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Revisiting Parsons: A Wartime Map Classification System in the Digital Age

Martin Davis

Bodleian Libraries, University of Oxford, Oxford, UK

ABSTRACT

The Manual of Map Classification and Cataloguing, known colloquially as the 'Parsons' classification, is a geographic-based scheme for structuring a map collection using a sequence of alphanumeric classes and subdivisions. The system was published in 1946 after being devised by Captain Edward J.S. Parsons RE, the inaugural Curator of Maps at the Bodleian Library, University of Oxford. Although originally adopted by Parsons within the map collection of the British War Office, the system was later used to classify the Bodleian's own map collections, where it remains the basis of the organization of over two million maps, atlases and cartographic books today. This paper explores how the role of the Parsons classification within the Bodleian Library has changed significantly since its genesis in the 1940s. It then outlines recent work undertaken at the library to consolidate and digitize the system so that it better serves a map collection whose infrastructure is now largely digital.

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INTRODUCTION

Classifications have long been an important component of library organization; allowing items, and information about items, to be systematically arranged into categories in order that they might be efficiently retrieved and used by library readers and staff (Larsgaard 1998). On the basis that geographic coverage is a key determinant of the relevance of a map to many library users, a number of location-based classification systems have been created especially for map collections (Merrett 1982). The *Manual of Map Classification and Cataloguing*, known colloquially as the 'Parsons' system, is one such classification which divides the world into countries and subdivisions using a sequence of alphanumeric classes. The system was published in 1946 after being devised by Captain Edward J.S. Parsons RE who shortly afterwards became the inaugural Curator of Maps at the Bodleian Library, University of Oxford. Although originally applied to the

CONTACT Martin Davis martin.davis@bodleian.ox.ac.uk Bodleian Libraries, University of Oxford, Oxford, UK.

map collections of the British War Office, the system was soon adopted for classifying the Bodleian's own map collections, where it remains the basis of the organization of over two million maps, atlases and cartographic books today. The Ministry of Defence Map Library, based at the Defence Geographic Centre in Feltham, also continues to use an updated Parsons classification for its printed map collections (Colin Wright, e-mail to author, July 19, 2023). Other variations on the system are also still in use within several other large UK map collections, including the National Library of Scotland (for overseas mapping) and the National Library of Wales.

The Ministry of Defence revised the 1946 Parsons classification in 1972, 1978, and 2002, with each iteration reflecting the recognition of newly independent states by the UK Government (Colin Wright, e-mail to author, July 19, 2023). Of these, the 1978 edition was the only one to be published, and the 1972 and 2002 editions remain internal Ministry of Defence documents (Colin Wright, e-mail to author, July 19, 2023). The published 1978 revision was partly and incrementally adopted by the Bodleian Library during the 1980s to create a *de facto* hybrid of the 1946 and 1978 editions. Further local amendments to the Bodleian hybrid version have been made on an *ad hoc* basis to reflect some of the more substantial changes to administrative boundaries over the last 40 years, while other collections have made their own local adaptations. This means that the versions of Parsons in use within different collections are not standardized, comprising a mixture of the official editions and local amendments.

This paper discusses how the role of the Parsons classification has evolved substantially at the Bodleian Library over the last 80 years, as the map collection has expanded and cataloguing and finding methods have become increasingly digital. Revisiting the function of Parsons in a modern map collection leads us to also revisit the classification itself, to ensure that it continues serve these functions as well as it can in a digital environment never envisaged by its creator. As part of this appraisal, work has been undertaken at the library to consolidate and digitize the system so that it can be sustainably and more consistently implemented in the future.

A GEOGRAPHIC CLASSIFICATION FOR MAPS

At the time Edward Parsons began working as an assistant at the Bodleian Library in 1927 (Clapinson and Clennell 2001), the library's maps were classified using the subject classification scheme for books, which had been created by head librarian E.W.B. Nicholson in 1883 (Heaney 1978). However,

the adoption of a separate classification for maps was discussed by library staff as early as the 1910s, with librarian J.G. Wiblin noting in 1917:

> I do not agree with the principle of treating maps on the same lines as books and ignoring the essential differences between them. It would in my opinion be far better to adopt a new and comprehensive scheme for maps, and take old as well as new into it, than to perpetuate a system which treats one atlas one way and another quite differently for no apparent reason. To pull the whole thing straight is doubtless a heroic measure, but the offer of voluntary work gives us an opportunity which we should do well to grasp. (Wiblin 1917, 1)

No such scheme was adopted in response to Wiblin's case, although the subject resurfaced as plans were drawn up for the New Bodleian Library building in Broad Street, constructed between 1937 and 1940. The New Bodleian brought with it the prospect of a new storage system for maps, as well as the Bodleian's first dedicated maps reading room; and discussions regarding a maps-specific classification system emerged in parallel with discussions about plans for the new building. Parsons was tasked with visiting a number of other map collections to identify the systems of map classification, cataloguing and storage in use elsewhere, in order to inform the approach taken by the Bodleian. Throughout the 1930s, Parsons visited and reported on the methods in use at major collections across England and, in 1936, received a Rockefeller Fellowship to spend six months visiting major map collections in the United States to the same end (Acting Secretary 1936). The University of Oxford's map collections were, at the time, split between several buildings and libraries around Oxford, and the cataloguing and storage of maps together in one place became a cause that Parsons was keen to promote. After a visit to the British Museum in 1932, he commented:

> The British Museum has a separate classification for maps, but the Bodley method is quite as good, but Bodley should be consistent and have all maps in all sections placed in the Map Room. […] Bodley should follow the example set and have a separate catalogue of maps. […] With improvements of this kind, Bodley could have what could be called, with true meaning, a map department. (Parsons 1932, 2)

