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Introduction

Have you ever visited a museum to carry out research on archaeological collections but been stymied by either the geologist-in-charge not knowing what a flanged axe was, or when asking for all the Burnished Ware from certain contexts, being shown to a storeroom full of context-arranged boxes with no cross referencing indexes, and having to wade through them all?

This article describes how the MDA helps museums and their users to overcome these problems in documenting archaeological collections and retrieving information from them.

MDA history

The MDA (Museum Documentation Association) was set up in 1977. It was formed as a merger of theoretical work on data standards (Mus. Assn. IRGMA, 1977) and practical computerisation of museum collections at the Sedgwick Museum Cambridge (Mus. Doc. Assn. 1980a:3). The work on data standards was initiated by an IRGMA subcommittee (Information Retrieval Group of the Museums Association) and has recently been published (MDA, 1980b).

Background to the MDA

Within the published objectives of the MDA the main one to concern us here is researching and developing methods of documenting collections (Mus. Doc. Assn. 1980a:5). The MDA assists museums and other institutions to catalogue their holdings by providing a range of standardised recording cards (Fig. 1) and a service to computerise these cards to generate catalogues and cross-referencing indexes (Fig. 2). In 1980, several departments and services were set up in the MDA to assist in this work. These include membership and research departments, and computing, publication and software services. The work of these departments and services is described in a recent paper (Mus. Doc. Assn. 1980a).

The MDA is in fact one of the few bodies in the world concerned with the documentation of museum collections on a multidisciplinary basis.

Membership

At present the MDA has two classes of member who contribute towards its work: most of the National Museums in the UK (including the British Museum, the National Museum of Antiquities of Scotland, the Ulster Museum, the National Museum of Wales, and the Directorate of Ancient Monuments and Historic Buildings) and the nine Area Museum Councils. These two classes of member may be extended in the future, to include other UK and overseas institutions.

Members are entitled to claim advice and assistance from the Association, and to make full use of its services at preferential rates. However, non members may also use the various services.

Card of	File	Institution : identity number	Part
IDENTIFICATION	Simple name	D Materials keyword/detail	Number
C	Full name or classified identification	System	D Identifier : date
DATING	Object period or date		
C	Dating method	Cross reference	Researcher : date
COLLECTION OR EXCAVATION	Site name	Site number	Lat Long NGR
	Place name/detail		Value & units/accuracy
	Context		Context period or date
	Locality detail		D
C	Collection method	Collector or excavator : date	Find number
ACQUISITION	Acquisition method	Acquired from : date	
C		D Price	Conditions Yes/No
			D Valuation : date
DESCRIPTION	Condition keyword/detail	Completeness keyword/detail	
C	Store : date	Recorder : date	

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DESCRIPTION	Dimension measured	value & units/accuracy	Dimension measured	value & units/accuracy
	Inscription	Method	Position	
	Mark			
	Transcription	Detail		D
	Description			
	Part : aspect : description keyword/detail			D
C	Conservation	Other process	Method/detail : operator : date : detail	Cross-reference
PROCESS	Reproduction			D
C	Conservation			
	Reproduction			
DOCUMENTATION	L Class	Author : date : title : journal or publisher : volume : detail		Drawing or photo
C	Notes			
NOTES	<p>Figure 1: MDA Archaeological Object Card</p>			
C				

Period index - New Kent Road Site

1101 AD = 1300 AD	
ceramic	
sherd	* <u>SABMS 78/2631-2633</u>
	* <u>SABMS 78/2635</u>
sherds	* <u>SABMS 78/2636</u>
1301 AD = 1500 AD	
ceramic	
sherd	* <u>SABMS 78/2648</u>
	* <u>SABMS 78/2672</u>
1501 AD = 1600 AD	
ceramic	
sherd	* <u>SABMS 78/2601</u>
	* <u>SABMS 78/2604-2606</u>
	* <u>SABMS 78/2609-2612</u>
	* <u>SABMS 78/2614-2616</u>
	* <u>SABMS 78/2618</u>
	* <u>SABMS 78/2620</u>
	* <u>SABMS 78/2641</u>
sherds	* <u>SABMS 78/2619</u>
	* <u>SABMS 78/2640</u>
	* <u>SABMS 78/2647</u>
1501 AD = 1700 AD	
ceramic	
sherd	* <u>SABMS 78/2644</u>
sherds	* <u>SABMS 78/2649</u>
1601 AD = 1700 AD	
ceramic	
sherd	* <u>SABMS 78/2613</u>
medieval	
ceramic	
sherd	* <u>SABMS 78/2602-2603</u>

Figure 2: Chronological index generated using GOS (published by courtesy of Verulamium Museum, St. Albans).

