

Of Maps and Meta-Records: Eighty-Five Years of Map Cataloguing at The National Archives of the United Kingdom



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RÉSUMÉ Cet article explore comment les pratiques de catalogage de cartes au Public Record Office en Grande-Bretagne, et à son successeur, les Archives nationales, ont évolué entre 1926 et 2011, tout en plaçant l'accent sur les changements associés à la transition des instruments de recherche en version papier au numérique. Le développement d'un catalogue en ligne et l'adoption conséquente de l'*ISAD(G)* à la fin des années 1990 ont engendré non seulement des changements radicaux au niveau des instruments de recherche pour les cartes, mais aussi un nouvel examen des normes descriptives des cartes. En codifiant ces normes, le personnel s'est inspiré de diverses sources d'expérience et d'expertise pour répondre aux besoins descriptifs particuliers des documents cartographiques, y compris les connaissances théoriques, les façons de faire à l'interne et les meilleures pratiques du secteur des bibliothèques. En révisant les outils traditionnels tels les index sur cartes, le personnel a continué à développer un système d'instruments de recherche pour rencontrer les besoins des usagers du XXI^e siècle.

ABSTRACT This article explores how map cataloguing practices at the UK's Public Record Office and at its successor, The National Archives, evolved between 1926 and 2011, with particular emphasis on changes associated with the transition from paper-based to electronic finding aids. The development of an online catalogue and associated adoption of *ISAD(G)* in the late 1990s triggered not only radical changes in the finding aids system for maps but also a thorough re-examination of map cataloguing standards. When codifying these standards, staff drew on various sources of experience and expertise to address the particular descriptive requirements of cartographic records, including theoretical knowledge, in-house tradition, and best practices from the library sector. By revisiting traditional tools such as index maps, staff have continued to develop the finding aid system to meet the needs of twenty-first-century users.

Introduction

A map cataloguing program has been underway at The National Archives of the United Kingdom (TNA) and its predecessor, the Public Record Office (PRO), for over eighty-five years. This article explores how the institution's approach to describing cartographic records has developed since that time.

Two preliminary sections, the first on the characteristics of cartographic records made of “traditional” materials¹ and the second offering an overview of maps held at TNA, serve to put the subsequent discussion into context. The bulk of the article then traces the history of map cataloguing at the PRO and TNA from the paper-only era through to the creation of an electronic catalogue and the transition to digital description, culminating in an outline of the current approach. The discussion concentrates on two interwoven developments: the modernization of the finding aids system and the formulation of descriptive standards. The final section summarizes the evolution of cataloguing practices over time and considers how they have benefited from critical reflection.

If this article’s primary aim is to set within their historical and institutional context the challenges that TNA has faced when describing maps, its secondary aim is to help address a perceived gap in the mainstream literature on archival practice. Although much has been written about map cataloguing, the majority of it has been produced by and for librarians. Aside from attempts to formulate descriptive standards,² since 1990 published discussion of map cataloguing from an archival perspective has tended to be aimed at explaining archives to map librarians or general library cataloguers rather than introducing archivists to the principles and practical issues relevant to describing maps.³ By treating map cataloguing within the context of UK government archives as a whole, the author hopes to draw cartographic records away from the “margins of archiv^y”⁴ and closer to the heart of reflective professional practice.

- 1 Born-digital mapping falls beyond the scope of this article. At the PRO and TNA, architectural drawings have always been regarded as part of the “maps and plans” remit; while this article concentrates on maps proper, most of what it says about PRO and TNA practice applies equally to architectural drawings.
- 2 For instance, Margaret Procter and Michael Cook, *A Manual of Archival Description*, 3rd ed. (Aldershot, England, 2000), chap. 21; and Bureau of Canadian Archivists, *Rules for Archival Description*, rev. version (Ottawa, 2008), http://www.cdncouncilarchives.ca/RAD/RADComplete_July_2008.pdf (accessed 22 November 2011), chap. 5.
- 3 Examples include James Corsaro, “Control of Cartographic Materials in Archives,” in *Describing Archival Materials: The Use of the MARC AMC Format*, ed. Richard P. Smiraglia (New York, 1990), 213–28; Hugo L.P. Stibbe, “Cataloguing Cartographic Materials in Archives,” in *Maps and Related Cartographic Materials: Cataloging, Classification, and Bibliographic Control*, ed. Paige G. Andrew and Mary L. Larsgaard (1999; repr., Abingdon, England, 2009), 443–63; Geraldine Beech, “The National Archives Map Catalogue Retrospective Conversion Project,” *The Cartographic Journal* 42, no. 3 (2005): 241–44; and Ashley Beamer, “Map Metadata: Essential Elements for Search and Storage,” *Program: Electronic Library and Information Systems* 43, no. 1 (2009): 18–35. The author would be pleased to be told of any substantial treatments of archival map cataloguing not cited in this article.
- 4 Joan M. Schwartz, “Coming to Terms with Photographs: Descriptive Standards, Linguistic ‘Othering,’ and the Margins of Archiv^y,” *Archivaria* 54 (2002): 147. Thanks are due to an anonymous reviewer for drawing Schwartz’s article to the author’s attention.

The Nature of Cartographic Records⁵

Everyone knows what maps are, but the distinction between a map and a “non-map,” such as a picture or diagram, is not sharply defined, either in specialist or in everyday usage.⁶ For instance, while many maps show real places drawn wholly in plan view (i.e., as if seen from above) and accurately to scale, this is not true of every map: a depiction of an imaginary place not drawn to scale and showing some features in perspective could still be cartographic.⁷

According to one attempt at a definition, “...a map is an abstract, abbreviated representation of a part or whole of an area.”⁸ The most important words in this definition are “area” (maps comprise spatial information) and “representation” (maps are a means of graphic communication).⁹ Not all of the information on a map is purely spatial: as well as relationships between different locations, maps represent the “qualities” or attributes of those locations.¹⁰ Such qualities need not be purely physical features of the landscape: they could be anything from the heights of mountains to what proportion of the inhabitants can speak a particular language. The place or area represented on a map can be regarded as its primary subject, and the qualities or type of content represented on it as its secondary subject.¹¹

The other crucial concepts are *abbreviated* (maps represent only selected content) and *abstract* (maps represent their content symbolically). Map-makers do not attempt to reproduce every possible location and quality of a particular area but choose content relevant to the purpose of the map.¹² Similarly, the

5 This section is a revised version of Andrew Janes, “Map Cataloguing from an Archival Perspective” (MSc(Econ) diss., Aberystwyth University, 2009), section 2.2.

6 John H. Andrews, “What Was a Map? The Lexicographers Reply,” *Cartographica* 33, no. 4 (1996): 7.

7 Catherine Delano-Smith and Roger J.P. Kain, *English Maps: A History* (London, 1999), 1; Andrews, 3.

8 Paul D. McDermott, “What Is a Map?” in *Map Librarianship: Readings*, ed. Roman Drazniowsky (Metuchen, NJ, 1975), 88.

9 Arthur H. Robinson et al., eds., *Elements of Cartography*, 6th ed. (New York, 1995), 9; Delano-Smith and Kain, 5. The notion of maps as representations is somewhat controversial; see, for example, John Krygier and Denis Wood, “Ce n’est pas le monde (This Is Not the World),” in *Rethinking Maps: New Frontiers in Cartographic Theory*, ed. Martin Dodge, Rob Kitchen, and Chris Perkins (Abingdon, England, 2009), 194–98. However, Andrews, 8–9n8, notes that none of the 321 definitions of maps that he had examined clearly excluded the concept of “representation.”

10 Robinson et al., 10; Andrews, 6–7.

11 Theodore R. Schellenberg, *The Management of Archives* (New York, 1965), 305–6.

12 McDermott, 89. As Delano-Smith and Kain, 6, point out, maps depict “points of view, not just a physical viewpoint.” Christopher Merrett notes that cartographic representations are inevitably abstractions because landscapes are dynamic, not static; see Christopher E. Merrett, *Map Cataloguing and Classification: A Comparison of Approaches* (Sheffield, England, 1976), 1.

landscape is not reproduced with photographic accuracy but with varying degrees of symbolic abstraction.¹³ For example, one map may represent height with contour lines, another with colouring, and a third not at all. Another facet of abstraction is that maps represent three-dimensional realities in two dimensions and, in most cases, as much smaller than their actual size.¹⁴ To explain such abstractions, many maps explicitly indicate geodetic information, such as orientation (how represented directions correspond to real directions), scale (how represented distances correspond to real distances), and projection (how relative sizes, distances, shapes, and directions are preserved or distorted).¹⁵

Most maps incorporate some text: features may be labelled directly or listed in legends, keys, or reference tables; there may be explanatory notes of various kinds; and there is usually at least one title.¹⁶ Decorative elements, such as cartouches and scenic vignettes, contribute significantly to the overall appearance of some maps.¹⁷

A map also has a physical makeup consisting of its medium (how it was drawn or printed) and material (what it was drawn or printed upon), its measurable size, and its storage format (whether flat, rolled, or folded).¹⁸ It may consist of a single object, several objects (e.g., four separate sheets), or a portion of a larger object (e.g., a page in a volume).¹⁹ Many maps are produced as sets or “series.”²⁰

- 13 Robinson et al., 11; Richard E. Dahlberg, “The Elements of a Map,” in *Map Librarianship: Readings*, ed. Roman Drazniowsky (Metuchen, NJ, 1975), 74; Rose Mitchell, “Early Maps in the Public Record Office: A Catalogue and Analysis” (MA diss., University College London, 1997), 24.
- 14 Robinson et al., 10–11. Abbreviation also follows from this fact: as Dahlberg, 74, notes, there is simply not enough room to depict everything on a reduced representation. The description in Lewis Carroll, *Sylvie and Bruno Concluded* (London, 1893, 169) vividly illustrates how impractical a life-size map of a large area would be.
- 15 Dahlberg, 66–69, 72–73; Rebecca Steffoff, *The British Library Companion to Maps and Mapmaking* (London, 1995), 112–13, 228, 249–50.
- 16 Steffoff, 175; Robinson et al., 332–36, 404.
- 17 Steffoff, 80, 110–11.
- 18 For a detailed outline of such physical attributes, see Helen M. Wallis and Arthur H. Robinson, eds., *Cartographical Innovations: An International Handbook of Mapping Terms to 1900* (Tring, England, 1987), sections 6 and 7.
- 19 Velma Parker, “Cataloguing Map Series and Serials,” in *Maps and Related Cartographic Materials: Cataloging, Classification, and Bibliographic Control*, ed. Paige G. Andrew and Mary L. Larsgaard (1999; repr., Abingdon, England, 2009), 66; Dorothy F. Prescott, “Early Maps with or in Printed Publications: Description and Access,” in *Maps and Related Cartographic Materials: Cataloging, Classification, and Bibliographic Control*, ed. Paige G. Andrew and Mary L. Larsgaard (1999; repr., Abingdon, England, 2009), 286.
- 20 Parker, “Cataloguing Map Series,” 66, 70. For cartographers, publishers, and librarians, a “series” typically comprises a number of individual maps, usually all at the same scale, depicting the same features and together covering a contiguous area, issued by one publisher over a period of time. This is significantly different from archivists’ provenance-based use of the term.

Every map has its own history: it was created at a particular time, by one or more map-makers, and with some purpose in mind.²¹ Since its creation, it may have been put to various uses.²² Map-makers' names and other information about the context of creation and use may be stated explicitly on the map, recoverable from other sources, or in some cases unknown except by conjecture.²³

The interweaving of spatial, symbolic, and textual information on a map is often seamless.²⁴ One feature can serve multiple purposes. For example, the statement "engraved by John Smith" gives information about both the medium and the creation history of the map in the form of a textual note. Similarly, a compass star both indicates orientation and serves as decoration. The visual character of maps blurs the distinction between their physical properties and informational content: graphic information cannot be separated from the manner of its presentation.²⁵ The meaning of a map thus derives from all aspects of its appearance and history.

The concept of "record" is no easier to define than the concept of "map," and any attempt to do so falls beyond the scope of this article.²⁶ Nonetheless, it is clear that, as people and organizations have made and used maps in the course of their day-to-day activities, maps have inevitably come to play a role in recordkeeping, and maps of enduring value have been retained within archives.²⁷ It is widely accepted that records can and do take "any form or

- 21 The term "map-maker" refers to any person or corporate body involved in creating or "authoring" a map, including surveyors, draftsmen, engravers, printers, publishers, etc.; see, for example, Steffoff (78–79, 227–28, 260) on various aspects of authorship. Although the fact of authorship for a purpose is often taken for granted, the importance of context is central to much work in the history of cartography, particularly the writings of J.B. Harley; see, for example, J.B. Harley, *The New Nature of Maps: Essays in the History of Cartography*, ed. by Paul Laxton (Baltimore, 2001).
- 22 Delano-Smith and Kain, 4; Margaret Condon, "Management of Architectural and Cartographic Records: the UK Experience" (seminar paper, SARBICA Seminar on the Management of Architectural and Cartographic Records, Singapore, 6–8 November 1991), 11–12.
- 23 Ronald J. Lee, *English County Maps: The Identification, Cataloguing, and Physical Care of a Collection* (London, 1955), 21–22; James Corsaro, "Control of Cartographic Materials in Archives," in *Describing Archival Materials: The Use of the MARC AMC Format*, ed. Richard P. Smiraglia (New York, 1990), 218.
- 24 Dahlberg, 75; Mitchell, 24.
- 25 The above paragraphs implicitly group the attributes of maps into content, structure, and context, paralleling how archival theory characterizes records. For alternative approaches, see Schellenberg, 304–8; Paula Williams, "Where Do I Start? A Cartographic Cataloguing Code," *The Cartographic Journal* 42, no. 3 (2005): 228–29.
- 26 It is worth noting that in UK archival tradition, the concept of "record" is often interpreted flexibly, allowing unpublished materials that were not considered to be records at the time of their creation to be accorded record status and kept in archivists' custody; see, for example, Caroline Williams, *Managing Archives: Foundations, Principles and Practice* (Oxford, 2006), 15, 26.
- 27 Herman R. Friis, "Cartographic and Related Records: What Are They, How Have They Been

medium,”²⁸ and, despite occasional suggestions to the contrary, there is no reason to suppose that maps are necessarily less evidential or “transactional” than purely textual documents.²⁹ Cartographic records, then, are simply entities that are both records and maps. Certain physical properties (such as the presence of annotations) and secondary subjects (such as land ownership) may be particularly common among archival maps, yet what actually makes a map archival is not specific structure or content but the fact that it has been maintained in a recordkeeping context.³⁰ Although maps are as commonly found among textual records as they are in separate map collections, the fact that many maps are larger than most textual records has often led recordkeepers to house them in separate storage.³¹ It is partly the challenge posed by unwieldy physical formats that has hindered recognition of maps as “proper” records and confined them to the margins of recordkeeping systems.³²

Just as maps represent spatial knowledge and records represent activities, catalogue descriptions represent records.³³ All archival records need descriptive metadata (or “meta-records”) to help maintain their integrity and contextual relationships, to allow archivists to manage them effectively, and to serve as finding aids for potential users.³⁴ Before exploring the particular challenges of describing cartographic records, and TNA’s response to them, it is necessary to outline the nature and scope of TNA’s map holdings.

