

45. The Coin Hoards of the Roman Republic [Online] Database

Reflections and Development after Nine Years

▼ **ABSTRACT** The *Coin Hoards of the Roman Republic* database started in 1989 as part of a Master's dissertation. It was expanded for my PhD, and then again for subsequent publications, especially my book in 2007. The database was a personal *research* database and hoards which fulfilled my research objectives were targeted at this stage. In 2009, I was approached by the late Rick Witschonke with a view to making the data available via the American Numismatic Society's website. I was initially reticent, as the data had not been collected with a view to being a *resource* database. This paper reviews how the original database came about, how the online database has been received, and outlines the development of the database since 2013. It concludes with some comments on how numismatic practice in relation to hoard publications could be improved.

▼ **KEYWORDS** Roman Republican coinage, coin hoards, database, CHRR, linked open data, online resource

Introduction

The *Coin Hoards of the Roman Republic* (henceforth CHRR) database has its origins in 1989 as part of my Master's degree (Lockyear 1989). At that stage, the database was created using the software package Ingres running on a network of Sun workstations and only contained the data from Table L in *Roman Republican Coinage* (Crawford 1974, henceforth RRC). The relational data structure was based on that published by Ryan (1988). For my PhD, the data was firstly ported to Ingres for PC, but this proved too slow on the available hardware and the data was subsequently ported to dBase III+ (Lockyear 1996, see especially chapter 5).

By the end of my PhD, the database included data for 617 hoards, which contained 71,363 coins (Figs 45.1–45.2).

A decade later I revisited my PhD and my database in order to rework it for publication (Lockyear 2007). The data was ported into an Access relational database and the suite of dBase programs replaced by SQL queries. In terms of new data, I deliberately targeted 'easy wins' inputting data from volumes such as that by Backendorf (1998). The total number of hoards was a modest increase to 643, but with many more having detailed data, totalling 91,965 coins. As soon as the manuscript was submitted, additional data was added, specifically for a case study on hoards from Italy and

Kris Lockyear Institute of Archaeology, University College London, United Kingdom; noviodunum@hotmail.com

Proceedings of the XVI International Numismatic Congress, 11–16.09.2022, Warsaw, Vol. II: Roman Numismatics. Vol. 2, Circulation, ed. by Jarosław Bodzek, Aleksander Bursche, and Anna Zapolska, WSA, 11 (Turnhout, 2025), pp. 451–458.
This is an open access chapter made available under a CC BY-NC 4.0 International Licence.

BREPOLS PUBLISHERS

DOI 10.1484/M.WSA-EB.5.145126

the Iberian Peninsula at the end of the second century BC (Lockyear 2018).

In 2009, I was contacted by the late Rick Witschonke with a view to creating an online version of the database. I was initially somewhat reticent because the database was a *personal research* database, not a *public resource* database (Lockyear 2016). As a personal research database, it contained the information I needed for my work. For most of the statistical analyses I set a minimum of thirty well-identified denarii, and very few early hoards were included due to the difficulties of differentiating between early anonymous denarius types from older publications. The database had a good coverage of Romanian material as this had formed a case-study in my PhD. My concern was that potential users of a *resource* database would be disappointed in the lack of information on these smaller or poorly recorded or early hoards. I was, however, persuaded to allow the American Numismatic Society to create an online version of the database, and Ethan Gruber and I collaborated in the creation of CHRROnline,¹ which was released in 2013 (Gruber and Lockyear 2015).

Reception

In general, the database appears to have been well received. CHRR usually gets about forty to fifty users per week. About 30 per cent of those users come from the UK or the US, followed by Italy, Spain, and Germany. Approximately 60 per cent come from web searches, but about a third are direct visits from people using the data.

A number of scholars have used the data either from the web, or from larger subsets supplied directly by me. Yarrow (2021), for example, mentions both the database and some of the analyses based upon the data. The ideal situation was collaborating with Lora Holland Goldthwaite (2021) on the publication of the Cetamura del Chianti hoard. Both Pierluigi Debenardi and Mark Passehl have collaborated with me using data from CHRR and helping to correct and update information in the current PC version.

The only criticisms I am aware of in print are one paper that spotted a typographic error in the memo field, and another which complained of a misspelt transliterated name. Both are trivial and it would have been more helpful to be informed of the errors rather than have to stumble across them in print! The main criticism is the lack of coverage of early and small hoards (e.g. Parisot-Sillon 2022, 420). This is being addressed in the new version.