Despite his opinion that the Bodleian method of classification was on a par with that of the British Museum, Parsons nonetheless began work on his new geography-based classification for maps at around this time, during the early 1930s. However, the idea of creating a maps-specific classification was not universally popular at the Bodleian, with librarian J.D.A. Barnicot producing a report outlining at length his objection to the concept:

> The introduction of a new classification for maps and atlases is an experiment that should not be lightly embarked upon. […] There is nothing the matter with the

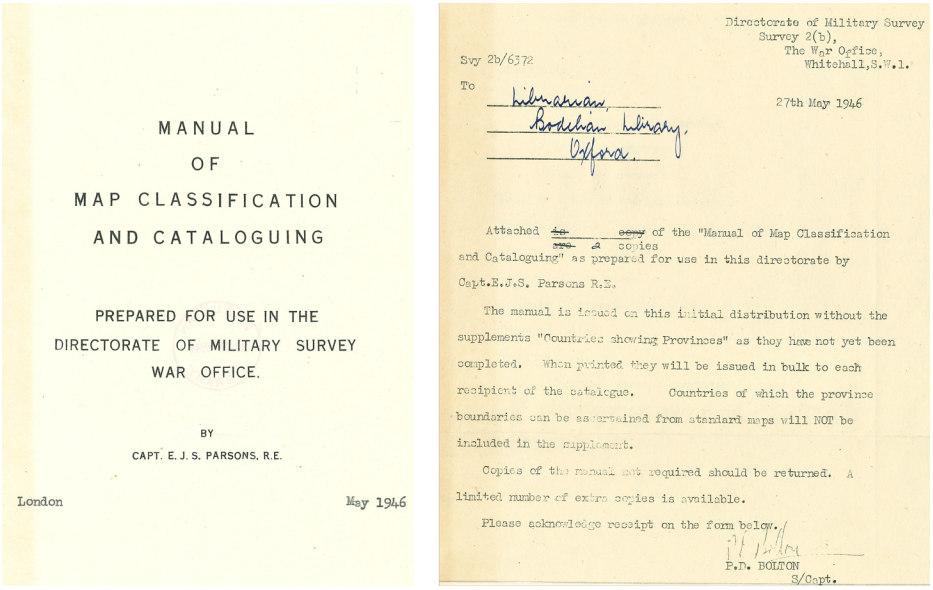
> Nicholsonian classification as far as geography is concerned. It is true that geological maps have been referenced into geological division, not into ordinary geographical divisions, but to put all maps of India, for instance, whether geological, economic, or political, into the geography section would be an obvious violation of the elementary assumptions of subject classification. This violation is purposed by the special classification which, I understand, is now being constructed. (Barnicot 1933, 1)

Notwithstanding its use of geographical divisions, consistency and comprehensiveness were important traits of the new 'special classification', and Parsons held in low regard geographic systems which he viewed as lacking these traits. After a visit to Cambridge University Library, he wrote:

> The map room has its own classification scheme which is very inconsistent. For instance, a separate number is assigned to each county of the British Isles and to each province of the United States and Canada, but the other countries of the world have but two numbers each, one for the whole country and the other for 'parts of'. Towards the end of the classification only one number is assigned to three or four of the South American republics. The classification scheme which is being prepared here (of which the portion for Europe is now finished) has not this great defect. (Parsons 1937, 3)

During the Second World War, Parsons left the Bodleian to serve as head of the Map Library at the War Office (Figure 1). While in this post, Parsons further developed and expanded his classification to accommodate the rapidly increasing size and scope of the War Office map collections (Colin Wright, e-mail to author, July 19, 2023). The finished classification

FIGURE 1. The staff of the War Office Map Library in April 1945. Edward Parsons is in the center of the middle row (Image: Directorate of Military Survey, War Office; courtesy of the Military Survey (Geographic) Branch, Royal Engineers Association historic archive).



MANUAL
OF
MAP CLASSIFICATION
AND CATALOGUING

PREPARED FOR USE IN THE
DIRECTORATE OF MILITARY SURVEY
WAR OFFICE.

BY
CAPT. E. J. S. PARSONS, R.E.

London May 1946

Directorate of Military Survey
Survey 2(b),
The War Office,
Whitehall,S.W.1.

Svy 2b/6372

To Librarian,
Bodleian Library,
Oxford.

27th May 1946

Attached ~~to~~ ~~copy~~ of the "Manual of Map Classification and Cataloguing" as prepared for use in this directorate by Capt.E.J.S. Parsons R.E. ~~2~~ 2 copies

The manual is issued on this initial distribution without the supplements "Countries showing Provinces" as they have not yet been completed. When printed they will be issued in bulk to each recipient of the catalogue. Countries of which the province boundaries can be ascertained from standard maps will NOT be included in the supplement.

Copies of the manual not required should be returned. A limited number of extra copies is available.

Please acknowledge receipt on the form below.

P.D. BOLTON
S/Capt.

FIGURE 2. Title page of the original *Manual of Map Classification and Cataloguing* (Parsons 1946) published by the War Office (left). This copy is one of two initially sent to the Bodleian Library from the Directorate of Military Survey on May 27, 1946, accompanied by a covering letter (right) (Image: Bodleian Libraries 25895 d.60).

was adopted and published by the Directorate of Military Survey in 1946 (Figure 2), its introduction outlining the aim of the system as being:

1. 'To arrange and catalogue the contents [of a Map Library] in such a way as to make all the information it contains readily available for consultation and use.'
2. 'To keep the collection up to date.'
3. 'To assure that new maps received can be assimilated in the shortest possible time.' (Parsons 1946, 1)

After the end of the war, Parsons returned to the Bodleian, becoming the first Superintendent of the newly formed Maps Section, within the Department of Printed Books, upon its establishment in 1946 (Parsons and Fathers 1968); formalizing a role he seemed to have been performing less officially for some time before the war. Parsons adopted his War Office classification across the map collections at the Bodleian Library, save for a small number of discrete collections which used their own classifications. Such collections included that bequeathed to the library by the antiquarian Richard Gough in 1809, including the famed 'Gough Map' of Great Britain; itself the subject of detailed study by Parsons both before and after the war (Parsons 1958).