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- Produced and What Are the Problems of Their Administration?” *American Archivist* 13, no. 2 (1950): 137–38; Corsaro, 217–18. Hilary Jenkinson, *A Manual of Archive Administration*, 2nd ed. (1937; repr., London, 1965), 6; Schellenberg, 66.
- 28 International Council on Archives, *ISAD(G): General International Standard Archival Description*, 2nd ed. (Ottawa, 2000), <http://www.ica.org/10207/standards/isadg-general-international-standard-archival-description-second-edition.html> (accessed 22 November 2011), para. 0.1.
- 29 Schwartz, 155, 164. Given his belief in the importance of cartographic records, the suggestion by Schellenberg, 307, that maps, unlike textual records, can be understood more in relation to their “subject” than to an “activity” is surprising; he offers no justification for it.
- 30 Ralph E. Ehrenberg, “Map Acquisition, Arrangement and Description at The National Archives,” in *Map Librarianship: Readings*, ed. Roman Drazniowski (Metuchen, NJ, 1975), 241–43; Corsaro, 126–28.
- 31 J.H. Love, “Archival Maps,” *The Globe* 5/6 (1976), 77; Condon, 8–10; Kim Eberhard and Steve Stefanopoulos, “Plans, Photographs and Objects,” in *Keeping Archives*, 3rd ed., ed. Jackie Bettington et al. (Canberra, 2008), 516.
- 32 Condon, 1, 14–15; Andrew Janes, “Maps as a Recordkeeping Technology,” *Journal of the Society of Archivists* 32, no. 1 (2011): 123. Similarly, Schwartz, 146, 155, observes that the physical properties of photographs and other visual materials have blinded both archivists and historians to their evidential nature.
- 33 Elizabeth Yakel, “Archival Representation,” *Archival Science* 3, no. 1 (2003): 2, 16 ff.
- 34 See, for example, Jenkinson, 114–15; Schellenberg, 108; Chris Hurley, “The Making and Keeping of Records: (1) What Are Finding Aids For?” *Archives and Manuscripts* 26, no. 1 (1998): 64; Lyn Milton, “Arrangement and Description,” in *Keeping Archives*, 3rd ed., ed. Jackie Bettington et al. (Canberra, 2008), 253.

Maps in The National Archives

TNA was formed in 2003 when the PRO and the Royal Commission on Historical Manuscripts merged, but its function as the central government archive for the UK as a whole, and for England and Wales, dates back to 1838.³⁵ Its remit now includes:³⁶

- preserving the majority of the historical records of government departments, the armed forces, and the higher law courts, and providing access to them;
- overseeing records and information management across government;
- publishing legislation, managing Crown copyright, and licensing the reuse of public sector information; and
- providing advice and strategic leadership to the rest of the archive sector.

Only the first of these four functions is relevant to this article.

Records held at TNA are arranged according to the traditional principles of provenance (i.e., records sharing a common origin belong together) and original order (i.e., an arrangement reflecting how they were previously maintained and used).³⁷ In most cases, the records of a single government department or a small group of closely related departments are treated as a fonds, although TNA uses the term “department” instead of fonds; a small number of records are held within artificial collections, also referred to as “departments.”³⁸ Within these departments, records are also grouped into series, most of which are “natural” accumulations. The reference codes used for storage, retrieval, and citation at file level reflect both the department (as a code of between one and four letters) and series (as a number) but very rarely any intermediate levels. For example, in the reference T 273/120, T stands for Treasury, 273 is the series number, and 120 is the file number.³⁹

Based on the number and proportion of maps known to exist, the rate of discovery of previously unknown maps, and the rate at which maps were accessioned, TNA is estimated to hold between six million and eight

35 The National Archives, “Our history,” <http://www.nationalarchives.gov.uk/about/our-history.htm> (accessed 22 November 2011).

36 The National Archives, “What we hold,” <http://www.nationalarchives.gov.uk/about/collection.htm> (accessed 22 November 2011); The National Archives, “What we do,” <http://www.nationalarchives.gov.uk/about/what-we-do.htm> (accessed 22 November 2011).

37 See, for example, Jenkinson, 97–99; C. Williams, *Managing Archives*, 74–75, 77; Milton, 253.

38 For discussion of some of the anomalies and complexities, see Michael Roper, “The Development of the Principles of Provenance and Original Order in the Public Record Office,” in *The Archival Imagination*, ed. Barbara L. Craig (Ottawa, 1992), 138–43.

39 T 273/120 is a file on the retirement of Sir Hilary Jenkinson from the PRO.

million maps (including architectural drawings).⁴⁰ They date from the fourteenth century to almost the present day, cover all parts of the world, and reflect many different aspects of government business.⁴¹ In the UK, ordinary published maps, including those produced by government bodies, such as Ordnance Survey mapping and Admiralty charts, are treated just like other published works and hence fall within the remit of the legal deposit libraries, not that of TNA.⁴² The majority of maps held at TNA are thus either special printings, amended versions of standard printings, or hand-drawn.

Although UK government departments created or amended many maps as individual records in their own right, they also received and kept maps within correspondence and other official papers.⁴³ Some maps, particularly larger ones, were kept as separate collections, some of which indiscriminately combined maps purchased as reference material with maps removed from textual records.⁴⁴ As a result of these varied government recordkeeping practices, maps now lie among TNA's records in three different ways:⁴⁵

- A. As distinct cartographic series or sub-series.
- B. As files consisting wholly of maps within largely non-cartographic series.
- C. As items or "sub-items" within files also containing non-cartographic items.

Approximately 20 percent of TNA's maps belong to category A and the remainder to categories B and C.

There is also a fourth category, consisting of about 55,000 maps extracted from other records.⁴⁶ This practice began in 1926 with the introduction of a

40 The traditional estimate of six million, cited by Condon (8, 22), is now at least two decades out of date.

41 The National Archives, "Maps," <http://www.nationalarchives.gov.uk/maps/> (accessed 22 November 2011); Eunice Gill, "The National Archives and Public Records," *The Cartographic Journal* 42, no. 3 (2005): 239.

42 This is very different from the situation in Canada prior to the formation of Library and Archives Canada, but it closely resembles the division of responsibilities in the United States between the National Archives and Records Administration and the Library of Congress; see Betty Kidd, "A Brief History of the National Map Collection at the Public Archives of Canada," *Archivaria* 13 (1981/2): 16–20, *passim*; Hugo L.P. Stibbe, "International Bibliographic Standards in Cartographic Archives: The National Map Collection, Public Archives of Canada, Experience," *INSPEL* 20 no. 1 (1986): 5–6; and Ralph E. Ehrenberg, "Administration of Cartographic Materials in the Library of Congress and National Archives of the United States," *Archivaria* 13 (1981/2): 28, 34–35, *passim*.

43 Condon, 8–9; Gill, 239.

44 Condon, 9–10; Janes, "Maps as a Recordkeeping Technology," 123.

45 Meryl Foster, "The Map Catalogue Conversion Project: History and Scope" (unpublished ms., August 2002), 3.

46 Geraldine Beech, "TNA Map Catalogue Retrospective Conversion Project," 241–42.

map conservation program and dedicated storage for larger maps.⁴⁷ Although extraction to large-format storage aids the physical preservation of a map, particularly a category-C map that is larger than its “parent”⁴⁸ folder, box, or volume, removing such a map from its archival context poses a challenge to the moral defence of the record.⁴⁹ PRO and TNA practice has always been to preserve the original context by inserting a dummy sheet to mark the former position of the map. To authenticate this important event in the archival history of both the map and its “parent,” the dummy is always signed and dated by the staff member authorizing the extraction.⁵⁰ Although extracted maps still belong intellectually to their “parent” files, series, and departments, the practicalities of storing extracted maps and producing them to the reading rooms require that a separate reference code be given to an extract. Originally, reference codes for extracted maps were simply storage locations, but over the decades they came to be treated as the official reference codes for all purposes, including citation.⁵¹

The original system of map extract reference codes made a three-way distinction between maps stored flat in ordinary map chests, maps stored flat in extra-large map chests, and maps stored rolled. All of the codes for maps in rolled storage began with the prefix MR. The prefixes for maps in flat storage also incorporated some information about the origin of the map; for example, MPK indicated maps extracted from Foreign Office (department FO) records to ordinary flat storage, and MPH indicated maps extracted from War Office (department WO) records to extra-large flat storage. In all cases, the prefix was followed by a serially allocated number for each extract. In 1977, when the PRO started operating on two separate sites, a different system of prefixes was devised for newly extracted maps: MFC and MRC stood for flat and rolled storage, respectively, at the old Chancery Lane site; MFQ and MRQ stood for flat and rolled storage at the new Kew site. When the Chancery Lane site closed twenty years later, a simple two-way distinction between MF (flat) and MR (rolled) extracts was introduced. By 1997, thirty-five separate prefixes existed, only two of which were still used for new extracts.⁵²

One complexity of the system is that multiple maps from the same file were usually given the same extract number, an additional number in parentheses being used to distinguish individual maps within a portfolio or roll. In some

47 Foster, 4.

48 “Parent” is the traditional PRO term for a record from which an extract has been removed.

49 Love, 78; Schellenberg, 303. Condon, 6, calls this an act of “archival vandalism.”

50 Condon, 27; Beech, “TNA Map Catalogue Retrospective Conversion Project,” 242. It is likely, but unproven, that this system of recording extractions was devised by Hilary Jenkinson, whose signature appears on some of the earliest dummies. Making such a decision would certainly have fallen within his remit and concerns at the time; see John D. Cantwell, *The Public Record Office 1838–1958* (London, 1991), 388–89.

51 Foster, 4; Beech, “TNA Map Catalogue Retrospective Conversion Project,” 242.

52 Ibid.

cases, a single sequence of extracts of different sizes could be divided between flat and rolled storage. For instance, ten plans extracted from J 90/124 were divided so that plans (1) and (2) were stored on roll MRC 1 and plans (3) to (10) were stored in portfolio MFC 25.⁵³ An additional complexity evolved: because in earlier decades map extract reference codes nominally referred to storage locations rather than specific records, they could be re-allocated on the relatively rare occasions when maps were re-conserved in a different format. For instance, after the maps originally at MPG 403 were made up into a roll and moved to MR 1789, the code MPG 403 was re-assigned to a completely different map. This practice was abandoned as the locations came to be treated as full reference codes.⁵⁴

Not all map “extracts” have been true extracts of category-C maps. A whole category-B file (i.e., one consisting entirely or chiefly of maps) would normally be given a map “extract” reference when it was conserved. Until 1959, standard practice was to treat *all* newly conserved maps, even category-A ones, as “extracts.”⁵⁵ A few entire small series (e.g., T 62) and substantial portions of some larger ones (e.g., LRRO 1) were given map extract reference codes despite the fact that their existing reference codes already identified them as maps.⁵⁶ Similarly, not all “map” extracts have been maps. Photographs, objects, and even purely textual records have also been extracted from records, either for preservation or security reasons. On occasion, these non-cartographic extracts were given map extract reference codes, sometimes because they accompanied related extracted maps and sometimes for unknown reasons, possibly confusion or a lack of clarity about the purpose of map extracts. Nowadays, non-cartographic extracts are given reference codes starting with either CN (for photographs) or EXT (for other records).⁵⁷

Paper-Based Finding Aids at the Public Record Office

From the mid-nineteenth century onward, the PRO gradually developed a complicated system of hard-copy finding aids to describe the records it held. Separate from, but complementing and sometimes overlapping with, the finding aids system was a similarly complex accumulation of research guidance leaflets, notes, and *aides-mémoire*.

53 Public Record Office, “Guidelines for the Map Catalogue Retrospective Conversion Project, Version 8” (unpublished ms., April 2002), Appendix C, 76.

54 Foster, 4n5.

55 *Ibid.*, 4–5.

56 Condon, 26, suggests that this unnecessary practice was stopped when staff realized that the number of discrete map series likely to be transferred to the PRO in the future had been vastly underestimated.

57 For an outline of current extraction procedures, see Beech, “TNA Map Catalogue Retrospective Conversion Project,” 241–42.

By the late twentieth century, the finding aids system had two cores: the Current Guide and the standard list set, both consisting of loose-leaf binders. The Current Guide consisted of three densely cross-referenced parts: a short description of every “class” (i.e., series) in alphanumeric sequence, a detailed administrative history of the British government, and a subject index.⁵⁸ The much larger standard list set comprised a fuller description of each class (again, in alphanumeric sequence), followed by a “class list” containing brief descriptions of each individual “piece” (i.e., file-level entity) and, in some instances, a subject or name index.⁵⁹ The amount of detail in the standard list set varied considerably from class to class. Descriptions of maps in categories A and B were included in the standard list set along with descriptions of other types of records. However, because extracted maps were regarded as belonging to their “parents,” no class lists in map extract reference order were created for them.⁶⁰

Further information about the content of many records was available in the form of “supplementary finding aids,” which were highly variable in format, content, and origin. Some of these were centuries old (and formally accessioned records in their own right) and others nineteenth- or twentieth-century creations. Some were published and others unpublished. Some were detailed calendars, others brief indexes. Their only common feature was that they included some kind of descriptive metadata not available in the standard list set.⁶¹

By 1998, the following types of supplementary finding aids existed for maps, all created by PRO staff and covering more than 70,000 items:⁶²

- a card catalogue;
- four published catalogues covering the British Isles prior to 1860,⁶³ the Americas,⁶⁴ Africa,⁶⁵ and Europe and Turkey;⁶⁶
- unpublished typescript catalogues covering England and Wales before 1600,⁶⁷ Japan, Southeast Asia, the mid-nineteenth-century New Zealand wars, and miscellaneous maps catalogued during the 1990s; and
- a “summary calendar” noting the existence of uncatalogued category-C maps and sometimes giving brief descriptions of them.