¹ <<http://numismatics.org/chrr/>>.

Development

Since the database went online, the data in the PC version has been greatly enhanced in three main ways.

Firstly, many more hoards including smaller and/or poorly recorded examples have been added to the database. A number of corpora have been entered, or are in the process of being entered, in their entirety. For example, thanks to a small grant from Rick Witschonke, Murray Andrews was employed to create entries for all the hoards listed in RRCH (Crawford 1969). Other corpora include Backendorf (1998), Blázquez (1987–1988), Chaves Tristán (1996), Chițescu (1981), Manganaro (2012), Moisil and Depeyrot (2003), Nicolai (2005), and Paunov and Prokopov (2002). In addition, any hoards that have come to my attention in various literature searches (including consulting the various volumes of *Survey of Numismatic Research*) have been input. In some cases, new listings of hoards have been published and these have replaced the older listings. Additionally, corrections to the data were made when I became aware of them. As of 1 January 2023, some 1037 hoards have at least a basic entry. Of those, 637 have more detailed data. These 637 hoards contain information about 130,605 coins, of which 114,623 are Republican coins identified at least down to issue (Figs 45.1–45.2).

Secondly, a small number of additional fields have been added. As the date of the discovery of a find has often been used in the past to identify a hoard, a field has been created to include that information. Approximate location data has been entered using geonames.org including latitude and longitude. It should be emphasized that the coordinates are merely those of the place name, and though useful for producing maps at a regional scale, are not suitable for detailed landscape analysis.

Thirdly, the original notes field was intended as nothing more than a digital scrap of paper with comments input for my benefit. This has been edited to create a free-text field discussing a variety of problems including the circumstances of the find, associated artefacts, problems with the data and so on. Much of this data ought to be included in a formal structure, allowing for more consistent searches, and will be considered for future developments.

Data Quality

Just as no book or paper has been printed which does not contain at least one typographic error, no database is error free. There are, however, tools and procedures which can be adopted to help minimize the problems. Dealing with errors falls into two overlapping groups:

minimizing problems at the data entry stage and correcting pre-existing entries.

Minimizing errors at the data entry stage begins with the use of a well-designed database structure. For the personal version of the database, use of a good relational model which does not include repetitive data is essential. So, for example, the dates and denominations of a particular coinage issue are entered just once. Multiple catalogue references to that type (e.g. from RRC, Sydenham (1952), Grueber (1910)) link back to that type allowing conversion between them. For CHRROnline details of the coin types are provided by data underlying the *Coins of the Roman Republic Online* (CRRO) website.

To illustrate the process of detecting errors at the data entry stage, I will take one hoard as an example (I am not going to name it as it is not my intention to criticize colleagues). The text of the publication stated there were forty-eight denarii and three quinarii, with the data in a list by RRC type numbers. Having input the data to a temporary table, the first check is whether all the type numbers can be found in the type table, quickly done via a stored query. Often this is not the case, either due to a slip during data input, or a typographic error. The most common issue, however, is because of the manner in which uncertainty is handled in many publications. In this case, for example, coins of 463/1a or /1b are simply listed as 463/1. The database can handle this uncertainty via the use of an accuracy code, and these coins are listed on the website 'as issue 463/1a'. Having corrected these problems, the next step is to check the totals and the denominations. In the example here, the list erroneously contained an aureus: RRC 500/6. Checking the publication showed this should be a denarius with the same type, RRC 500/7. Lastly, the totals from the list resulted in the hoard containing forty-seven denarii and four quinarii, not the totals stated in the main text. Careful checking of the list and the photographs showed that there were indeed four quinarii and that the list was correct, but the main text was in error. Only at this stage are the data uploaded to the main tables. Notes of the problems and solutions adopted are made in the project logbooks.