Funding

Financing of the MDA is provided by subscriptions from full members and from sales and services. The history, administrative organisation and financing of the MDA is described in several publications (Mus. Doc. Assn. 1980a; Roberts, 1981a; Roberts et al 1980; Mus. Doc. Assn. 1980c).

The GOS Program Package

GOS, a piece of proprietary software maintained and distributed by the MDA (Mus. Doc. Assn. 1980d; Mus. Doc. Assn. 1980e; Porter 1980; Porter, 1981), is a program package for handling catalogues, i.e. files of records. GOS is written in BCPL, a high level language, and is geared to simple batch working. The structure of a file is very straightforward - It is a sequence of independent records processed one at a time by GOS. The structure of each record may vary but all records within a file should conform to a single format (a set of rules governing the form of any record). There is no effective limit to the complexity such a format may have if required. Once stored, data may be variously manipulated, edited, updated and displayed by a variety of processors.

Input to GOS

Records are initially presented to GOS as ordinary text files containing data in an appropriate format - usually with each item of data preceded by one or more mnemonic tags for example:

*coll *place Duxford, Cambridgeshire

Tags used for archaeology have been described by Roberts et al. (1980).

Output from GOS

GOS can produce 'catalogues', which are listings of some or all of the information contained in every record in a file; 'indices', which present some of the information from each record in alphabetical or numerical order, with as many subheadings as are required; and 'information retrieval runs' which select all records from the file which relate to a specific request. Catalogues, etc. are usually presented on line-printer paper but could be printed as camera-ready copy, labels or on COM (Computer Output Microform).

At the moment, GOS is concerned with manipulating records, it is not a database management system. While arithmetic can be done, full scale statistics or graphics cannot.

Recent work with GOS

Recently my colleague, Richard Light, has completed some important work in developing international data standards and procedures for the exchange of data systems. Magnetic tapes were received from the National Inventory Program, Canada (the ISIS system - conforming to ISO Standard 2709); the Nordiska Museum, Stockholm (simple, fixed length records with fixed length fields); the British Library (bibliographic records in the MARC format conforming to the ISO standard 2709); and the MDA (MDS records in the form of variable length source text). The records from these tapes were processed using GOS and catalogues and indexes generated. Light and Roberts (1981) describe this work, the data standards adopted by a number of major documentation systems around the world and the unification of these standards into a single listing of data categories (see Fig. 3 and note 2).

This kind of work has direct relevance to any archaeological discussion on data banking procedures or data transfer of records from one system to another.

Archaeological work

MDA's interest in archaeology was first evidenced in 1976 with the publication of the MDA Archaeology Object Card (Mus. Doc. Assn. 1980g). This was aimed primarily at recording archaeological objects in museums, usually those in the category of small finds. Some museum-based excavating bodies have used the card for on-site recording. Recently the remit of the MDA in archaeology recording has extended to include a site-to-museum documentation system (Stewart, 1980a). Just as the life of an object from excavation to the museum shelf is one continuous sequence, so its recording in both the site and the museum environment should form one single integrated process.

The practicalities of this site-to-museum documentation system are still being tested but the theory is based largely on MDA's own experience in

B4. Unified Listing

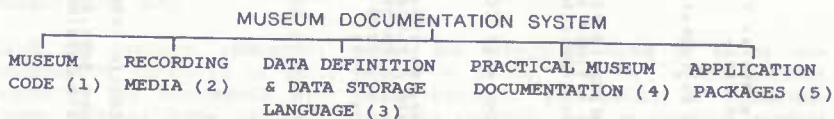
A unified list of data categories has been developed, using the MDA data standard as a basis. This shows the position of each category in the individual systems described above within the unified list.