58 Roper, 148.

59 Foster, 3.

60 *Ibid.*, 5–6.

61 *Ibid.*, 3.

62 *Ibid.*, 6–8.

63 Public Record Office, *Maps and Plans in the Public Record Office 1: British Isles c. 1410–1860* (London, 1967).

64 P.A. Penfold, ed., *Maps and Plans in the Public Record Office 2: America and West Indies* (London, 1974).

65 P.A. Penfold, ed., *Maps and Plans in the Public Record Office 3: Africa* (London, 1983).

66 Geraldine Beech, ed., *Maps and Plans in the Public Record Office 4: Europe and Turkey* (London, 1998).

67 This is a partial copy of Mitchell.

Descriptions in all four types of finding aids were arranged topographically (i.e., by the primary subject of place). Some, but not all, of these finding aids were also indexed by the names of map-makers, the publication numbers of official British military and naval mapping, or secondary subjects. None included a listing in reference code order.⁶⁸ Almost all extracted maps were described either in the card index or in one of the published catalogues. Large numbers of maps in categories A, B, and C were also described in one of the supplementary finding aids, but the majority were not.⁶⁹

Two other types of supplementary finding aids for maps were also in use. Firstly, some maps had been described in published catalogues produced externally, most notably the pre-1910 Colonial Office map collection (series CO 700)⁷⁰ and the mid-nineteenth-century tithe maps (series IR 30).⁷¹ Secondly, many of the multi-sheet published maps were primarily accessible via graphic indexes: small-scale maps showing the coverage of the individual sheets.⁷² Some of these indexes were themselves accessioned records or surrogate copies of records.

The chief driver behind cataloguing during the era of paper finding aids was conservation work. Extracted maps were catalogued individually, usually in detail, as part of the extraction process.⁷³ A second driver was the wish to publish catalogues relating to particular geographical areas. When preparing these catalogues, map archivists searched likely records systematically to find maps for inclusion.⁷⁴ A third driver was the serendipitous discovery of category-C maps by both staff and users, who were encouraged

68 Foster, 6.

69 Beech, "TNA Map Catalogue Retrospective Conversion Project," 241. Many unannotated published maps were deliberately omitted from the first three published catalogues to make space for other maps, which was justified by the assumption that other copies of published maps would be available in the British Museum Library (afterwards the British Library). In retrospect this was recognized as a mistake; see Foster, 7; Penfold, *Africa*, xi; Beech, *Europe and Turkey*, ix.

70 Colonial Office, *Catalogue of Colonial Maps and Plans (CO 700)*, repr., List and Index Society, vol. 203 (London, 1984).

71 Roger J.P. Kain, and Richard R. Oliver, eds., *The Tithe Maps of England and Wales: A Cartographic Analysis and County-by-County Catalogue* (Cambridge, 1995).

72 Beech, "TNA Map Catalogue Retrospective Conversion Project," 241. On the utility of visuo-spatial finding aids for maps, see Merrett, 15; Harold Nichols, *Map Librarianship*, 2nd ed. (London, 1982), 114–15; Richard Healey and Barbara Morris, "CARTO-NET: A Relational Database Approach to Automated Map Cataloguing," *The Cartographic Journal* 24, 1 (1987), 15; and Bobs M. Tusa, "An Overview of Applications of Automation to Special Collections: Maps and Archives," *Information Technology and Libraries* 12, no. 4 (1993): 406–7.

73 This process frequently resulted in maps being described in more detail than closely related textual records.

74 PRO, *British Isles*, xi–xii; Penfold, *America and West Indies*, xi; Penfold, *Africa*, ix; Beech, *Europe and Turkey*, ix.

to report any uncatalogued maps they discovered to the map archivists. Such reports often led to extraction (and hence cataloguing) or cataloguing without extraction.⁷⁵

PROCAT and the Map Catalogue Retrospective Conversion Program

In 1996, the PRO decided to develop an integrated electronic catalogue as the main finding aid for all of its records, with the aim of making descriptions fully and flexibly searchable by keyword as well as browsable in reference code order.⁷⁶ Computers were already in widespread use within the institution – for instance, researchers used them to order records to be brought to the reading rooms, and staff used a stand-alone database to create new catalogue entries for maps⁷⁷ – but virtually all of the products of cataloguing had hitherto been made available to the public only on paper.⁷⁸ The new catalogue, initially named PROCAT but rechristened “the Catalogue” when the PRO merged into TNA, was to be accessible primarily on computer, both within the PRO and remotely via the Internet. Between 1996 and 2000, the contents of the standard list set and the Current Guide were converted into a single hierarchical catalogue with entries at seven levels.⁷⁹ Fonds (“department”) and sub-fonds (“division”) entries were created by recycling content from the Current Guide.⁸⁰ Five lower levels of entries, *viz* series, sub-series, sub-sub-series, file (“piece”), and item, were taken from the standard list set, in most cases verbatim.⁸¹ PROCAT was made available in the reading rooms in 2000 and on the PRO website in

75 Condon, 29.

76 Foster, 1.

77 *Ibid.*, 8.

78 Rare exceptions existed, such as the Equity Pleadings Database, which slightly predated PROCAT. Amanda Bevan, personal communication.

79 Susan Dunham, Jim Geddes, and David Thomas, “The Retrospective Conversion of the Public Record Office’s Catalogues,” *Journal of the Society of Archivists* 20, no. 2 (1999): 224–25. At the same time, the PRO replaced some, but not all, of its traditional terminology for different levels of accumulations of records with the terminology used in *ISAD(G)*. See Appendix A for a comparison between *ISAD(G)* names for levels of description and the traditional and current terms used at the PRO and TNA.

80 In retrospect, this rearrangement of material from the Current Guide represented a shift from a “poly-hierarchical” finding aid to a more rigid “mono-hierarchical” one, something that many archival theorists would consider a retrograde step; see, for example, Chris Hurley, “Strength Below and Grace Above: The Structuration of Records” (conference paper, Brazilian Archivists’ Association, 4th Conference Archival Information Databases, Rio de Janeiro, 4–6 May 2011), <http://infotech.monash.edu/research/groups/rcrg/publications/strength-below.pdf> (accessed 22 November 2011), 10–12.

81 Class lists for larger classes (series) often included sub-headings, which were used to create sub-series and sub-sub-series. At TNA, entries at sub-fonds, sub-series, and sub-sub-series are not given unique reference codes; neither are these levels ordinarily reflected in the reference codes assigned to series, files, and items.

2001.⁸² The related research guidance leaflets were also made available on computer at the same time.

From 2000, all newly created cataloguing was being made available electronically, but many supplementary finding aids still existed only in paper form. Since the late 1990s, various projects have been undertaken to convert this remaining paper “legacy data” into electronic catalogue descriptions. The largest, most complex, and one of the most important of these has been the map catalogue retrospective conversion program.⁸³

In the past, it was common for libraries and archives to maintain a separate map catalogue, and many librarians and users still favour this approach.⁸⁴ The PRO had previously maintained a hybrid system: some map descriptions existed within an integrated finding aid (the standard list set) and others within map-specific finding aids.⁸⁵ In the context of an electronic catalogue for archives, however, the fact that descriptions are linked to represent provenance-based relationships implies that metadata for all types of records belong in a single catalogue. Not only do integrated catalogues reflect the fact that archival maps are just as much records as the non-cartographic records are, and represent the relationships between cartographic and non-cartographic records more clearly (particularly where category-B, category-C, and extracted maps are concerned), but they also have the practical advantage of not requiring users to know before searching whether or not the records relevant to their research are maps.⁸⁶ Therefore, as well as adding all newly created map descriptions to PROCAT, the PRO aimed to incorporate all existing map descriptions within it.

The map catalogue retrospective conversion program was originally planned in four phases, although the boundaries of these came to be blurred in practice.⁸⁷

82 Foster, 1.

83 Ibid., 3, 10.

84 See, for instance, the “...plea for a complete and separate map index” made by Paul Hindle, *Maps for Historians* (Chichester, England, 1998), x. For a summary of the arguments for and against separate map catalogues, see Merrett, 19–20. As Paula Williams (personal communication) points out, the advent of effective tools for searching across multiple catalogues has meant that, in the library sector, this decision now makes little difference to many users.

85 The UK *Manual of Archival Description (MAD)* envisages creating a separate map catalogue, with each entry cross-referred to the appropriate place in the general catalogue. Procter and Cook, para. 17.2, 21.1B. This was, in essence, the approach taken by the PRO for extracted maps throughout the paper era.

86 See, for example, S. Muller, J.A. Feith, and R. Fruin, *Manual for the Arrangement and Description of Archives*, 2nd ed., reissue, trans. Arthur Leavitt (New York, 1968), 143–44; Nichols, 141; Corsaro, 218.

87 Foster, 8–9. Beech, “TNA Map Catalogue Retrospective Conversion Project,” 242–43.

- I. Identifying relevant metadata within the system of supplementary finding aids and preparing it for conversion.
- II. Converting descriptions of extracted maps.
- III. Converting descriptions of category-A and category-B maps that were more detailed than those descriptions previously added to PROCAT from the standard list set.
- IV. Converting descriptions of category-C maps.

Phase I comprised two separate tasks. The first was to create a database showing which catalogue entries existed in each supplementary finding aid and which map extract references had no extant catalogue entry.⁸⁸ The second, parallel task was to retype the catalogue entries into Encoded Archival Description (EAD) templates.⁸⁹ Phases II to IV involved editing the content of the EAD files to meet PRO and international standards and uploading them into PROCAT. The database created during Phase I was used to keep track of the work involved.⁹⁰

Two factors made this program more complicated than most retrospective conversion projects. The first was the change from separate map catalogues primarily arranged by place name (which was the long-standing tradition among map curators)⁹¹ to an integrated catalogue arranged in reference code order.⁹² One consequence of this was that where a single catalogue entry covered two or more copies or near-copies of a map within different records, the entry had to be divided and carefully edited so that each map was described accurately within its own entry.

The second complexity was the anomaly presented by extracted maps and their irregular system of reference codes. Although these nominally belonged to their “parent” files, series, and departments, PRO staff decided that it would be impractical to revert their reference codes to match those of their “parents.” Instead, formal recognition was granted to what had already been true in practice: extracted maps were understood to comprise files and items within artificial category-A collections. A further problem was that neither

88 As maps would normally have been catalogued at the time of extraction, the vast majority of uncatalogued “map extracts” proved to be non-cartographic records that had been extracted to large-format storage.

89 Foster, 9.

90 Ibid.

91 Prior to computerization, librarians fiercely debated whether the “main entry” (i.e., heading or chief access point) for map catalogue descriptions should be “author” (as used for most library materials) or place; see Merrett, 4, and Nichols, 142–43. After computerization, the concept of “main entry” scarcely mattered anymore; see Merrett, 5, and Elizabeth U. Mangan, ed., *Cartographic Materials: A Manual of Interpretation for AACR2* (London, 2003), Intro, 1.

92 Foster, 10.

PROCAT nor the linked DORIS system for requesting records to be produced to the reading rooms could accommodate two-part references at file level. To resolve this, the extract reference codes were converted into three-part ones by repurposing the prefixes as artificial “department” codes and inserting the series number 1 after them; for example, the reference MFC 25 was transformed into MFC 1/25.⁹³ For the first time, publicly accessible “class lists” were created for the map extract “series,” consisting of very brief descriptions (e.g., “8 extracts from J 90/124”) in reference code order. These were added to PROCAT as file-level entries, pending the conversion of fuller descriptions from the supplementary finding aids.⁹⁴

In effect, each map within the map extract series now had two “parents”: the record from which it had been removed and the artificial series to which it had been removed. However, because PROCAT was developed to be “mono-hierarchical” (i.e., each lower-level “child” entry could have only one higher-level “parent” entry), there was no mechanism for representing the “poly-hierarchical” relationships created by the extraction process. Instead, it was decided that the hierarchy displayed in PROCAT would represent the relationship with the “adoptive” parent, and the relationship with the “natural” parent would be maintained through cross-referencing.⁹⁵ As part of Phase II, hyperlinked cross-references were constructed between the *Scope and content* fields of entries for the extracts and the *Separated material*⁹⁶ fields of entries for the files from which they had been extracted. Where a whole file had been transferred to a map extract reference, the description under the former reference would simply read, for example, “Transferred to MPD 1/34,” and the former reference code (T 62/38) would be noted in a former reference (PRO)⁹⁷ field within the new description.

93 Ibid., 5. The method of citing item numbers was similarly brought into line with general practice; for example, MFC 25 (3) became MFC 1/25/3.

94 Ibid.; Beech, “TNA Map Catalogue Retrospective Conversion Project,” 241–43.

95 Similar approaches are advocated by Schellenberg, 303; Love, 78; and Mary L. Larsgaard, *Map Librarianship: An Introduction*, 3rd ed. (Englewood, CO, 1998), 152. Arguably, the result treats extracted maps as a “mini-catalogue” along the lines advocated by *MAD* (see n85, above) within the wider catalogue.

96 TNA maintains a distinction between *Separated material* and *Related material* elements for records related by provenance and by subject respectively. This has some similarities to the distinction between *Related units of description* and *Associated material*, found in the first edition of *ISAD(G)* but abolished in the second; see International Council on Archives, *ISAD(G): General International Standard Archival Description*, 1st ed. (Ottawa, 1994), para. 3.5.3–3.5.4.

97 PROCAT was designed with three separate reference code fields: one for the current reference, one for former references used at the PRO, and one for references used before transfer to the PRO; see PRO, “Map Catalogue Retrospective Conversion Project,” 21–23.