Correction of older lists can be quite involved. The Someşul Cald hoard is a good example (see Lockyear 2022 for a more detailed explanation). It was originally input to the database in about 1992 from the list published by Chițescu (1981). Her very useful book has to be used with care, not least because the process of collating, translating and publishing a BAR report in the early 1980s created many opportunities for typographic errors. Some of those were picked-up in 1992, usually due to the Sydenham references being out of sequence. Thankfully, Chițescu included the Grueber references and the moneyers which enabled

these slips to be corrected. At the time, however, I knew that there were more problems, as the list of denarii was three coins short, but I did not have the resources to investigate further. Fast forward thirty years and I revisited this hoard. Now, I was able to download a scan of the original article (Kenner 1860), and a scan of the second edition of Riccio's *Le monete delle antiche famiglie* (1843). By carefully working through the list, I was able to determine that the total number of drachms listed by Winkler (1967, No. 144) and Thompson et al. (1973, No. 650) was incorrect (should be 318 not 345). I was also able to correct Chițescu's list and provide references for all 120 denarii. Most importantly, the closing date of the hoard was, as a result, pushed back to 70 BC from 56 BC, a date which agrees with that given by Crawford in RRCH (No. 321). The whole process took about two days.

One of the criticisms of the database has been weak coverage in certain periods or areas. As explained above, this was generally due to problems with the available data. For example, of the 164 hoards listed by Paunov and Prokopov (2002) from Bulgaria, only fifteen have detailed data. The Malak Cherdak (1992) hoard was listed as having 'over 600 coins'. A subsequent publication (Prokopov and Paunov 2012) corrects the name (Maluk Cherdak), the find date (1990) and the total number of coins ('some 530 coins'). I have had to be careful not to create double-entries in circumstances such as these.

There is much talk in the world of the digital humanities in general, and numismatics in particular, about 'smart capture', that is creating data sets from scanned documents or by web-scraping. Unfortunately, 'smart capture' requires extensive data checking and cleaning, not only of errors created during capture but also those inherent in the data sources. I have found that my more manual approach is, in the end, faster than more automated approaches which require extensive checking afterwards. For example, many of the errors in Chițescu's book are carried over into that published by Moisil and Depeyrot (2003) but converted to RRC references and sorted into RRC order. Without the addition of the original references or the moneyers, it is impossible to spot these problems directly, and hence my preference to input the lists from Chițescu's volume in the first instance. They do, however, provide a fuller bibliography for each hoard which has proved extremely helpful in updating CHRR.

Future

The immediate aim is to get the current version of CHRR online, hopefully during 2023.

One of the issues we have to resolve sooner rather than later is how to incorporate newly established

Roman Republican coin types into the database. For example, Pierluigi Debernardi has proposed a number of new varieties of early denarii. Adding a type would not be problematic, but how do we deal with older lists before the type was defined? Do we just live with the contradiction that some coins may, as a result, be misclassified? What happens if someone proposes a new type but it does not meet with universal acceptance? These are issues of policy rather than technology.

There are some more aspirational aims. Ideally, the data structure should be expanded to properly model the information which now resides in the unstructured notes field. This would require the personal version's relational data structure to be modelled and corrected, and then mapped into a linked open data format for the online version. For example, being able to search on types of vessels used as the storage containers, or on associated jewellery, would be a useful development.

At present, the database uses a series of general coin types to deal with non-Roman coins. Ideally, these general categories would be broken down into more specific types and then linked to other online sources. For example, the Iberian coins should link to the Moneda Iberica database (<<https://monedaiberica.org/v1/>>), and the Greek coins to the new type series which are being created (e.g. <<https://www.greekcoinage.org/>>).

The longer-term future of the database is also a matter for consideration. At the moment, the database is maintained and expanded by myself in the gaps between teaching, fieldwork, and other research. As well as the digital resource, there are a series of data entry logbooks, as well as annotated photocopies and publications. At some point, a home for these will need to be found, and hopefully a commitment to maintain and expand the digital resource.

By Way of a Conclusion

To conclude, I would like to make some pleas to numismatists dealing with the material from this period.

1. If you spot an error, please let me know. It is very unhelpful to publish errors in articles which I may or may not come across, especially as these can be corrected easily and thus eliminated from the online version.
2. If you have published a hoard which is not in the database, or know of a published hoard which has been omitted, please let me know and, if possible, send me a PDF.
3. If you are working on a hoard, please let me know so I can assign it a unique three-letter code which will become part of the URI, details of which you

can include in your publication. I am also happy to provide information about other hoards to inform your discussion, as I did for the Cetamura del Chianti hoard.