Category Number	Category Name	Category Numbers in Individual Systems
1	record	: MDA 1.
2	> Type DIVISION = 'object'	: MDA 2.
3	> identity division	: MDA 3.
4	> > record managing institution	: MCN 40, 5, 2; MDB 2; NIP F1, E1, A2, H1, O2; IG 1130, 30, 1140, 1141, 120, 121; ICOM 2, 3; NM 1, 2; IRPA 4, 7; MDA 4.
5	> > record identity number	: MDB 1; NIP F2, E2, A4, H50, O3; IG 10; ICOM 1; NM 3; ICMN 1; IRPA 8; MDA 5.
6	> part division	: MDA 6.
7	> part identification group	: MDA 7.
8	> part name statement	: MDA 8.
9	> > title name statement	: NIP E15, A13, H6; IG 1030; ICOM 7; NM 4, 17; ICMN 3; IRPA 9; MDA 9-13.
10	> > > description	: MCN 32, 64, 65, 68, 69, 80, 81, 88, 120, 180-183, 608-640, 3886, 4002-4008; MDB 31-33, 62-90; NIP F11, F28, F29, E14, E41, A11, A24, A30, H3-H5, H7-H8, H21-H22; ODS-09; IG 1010, 1020, 1320, 1370, 1450; ICOM 4, 10, 15-17, 20; NM 5, 7, 8, 10; ICMN 2, 4; IRPA 2, 10, 16, 18; MDA 14-21.
11	> > > type of name	: MCN 30, 33, 3010, 3110; MDB 56; NIP F26; IG 20; IRPA 11; MDA 22-24.
12	> > > > status of identification	: MDA 25.
13	> > > > title statement	: MDA 26.
14	> > > > identification	: MDA 27.
15	> > > > > description	: MDA 28.
16	> > > > > > production history group	: MDA 29.
17	> > > > > > > TREE OF ANTECEDENT	: MDA 30.
18	> > > > > > > > object identity	: MDA 31.
19	> > > > > > > > full name	: MDA 32.
20	> > > > > > > > > production process group	: MDA 33.
21	> > > > > > > > > > production process statement	: MCN 46-48; MDB 48; NIP F13, A15, E26; IG 1450; ICOM 10; NM 10; MDA 34.
22	> > > > > > > > > > > person or corp. body	: MCN 70-72, 74, 92, 170, 172, 174, 3000, 3001, 3020-3080, 3082-3090, 3098, 3140-3180, 3470-3473; MDB 21-24;

Figure 3: Data standards - unified listing and concordance table of data categories used in different systems.

the museum documentation field, and the development of the Museum Documentation System (MDS). The MDS is a collection of publications and facilities which can be used by an institution to document its collections. The theoretical and practical elements of the MDS may be used independently but together form a single system (Mus. Doc. Assn. 1980c).

The overview to the MDS may be diagrammatically represented thus:



Notes

(1) Museums in Britain are assigned a five letter code which, used in conjunction with the identifying number of an item, provides a unique identifier for an object, group of objects, or written record (Mus. Doc. Assn. 1979). Over half the museums in Britain have already confirmed their museum code.

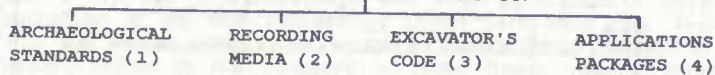
(2) The recording media can take the form of the standardised MDA A4 or A5 catalogue cards, internally produced records which conform to the MDA Data Standards or records on non-paper media for example flexible discs (floppies) - again conforming to the MDA Data Standards. Instruction books for each of the main subject areas covered by the record cards are also available.

(3) This language defines the logical structure of any record within the system. As with any language, this is made up of vocabulary (permitted word) and syntax (a set of rules governing the arrangement of words and showing their connection and arrangement). The data standard is a practical application of the theoretical language. Roberts (1980) discusses these standards in relation to archaeology (See Figs. 3 & 4).

(4) The publication "Practical Museum Documentation" (Mus. Doc. Assn. 1980f) is a curatorial handbook and guide to the techniques to use when cataloguing collections. It covers the initial receipt of the item by the museum through the various stages in cataloguing and indexing. Both manual and computerised recording methods are detailed. Practical Museum Documentation is the only British publication which describes how to accession and catalogue collections.

(5) Work has concentrated on developing the Object Applications Package. Future work will develop locality, biography, bibliography, and stratigraphy applications.

The archaeological subset of the MDS would be:



Notes to Fig. 3. MCN = Museum Computer Network. MDB = Museum Data Bank Coordinating Committee. ICMM = Institute of Conservation and Methodology of Museums, Hungary. NM = Nordiska Museet. NIP = National Inventory Program. IRPA = Institut Royal du Patrimoine Artistique, Belgium. ICOM = International Council of Museums. IG = Inventaire General.