Developing Map Cataloguing Guidelines⁹⁸

The codification of good practice into common metadata standards allows cataloguers to describe the attributes of records and their interrelationships more consistently and hence more clearly.⁹⁹ Standardized metadata are more readily and consistently retrieved, and more easily understood.¹⁰⁰ It also facilitates various forms of combining and exchanging information from different institutions.¹⁰¹ Once developed, standards can be applied many times, making working practices more efficient.¹⁰² Archival descriptions for maps must reflect the status of cartographic records as entities that are both records and cartographic.¹⁰³ The success of such descriptions is dependent on metadata standards being fit for this dual purpose.¹⁰⁴

Nonetheless, standardization of archival description proved difficult to achieve throughout most of the twentieth century.¹⁰⁵ The formats and layouts of the various paper-based map catalogues created at the PRO were inspired by the traditional practices of map librarians and commercial map dealers, such as using a place name and date as the “main entry” heading for each

98 This section is partly based on Janes, “Map Cataloguing,” sections 2.3, 3.1, and 3.3.

99 See, for example, *ISAD(G)*, 2nd ed., para. I.5; Victoria I. Walch, *Standards for Archival Description: A Handbook* (Chicago, 1994), <http://www.archivists.org/catalog/stds99/> (accessed 22 November 2011), Introduction. This is recognized by Muller et al., 190–92; Jenkinson, 129–30; Schellenberg, 74, 76.

100 See, for example, Schellenberg, 61–62, 75; Marion Matters, “Reconciling Sibling Rivalry in the AACR2 ‘Family’: The Potential for Agreement on Rules for Archival Description of All Types of Materials,” *American Archivist* 53, no. 1 (1990): 91; *ISAD(G)*, 2nd ed., para. I.5.

101 *ISAD(G)*, 2nd ed., para I.5. Both Jenkinson, 130, and Schellenberg, 58–59, recognize that shared standards would be a prerequisite for creating shared finding aids.

102 Schellenberg, 77. In a technologically complex environment (which the PRO was, even when all of its finding aids were paper based), description is virtually impossible without some kind of standards; see Wendy M. Duff and Verne Harris, “Stories and Names: Archival Description as Narrating Records and Constructing Meanings,” *Archival Science* 2, no. 3/4 (2002): 283.

103 Matters, 77; Corsaro, 219, 221.

104 Matters, 90, points out that using unsuitable standards invites ad hoc (i.e., unstandardized) attempts to remedy their deficiencies, defeating the purpose of following standards.

105 See, for example, Muller et al., 153; Jenkinson, 119. Even in the early 1990s, descriptive standards for archives remained underdeveloped and many practitioners were sceptical about their value; see Richard P. Smiraglia, “New Promise for the Universal Control of Recorded Knowledge,” in *Describing Archival Materials: The Use of the MARC AMC Format*, ed. Richard P. Smiraglia (New York, 1990), 3; Michael Cook, “The International Description Standards: An Interim Report,” *Journal of the Society of Archivists* 16 (1995): 15–16; Hugo L.P. Stibbe, “Cataloguing Cartographic Materials,” 450. It is typical of archives in the UK that a significant legacy of unstandardized finding aids has remained in use for some time after cataloguing standards have been established or revised; see Michael Cook and Margaret Procter, *A MAD User Guide: How to Set About Listing Archives: A Short Explanatory Guide to the Rules and Recommendations of the Manual of Archival Description* (Aldershot, England, 1989), 53.

description.¹⁰⁶ Although in-house cataloguing conventions were followed, the descriptive standards used for map cataloguing varied considerably over the decades.¹⁰⁷

The PRO formally adopted international descriptive standards for the first time as part of the process of converting from a paper-based to a digital finding aids system.¹⁰⁸ PROCAT was designed to be compatible with the first editions of *ISAD(G): General International Standard Archival Description* and *EAD*.¹⁰⁹ Authority files – created largely from content within the Current Guide – were constructed in conformance with *International Standard Archival Authority Records (Corporate Bodies, Persons and Families) (ISAAR(CPF))*,¹¹⁰ the National Council on Archives' *Rules for the Construction of Personal, Place and Corporate Names (NCA Rules)*,¹¹¹ and the *UNESCO Thesaurus*¹¹² (later replaced by the *UK Archival Thesaurus (UKAT)*).¹¹³ As these standards alone did not include sufficient detail to support cataloguing work in practice,¹¹⁴ they were expanded to form a set of in-house cataloguing guidelines.¹¹⁵ The PRO's decision to adopt these standards applied equally to text-based and non-textual records. Although specific provision for maps falls beyond the aims of *ISAD(G)*, it was intended that insofar as cartographic records have the same attributes as other records, they should be described in the same way.¹¹⁶ Although conforming to general international and in-house standards was necessary for pursuing consistency and

106 For examples, see Beech, "TNA Map Catalogue Retrospective Conversion Project," 243–44.

107 Foster, 7; Beech, "TNA Map Catalogue Retrospective Conversion Project," 243. The same was true of the PRO's finding aid system generally; Dunham et al., 223–24.

108 Foster, 9. The National Archives, "Cataloguing Guidelines," unpublished ms. (2nd rev., updated June 2007), Part B, para. 2.3.

109 Library of Congress, *EAD: Encoded Archival Description*, <http://www.loc.gov/ead/> (accessed 22 November 2011).

110 International Council on Archives, *ISAAR (CPF): International Standard Archival Authority Record for Corporate Bodies, Persons and Families*, 2nd ed. (Paris, 2004), <http://www.ica.org/10203/standards/isaar-cpf-international-standard-archival-authority-record-for-corporate-bodies-persons-and-families-2nd-edition.html> (accessed 22 November 2011).

111 National Council on Archives, *Rules for the Construction of Personal, Place and Corporate Names* (London, 1997).

112 United Nations Education, Scientific and Cultural Organization, *UNESCO Thesaurus*, <http://databases.unesco.org/thesaurus/> (accessed 22 November 2011).

113 *UK Archival Thesaurus*, <http://www.ukat.org.uk/> (accessed 22 November 2011).

114 See *ISAD(G)*, 2nd ed., para. I.4, I.6, I.12–I.13; Walch, chap. 13.

115 TNA, "Cataloguing Guidelines." For a summary of the elements of description used in PROCAT, see Appendix B.

116 *ISAD(G)*, 2nd ed., para. I.4. This is consistent with Nancy Kandoian's view that, from a cataloguer's perspective, early-modern printed maps have as much in common with printed books of the same period as with twentieth-century mapping. Nancy A. Kandoian, "Cataloguing Early Printed Maps," in *Maps and Related Cartographic Materials: Cataloging, Classification, and Bibliographic Control*, ed. Paige G. Andrew, and Mary L. Larsgaard (1999; repr., Abingdon, England, 2009), 232.

best practice in map cataloguing, it was not sufficient. Supplementary guidance had to be sought elsewhere.

In the absence of agreed-upon archival standards for map cataloguing,¹¹⁷ the most obvious place to seek further guidance was the library sector, which had developed very detailed cataloguing standards for maps.¹¹⁸ In broad-brush principle, the purposes behind library catalogues and archive catalogues and their metadata content are very similar: both aim to bridge the gap between the material and its users by noting the distinguishing features necessary to make the material identifiable and any keywords necessary to make it searchable, as well as other useful information about its physical and intellectual properties.¹¹⁹ Nonetheless, there are significant differences between library and archive catalogues. Whereas archival records are normally described using hierarchically linked sets of entries reflecting a provenance-based arrangement, library materials are typically classified and arranged by their subject content and described as individual items.¹²⁰ Entries in library catalogues concentrate largely on bibliographic information (such as author and title), reflecting the typical information-seeking paths of library users; for archives, where such bibliographic features are frequently less standardized or absent altogether, catalogue entries require a stronger emphasis on the “other useful information” to outline content, structure, and context clearly.¹²¹

Library cataloguing standards, based on the *International Standard Bibliographic Description (ISBD)*,¹²² also embody an approach to metadata structure that is quite different from that of *ISAD(G)*. Library standards employ more finely grained separate elements and have a much stronger tendency to separate bibliographic detail, access points, and “notes.”¹²³ They

117 Writing in 1990, Corsaro, 219, noted that “...no uniform agreement for standards for archival description of maps” existed. At least in the UK, little had changed a decade later. Although map-specific guidance did exist within *MAD*, this had been written with paper finding aids in mind and was already outdated by the time the third edition appeared in 2000. Attempts to make the third edition of *MAD* compatible with *ISAD(G)* were only partly successful, largely owing to a lack of funding; see Procter and Cook, xii.

118 See, in particular, the expansion by Mangan of the *Anglo-American Cataloguing Rules*, which codifies best practice as developed by libraries over many years.

119 Compare: Smiraglia, 7–8; Jane M. Read, *Cataloguing without Tears: Managing Knowledge in the Information Society* (Oxford, 2003), 20; Michael J. Fox, “Descriptive Cataloging for Archival Materials,” in *Describing Archival Materials: The Use of the MARC AMC Format*, ed. Richard P. Smiraglia (New York, 1990), 17; and Procter and Cook, para. 8.4–8.5.

120 On this distinctive characteristic of archival description, see, for example, Muller et al., 125; Jenkinson, 115–17; Luciana Duranti, “The Origin and Development of the Concept of Description,” *Archivaria* 35 (1993): 51; Stibbe, “Cataloguing Cartographic Materials,” 451.

121 Smiraglia, 9–11; Fox, 18.

122 International Federation of Library Associations and Institutions, *ISBD: International Standard Bibliographic Description: Consolidated Edition* (Munich, 2011) and predecessors.

123 Smiraglia, 10–11.

also lack a clear concept of multi-level description.¹²⁴ In short, archival description requires something less strictly bibliographic¹²⁵ and more holistic than library cataloguing standards can supply.¹²⁶ The belief that library cataloguing standards should work for archives seems to be based on the misunderstanding that the latter are simply non-book library materials.¹²⁷ From the perspective of a British archivist, library materials and records are quite different things.¹²⁸

Nonetheless, an unfortunate effect of the structural differences between *ISAD(G)*-based and *ISBD*-based descriptions is that they obscure the fundamental commonality between cartographic items in libraries and cartographic records: both have the attributes of maps. The visuo-spatial character of a published map makes it less purely bibliographic than most typical library materials, and it therefore requires a less purely bibliographic description.¹²⁹

- 124 Corsaro, 215–17; Kris Kiesling, “EAD as an Archival Descriptive Standard,” in *Encoded Archival Description: Context, Theory and Case Studies*, ed. Jackie M. Dooley (Chicago, 1998), 83. Although library standards accept the possibility of multi-level description in principle, it has very rarely been applied in practice because of the limitations both of technology and of understanding; see Velma Parker, “Multilevel Cataloging/Description for Cartographic Materials,” *Western Association of Map Libraries Information Bulletin* 21, no. 2 (1990): 86. According to Stibbe, “Cataloguing Cartographic Materials,” 447, the editors of the *Anglo-American Cataloguing Rules* for libraries either misunderstood multi-level description or deliberately downplayed its potential.
- 125 As Frances Hinton points out, the use of the word “bibliographic” in connection with cataloguing embodies a “...tacit assumption that ‘nonbooks’ are second-class citizens”; see Frances Hinton, “Cartographic Materials, Manuscripts, Music, and Sound Recordings,” *The Making of a Code: The Issues Underlying AACR2*, ed. Doris H. Clack (Chicago, 1980), 61.
- 126 Kiesling, 83, notes that the difficulties encountered during attempts to force archival descriptions into library-style metadata structures are “...an excellent illustration of the critical need for a good fit between the data and the data structure.”
- 127 See, for example, Larsgaard, 187, who apparently believes that because library cataloguing standards apply to one class of “special materials” (maps) they should apply equally to another (archives); and Merrett, 10–11, who assumes that archival provenance-based arrangement is merely “...a disguised form of author entry.” Corsaro, 219–21, notes that then-current US cataloguing practices allowed an item to be treated as either a map or a “manuscript” but not as both.
- 128 See, for example, Procter and Cook, para. 9.11C. As a result, there is no UK tradition of attempting to adopt bibliographic library cataloguing standards for archives; see Michael Cook, “The British Move toward Standards of Archival Description: the *MAD* Standard,” *American Archivist* 53, no. 1 (1990): 131, 137. For a partial exception, see Beamer, 21–23. North American views of the relationship between archives and libraries tend to be rather different (see, for example, Stibbe, “International Bibliographic Standards,” 7; Stibbe, “Cataloguing Cartographic Materials,” 449; C. Williams, *Managing Archives*, 24–26), resulting in a much stronger tradition of borrowing ideas from library practice.
- 129 Paige G. Andrew, *Cataloging Sheet Maps: The Basics* (Binghamton, NY, 2003), 147–48; Merrett, 1, 13–14. Although Philip Lee Phillips took the stance that map cataloguing is basically the same as book cataloguing, the majority of map curators have disagreed; see Philip L. Phillips, *Notes on the Cataloging, Care and Classification of Maps and Atlases, Including a List of Publications Compiled in the Division of Maps* (Washington, DC, 1921),

Yet the same item has more standardized bibliographic features, *viz* title, publisher, and so on, to be reflected in its catalogue entry than most archival materials do.¹³⁰ Although computerization of catalogues might have been expected to facilitate similarities of approach in cataloguing the types of material commonly held by institutions in both sectors (such as maps), the adoption of international cataloguing standards for archival records and for library materials has, in this sense, made consistency between the two sectors harder to achieve in practice.

Both on principle and on pragmatic grounds, PRO staff decided that, as archivists, they had to treat the maps in their care primarily as records and only secondarily as maps. Hence, catalogue descriptions for cartographic records should follow archival standards and practices in preference to map library ones. Nevertheless, any lessons that could be learned from map librarians' cataloguing practices would not be wasted: appropriate library standards and practices would be followed where possible. It was therefore decided to expand upon the PRO's interpretation of *ISAD(G)* by incorporating relevant guidance from both the PRO's in-house map cataloguing tradition and modern library cataloguing standards.¹³¹ The result, codified as part of the project guidelines for the map catalogue retrospective conversion program,¹³² is not so much an adaptation of library standards for archival use as it is an extension of general archival standards.¹³³ Although the design of PROCAT made some provision for specific map-related elements of description, the majority of each

1; Samuel W. Boggs and Dorothy C. Lewis, *The Classification and Cataloging of Maps and Atlases* (New York, 1945), 1; Roman Drazniowsky, "The Need for Map Cataloging," in *Map Librarianship: Readings*, ed. Roman Drazniowsky (Metuchen, NJ, 1975), 299; Stibbe, "Cataloguing Cartographic Materials," 445. Mid-twentieth-century attempts to apply cataloguing standards devised for books to maps and other "non-books" caused significant confusion; see Walter W. Ristow, "The Emergence of Maps in Libraries," in *The Emergence of Maps in Libraries*, ed. Walter W. Ristow (Hamden, CT, 1980), 59; and Ronald Hagler, "Nonbook Materials: Chapters 7 through 11," *The Making of a Code: The Issues Underlying AACR2*, ed. Doris H. Clack (Chicago, 1980), 72–73. Attempts to apply library cataloguing standards to archives run a similar risk.