4. Please be explicit about your uncertainties, for example, listing a coin as 463/1a-b not just 463/1. Indicating uncertainty by just a question mark is unhelpful. What, exactly, are you uncertain about?
5. Please use the tools available to minimize errors in your data. For example, even a simple Excel spreadsheet should help you be consistent as regards the total number of coins.

Many of these comments are valid for all periods of coinage. In general, I am always happy to collaborate with scholars working on hoards. Just inputting the information to the database can throw-up simple errors, such as using the type for an aureus rather than a denarius.

My hope is that the updated and expanded database will form a useful resource for scholars in the field. The availability of plentiful data should encourage people to be more adventurous in their analyses, moving beyond a plain list and maybe a bar chart or two.

Acknowledgements

Although the majority of the work on the personal version of the database has been undertaken by myself, this has relied on the help and cooperation of a large number of people. My thanks go to Michael Crawford for allowing me to use his archive and to the staff of the Department of Coins and Medals past and present for their help in accessing it, and in many other ways. Several authors have kindly responded to my emails regarding problems with coin lists which has often necessitated digging into their own archives. Murray Andrews input the data from RRCH. The late Rick Witschonke both persuaded me to allow the creation of the online resource, but also funded some of the subsequent expansion of the database. Ethan Gruber expertly turned my relational database into the online version and provided the usage figures cited here. Many scholars too numerous to name have kindly provided scans, photocopies, advice and information for which I am truly grateful. In particular, Vincent Drost provided me with an Excel spreadsheet of the French material and Mark Paschall shared a spreadsheet correcting some of the data, to both of whom I am very grateful. I hope the online resource, especially once the second version goes online, justifies all the help I have received.

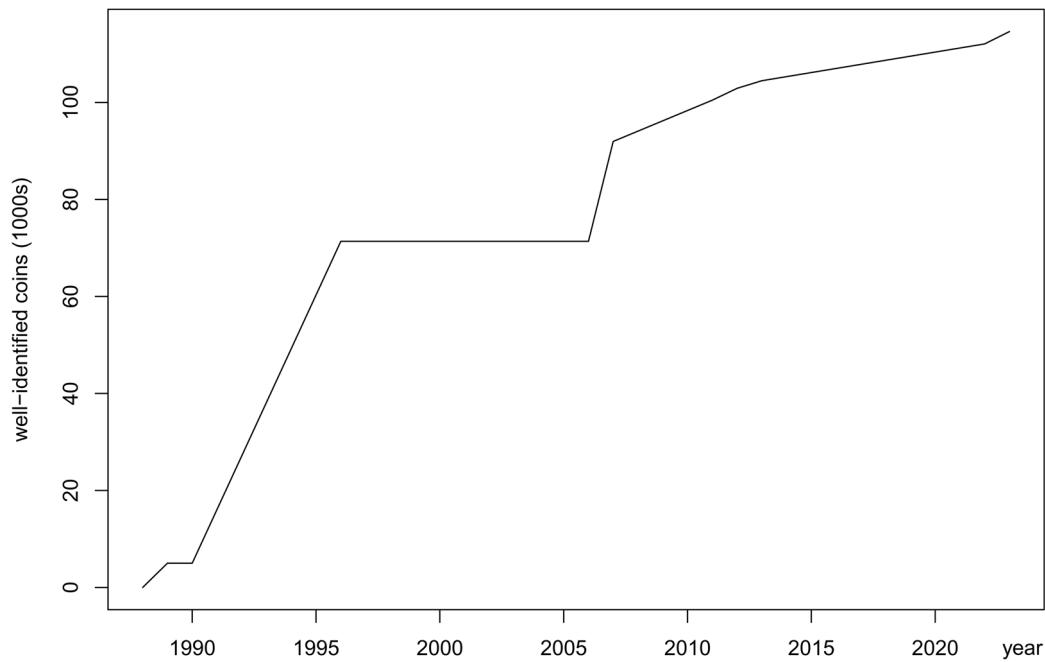


Figure 45.1. Number of well-identified coins (1000s). Figure by the author.