DESC	>>>	place	>>>	[within PARTD in data standard.]
PLACE	>>>	place	>>>	- collection place names.
DESC	>>>	documentation	>>>	[within PARTD in data standard.]
DOC	>>>	coordinates	>>>	
CCCRD	>>>	dimension	>>>	
DIMEN	>>>	measurement	>>>	
	>>>	desc	>>>	
	>>>	result	>>>	
	>>>	dim	>>>	
	>>>	desc	>>>	
	>>>	authority	>>>	
	>>>	documentation	>>>	
	>>>	NOTE	>>>	
RELPCS	>>>	relative position	>>>	
DIMEN	>>>	dimension	>>>	
	>>>	measurement	>>>	
	>>>	desc	>>>	
	>>>	result	>>>	
	>>>	dim	>>>	
	>>>	desc	>>>	
	>>>	authority	>>>	
	>>>	documentation	>>>	
	>>>	NOTE	>>>	
VC	>>>	vice-county	>>>	
DESC	>>>	desc	>>>	- the vice-county of the locality.
HABITAT	>>>	habitat	>>>	[within PARTD in data standard.]
DESC	>>>	desc	>>>	- the habitat of the locality.
STRAT	>>>	stratigraphy	>>>	[within PARTD in data standard.]
TYPE	>>>	TYPE	>>>	
DESCR	>>>	description	>>>	
	>>>	desc	>>>	
	>>>	authority	>>>	
	>>>	documentation	>>>	
	>>>	NOTE	>>>	
CONTEXT	>>>	context	>>>	
DESC	>>>	desc	>>>	- the archaeological context of the locality.
DATE	>>>	date	>>>	[within PARTD in data standard.]
LOCTYPE	>>>	locality type	>>>	
DESC	>>>	desc	>>>	- the type of locality.
AUTD	>>>	authority division	>>>	[within PARTD in data standard.]

Figure 4: An excerpt from the Object Data Standards listing.

(1) Work to extend the MDA Data Standards specifically for archaeological recording will be undertaken later in 1981. Part of this investigation would look at existing recording sheets used by units and other excavating bodies and assess their compatibility with Archaeological Data Standards, which could act as a real link between different record systems in the archaeological world.

(2) The recording media, be they for stratigraphy, artefacts or processes such as conservation or photography, can be of various types. These include standardised recording sheets or cards for manual work or as input for computerisation; or a microprocessor based system with VDU prompts or initial on-site use of tape recorders. Providing the media's recording categories are compatible with theoretical data standards, the physical form of the medium chosen can be any of the different types mentioned. The data categories on the recording media are in fact graphic expressions of a theoretical model within data standards. The eventual choice of recording medium depends not only on the type and complexity of the site but also on funding and staff expertise.

(3) A five letter code for the excavating body which would work in a similar way to that of museum codes described above.

(4) For purely archaeological application, such as heavy-duty statistics, graphics, automatic production of stratigraphic matrix displays, stratigraphic verification etc., either an extension of GOS, or more feasibly, a bridging mechanism for data transfer to existing off-the-peg packages may have to be developed. In the long term there may have to be a shift from file orientated applications packages towards data base management software to provide new forms of data manipulation. American work in this field is well described by Gaines & Gaines (1980). Relational data bases (Date, 1977) may also be worthy of consideration in this aspect. An alternative approach, that of transferring data from a relational database through GOS to produce indexes, has already been achieved on the CODD project.

Mention has already been made of the development by the MDA of a site-to-museum documentation system. The individual theoretical and practical elements of this system have been illustrated in the preceding diagram. We can now see how these separate elements relate to the site and the museum.

The site-to-museum documentation system may be expressed diagrammatically:

EXCAVATING BODY	----->	RECEIVING INSTITUTION
Archaeological data Standards	----->	MDA Object and Locality Data Standards
Recording media	----->	absorption or cross referencing via code
Excavator's Code	----->	utilised where necessary for referral to site documentation
Applications packages or bridging mechanisms	----->	retained as archive plus artefact cross-referencing for museological work

For the above correlation several points require amplification.