SUMMARY OF THE PARSONS CLASSIFICATION

At the first level, the Parsons Classification assigns a letter to high-level entities, continents, oceans and regions (Figure 3):

A – *The Universe*
B – *The World*
C – *Europe*
D – *Asia*
E – *Africa*
F – *North America*
G – *Central America*
H – *South America*
I – *Australasia*
J – *Pacific Ocean*
K – *Atlantic Ocean*
L – *Indian Ocean*
M – *Arctic Regions*
N – *Antarctic Regions*
O – *Imaginary Lands*

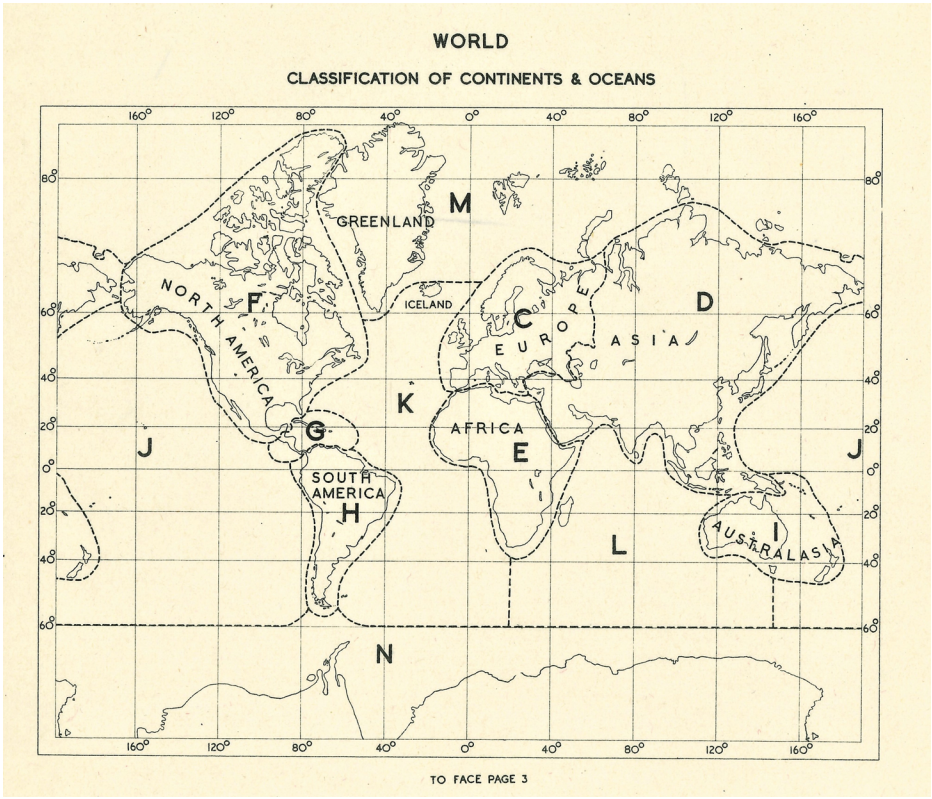


FIGURE 3. A map included in the 1946 Parsons manual showing the top-level classification of continents and oceans (Parsons 1946) (Image: Bodleian Libraries 25895 d.60).

A digit is appended to each of these letters, with '1' denoting the whole entity (e.g. *A1 The Universe*, *B1 The World*, *C1 Europe* etc.). Further numbers divide A and B into planets and hemispheres respectively (e.g. *B2 Northern Hemisphere*). Class O for 'Imaginary Lands' does not appear in the published classification but is used at the Bodleian Library.

When appended to letters corresponding to continents (C to I and M to N), '2' denotes seas and oceans adjacent to that continent (e.g. *C2 European Seas*). Almost all subsequent appended numbers refer to individual countries and major regions within each continent (e.g. *C3 Andorra, C4 Austria* etc.).

Second-level subdivisions are formed by appending a colon and a further number. Subdivision numbers 1–9 are almost universally reserved for compass areas as follows:

1 – *Northern*
2 – *Northeastern*
3 – *Northwestern*
4 – *Eastern*
5 – *Central*
6 – *Western*
7 – *Southern*
8 – *Southeastern*
9 – *Southwestern*

These compass areas are not applied to seas or a relatively small number of small countries, where such divisions were deemed unnecessary. Further subdivision numbers denote alphabetically arranged administrative regions within each country (e.g. for *C32 Portugal: C32:10 Alemtejo, C32:11 Algarve* etc.). Parsons made 'every effort' to keep the number of classes to a minimum (Parsons and Fathers 1968, 3), with a reviewer describing the classification as 'generally admirable', with 'brevity of notation and schematic simplicity [its] outstanding characteristics', and 'a pleasing paucity of symbols' in comparison to other schemes (Bartlett 1947, 59). Letters A, B, and O have no second-level subdivisions.

The 1946 Parsons manual also outlines how, after classification, map accessions should be recorded using a specially-designed format of handlist, organized using the classification, in conjunction with an area-based card catalogue. A full item shelfmark (elsewhere known as a classmark or call number) is formed by following the relevant area classification with a bracketed sequence number. Sequence numbers 1–100 are reserved for map series, with non-series maps beginning at 101. Sequence numbers between 1 and 100 are divided into blocks of ten, with each block corresponding to a scale range. For example, at the country level, sequence

numbers 1–10 are reserved for series at scales larger than 1:20,000, while numbers 91–100 are used for maps at scales smaller than 1:750,000. The number of series which can be added to the sequence within the same area class and scale range is therefore limited without local workarounds (Nichols 1976).