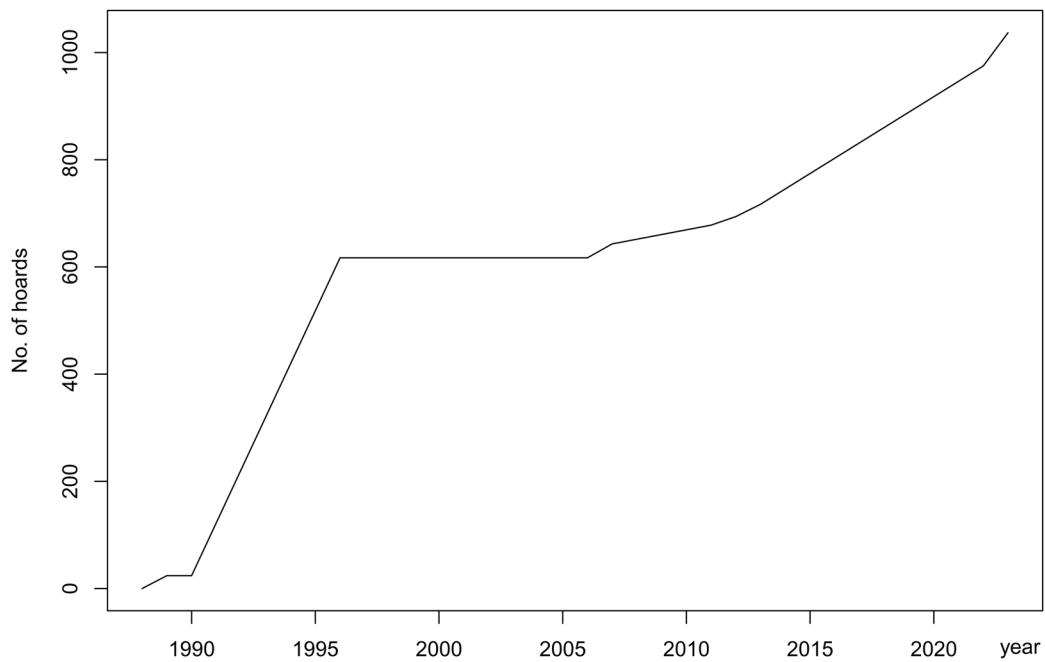


Figure 45.2. Number of hoards. Figure by the author.

Works Cited

Backendorf, Dirk. 1998. *Römische Münzschatze des zweiten und ersten Jahrhunderts v. Chr. vom italienischen Festland*, Studien zu Fundmünzen der Antike, 13 (Berlin: Gebr. Mann)

Blázquez, Cruces. 1987–1988. ‘Tesorillos de moneda republicana en la península Ibérica. Addenda a Roman Republican Coin Hoards’, *Acta numismática*, 17–18: 105–42

Chaves Tristán, Francisca. 1996. *Los Tesoros en el Sur de Hispania. Conjuntos de denarios y objetos de plata durante los siglos II y I a.C.* (Seville: Fundación el Monte)

Chițescu, Maria. 1981. *Numismatic Aspects of the Dacian State. The Roman Republican Coinage in Dacia and Geto-Dacian Coins of Roman Type*, British Archaeological Reports International Series, 112 (Oxford: British Archaeological Reports)

Crawford, Michael H. 1969. *Roman Republican Coin Hoards*, Royal Numismatic Society Special Publication, 4 (London: Royal Numismatic Society)

———. 1974. *Roman Republican Coinage* (Cambridge: Cambridge University Press)

Gruber, Ethan, and Kris Lockyear. 2015. ‘From dBase III+ to the Semantic Web: Twenty-Five Years of the Coin Hoards of the Roman Republic Database’, in *Across Space and Time. Papers from the 41st Conference on Computer Applications and Quantitative Methods in Archaeology*, Perth, 25–28 March 2013, ed. by Anna Traviglia (Amsterdam: Amsterdam University Press), pp. 336–46 <<https://doi.org/10.5281/zenodo.1035892>>

Grueber, Herbert A. 1910. *Coins of the Roman Republic in the British Museum* (London: British Museum)

Holland Goldthwaite, Lora L. 2021. *Treasure of Chianti: Silver Coinage of the Roman Republic from Cetamura del Chianti* (Livorno: Sillabe)

Kenner, Friedrich. 1860. ‘Beiträge zu einer Chronik der archäologischen Funde in der österreichischen Monarchie (1856–1858)’, *Archiv für Kunde österreichischer Geschichts-Quellen*, 24.2: 225–423