130 Schellenberg, 303.

131 This is consistent with the advice offered by Schellenberg, 302; Pierre-Yves Duchemin, "Automation at the Maps and Plans Department of the Bibliothèque Nationale," *INSPEL* 22, no. 3 (1988): 248; Corsaro, 219–21; Matters, 92; Larsgaard, 187; Procter and Cook, para. 9.11C, 17.1; and *ISAD(G)*, 2nd ed., para. I.4. Beamer, 23–25, 28–29, discusses a similar approach developed at the Royal Scottish Geographical Society.

132 PRO, "Map Catalogue Retrospective Conversion Project."

133 Conversely, Canadian archivists have actively sought to adapt library cataloguing standards (both for maps and non-maps) for use in archival description; for map examples, see David R. Chamberlin, "The Description of Cartographic Archives Using the Anglo-American Cataloguing Rules, Second Edition," *Archivaria* 13 (1981/2): 41–46; Bureau of Canadian Archivists, *Toward Descriptive Standards: Report and Recommendations of the Canadian Working Group on Archival Descriptive Standards* (Ottawa, 1986), 64–65. The culmination of these efforts was, of course, the cartographic materials chapter in *RAD* (chap. 5).

description would have to be incorporated within the standard elements.¹³⁴ The main challenge involved in developing fit-for-purpose map cataloguing guidelines thus became one of determining how to incorporate specifically cartographic attributes (such as scale or the fact of being uniquely amended publications) within the framework of *ISAD(G)*.

Approaching the Specific Challenges of Map Cataloguing¹³⁵

Like map-making, cataloguing is intrinsically selective: no description can entirely reproduce the described material.¹³⁶ Cataloguers always face the task of deciding what content to include in and exclude from descriptive metadata. Although more detailed descriptions, which facilitate searching by a wider variety of attributes, are widely felt to be highly desirable for maps, limited resources can make it impractical to produce very detailed descriptions.¹³⁷

Description Content

The types of information selected for inclusion in map descriptions at the PRO has varied considerably over time. Descriptions converted from the map-specific supplementary finding aids have tended to be considerably more detailed than those found within the standard list set. The multi-level nature of archival descriptions means that individual maps within uniform accumulations may require relatively brief individual descriptions, as common details can be supplied at a higher level (typically series or sub-series), whereas maps within disparate accumulations (such as the artificial map extract series) need more substantial descriptions at file or item level.¹³⁸ The practicalities of conversion have meant that the amount of detail in pre-existing descriptions was retained unless it was clearly inadequate or excessive. Although many entries have had to be rewritten entirely, this was to ensure that they were accurate and consistently structured, not to provide a uniform amount of detail.¹³⁹

134 Beech, "TNA Map Catalogue Retrospective Conversion Project," 244.

135 This section is a revised version of Janes, "Map Cataloguing," sections 2.4 and 4.2.1.

136 Procter and Cook, para. 8.6B; Yakel, 25. According to Duff and Harris, 278, an archival description represents only a "slice of a slice of a slice" of the original record.

137 On the desirability of relatively detailed map descriptions, see, for example, Drazniowsky, 298; Nichols, 156–57; P. Williams, 227; and Eberhard and Stefanopoulos, 519.

138 For the opposing view that records normally require only brief individual descriptions, see, for example, Milton, 282; Mark A. Greene and Dennis Meisner, "More Product, Less Process: Pragmatically Revamping Traditional Processing Methods to Deal with Late Twentieth-Century Collections," *American Archivist*, 68, no. 2 (2005): 246.

139 PRO, "Map Catalogue Retrospective Conversion Project," 6, 45.

Different qualities or features may, of course, be more salient or relevant for different kinds of maps.¹⁴⁰ Nonetheless, a broad consensus has developed among map archivists and librarians that, where possible and relevant, descriptions should include at least the following seven attributes: title, creator(s), date, physical extent, primary subject (area), secondary subject(s), and scale.¹⁴¹ The first three are core bibliographic information, and the first four are now considered mandatory elements of archival descriptions.¹⁴² The remaining three attributes are important distinguishing features of the meaningful content of maps. Although it has proved difficult to obtain data about the needs of map researchers in archives and libraries,¹⁴³ there is evidence that these attributes are those that potential users want to know when searching. The majority of enquiries about maps specify a place name (“a map of X”).¹⁴⁴ Many users also have in mind an approximate date, particular secondary subjects (e.g., “showing railways”) or a certain level of detail (which often corresponds roughly to scale).¹⁴⁵ While requests for maps by individual “author” or by title are rarer, they do occur, and are not uncommon for older printed material; titles, map-makers’ names and physical makeup are particularly useful for identifying known items.¹⁴⁶

An eighth attribute that it is vital to mention when describing a cartographic record is the fact that it is a map. In separate map catalogues, such as the PRO’s supplementary finding aids for maps, this can be taken for granted, but in integrated catalogues it must be mentioned explicitly: a map description that lacks an appropriate “type term” (such as “map,” “plan” or “chart”) is inaccurate and difficult for users to find or identify.¹⁴⁷ TNA’s cataloguing guidelines therefore mandate including “map” or another appropriate term within the *Scope and content* element of the description. In many cases, this

140 Schellenberg, 316–18; Mary E. Fink, “A Comparison of Map Cataloging Systems,” in *Map Librarianship: Readings*, ed. Roman Drazniowsky (Metuchen, NJ, 1975), 312–14; Ralph E. Ehrenberg, *Archives and Manuscripts: Maps and Architectural Drawings* (Chicago, 1982), 27.

141 See, for example, Nichols, 159; Ehrenberg, *Maps and Architectural Drawings*, 23–27, 39; Eberhard and Stefanopoulos, 518–19. Fink, 316, shows that, despite wide variation in other aspects of cataloguing practice, this list reflects some long-standing commonalities.

142 *ISAD(G)*, 2nd ed., para 1.12 makes six elements mandatory, including four closely equivalent to these. The other two mandatory elements – *Reference code* and *Level of description* – are by-products of the arrangement and description process.

143 Nick Millea, “Map Library Usage in Europe: A Vision for the Future? An Assessment of a Questionnaire Conducted During the Summer of 2003,” *Journal of Map and Geography Libraries* 1, no. 2 (2005): 74.

144 See, for example, Schellenberg, 309; Merrett, 5; Mitchell, 9; P. Williams, 227. One study found that 85 percent of map enquiries in an academic library were for a map of a specific place or area. Jeff Leeuwenburg, “Map Reference Work in an Academic Library,” *The Globe* 18 (1982): 10. Anecdotal evidence of map enquiries at TNA and elsewhere supports this.

145 Leeuwenburg, 10; Mitchell, 9; Larsgaard, 258.

146 Merrett, 7; Prescott, 289; Andrew, 195.

147 Ehrenberg, *Maps and Architectural Drawings*, 23; Nichols, 113.

“type term” has had to be added during phases II to IV of the map catalogue retrospective conversion program. In this instance, rigorous application of the usual rule regarding not repeating metadata at different levels of description¹⁴⁸ has been dropped in favour of ensuring that individual descriptions are coherent and findable: although the words “map” and “plan” already appear in the series-level descriptions for the map extract series, they are repeated at lower levels to aid searching.¹⁴⁹

Area Coverage

Describing a map’s primary subject (i.e., the geographical area that it depicts) clearly, accurately, and succinctly can be difficult. Places include other places (e.g., Vancouver is in British Columbia, which is in Canada) and overlap with one another. Maps often show all or parts of several different places and, especially at smaller scales, it is impractical to list every feature depicted.¹⁵⁰ In some cases, the information on the map or in accompanying records may be insufficient or insufficiently accurate to identify the area shown. The most obvious way to describe geographical area is to use place names. TNA’s catalogue entries often resort to naming places near the corner or edges of a map. Coordinates, such as latitude and longitude or UK National Grid references, can define areas more accurately than place names alone but have commonly been regarded as complicated for both cataloguers and users of catalogues.¹⁵¹ TNA rarely uses coordinates unless they are part of the title or the only straightforward way to describe geographical coverage accurately.

Alterations in landscapes, settlement patterns, and political jurisdictions inevitably affect the forms and spellings of place names and how they relate to real-world features.¹⁵² Table 1 provides a summary of the major factors

148 *ISAD(G)*, 2nd ed., para. 2.4.

149 PRO, “Map Catalogue Retrospective Conversion Project,” 6, 48. Routine, but limited, bending of the non-repetition rule in the interests of searchability has come to be recognized as good practice at TNA in recent years.

150 Nichols, 116; Naftali Kadmon, *Toponymy: The Lore, Laws and Language of Geographical Names* (New York, 2000), 247–48, 256–58. Note that while maps are typically rectangular, most real places, particularly in Europe and Asia, have irregular boundaries; see Katherine H. Weimer, “Subject Analysis for Cartographic Materials,” in *Maps and Related Cartographic Materials: Cataloging, Classification, and Bibliographic Control*, ed. Paige G. Andrew, and Mary L. Larsgaard (1999; repr., Abingdon, England, 2009), 398.

151 I. Watt, and T.J. Browne, “Using Computers to Catalogue Map Collections (Part 2),” *The Cartographic Journal* 24, no. 1 (1987): 51; Andrew, 96; Beamer, 31–32. Watt and Browne, 52, suggest that searching by latitude and longitude or national grid references offers a text-based substitute for graphic indexes, although this could be more difficult to apply to integrated catalogues than to catalogues just for maps.

152 See, for example, Boggs and Lewis, 1; Drazniowsky, 299; Robinson et al., 422; Adrian Room, *Place-Name Changes, 1900–1991* (London, 1993), viii-x. As Merrett, 12, points out,

complicating the identification and usage of place names.¹⁵³ Traditional PRO practice was to cite place names in the forms current at the time of cataloguing, which facilitated searching within paper finding aids by ensuring that maps of the same place were described under the same topographical heading. With the development of PROCAT, this changed completely: current practice is to use names contemporary with the map, for greater accuracy, but (except in direct quotation) to modernize spellings to improve searchability. Where necessary, the current name is added in parentheses, e.g., “Leningrad (now St Petersburg).” Where established English-language names (exonyms) exist for foreign places, they are used in preference to the local names (endonyms).¹⁵⁴ All of this is consistent with the place name guidance in the National Council on Archives’ *Rules*.¹⁵⁵ Various sources are used when establishing the preferred forms of place names. Ordnance Survey sources are used for British places, and the *Times Atlas* and *Columbia Gazetteer* are the first choices for places overseas.¹⁵⁶ Various specialist reference works are also consulted, particularly for place name changes. Where political sensitivities affect place names, guidance issued by the UK government’s Foreign and Commonwealth Office is followed.¹⁵⁷

every map reflects a particular time as well as a particular place because topography is never static.

153 See the discussion in Drazniowsky, 300; Merrett, 9; Mitchell, 10–11; Weimer, 398; Kadmon, chap. 11 and 13; Andrew, 204–9; and *The Times Comprehensive Atlas of the World*, rev. 12th ed. (London, 2009), Introduction.

154 PRO, “Map Catalogue Retrospective Conversion Project,” 47.

155 NCA *Rules*, para. 3.2.1, 3.7.3.

156 *Times Comprehensive Atlas* and previous editions; *Columbia Gazetteer of the World*, <http://www.columbiagazetteer.org> (accessed 22 November 2011).

157 Foreign and Commonwealth Office, *Geographical Names and Information* (London, 2011), <http://www.fco.gov.uk/resources/en/pdf/publications/geographical-names-and-information> (accessed 22 November 2011) and previous editions.

Table 1: Major Factors Complicating the Identification of Place Names¹⁵⁸

COMPLEXITY	EXAMPLE
Renaming	Volgograd (since 1961) Stalingrad (1925–1961) Tsaritsyn (until 1925)
Different names in English (exonyms) and the local language (endonyms)	Firenze (Italian endonym) Florence (English exonym)
Variant transliterations into the Roman alphabet	Al-Fayyūm El Faiyūm
Semi-official use of variant or shortened names	Kingston upon Hull Hull
Multiple places bearing the same name	Perth, Australia Perth, Scotland
Unclear or multiple definitions	Central Europe
Controversial or disputed usage	Macedonia (meaning disputed by the governments of Greece and of the Former Yugoslav Republic of Macedonia)
Boundary changes	Abingdon, Berkshire (until 1974) Abingdon, Oxfordshire (since 1974)
Uncertain or historically variable English usage	L'viv (transliteration from Ukrainian) L'vov (transliteration from Russian) Lwów (Polish) Lemberg (German)

Place names are included in *Scope and content*, not as separate index terms. TNA rarely uses index terms below series level, and at the start of the map catalogue retrospective conversion program it was thought to be too complicated and time-consuming to link individual maps to place name authority files.¹⁵⁹ During conversion, the place name headings from entries within paper catalogue entries were discarded if they duplicated other portions of the description but retained if they did not. One result of this is that place names can appear in either “top-down” order (e.g., “France: Paris”), derived from the topographical heading in a paper catalogue entry, or “bottom-up” order (e.g., “Paris, France”).¹⁶⁰

158 These examples are adapted from Room; the *Columbia Gazetteer*; and the index to the *Times Comprehensive Atlas*.

159 PRO, “Map Catalogue Retrospective Conversion Project,” 21.

160 For discussion of this issue, see Joan Winearls, “Some Problems in Classifying and Cataloging Maps,” in *Map Librarianship: Readings*, ed. Roman Drazniowsky (Metuchen, NJ, 1975), 354–55.