DEVELOPING THE 1978 REVISION

Six years after an unpublished revision of the Parsons classification was produced in 1972, a more substantial revision, compiled by Brian Candy and Bruce Davis, was published by the Ministry of Defence in 1978 (Colin Wright, e-mail to author, July 19, 2023). According to Candy, the revision emerged from a recognition that the 'deficiencies' of the system were having a 'significant effect of the [Directorate of Military Survey] library's performance', particularly with regard to responding to queries (Candy 1980, 1). After failing to amass sufficient funds to complete work toward automation of library processes, a decision was taken to instead update the Parsons classification.

Candy (1980, 5) explains that first of these deficiencies was the limited 'instructional content' of the manual, leading to a lack of consistency in the implementation of the classification. Secondly, the 'inadequate definition of the classification areas' had led to an inconsistent classification of maps covering the same area. As part of this issue, Candy highlights the application of the nine compass areas to all countries regardless of 'whether a country's shape was suited or not to this treatment', and the need to allocate a map to just one of these areas, even though its coverage may straddle several.

The third problem is outlined not as an issue with the classification itself, but rather its implementation. Candy explains that the Directorate of Military Survey had made local amendments to the 1946 manual and introduced new procedures, but that a lack of documentation of these developments had led to further inconsistency. While it was evidence of these issues in the context of the Directorate of Military Survey which led to the development of an updated system, it is likely that similar problems were encountered by other large collections using the classification, including the Bodleian Library. The challenge for the Directorate was to devise a new system to address these issues, while avoiding the creation of a system so radically different that it would require the reclassification and re-cataloguing of the whole collection, the cost and time-burden of which would have been prohibitive. For this reason, the revised system retained elements of the original wherever possible and 'measures were avoided when they would cause work for no benefit other than tidiness' (Candy 1980, 5). Instead of introducing wholescale changes to

the structure of the classification, the major evolutions of the Ministry of Defence (1978) edition were:

1. The introduction of comprehensive graphic indexes to clearly define the boundaries of each geographic area, including the compass divisions.
2. Area classes were updated to reflect changes to boundaries.
3. Much more extensive instructions regarding the implementation of the system, including the selection of area classes, the cataloguing processes required when using the system, and provisions for adding additional area classes to records for maps which cover more than one class area.

The grayscale, diagrammatic maps included in the revised manual clearly delineate the entities listed in the updated classification, allowing them to be interpreted and applied much more consistently than the 1946 edition (Larsgaard 1998). Such is the quality of the maps that they were noted as being of reference value even within collections not using the classification (Selmer 1983). However, for some countries, a list of administrative subdivisions was replaced by a single second-level class titled 'provincial', akin to the system previously criticized by Parsons (1937).

The instructions for assigning area classes to items are especially extensive, occupying section seven of the revised manual, and accompanied by graphical examples. Rules are set out for determining whether a map should be assigned to an Equal Unit (EU) (which corresponds exactly or approximately to the area covered by the map), the Smallest Single Unit (SSU) (the smallest area class which entirely encompasses the map coverage), or the Proportionally Greatest Unit (PGU) (the area class which is most fully covered by the map). Conversely, town classifications are only to be used where the coverage of a map is limited to 'areas of permanent nucleated settlement and show such features as street names, prominent and public buildings, urban public services etc.' (Ministry of Defence 1978, 7-7). As well as applying the new manual to accessions received after 1978, the Directorate of Military Survey also implemented the new system retrospectively across the whole of its collection; a reclassification process which required around 20 years of staff time to complete, divided between three staff members (Candy 1980).

While much of the additional implementation guidance was welcomed by reviewers, particularly the area classification instructions, the 1978 manual was criticized for not conforming to any international cataloguing standards (Selmer 1983), while the cataloguing process itself was described as a 'rather archaic and complex manual system' (Parker 1980, 43). Also noted was the fact that, while the 1946 area subdivisions were listed

alphabetically, name changes meant that the numbering of the 1978 edition was more random (Parker 1980, 44). Flink (1975) highlights that Parsons, along with other systems developed for use in military collections, is particularly suited to military mapping, reflecting the nature of the collection for which it was designed. The 1978 manual is clear that the system has been devised 'solely and entirely to meet the requirements of this department' (Ministry of Defence 1978, 1-1), and therefore may not be entirely suited to other collections. Merrett (1982) argues that this military focus leads to an assumption that almost all maps are topographic, while Minamoto (1999) notes that the classification almost solely includes administrative and political areas, with no classes for any natural areas or features which may be the primary subject of a map, such as major rivers or mountain ranges. A further revision was created in 2002.

IMPLEMENTING THE CLASSIFICATION AT THE BODLEIAN LIBRARY

In 1966, Parsons was appointed Secretary of the Bodleian Library and was succeeded as Superintendent of the Maps Section by Betty D. Fathers (Bernleithner 1971), with Parsons and Fathers remaining in these roles until their retirements in 1980 and 1992, respectively (Campbell 1993; Clapinson and Clennell 2001). The version of the classification in use at the Bodleian since 1946 had evolved slowly, and the three deficiencies of Parsons which had been problematic at the Directorate of Military Survey also characterized the application of the scheme at the Bodleian Library. However, when the 1978 revision was published by the Ministry of Defence, it was not adopted wholesale in order to address these issues. Instead, the 1978 schemes for countries which had seen more substantial boundary changes since 1946 were adopted piecemeal during the 1980s, creating a hybrid of the two editions which has persisted ever since. While this partly addressed issues caused by outdated entities in the 1946 manual, some of which likely dated back to Parsons' early work on the classification in the 1930s, this approach meant that the Bodleian did not fully benefit from the full set of new graphic indexes or the extensive guidance for application in the 1978 edition. As a result, the approach remained vulnerable to inconsistent application. Sequence numbers for map series generally follow the pattern of larger to smaller scale, although the specific ranges specified in the 1978 manual were not adopted.

