBSISTENCE SYST
EVANSPRITCHARD_EE, 1951, KINSHIP MARRIAGE NUE
EVANSPRITCHARD_EE, 1940, NUER DESCRIPTION MOD
FRATKIN_E, 1991, SURVIVING DROUGHT DE
GALATY_JG, 1991 p.171, HERDERS WARRIORS TRA
GALVIN_KA, 1994 p.113, AFRICAN PASTORALIST
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HARRIS_M, 1990 p.48, INSIDER OUTSIDER DEB
HARRIS_M, 1974 Vol.30 p.242, J ANTHROPOL RES
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HEGMON_M, 1992 Vol.21 p.517, ANNU REV ANTHROPOL
HILL_JN, 1985 p.362, DECODING PREHISTORIC
HJORT_A, 1981 p.135, FUTURE PASTORAL PEOP
HODDER_I, 1985 Vol.8 p.1, ADV ARCHAEOLOGICAL M
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HODDER_I, 1985 p.141, ARCHAEOLOGY FRONTIER
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HODDER_I, 1977 Vol.12 p.239, MAN
HODDER_I, 1987 p.424, METHOD THEORY ACTIVI
HODDER_I, 1991 p.30, PROCESSUAL POSTPRECE
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JACOBS_AH, 1975 p.406, PASTORALISM TROPICAL
JACOBS_AH, 1965, THESIS OXFORD U
JEWELL_PA, 1980 p.353, HUMAN ECOLOGY SAVANN
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KERVEN_C, 1992, ODI15
KING_BJ, 1994, INFORMATION CONTINUU

KLIMA_GJ, 1970, BARABAIG E AFRICAN C
KREBS_JR, 1978, BEHAVIOURAL ECOLOGY
KRIPPENDORFF_K, 1986, INFORMATION THEORY S
LARRICK_R, 1991 Vol.10 p.299, J ANTHROPOL ARCHAEOL
LARRICK_R, 1987 Vol.9 p.143, RES EC ANTHR
LEONE_MP, 1986 p.415, AM ARCHAEOLOGY PAST
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LEVINE_RA, 1962 Vol.1 p.39, ETHNOLOGY
LITTLE_MA, 1988 p.713, ARID LANDS TODAY TOM
LITTLE_MA, 1990 p.389, ECOSYSTEM APPROACH A
LITTLE_MA, 1980 p.479, HUMAN ECOLOGY SAVANN
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LITTLE_PD, 1992, ELUSIVE GRANARY HERD
LITTLE_PD, 1983 Vol.15 p.91, RURAL AFRICA
LITTLE_PD, 1981, SOCIOLOGICAL REPORT
LONGACRE_WA, 1991 p.71, CERAMIC ETHNOARCHEOL
LOSEY_GS, 1978 p.43, QUANTITATIVE ETHOLOG
MARGALEF_R, 1968, PERSPECTIVES ECOLOGI
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NESTEL_P, 1986 Vol.19 p.1, ECOL FOOD NUTR
NESTEL_PS, 1985, THESIS U LONDON
OHTA_I, 1987 Vol.8, AFRICAN STUDIES MONO
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PIANKA_ER, 1983, EVOLUTIONARY ECOLOGY
PLOG_S, 1980, STYLISTIC VARIATION
RAPPAPORT_R, 1971 Vol.73 p.59, AM ANTHROPOL
RAPPAPORT_RA, 1968, PIGS ANCESTORS RITUA
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RIGBY_P, 1969, CATTLE KINSHIP GOGO
RIGBY_P, 1985, PERSISTENT PASTORALI
SAITOTI_TO, 1980, MAASAI
SCHNEIDER_H, 1957 Vol.59 p.278, AM ANTHROPOL
SCHNEIDER_HK, 1981 p.210, FUTURE PASTORAL PEOP
SCHNEIDER_HK, 1984, LIVESTOCK DEV SUBSAH
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STEPHENS_DW, 1986, FORAGING THEORY
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SUDRE_P, 1990 Vol.24 p.181, ECOL FOOD NUTR
TAIFEL_H, 1978, DIFFERENTIATION SOCI
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TURNER_JC, 1982 p.15, SOCIAL IDENTITY INTE
VANDENBERGHE_PL, 1979, HUMAN FAMILY SYSTEMS
VEDELD_P, 1990 Vol.25 p.133, NOMADIC PEOPLES
WIENPAHL_J, 1984 Vol.6 p.193, RES EC ANTHR
WIESSNER_P, 1983 Vol.48 p.253, AM ANTIQUITY
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WIESSNER_P, 1990 p.105, USES STYLE ARCHAEOLO
WILSON_EO, 1975, SOCIOBIOLOGY
WINTERHALDER_B, 1981, HUNTER GATHERER FORA
WOBST_HM, 1977, 61 U MICH MUS ANTHR
YAGIL_R, 1988 p.373, ARID LANDS TODAY TOM
YENGOYAN_AA, 1975 p.70, AUSTR ABORIGINAL ANT
YENGOYAN_AA, 1968 p.185, MAN HUNTER
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