Titles

Determining the title of a map can be surprisingly problematic. Some maps lack titles. Others have multiple titles or long titles, which may or may not incorporate other attributes (such as authorship) and can be difficult to distinguish from other text.¹⁶¹ Such titles may or may not describe the primary and secondary subjects adequately: translating foreign-language titles, or even quoting long titles in English, may be less helpful than simply describing a map's content.¹⁶² An added difficulty associated with converting paper finding aids is that, in the past, some PRO cataloguers paraphrased map titles instead of quoting them when creating entries for the card catalogue. Although *ISAD(G)* prescribes the inclusion of a quoted or supplied title in the *Title* element at every level of description,¹⁶³ TNA rarely uses this element at file and item levels, preferring to add a description to *Scope and content*.¹⁶⁴ This implicitly recognizes the fact that there is no meaningful distinction between a supplied "title" and a brief description.¹⁶⁵ Accordingly, titles of individual maps, or meaningful portions of long titles, are quoted in *Scope and content*.¹⁶⁶ The *Title* element has, however, been used for quoting the titles of atlases at file level.¹⁶⁷

Some published maps can be identified using publishers' numbers or "map designations" (e.g., *Admiralty chart 483*).¹⁶⁸ Such designations are, in effect, a form of title. PROCAT was designed with a dedicated *Map designation* element (which in EAD is a specially marked version of the <unittitle> tags) designed to include these numbers.¹⁶⁹ However, length restrictions mean that very long or multiple map designations have been added to *Scope and content* instead.¹⁷⁰

161 See, for example, Boggs and Lewis, 1; Kandoian, 234–35; Ken Rockwell, "Problem Areas in the Descriptive Cataloging of Sheet Maps," in *Maps and Related Cartographic Materials: Cataloging, Classification, and Bibliographic Control*, ed. Paige G. Andrew, and Mary L. Larsgaard (1999; repr., Abingdon, 2009), 40–42; Andrew, 65–68; and P. Williams, 228.

162 Boggs and Lewis, 27; Ehrenberg, *Maps and Architectural Drawings*, 38–39; Mitchell, 9.

163 *ISAD(G)*, 2nd ed., para. I.12, 3.1.2.

164 TNA, "Cataloguing Guidelines," Part A, 15–16, Part B, para. 11.1, 11.5.

165 Mitchell, 9–10, argues that the concept of "supplied title" is meaningless when applied to maps.

166 PRO, "Map Catalogue Retrospective Conversion Project," 47–48.

167 *Ibid.*, 24.

168 Parker, "Cataloguing Map Series," 80, 84; Beech, "TNA Map Catalogue Retrospective Conversion Project," 244.

169 PRO, "Map Catalogue Retrospective Conversion Project," 25–26.

170 *Ibid.*, 26, Appendix K, 89.

Map-makers

A manuscript sketch map has only one creator, but a published map has many creators – often corporate bodies rather than individuals – each with a different role: commissioning, surveying, drawing, printing, and publishing.¹⁷¹ As the map-making process is a continuum,¹⁷² a book-style distinction between “authors” and publishers does not make sense.¹⁷³ Not all of these map-makers are also record-makers: some maps were originally commissioned or drawn as records, but others only become records later.¹⁷⁴ For example, published Ordnance Survey maps used by early-twentieth-century District Valuation Offices became records when officials annotated them.¹⁷⁵ It is common for either the names or roles of map-makers to be left unstated, but missing creator information is sometimes recoverable from the context or from secondary sources.¹⁷⁶ Under a strict interpretation of *ISAD(G)*, map-makers’ names – or, at least, the names of those map-makers deemed to count as record creators – would belong in the *Creator name(s)* element (or within quoted or supplied titles).¹⁷⁷ In PROCAT, this element was designed to link to authority files for corporate bodies, and TNA rarely uses it below series level.¹⁷⁸ In file- and item-level descriptions, map-makers are listed in *Scope and content*, as far as possible in order of their input into making the map, allowing them to be integrated with outlines of complex production histories.¹⁷⁹

171 Rockwell, 42–46; Kandoian, 251; Andrew, 51–53.

172 Janes, “Maps as a Recordkeeping Technology,” 122.

173 This is consistent with the approach taken by Ehrenberg, *Maps and Architectural Drawings*, 33–34, although a survey by Fink, 313, found that librarians’ opinions are divided on this point. Andrew, 56–57, notes that the “corporate issuing bodies” of most modern printed maps are both author and publisher.

174 Ehrenberg, “Map Acquisition, Arrangement and Description,” 242–43, lists further examples of these two types.

175 The National Archives, “Valuation Office survey,” <http://www.nationalarchives.gov.uk/records/research-guides/valuation-office-records.htm> (accessed 22 November 2011), sections 3 and 7.

176 Lee, 21–22. For an outline of the complexities involved in determining the roles of individual cartographers and map-makers in the creation of antiquarian printed maps, see Ashley Baynton-Williams, “Whose Map Is It Anyway?” *Mapforum* 11: 12–16.

177 *ISAD(G)*, 2nd ed., para. 3.2.1, 3.1.2.

178 PRO, “Map Catalogue Retrospective Conversion Project,” 27; TNA, “Cataloguing Guidelines,” Part A, 18–19, Part C, 8–10. As the various map extract “departments” and series are artificial accumulations, their creator is cited as the PRO itself.

179 PRO, “Map Catalogue Retrospective Conversion Project,” 49. Retrospective conversion project guidelines allow for creators likely to feature prominently in non-cartographic records (e.g., the explorer Dr. David Livingstone) to be indexed as creator and personal names at file and item level, but this has very rarely been done; see *Ibid.*, 27.

Dates

A map has two distinct dates: that of situation (the date that it depicts) and that of creation (the date when it was made); in extreme cases, the latter can be several million years later than the former.¹⁸⁰ As maps can depict change over long periods or themselves be made and revised over several decades, both kinds of dates can span long time periods.¹⁸¹ The date depicted is perhaps of greater interest to many users, but the date of creation is key to the moral defence of the records, and it is useful to know both.¹⁸² Dates are frequently unspecified on maps, but situation dates can often be estimated from the presence and absence of depicted landscape features; approximate creation dates can be established from the archival context, style, and physical makeup of the map, including any watermarks.¹⁸³ Traditional PRO practice was to indicate the full range of both types of dates indiscriminately next to the place name heading within a catalogue entry. Since the development of PROCAT, TNA's approach has been consistent with its approach to cataloguing other records.¹⁸⁴ The *Covering dates* element is restricted to a single date or single range of dates of creation (either known or deduced). Discrepancies between creation and situation dates are explained and, where appropriate, long date ranges broken down within *Scope and content*.¹⁸⁵

Physical Structure

The medium and material of which a map is made (e.g., pencil on tracing paper) are normally relatively straightforward to describe, although specific printing techniques or types of paper can be difficult to distinguish.¹⁸⁶ At TNA, this information is added to a *Physical condition* element, which corresponds

180 Boggs and Lewis, 39; Andrew, 114. Broadly speaking, the date of situation corresponds to the content and the date of creation to the context and structure.

181 Merrett, 13. For example, Admiralty chart 751 was published in 1825 on the basis of surveys taken in 1703; see The National Archives, "Admiralty charts (maps)," <http://www.nationalarchives.gov.uk/records/research-guides/admiralty-charts.htm> (accessed 22 November 2011), section 1.

182 Schellenberg, 306; Nichols, 161. The survey by Fink, 315, revealed increasing recognition of the need to note multiple dates when cataloguing maps.

183 See, for example, Lee, 16–21; Mitchell, 20–21; Rockwell, 50–51. As Lee, 18–20, and Merrett, 16, note, inaccurate depictions of the built environment are a confounding factor when ascribing dates.

184 PRO, "Map Catalogue Retrospective Conversion Project," 28–29; TNA, "Cataloguing Guidelines," Part A, 20–23, Part B, section 9.

185 PRO, "Map Catalogue Retrospective Conversion Project," 28–29. This is an area where library conventions, which involve several date elements, are markedly different; see Mangan, para. 2B, 2D, 4F, 4G, 7B7, 7B9, Appendix C.

186 Schellenberg, 307; Rockwell, 54. See Wallis and Robinson, section 7, for details of various reproduction techniques.

roughly to *ISAD(G)*'s *Physical characteristics and technical requirements* but is much less strictly confined to access-related attributes.¹⁸⁷ Following both cross-sector tradition and contemporary library practice, the word "coloured" is added if the map is drawn or printed in colour. Comments on mounting and signs of poor condition or damage are also included in this element.¹⁸⁸

A more complex question is how much there is of whatever is being described. It is possible to count both the number of maps and the number of sheets, volumes, or other physically distinct objects, bearing in mind that these two numbers will be different if the cartographic entity being described consists of only part of a multi-sheet map or of several maps (perhaps a single sheet printed on both sides or including insets).¹⁸⁹ Cataloguers can also measure a map's dimensions, but this is not a straightforward matter either.¹⁹⁰ Whereas *ISAD(G)* treats *Extent and medium of the unit of description* as a single element, PROCAT was designed with separate *Physical description* and *Dimensions* elements, the former used for countable extent and the latter for measurable extent. *Physical description* is used for noting the number of rolls, portfolios, volumes, boxes, or individually produced flat sheets (although this is usually omitted if the number is one); the number of maps and the number of sheets (whether separate or joined together) is instead noted under *Scope and content*.¹⁹¹ Methods of measuring dimensions varied considerably in the past, but current practice is to follow map library standards by measuring within the "neat line" (i.e., the innermost border) if one exists, and noting the measurements in centimetres – first height and then width. The *Dimensions* field accommodates only a single pair of measurements: multiple dimensions and explanations of large differences between map size and sheet size (e.g., owing to a large reference table or piece of text filling a significant portion of the sheet) belong in *Scope and content*.¹⁹²

Many archival maps are published works that have suffered various mutilations as part of the recordkeeping process.¹⁹³ Maps can be overprinted,

187 See *ISAD(G)*, 2nd ed., para. 3.4.4. In EAD, however, TNA's *Physical condition* field uses the <physfacet> tags (corresponding to a sub-element within *ISAD(G)*'s *Extent and medium of the unit of description* element), not the <phystech> tags that most closely match *ISAD(G)*'s *Physical characteristics and technical requirements*; see Library of Congress, "Encoded Archival Description Tag Library, Version 2002" (August 2002), <http://www.loc.gov/ead/tglib/index.html> (accessed 22 November 2011), Appendix A.1. *ISAD(G)*'s approach to this kind of metadata is ambiguous; one example implies that it belongs in *Extent and medium of the unit of description*; see *ISAD(G)*, 2nd ed., Appendix B, [54].

188 PRO, "Map Catalogue Retrospective Conversion Project," 36.

189 Larsgaard, 196; Rockwell, 52–54; Andrew, 12–13, 17.

190 Rockwell, 55–56; Andrew, 139–45.

191 PRO, "Map Catalogue Retrospective Conversion Project," 30–31, 49–50, Appendix K, 89–90.

192 *Ibid.*, 33–34, 50.

193 Ehrenberg, "Map Acquisition, Arrangement and Description," 242; Gill, 239.

annotated, traced, copied, trimmed down, or joined together (“collaged”), often resulting in a sophisticated interplay between manuscript and printed information.¹⁹⁴ Distinguishing clearly what was added or changed at each stage of production can be challenging in practice.¹⁹⁵ Maps of this type are theoretically and practically complex: their content, physical structure, and production histories are all multi-layered.¹⁹⁶ For example, the statement “railways added in pencil” combines information about a map’s secondary subject, medium, and history of use. Despite the fact that the evolving production histories of printed maps are a central concern of traditional cartobibliography,¹⁹⁷ such phenomena have been very poorly acknowledged within library cataloguing standards.¹⁹⁸ Catalogue entries in the PRO’s paper finding aids frequently did not distinguish clearly between information on the base map and information in added layers, and some entries even omitted important information about the base map (such as it being an Ordnance Survey map).¹⁹⁹ Where possible, such facts were clarified or added during conversion. TNA’s approach to describing such amendments recognizes that it is impossible to demarcate clear boundaries between physical form, intellectual content, and context of use in these circumstances.²⁰⁰ To avoid needless repetition between elements, all details of insets, endorsements, trimming, joining, overprinting, and annotations are listed in *Scope and content*.²⁰¹

194 Janes, “Maps as a Recordkeeping Technology,” 121–22.

195 Andrew, 76, points out that many published maps do not state edition or revision information clearly; if the sheet margins have been trimmed away, it may be impossible to recover this part of the production history. Baynton-Williams, 14–16, notes that map-makers have frequently copied and adapted the work of others. Sarah Tyacke, “Describing Maps,” in *The Book Encompassed: Studies in Twentieth-Century Bibliography*, ed. Peter Davison (Cambridge, 1992, 137, 139–40), discusses the effect of wear-and-tear on printing plates during their active lifespans.

196 Janes, “Maps as a Recordkeeping Technology,” 121.

197 Tyacke, 132–33, 137.

198 Library cataloguing conventions relegate all such additions and amendments to various “note” elements; see Mangan, para. 7B7, 7B10, 7B20.

199 In concentrating purely on the additions, the PRO took the opposite approach to library standards, which are concerned chiefly with the map as originally produced.

200 Arguably, this is true for very many aspects of maps, e.g., physical colouring expresses meaningful distinctions; see Robinson et al., 11, 381. Even the simple statement “two maps” combines information about both record content and record structure.

201 PRO, “Map Catalogue Retrospective Conversion Project,” 49–50, Appendix K, 89–90. A strict interpretation of *ISAD(G)* would require dividing this information among three or four elements, with a consequent loss of any sense of the unity of the process; see *ISAD(G)*, 2nd ed., para. 3.2.3, 3.3.1, 3.4.4.

Geodetic Information

The various geodetic or mathematical features of maps, such as projection, orientation, and scale, which textual records lack, are sometimes treated as physical attributes or as something distinct from both content and physical format.²⁰² Yet, since their purpose is to help readers “translate” between the map and the landscape, they logically form part of the content.²⁰³ Scales have the added complication of being expressed on maps in three ways: as verbal statements (e.g., 1 inch to 1 mile), as ratios (e.g., 1:63,360), and as measurable scale bars; in descriptions, they can be expressed either as verbal statements or ratios or both.²⁰⁴ Unspecified scales can sometimes be recovered through measurement.²⁰⁵ PROCAT was designed with a separate *Map scale number* element (which in EAD is a specially marked version of the <note> tags) to make ratio scales readily searchable; this element is not repeatable, so it cannot be used if several maps with different scales are being described in one entry.²⁰⁶ At TNA, all other geodetic information is placed in *Scope and content*. For some common scales, both verbal and ratio forms are given; otherwise, only the simpler form is noted. Approximate imperial or metric equivalents are given for obscure scales. In line with common library practice, scales are described “paper before ground” (e.g., 6 inches to 1 mile, not 1 mile to 6 inches).²⁰⁷ Projection is only noted if named on the map or in accompanying papers.²⁰⁸ The presence of a compass indicator and any orientations other than to north are normally noted.²⁰⁹

Decoration

The graphic character of maps makes it inevitable that any decoration is interwoven with the meaningful content. This suggests that decorative features are also chiefly “content” rather than purely physical attributes. TNA practice is therefore to note decoration under *Scope and content* if it contributes significantly to the appearance or meaning of the map. Map cataloguers traditionally

202 See, for example, Schellenberg, 308; Mitchell, 7–8; P. Williams, 229. Examples in *ISAD(G)* appear to assign scale to a bespoke or “floating” element; see *ISAD(G)*, 2nd ed., Appendix B [39, 45, 54].