As the original hard-copy manuals are still used by map cataloguers (Figure 4), the edition in use for a particular region or country is indicated by a series of hand-written annotations in both editions, with the date of the switchover usually indicated in red pencil (Figure 5). These are supplemented by more recent local additions and amendments, with each working copy of the manuals containing several hundred other

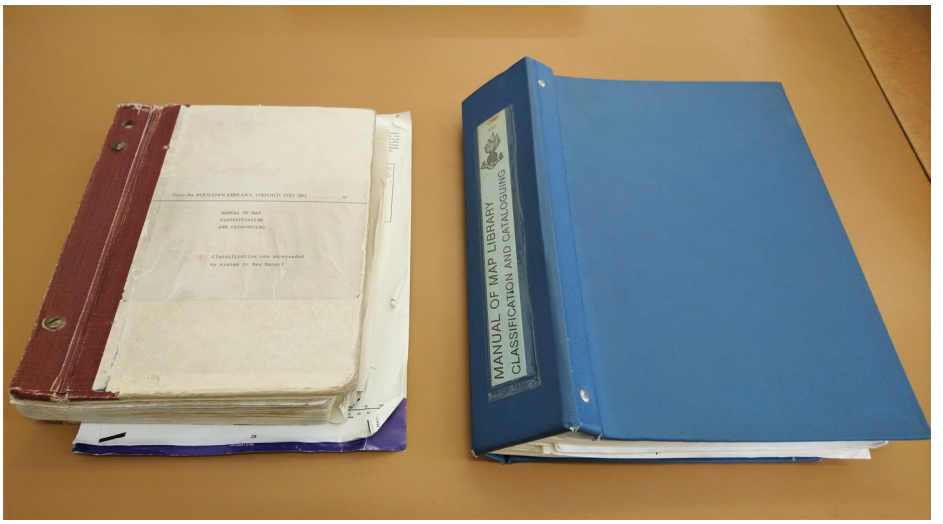


FIGURE 4. Working copies of the 1946 (left) and 1978 (right) Parsons manuals in the Bodleian Libraries Map Room, which remain in use by map cataloguers (Image: Bodleian Libraries).

annotations and loose sheets, usually undated, which serve to update various toponyms, or to record other notes regarding amendments or implementation. New classifications have also been created to reflect various tranches of boundary changes to British counties, with the class chosen reflecting the date of the map being catalogued.

Other such amendments are Eurocentric and unsystematically applied, with updates generally limited to more high-profile changes, such as German reunification and the dissolution of the USSR. An informally adopted practice of using the previous classification for the USSR, Yugoslavia or Czechoslovakia for new accessions of maps from their respective eras also exists, but this is not done for other defunct countries where a superseded class exists. For example, a map covering a region of Eastern Siberia published in 1950 would be classified within *C40 USSR* (which was the 'current' scheme between 1982 and 1991), and not the current scheme (*C400 Russia*, adopted 1991) or the scheme in use at the Bodleian at the time of the map's publication (*D31 USSR in Asia*, which was the 'current' scheme between 1947 and 1982). Where a map relates to a geographic entity which has become defunct since 1947 and a relevant previous scheme is not known to Maps staff, the currently adopted scheme for the country is used. For example, *E23:1 (2)* is a map classified within the current scheme (*E23 Morocco*, adopted 1982) despite specifically relating to Spanish Morocco which has its own previously adopted scheme, *E52*, which was the 'current' scheme at the Bodleian between 1947 and 1982.

Many top-level Parsons classes relate to entities which are within countries (e.g. *F3 Alaska, K13 Madeira Islands*). These entities are therefore