Lockyear, Kris 1989. ‘A Statistical Investigation of Roman Republican Coin Hoards’ (unpublished master’s dissertation, University of Southampton)

———. 1996. ‘Multivariate Money. A Statistical Analysis of Roman Republican Coin Hoards with Special Reference to Material from Romania’ (unpublished doctoral thesis, Institute of Archaeology, University College London)

———. 2007. *Patterns and Process in Late Roman Republican Coin Hoards 157–2 BC*, British Archaeological Reports International Series, 1733 (Oxford: British Archaeological Reports)

———. 2016. ‘The Coin Hoards of the Roman Republic Database: The History, the Data, and the Potential’, *American Journal of Numismatics*, 28: 159–84

———. 2018. ‘Mind the Gap! Roman Republican Coin Hoards from Italy and Iberia at the End of the Second Century BC’, *The Numismatic Chronicle*, 178: 123–64

———. 2022. *The Coin Hoards of the Roman Republic Database and the Someșul Cald Hoard (CHRR SMC, RRCH 321, IGCH 650)*, Romania, unpublished note available at <https://www.academia.edu/91273016/The_Coin_Hoards_of_the_Roman_Republic_database_and_the_Some%C5%9Ful_Cald_hoard_CHRR_SMC_RRCH_321_IGCH_650_Romania> [last accessed 1/2/2023]

Manganaro, Giacomo. 2012. *Pace e guerra nella Sicilia tardo-ellenistica e romana (215 a.C.–14 d.C.): Ricerche storiche e numismatiche*, Nomismata, 7 (Bonn: Habelt)

Moisil, Delia, and Georges Depyrot. 2003. *Les trésors de deniers antérieurs à Trajan en Roumanie*, Moneta, 33 (Wetteren: Moneta)

Nicolai, Rosa M. 2005. *La Circolazione del Denario Repubblicano nella Penisola Italica fino alla Metà del II secolo A.C.*, web resource available at: <https://www.monetaecivilta.it/denario_repubblicano/> [last accessed 28/01/2023]

Parisot-Sillon, Charles. 2022. ‘The Roman Republic’, in *Survey of Numismatic Research 2014–2020*, ed. by Michael Alram, Jarosław Bodzek, and Aleksander Bursche (Warsaw: International Numismatic Council), pp. 419–41

Paunov, Eugen I., and Ilya S. Prokopov. 2002. *An Inventory of Roman Republican Hoards and Coins from Bulgaria (IRRCHBulg)*, Glaux, 15 (Milan: Ennerre)

Prokopov, Ilya S., and Eugen Paunov. 2012. ‘Maluk Chardak 1990 Near Plovdiv: An Unpublished Late Roman Republican Hoard from Thrace’, in *Bacilka Герасимова-Томова In Memoriam*, ed. by Metodi Manov (Sofia: National Institute of Archaeology with Museum), pp. 147–63

Riccio, Gennaro G. 1843. *Le monete delle antice famiglie di Roma fino allo Imperadore Augusto, inclusivamente co' suoi zecchieri, dette comumente consolari. Disposte per ordine alfabetico, raccolte per collezione, ed interpretate, colle rispettive figure accuratamente eseguite, e colla esposizione in ultimo delle incerte, ed un saggio degli assi gravi, e sue parti, e per tutte il grado di rarità, e prezzo rispettivo*, Second Edition (Napoli: Fibreno)

Ryan, Nicholas S. 1988. *Fourth Century Coin Finds from Roman Britain: A Computer Analysis*, British Archaeological Reports British Series, 183 (Oxford: British Archaeological Reports)

Sydenham, Edward A. 1952. *The Coinage of the Roman Republic*, 1–11 (London: Spink & Son)

Thompson, Margaret, Otto Mørkholm, and Colin M. Kraay. 1973. *An Inventory of Greek Coin Hoards* (New York: American Numismatic Society)

Winkler, Judita. 1967. 'Schatzfunde römischer Silbermünzen in Dakien bis zum Beginn der Dakerkriege', *Jahrbuch für Numismatik und Geldgeschichte*, 17: 123–56

Yarrow, Liv M. 2021. *The Roman Republic to 49 BCE. Using Coins as Sources* (Cambridge: Cambridge University Press)
<<https://doi.org/10.1017/9781139005173>>