203 This is consistent with Robinson et al., 11, 92, and with the way that archival theory characterizes record content. Similarly, coordinates are a “geodetic” means of expressing place, which is universally acknowledged to form part of the content of a map; see Dahlberg, 65–66; P. Williams, 229.

204 Dahlberg, 73; Andrew, 80; Beamer, 20.

205 Rockwell, 47; Andrew, 82–83.

206 PRO, “Map Catalogue Retrospective Conversion Project,” 35, Appendix E, 78.

207 *Ibid.*, 49, Appendix E, 79–80.

208 *Ibid.*, 49.

209 *Ibid.*

described decoration in lavish detail, but because this tended to create unbalanced descriptions, excessive detail has been pruned during conversion.²¹⁰

Constructing the Scope and Content Element

As the above makes clear, the core, and often the bulk, of a typical map description in TNA's online catalogue now consists of a prose statement within the *Scope and content* element. Under the current guidelines, information within this element follows a set order, derived from a combination of in-house tradition, logical flow, and the wish to avoid unnecessary repetition. This is:²¹¹

- extraction information;
- topographical heading (if retained from the paper catalogue entry);
- quoted title;
- the number of joined or separate sheets comprising the map;
- primary subject (geographical area), if not sufficiently clear from the heading or title;
- secondary subjects;
- legends or reference tables;
- decoration;
- geodetic attributes;
- map-makers and production history, in chronological order;
- endorsements (information on the back of the map);
- other useful contextual information.

To illustrate how catalogue entries fit together in practice, some examples are included as Appendix C.

Current Developments

Nowadays, the cataloguing of records accessioned by TNA, including maps, is carried out by staff in the transferring government body under the guidance of TNA's Information Management and Practice Department.²¹² The metadata are supplied in a form that can be uploaded directly into the online catalogue. Where newly accessioned files are known to contain category-C maps, this fact is mentioned in the catalogue entry, normally by including the statement "with maps" or "with plans" in the *Note* field.²¹³

210 Ibid.

211 Ibid., 45–50. As noted above, both the attributes of individual maps and the amount of detail included in descriptions vary; hence, not everything in this list appears in every description.

212 Gill, 240.

213 The paper-based equivalent of this practice has a long history; see Condon, 18.

Projects to improve the online catalogue descriptions of records already held – by re-cataloguing the records in more detail, converting the remaining supplementary finding aids, or lightly editing existing entries for clarity and searchability – are carried out by TNA staff, or by volunteers under staff supervision. A Cataloguing Strategy Panel oversees this work to ensure that the enhancements will serve users' needs, as evidenced by a variety of tools, from enquiry and record production statistics to direct suggestions and other feedback from researchers.²¹⁴ This approach is consistent with the spirit of “more product, less process”: detailed, item-level cataloguing is the exception, reserved for cases where it is of demonstrable value, rather than the rule.²¹⁵ As of 2011–12, there is a particular focus on reducing the remaining reliance on paper finding aids still further, in favour of the more flexible access offered by online searching and browsing.

Phases I and II of the map catalogue retrospective conversion program were completed in 2000 and 2006 respectively, but work on phases III and IV continues under this umbrella, alongside separate map cataloguing projects focusing on particular series. Decisions about what content to include in catalogue descriptions are made on a project-by-project basis, but cataloguing is always carried out in a manner consistent with the original retrospective conversion program guidelines. Methods of adding data to the catalogue also vary between projects: more complex projects require EAD uploads or direct keying into the database lying behind the catalogue; certain simpler enhancements can be achieved more quickly by manipulating data in spreadsheet form and uploading it as comma-separated values (CSV) files.²¹⁶

Like cataloguing projects, most conservation work at TNA now focuses on whole series, so the extraction and remedial conservation of individual maps is much rarer than in the past. When maps are extracted, they are treated as internal accessions to the artificial map extract series and catalogued by the map archivists.

Traditionally, map cataloguing at the PRO focused on describing maps separately from other records. Extracted maps and those in categories A and B were far more likely to be described adequately than those in category C, despite the fact that the latter are the prototypical kind of cartographic

214 The National Archives, “Cataloguing Strategy Panel,” <http://www.nationalarchives.gov.uk/how-we-are-run/cataloguing-strategy-panel.htm> (accessed 30 June 2012). Soliciting and responding to user feedback has been important since the initial development of PROCAT; see Jone Garmendia, “User Input in the Development of Online Services: The PRO Catalogue,” *Journal of the Society of Archivists* 23, no. 1 (2002): 52–54.

215 Greene and Meisner, 246–48.

216 Andrew Janes, “Make-Do and Mend: Signposting the Unfindable on a Budget,” *Cartographiti* 87 (2011): 10–11.

record.²¹⁷ The need to start incorporating pre-existing descriptions of category-C maps into the online catalogue has exposed the fact that describing mixed-format items appropriately can be extremely challenging.²¹⁸ If part of an item-level entity is cartographic, adding adequate descriptive metadata for the map is liable to distort the catalogue entry unless done with great care.²¹⁹ A variety of solutions to this challenge are currently being devised, but it is likely that it will need to be addressed on a case-by-case basis. Similarly, further work is required to assess the suitability of data within the “summary calendar” for addition to the online catalogue. In the meantime, several cataloguing projects focusing on primarily textual series have uncovered previously unknown category-C maps and made brief descriptions of them available online.²²⁰

The infrastructure behind TNA’s original online catalogue is now fifteen years old and will soon need replacing. At the time of writing, TNA is developing a new *Discovery* tool allowing catalogue metadata, digitized and born-digital records, and eventually user-generated content to be accessed via a single system.²²¹ New approaches to indexing and filtering catalogue entries by subject are being developed. At the same time, the system of research guidance products has also been rationalized and restructured with the aim of making the guidance easier to use and a more effective complement to the catalogue descriptions.²²²

Although digital finding aids have now been a reality for many years in archives, and have an even longer history in libraries, little progress has been made with integrating graphic indexes into general-purpose catalogues, and they remain largely paper based.²²³ One probable reason for this is that a different kind of metadata, including accurate geo-referencing, is required to allow digital graphic indexes to function properly. TNA has begun to explore

217 See, for example, Love, 77; Eberhard and Stephanopoulos, 516. Schellenberg, 303, explicitly excludes maps “interfiled with textual records” from consideration.

218 For discussion of the problems associated with a legacy of detailed but decontextualized individual descriptions of visual materials, see Schwartz, 156–59, 164–65.

219 See Prescott, 296–98, on cataloguing maps within early printed books.

220 Two examples are ADM 101/197/3 f. 86, discovered in a naval surgeon’s journal and MH 12/487/17 f. 34, found among Poor Law Commission correspondence.

221 The National Archives, “Discover our collections,” <http://discovery.nationalarchives.gov.uk/SearchUI/> (accessed 30 June 2012).

222 For the result of this work, see The National Archives, “Records,” <http://www.nationalarchives.gov.uk/records/> (accessed 30 June 2012).

223 This is despite the fact that experiments to incorporate graphic indexes within computerized library catalogues have been made since the 1980s, see Barbara A. Morris, “Computer Generated Map Indexes: Cartographic Information Retrieval Using the ORACLE-GIMMS Software Interface,” *Bulletin of the Society of University Cartographers* 18, no. 1 (1984): 25–28; Barbara Morris, “CARTO-NET: Graphic Retrieval and Management in an Automated Map Library,” *INSPEL* 22, no. 2 (1988): 99–100. For a more recent attempt to incorporate spatial browsing within a general library catalogue, see Michael Vandenburg, “Using Google Maps as an Interface for the Library Catalogue,” *Library Hi Tech* 26, no. 1 (2008): 33–40.

how to incorporate such metadata most effectively within catalogue descriptions.²²⁴ Coordinates are now being incorporated within descriptions of some maps and other records that relate to specific places, and the issue of place name authority files is being reconsidered. TNA has also started to create experimental online graphic indexes for selected records, including some photographs and textual records as well as maps, which allow single-click connections between spatial browsing and catalogue entries.²²⁵ The success of such efforts makes it likely that the traditional graphic index – re-interpreted for the digital age – will play a much more prominent role in the finding aids systems of the future.

Despite the innovations of the past fifteen years, TNA's finding aids system remains a hybrid of paper and digital. Although the use of supplementary finding aids for accessing maps and other records continues to dwindle, some paper finding aids will continue to be used for the foreseeable future alongside online search tools.

Meta-Records for Maps: How Practice Has Evolved

The discussion above has shown how map cataloguing practices at TNA have undergone considerable change, particularly since the mid 1990s. During that time, six kinds of transition have occurred:

1. Descriptions have changed from being wholly paper based to primarily digital. The importance of this lies not in the change of mode per se but the fact that descriptions are much more accessible, not just because the catalogue is freely available to anyone with an Internet connection, but also because any aspect of a fully searchable catalogue description is potentially an access point.
2. The finding aids system has moved away from a primarily topographical system toward a system primarily reflecting the relationships between records. By ceasing to privilege a map's "primary" subject (i.e., place), this implicitly recognizes that the geographical areas covered by maps are only one aspect of their makeup. In combination, transitions 1 and 2 foster multiple approaches to, and uses of, maps for research.

224 Although library cataloguing standards include elements suitable for containing such data (see Mangan, para. 3D), archivists have to improvise. Even graphic indexes in paper form have traditionally been considered outside the remit of archival descriptive standards, which have concerned themselves exclusively with text-based finding aids; see Procter and Cook, para. 21.1A.

225 For several examples, see The National Archives, "The National Archives Labs," <http://labs.nationalarchives.gov.uk/wordpress/> (accessed 30 June 2012).

3. A complex system of multiple finding aids has been overtaken gradually by a single finding aid: the online catalogue. Other finding aids have not disappeared entirely but are very much regarded as supplementing the main catalogue, not as its equals.
4. TNA's map cataloguing strategy has shifted away from the traditional drivers of cartobibliographic surveys and conservation needs and toward exploiting the potential of technology to meet researchers' needs more fully. Established technologies supporting keyword searching and hierarchical browsing are starting to be supplemented by forms of spatial browsing, and data-processing methods can be matched to the complexity of particular projects and records.
5. Adopting international standards has made some aspects of TNA's approach to map cataloguing more consistent with the approaches of other institutions. Although the narrowly bibliographic conventions prescribed by library standards are unsuitable for archival use as they stand, borrowing from those conventions to meet the particular requirements of cartographic records has helped to mitigate the adverse effect of the incompatibilities between *ISAD(G)* and library cataloguing standards.
6. TNA's approach to map cataloguing has become more internally consistent. Adopting international standards has made our map descriptions (regardless of their origin) more similar both to one another and to our descriptions of non-cartographic records. Yet, at the same time, our current conventions allow us to balance consistency with flexibility in making cataloguing decisions.

Although all of these changes are now well established, all except number 4 are as yet incomplete. Nonetheless, in combination they embody a subtle but radical shift in emphasis: in the past, PRO map catalogue entries in effect described maps that happened also to be records; they now describe records that happen also to be maps.

At heart, archive administration and map curatorship are practical disciplines concerned with preserving the past for the present and the future. Yet, to forge best practice in cataloguing, TNA's map archivists have needed to draw on a variety of sources of help, including an understanding of cartographic theory and history, archival theory and history, and the intersection between the two. Our cataloguing conventions are informed by theory and reflection, but our manner of applying them is driven pragmatically. The relationship between doing and thinking is symbiotic:²²⁶ sound theoretical understanding

226 Caroline Williams, "Studying Reality: The Application of Theory in an Aspect of UK Practice," *Archivaria* 62 (2006): 78. TNA is, of course, precisely the type of large, centralized, state-run archives that inspired the now-"traditional" archival theory of the early and

grows out of past good professional practice and informs future good professional practice.²²⁷ Although considerable scope exists for exploring the intersection of cartography and archival description from a more theoretical standpoint,²²⁸ this too would inevitably be grounded in a reflective grasp of current and historical map-making, recordkeeping, and curatorial practices.

Being influenced by past thought and practices does not mean that we have been hidebound by them. TNA's approach to the archival representation of maps has evolved considerably since 1926, and particularly during the past fifteen years, and continues to evolve today. Outdated aspects of traditional PRO map cataloguing practice have been replaced by standards and methods more appropriate to the twenty-first century. Yet it is the tradition of engaging seriously with historic maps maintained in a recordkeeping context and developing finding aids for them over nearly nine decades that has allowed us to move toward more accurate, consistent, and accessible catalogue descriptions.²²⁹

TNA's attempts to reconcile diverse and conflicting approaches to selecting and structuring metadata have driven us to appreciate more fully past uses of cartography for recordkeeping purposes. While the particular set of experiences and approaches outlined in this article are unique to one institution and one type of record, the challenge of creating "consistent, appropriate and self-explanatory descriptions"²³⁰ is universal. Like the process of cataloguing itself, analyzing past and present cataloguing practices helps us gain a richer understanding of the records in our care.

mid-twentieth century; see Terry Cook, "What is Past is Prologue: A History of Archival Ideas Since 1898, and the Future Paradigm Shift," *Archivaria* 43 (1997): 21–28.

227 In this respect, the experience of the PRO and TNA accords with Preben Mortensen's view of the relationship between practice and theory; see Preben Mortensen, "The Place of Theory in Archival Practice," *Archivaria* 47 (1999): 15, 17. It is worth recalling that throughout the early years of the PRO's map cataloguing program, Hilary Jenkinson was both a practising archivist (and a senior and influential member of staff) and was developing his ideas on archival theory; see n50.

228 For instance, as Schwartz, 162–63, points out, postmodern thinking about the history of cartography has significant potential to aid the understanding of archival theory.

229 Much the same is true for other types of records held at TNA; see Roper, 148–49, *passim*. As C. Williams, "Studying Reality," 96–98, argues, experience (in our case, collective experience) and intuition take their place alongside theory as part of the "reflective practitioner's" toolkit.