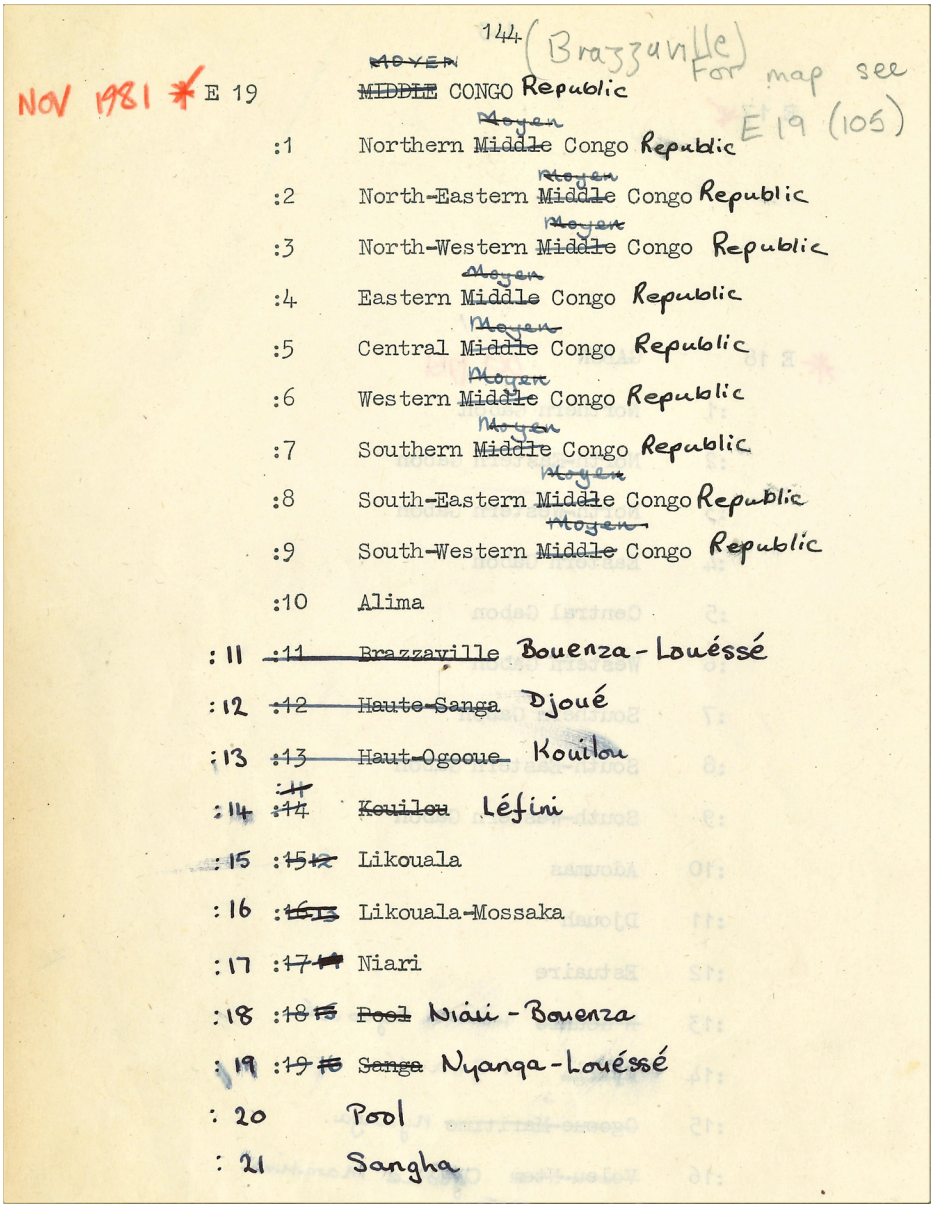


FIGURE 5. Classification for *E19 Middle Congo* in a Bodleian working copy of the 1946 manual, showing local amendments and updates to both class numbers and toponyms. 'Nov 1981' indicates the date at which this classification was superseded by that in the 1978 edition (Image: Bodleian Libraries).

excluded from the subdivisions of the classification of the 'parent' country (e.g. *F6 United States, C32 Portugal*). There are nonetheless many examples of maps which have been catalogued using the parent country's class, despite the existence of the separate class. For example, *D32 (137)* is a map of Sulawesi classified using the *D32* class intended for general maps of Indonesia. This is despite the presence of a specific class for Sulawesi

(*D39*). Similarly, 'Regional map. Great Lakes of North America' uses the shelfmark *F6:1 (20)* despite the presence of a class specifically for the Great Lakes (*F2:5*).

In some cases, annotations are ambiguous regarding which edition should be used for a certain area, especially where international borders have moved and left an area in both schemes simultaneously. For example, *D63 South Yemen* (adopted February 1981) and *D64 Yemen* (adopted March 1981) are both 'current' schemes, despite unification in 1990. These schemes superseded *D302 South Arabia (Aden)* and *D308 Yemen* (both adopted between 1947 and 1981). Therefore, *D63:10 Socotra* is a currently adopted subdivision, despite the fact that *L16 Socotra* (adopted 1947) was not superseded at the same time as *D302 South Arabia*, and also therefore remains current, including its own subdivisions (e.g. *L16:1 Abdal Kuri*).

In practice, each of these aberrations is overcome by the detailed knowledge, mutual understanding and established practice of Maps Section staff regarding the system and its implementation, although much of this practice is undocumented. With cataloguing now taking place digitally and in accordance with international standards, currently Resource Description and Access (RDA), only the classification part of the Parsons manuals remains in use today.

Whereas a Parsons-organized card catalogue was once a vital tool for readers, map discovery methods have also changed significantly, with online searches and filters now the most effective means of finding maps, and the classification playing a much less central role in this process. Hyperlinked Library of Congress Subject Headings (LCSH) can also help with the discovery of geographically or thematically grouped items, largely replacing a role that the Parsons classification once played. However, despite no longer forming the basis of organization for a card catalogue as originally envisaged, the Parsons classification still serves several important library functions, namely:

1. It determines the shelfmark of each item, including new accessions.
2. A Parsons-based handlist is still maintained, and is a frequently used finding aid for staff.
3. It is often the only library reference physically recorded on each map, alongside a stamp indicating the date of accession.
4. It forms the basis of the storage system for maps and atlases, in onsite and offsite closed stack facilities, and on open shelves.
5. It is the primary reference used when ordering maps from storage.
6. It is the primary means of citing items from the collection in publications.
7. It forms the title of digitized map images viewable online via the Digital Bodleian website, thereby affecting the organization of the images.

DIGITIZING THE CLASSIFICATION

Although most readers are now less likely to engage directly with Parsons, unless citing collections items or browsing open shelves, its endurance within internal systems and processes means that the Bodleian version of the Parsons classification still serves as critical infrastructure for the map collection. There is therefore merit in aiming to make documentation of the system in use clearer and more consistent. Fully replacing the current composite Parsons classification with a modern, standardized equivalent would likely be as impractical as it was for the Directorate of Military Survey in the 1970s; perhaps even more so given the size of the collection involved. Therefore, irrespective of the classification's flaws, any attempt to solve issues of inconsistent implementation and undocumented practice cannot involve a full replacement or restructuring of the Parsons system. Instead, producing a consolidated digital record of the Parsons classification, including its local amendments, and formalizing practices around its implementation, may help it to better meet its aims and functions in the context of a library whose infrastructure is now largely digital, while ensuring that a record of the system itself is preserved for the future. This digital record should be spatial, essentially producing an exhaustive, digital, graphic index of the world for use internally by map cataloguers. The consolidation of this information into one resource will reduce the complexity and version ambiguity of the manuals currently used, allow consistent classification by providing geographic definitions of compass and administrative areas (many of which are now defunct), and reduce future dependence on the implementation knowledge of current library staff.