The emphasis is on the avoidance, as far as possible, of duplication in recording. Excavation generated records should be absorbed and utilised in the museum's documentation system. The excavating body's code can be used for cross-referencing and as a key into the site documents. The system should also allow for new artefact information to be added to site records in the museum, to provide details of exhibition history, later conservation work, new bibliographic references, re-identifications, etc. There will probably always be the occasion when museums have to generate their own records about an archaeological archive, but use of archaeological data standards during excavation should ensure compatibility with the MDA Object Standards used in museum records.

How can the MDA assist field and museum archaeologists to achieve this site-to-museum transition?

By developing the MDS for archaeological needs we intend to assist both excavators and curators. Within the MDS, the extension of the MDA Object and Locality Data Standards for archaeology would be a primary requirement.

Advisory help in the design of media, and for general documentation problems can also be provided. In addition, the MDA can assist in the dissemination of information about museum documentation needs, current work in related subjects and disciplines such as classification work or information science. The MDA can also act as a forum for seminars of interest to archaeologists such as micro-electronic applications, data standards, current classification work, etc. The various MDA services can be utilised, such as the Computing Service to process records (MDA or non-MDA); as can the extensive library facilities - over 2,000 items relating to the documentation of collections (Roberts 1981b).

Frere and Dimbleby Reports - 5 years on

For British museums in the 1980s, one of the major problems will be handling the vast amount of objects and data accumulated in the boom years of rescue archaeology. The Frere and Dimbleby Reports (Anc. Mon. Board 1975; Anc. Mon. Board 1978) provided the general framework and guidelines about archival deposition. The MDA, acting in its capacity as a national forum for all aspects of the documentation of collections would like to work with museums and excavating bodies in helping to realise the aims of the Frere and Dimbleby reports.

Such cooperation will be necessary so that future archaeologists will not be re-excavating our excavations in museum basements.

Acknowledgements

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Figure 5: The definition of some data categories from Object Data Standards.

MUSEUM DOCUMENTATION SYSTEM -- DRAFT OBJECT DATA STANDARD

Summary representation of draft standard

Category	Code	Hierarchical indentation	MDA Category	Brief description
REC	record		MDA 1	the available information (or indicators to this information) considered relevant to one object.
TYPED ID	>	TYPE DIVISION = 'object' Identity division	MDA 2	a definition of the type of item being documented.
INST	>	>	MDA 3	a definition of the current unique identity of the object being documented. Only one entry is allowed.
IDNO	>	>	MDA 4	the corporate body responsible for this record and for the current unique identity of the record.
PARTID	>	>	MDA 5	the current unique identity of the record managing institution for this record and the object being recorded.
PART IDENT	>	>	MDA 6	a grouping of data about the object being recorded.
	>	>	MDA 7	the part of the record considered in this division.
	>	>	MDA 8	the group of data concerned with the identification of the object.
SNAME	>	>	MDA 9	a statement of data within this group, about the simple name for the object.
IDEN TYPE	>	>	MDA 10	an identification of the object.
	>	>	MDA 11	a definition of the type of identification. Only one entry is allowed, selected from: 'other name', 'description', 'type of name'.
DESCR NTYPER	>	>	MDA 12	a description of the identification.
	>	>	MDA 13	eg: 'dialect', 'technical', 'this statement'.
FNAME	>	>	MDA 14	a statement of data within this group, about the full name for the object.
IDEN TYPE	>	>	MDA 15	an identification of the object.
	>	>	MDA 16	a definition of the type of identification. e.g.: 'schools', 'style', 'period', 'serial numbers', 'area', 'continent', 'catalogue numbers', 'mineral species', 'associated minerals', 'phylum', 'family', 'class', 'species', 'function', 'date', 'main colour', 'main material', 'sex', 'age', 'has subject (method)', 'pattern date', 'this statement'.
DESCR SYS	>	>	MDA 17	a description of the identification.
	>	>	MDA 18	the documented nomenclature system applied when deciding the identification.
NTYPER	>	>	MDA 19	the type of name described in this statement. eg: 'dialect', 'technical'.
CUR	>	>	MDA 20	the currency of this identification.
STAT TITLE	>	>	MDA 21	e.g.: 'current', 'label', 'other'.
	>	>	MDA 22	the taxonomic status of this identification. eg: 'type', a statement of data within this group, about the title for the object.
IDEN DESCR	>	>	MDA 23	an identification of the object.
PREPROD	>	>	MDA 24	a description of the identification.
	>	>	MDA 25	the description is concerned with the history of the object and it is associated with its production.
XREF	>	>	MDA 26	a cross-reference to another record.

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