230 *ISAD(G)*, 2nd ed., para. I.5.

Appendix A: Terminology for Levels of Description²³¹

This table outlines the traditional PRO and current TNA terminology used to label the different levels within a multi-level archival description. While *ISAD(G)* theoretically allows an infinite number of levels of description between fonds and series levels and between series and file levels, TNA practice permits a maximum of seven levels of description.

<i>ISAD(G)</i> Level Name	TNA Level Name	Former PRO Label
Fonds	Department	Letter-code (or group)
Sub-fonds	Division	<i>Not used previously</i>
Series	Series	Class (and sub-class) ²³²
Sub-series	Sub-series	Header
Sub-sub-series	Sub-sub-series	Sub-header
File	Piece	Piece
Item	Item	Item

231 Based on Foster, 2; and TNA, "Cataloguing Guidelines," 9.

232 Although PRO "classes" are now called series, the former PRO usage of "sub-class" means something entirely different from "sub-series." For the minority of series indicated by a double number (e.g., IR 121/5, where 121/5 is the series number), the first number was formerly considered to be the "class" number and the second number the "sub-class" number. Old "sub-classes" never correspond to current sub-series.

Appendix B: Elements of Description Used for Map Cataloguing at The National Archives²³³

Closest Equivalent Element in <i>ISAD(G)</i> , 2nd ed.	TNA Element Name	EAD Tag Used During Retrospective Conversion
3.1.1 Reference code(s)	Reference	<i>Attribute within <c></i>
	Former reference (department)	<unitid>
	Former reference (PRO)	
3.1.2 Title	Title	<unittitle>
	Map designation	
3.1.3 Date(s)	Covering dates	<unitdate>
3.1.4 Level of description	Level	<i>Attribute within <c></i>
3.1.5 Extent and medium of the unit of description	Physical description: extent	<extent> <i>within</i> <physdesc>
	Physical description: form	<genreform> <i>within</i> <physdesc>
	Dimensions	<dimensions> <i>within</i> <physdesc>
	Physical condition ²³⁴	<physfacet> <i>within</i> <physdesc>
3.2.1 Name of creator(s)	Creator name(s)	<origination>
3.2.2 Administrative / biographical history	Administrative / biographical background	<bioghist>
3.2.3 Archival history	Custodial history	<i>Not used in EAD files during retrospective conversion</i>
3.2.4 Immediate source of acquisition	Immediate source of acquisition	<acqinfo>
3.3.1 Scope and content	Scope and content	<scopecontent>
3.3.2 Appraisal, destruction, and scheduling information	Appraisal/destruction information	<i>Not used in EAD files during retrospective conversion</i>

233 Based on PRO, "Map Catalogue Retrospective Conversion Project," 12–13; TNA, "Cataloguing Guidelines," Part A; and Library of Congress, "EAD Tag Library," Appendix A. Note that TNA's in-house standards were developed in response to the first editions, not the current editions, of *ISAD(G)* and EAD.

234 At TNA, this element is combined with the *ISAD(G)* element *Physical characteristics and technical requirements*.

Closest Equivalent Element in ISAD(G), 2nd ed.	TNA Element Name	EAD Tag Used During Retrospective Conversion
3.3.3 Accruals	Accruals	<i>Not used in EAD files during retrospective conversion</i>
3.3.4 System of arrangement	Arrangement	<arrangement>
3.4.1 Conditions governing access	Access conditions ²³⁵	<accessrestrict>
	Legal status	<i>Attribute within <c></i>
3.4.2 Conditions governing reproduction	Restrictions on use	<userrestrict>
3.4.3 Language/scripts of material	Language	<i>Attribute within <c></i>
3.4.4 Physical characteristics and technical requirements	<i>See: Physical condition (above)</i>	<physfacet> <i>within</i> <physdesc>
3.4.5 Finding aids	Unpublished finding aids	<otherfindaid>
3.5.1 Existence and location of originals	Location of originals	<altformavail>
3.5.2 Existence and location of copies	Copies information	<altformavail>
3.5.3 Related units of description	Related material	<relatedmaterial>
	Separated material	<separatedmaterial>
3.5.4 Publication note	Publication note	<bibliography>
3.6.1 Note	Note	<note>
	Map scale number	
3.7.1 Archivist's note	<i>Invisible to end-users of the catalogue. Partly generated automatically by the cataloguing software.</i>	<i>Not used in EAD files during retrospective conversion</i>
3.7.2 Rules or conventions		
3.7.3 Date(s) of descriptions		
n/a	Held by	<repository>
n/a	Index terms	<i>Not used in EAD files during retrospective conversion</i>

235 This element is subdivided to facilitate more complex searches, e.g., by record opening date.

Appendix C: Sample Catalogue Entries²³⁶

Example 1a. Extracted category-C map (shown in Figure 1)

PIECE REFERENCE	MPC 1/212
Scope and content	1 item extracted from DL 42/119, f 378. 'Lincolniae Notinghamiaque Comitatum nova vera et accurata descriptio Anno Domini 1576': map of the counties of Lincolnshire and Nottinghamshire. Title in fretwork cartouche beneath royal arms. Scale bar surmounted by dividers; 1 inch to about 4 miles. Surveyed by Christopher Saxton; engraved by Remigius Hogenberg. Manuscript additions in gold and red ink to show the main towns and manors belonging to the Duchy of Lancaster and Honour of Bolingbroke; [additions made ?1608]. Endorsed with a reference note explaining the annotations
Covering dates	1576-[?1608]
Physical condition	Engraved, with MS colouring
Dimensions	41 cm x 53.5 cm
Publication note	Maps and Plans in the Public Record Office: I. British Isles, c.1410-1860 (London, 1967), entry 2624

Example 1b. "Parent" of extracted category-C map

PIECE REFERENCE	DL 42/119
Scope and content	Survey of Bolingbroke honour, Lincolnshire
Covering dates	1608
Separated material	For an item extracted from this piece see MPC 1/212

236 These examples are entries added to TNA's online catalogue during phases II and III of the retrospective conversion program. For simplicity, elements not relevant to the article (e.g., *Legal status*) have been omitted.

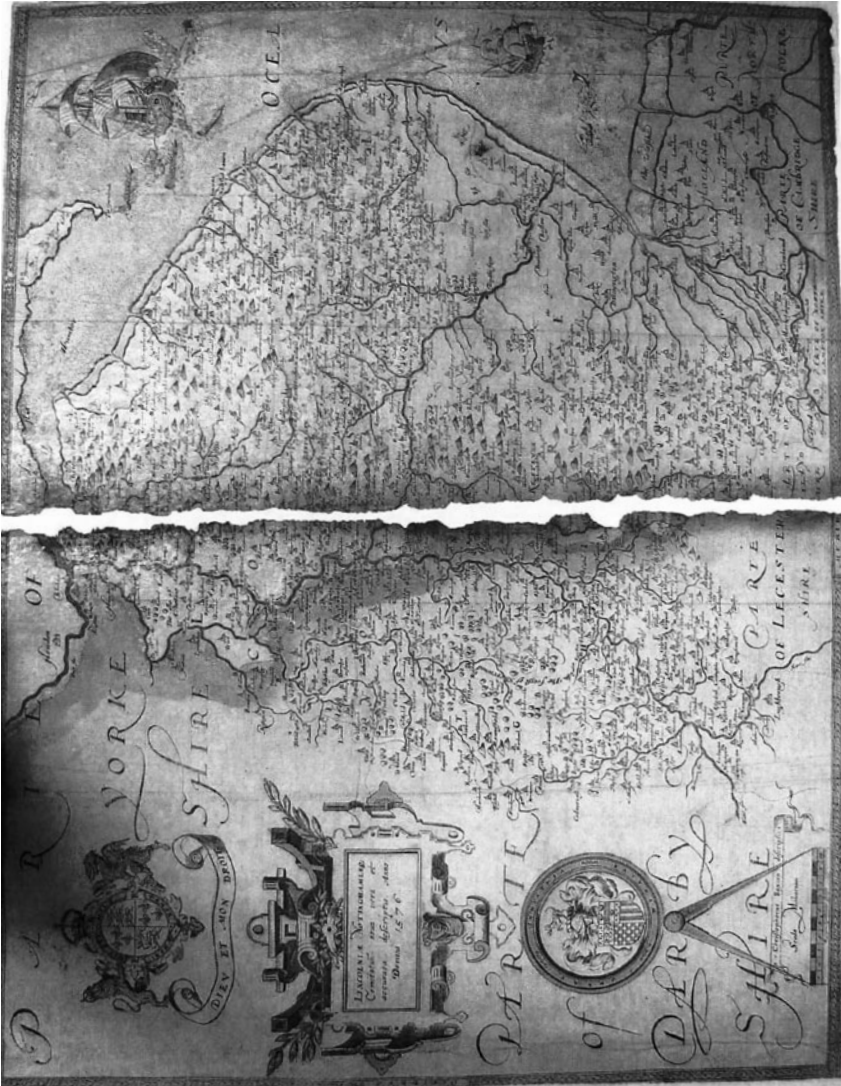


Figure 1. Lincolnshire and Nottinghamshire, 1576–[?1608]. Reference: MPC 1/212. Credit: Reproduced by permission of The National Archives.

Example 2. “Extracted” category-B map (shown in Figure 2)

PIECE REFERENCE	MPI 1/112
Scope and content	Ordnance Survey one-inch Old Series England and Wales: parts of three sheets [the western quarters of sheet I and the south-west part of sheet XLVII], joined to form a map of the area between London and Hoddesdon, Hertfordshire. Scale: 1 inch to 1 mile. Hachured edition. Railways are shown, so this is likely to be an electroplated re-issue. All marginalia trimmed away. A frame has been constructed around the joined sheets; the lower border of another sheet has been used for the eastern side. Coloured manuscript additions show lands in Epping Forest, Essex. Manuscript reference table to boundaries of the northern and southern portions of the Forest and to lands released from and subject to Crown Forestal Rights. A note states: ‘In the matter of The Epping Forest Act 1871 This is the Copy Ordnance Survey Plan marked RCD7 referred to in the Affidavit of Robert Collier Driver’; signed by Charles Woods and Robert Collier Driver, 25 March 1872.
Covering dates	1871-1872
Former reference (PRO)	WORK 9/54
Map designation	OS one-inch Old Series England and Wales
Dimensions	71 cm x 37 cm
Physical condition	Printed, with MS colouring
Map scale number	1:63360

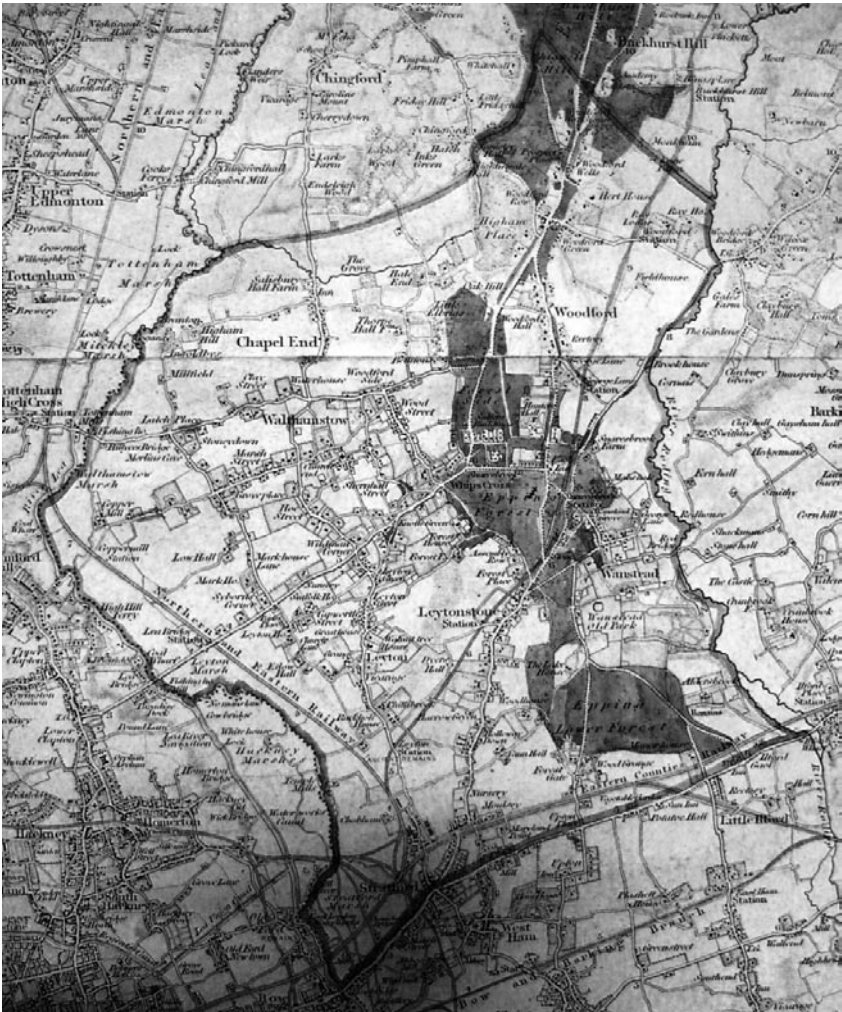


Figure 2. Detail of part of Epping Forest, showing the join between two printed sheets, 1871–1872. Reference: MPI 1/112. Credit: Reproduced by permission of The National Archives.

Example 3a. “Extracted” piece (file) of Category-A maps: file-level description

PIECE REFERENCE	MR 1/184
Scope and content	22 maps and plans of towns and fortifications in Italy, including Savoy (now part of France). Detailed descriptions are given at item level.
Covering dates	[?early 18 th century]–1860
Former reference (PRO)	WO 78/1019; WO 38/49
Language	English, French, Italian and Spanish

Example 3b. “Extracted” piece (file) of Category-A maps: item-level description (shown in Figure 3)

ITEM REFERENCE	MR 1/184/2
Scope and content	Lombardy (now in Italy): Mantua (Mantova). Plan of the town and fortifications, showing lakes, the city gates, and bridges.
Covering dates	[?18 th century]
Former reference (department)	Italy/Cities & Towns/3
Language	Italian
Dimensions	22 cm x 26 cm
Physical condition	MS, coloured
Publication note	Maps and Plans in the Public Record Office: 4. Europe and Turkey, ed. Geraldine Beech (London, 1998), entry 2727