It should also be noted that, with its roots in the Ministry of Defence in the 1940s, the Parsons classification codifies a British colonial worldview. Colonial administrative structures and non-native toponyms are commonplace, and the classification's inherent focus on political and administrative entities rather than the natural environment serves to amplify this. The classification could also be contentious in its inclusion and exclusion of various states, including its treatment of entities without universal international recognition. It is therefore proposed that any process of digitizing the classification should also include the construction of a table of equivalence with modern ISO 3166 countries and subdivisions. The integration of this standardized international framework will mean that Parsons classes will be identifiable on the basis of modern toponyms and administrative structures without the need to re-shelfmark existing collections. This table of equivalence will also be relatively straightforward to update when changes are made to ISO 3166 in future, thereby working around the issue of the inevitably limited shelf life of a static classification.

Parsons uses a two-tier class structure, with the first and second-level identifiers separated by a colon (e.g. *E38 Mozambique, E38:15 Niassa*). However, these first and second level classes do not nest consistently, meaning that some classes of the same tier correspond to overlapping geographic areas (e.g. *C25:5 Central Italy, C25:21 Toscana*). The creation of the digital outputs outlined above requires the organization of all Parsons classes into a more consistent hierarchy, while preserving the two-tier Parsons class codes. This was achieved by disaggregating the original Parsons structure and allocating each class to a level in a new 17-level hierarchy, plus two for seas (see Table 1), to enable each new class to be recorded in a series of GIS layers, where any given location can simultaneously fall within the extents of multiple classes at different levels. As some previous schemes are still in use for period maps of some areas (e.g. Yugoslavia), these are also recorded in separate layers. Two such layers are required, as no more than two previous schemes are in use for any location. Within the GIS, attribute table fields record the start and end dates for the adoption and discontinuation of a particular scheme in a particular location, and which Parsons edition (i.e., 1946, 1978, or a later amendment) each class is derived from.

Work was then undertaken to produce vector polygons each containing a unique combination of currently and previously adopted Parsons classes

TABLE 1. Restructured list of Parsons classes, including 17 land classes and two for seas.

Entity	Parsons class format	Fields for current scheme	Fields for previous Scheme 1	Fields for previous Scheme 2		Example
Planet	Level 1	✓			*B1*	*Earth*
Hemisphere (N/S)	Level 1	✓			*B2*	*Northern Hemisphere*
Hemisphere (E/W)	Level 1	✓			*B5*	*Western Hemisphere*
Intercontinental 1	Level 1	✓			*B6*	*Eurasia*
Intercontinental 2	Level 1	✓			*B7*	*Europe and Africa*
Intercontinental 3	Level 1	✓			*B8*	*Asia and Africa*
Continent	Level 1	✓			*D1*	*Asia*
Continental compass	Level 2	✓			*E1:4*	*Eastern Africa*
Supra-national	Level 1	✓	✓	✓	*C33*	*Scandinavia*
Supra-national compass	Level 2	✓	✓	✓	*D3:8*	*Southeastern Arabian Peninsula*
Country	Level 1	✓	✓	✓	*L10*	*Madagascar*
Sub-national	Level 1/2	✓	✓	✓	*F3*	*Alaska*
Compass area – notional	Level 2	✓	✓	✓	*H11:1*	*Northern Suriname*
Compass area – graphic index	Level 2	✓	✓	✓	*D30:7*	*Southern Turkey*
Subdivision 1	Level 2	✓	✓	✓	*C25:26*	*Sicily*
Subdivision 2	Level 2	✓	✓	✓	*C17:133B*	*Westminster*
Towns	Level 2	✓	✓	✓	*E51:20*	*Mogadishu*
Seas	Level 1/2	✓			*F2:5*	*Great Lakes*
Subdivisions of seas	Level 2	✓			*M2:1*	*Baffin Bay*

at each level. This was achieved by editing a shapefile of ISO 3166 countries and first-level administrative subdivisions, while maintaining the ISO 3166 identifiers as attributes in order that these could be equated with the Parsons class combinations. This work was carried out in Parsons classification order, beginning with the 1946 manual and followed by the 1978 manual and any supplementary sheets or annotations. In most cases, the Parsons administrative divisions did not correspond with the ISO 3166 divisions, and polygons needed to be manually split on the basis of the historic boundaries.

Where Parsons classes are accompanied by a graphic index (mainly in the 1978 manual), these were used as the basis of the polygon splitting. In other cases, no graphic index is present but working copies of the manuals have been annotated with the shelfmarks of historic maps in the Bodleian's collection which display the relevant boundaries (e.g. Figure 5, where *E19 (105)* has been indicated as a suitable reference map). In such cases, these maps were retrieved, digitized, and georeferenced so that they could be used as the basis for the polygons for that area. Where no graphic index was present, and no separate map has been annotated in the manuals, further research was required to ascertain the boundaries of the administrative divisions listed in the manual. The result was a dataset containing approximately 10,000 polygons globally, each containing a unique subset of the ISO 3166 subdivisions and the 5,500 Parsons classes.

In order to be more easily useable as an internal cataloguing resource, the final polygons were used to create a web map application. A cataloguer can click on a zoomable world map, prompting the side panel to display all Parsons classes currently and previously adopted for that location, along with the current name of the subdivision. Alternatively, a toponym can be typed into a search box to bring up the results for that area. The boundaries of the currently adopted Parsons classes are also displayed on the web map, allowing it to be used in the same way as a traditional graphic index (Figures 6 and 7). Once a search has been made, the boundary of the combination of classes displayed in the side panel is displayed in orange on the map (Figures 8 and 9).

CONCLUSION

The role that a map classification system plays in a large map collection has undoubtedly changed significantly since the emergence of digital catalogue and library management systems. Whereas the Parsons classification was once vital for finding map collection items at the Bodleian Library, its role today is less visible but still important as the basis for ordering and storage, among other uses. It is hoped that digitally consolidating the classification and establishing its equivalence with a modern and

FIGURE 6. The Bodleian-Parsons web map application displays a global graphic index on launching (Image: Bodleian Libraries).

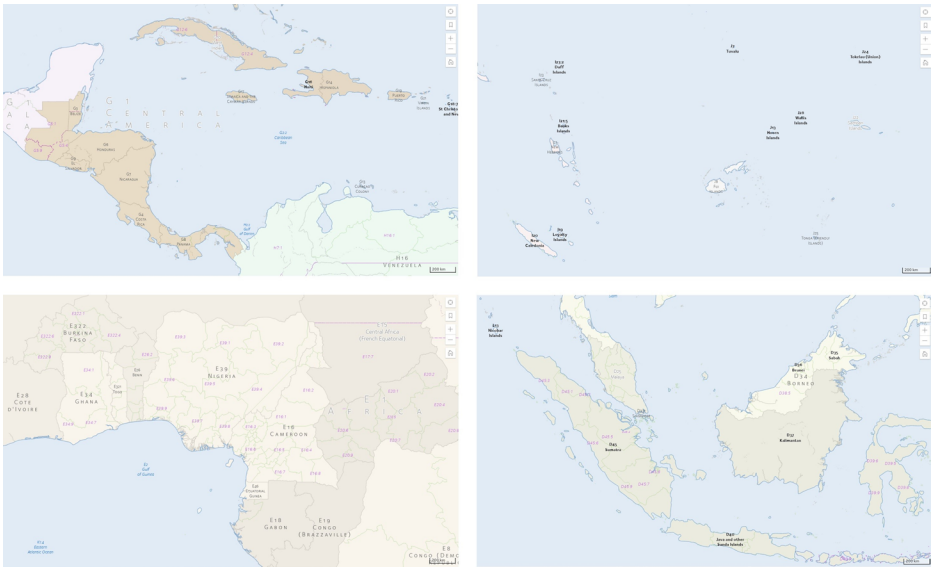


FIGURE 7. Medium scale graphic indexes displayed in the Bodleian-Parsons web map application, for Central America (top-left), the South Pacific (top-right), the Gulf of Guinea (bottom-left), and Northern Indonesia (bottom-right) (Images: Bodleian Libraries).

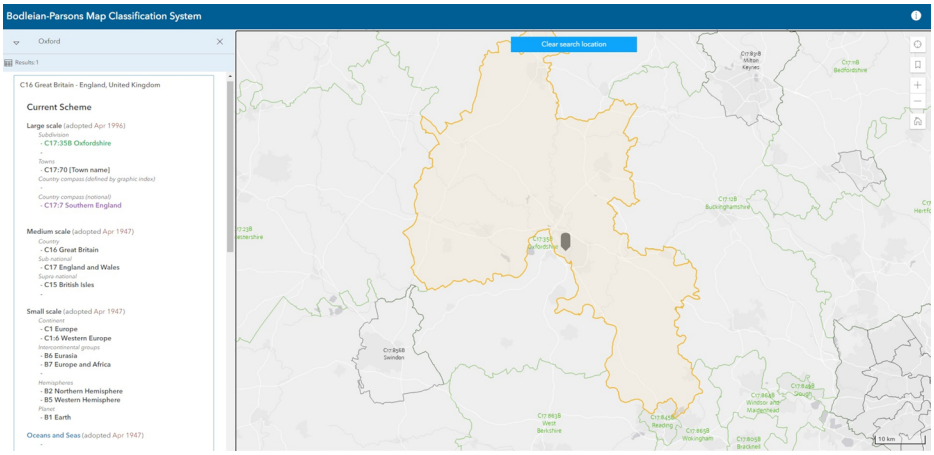


FIGURE 8. A search for 'Oxford, UK' on the Bodleian-Parsons web map application displays the possible Parsons classes for that location, dependent on the scale of the map, alongside the date of adoption (Image: Bodleian Libraries).

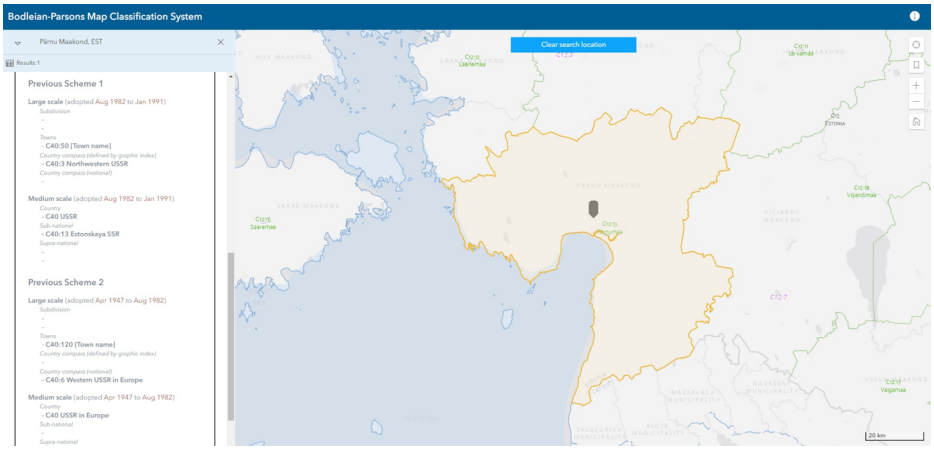


FIGURE 9. Scrolling down within the side panel reveals any previous schemes used for the selected location, in this example 'Pärnu, Estonia', alongside the relevant dates of adoption (Image: Bodleian Libraries).

standardized system of geographic divisions will enable it to be consistently usable by current and future map cataloguers, while avoiding the impractical solution of a full reclassification of the collection. In this way, dependence on undocumented practices should be reduced, and the classification digitally preserved for future custodians of the collection.

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ORCID

Martin Davis http://orcid.org/0000-0001-6621-8115

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