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TIL DEATH US DO PART? A BIOGRAPHICAL APPROACH TO THE STUDY OF COIN HOARDS

Abstract – The study of hoards is one of the mainstays of numismatics. Hoards allow us to examine patterns of production, supply and circulation. They have, however, largely been studied as static entities with attempts to categorise them in a simple way, e.g., emergency, savings and purse hoards. This paper describes how we might use the metaphor of 'life' to move away from studying hoards as static entities and proposes a vocabulary to facilitate that approach. It argues that by thinking of the processes that lie behind our hoards in this systematic way, we might develop more nuanced interpretations of our data.

Introduction

The study of coin hoards has been the mainstay of numismatic research, both applied and 'pure', for centuries. The presence and absence of individual issues within hoards enabled early scholars to propose dating schemes for otherwise undated issues (Crawford 1990). Speculation as to the reasons for hoarding fill both popular and academic accounts of hoards. Recent years have seen a flurry of research projects and publications on hoards and hoarding in Britain (some examples include Andrews 2019; Bland *et al.* 2020; de Jersey 2014; Mairat *et al.* 2022; Naylor & Bland 2015), perhaps in part because of the use of metal detectors and the means to report finds which has led to a dramatic increase in the numbers of hoards recorded. The aim of this paper is to provide a terminological framework which would allow for a more nuanced interpretation of coin hoards. The examples used here are largely Roman and/or British which reflect the material with which I am most familiar. The framework, however, is applicable to coin hoards from all periods and places.

A recurrent problem with the study of hoards, however, is one of terminology.[1] The word 'hoard' has overtones of hidden treasure (Casey 1986, p. 51), especially so in Romance language speaking countries where the term *trésor*, *tezaur*, *tesouro* etc. is often used (see Geneviève & Cardon 2020, for the French case). In the age of the coronavirus the term 'hoards' also conjures images of cupboards full of toilet rolls (David *et al.* 2021)! Crawford (1969, p. 7), in his corpus of Roman Republican coin hoards, included 'All groups of two or more coins which seem to have been consigned to the ground as *groups*…' (emphasis Crawford's), with some exceptions such as the large *aes signatum* bronze

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[1] Definitions of hoard vary greatly in a legal context as well, see the papers listed at https://inc-cin.org/home/publications/compte-rendu/cr-laws/.

bars weighing about five Roman pounds which he considers 'too large to have been lost by accident.' The late Sara Champion (*pers. comm.*) made a similar point about individual gold coins as being too valuable to be accidental losses and the *Coins Hoards of the Roman Empire* database includes single gold finds. Andrews (2017) shows, however, that gold coins in some periods and places were not so rare or valuable that 'ordinary' people didn't have access to them. Casey (1986, p. 51) also uses two coins as a minimum size but without the stricture that they be consigned to the ground. He went on to describe hoards as 'temporary immobilisations of coin' (Casey 1986, p. 53). For the purposes of this paper, I will use Casey's description as a working definition of a coin hoard. This means that the loose change in my pocket constitutes a coin hoard.

An excellent example of terminological confusion is the idea that hoards can be divided into 'emergency' and 'savings' hoards (*e.g.*, Casey 1986, p. 55-56).[2] These terms, unfortunately, conflate the reasons for the deposition of the hoard with the manner in which they were collected. This confusion results, in part, from regarding coin hoards as static entities. I would argue, however, that hoards are dynamic, passing through a series of life stages. Biographical approaches to objects have a long history (Burström 2014, p. 67) although the popularity of the approach grew markedly after the publication of the paper by Kopytoff (1986). For coinage, Myrberg (2009) proposed three stages in the life of a coin: the primary, secondary and tertiary contexts with the last being deposition. Andrews (2019) also proposed using a life-history approach in the study of medieval hoards. I have not adopted these approaches in detail here but have used the metaphor of 'life' as a way to think about hoards. The two aims are (a) to emphasize that hoards should be studied as dynamic entities and (b) to develop a language to describe the different facets of coin hoards. In the following I suggest some terminology and definitions, and those terms are given in *italics* when they first occur.

The life of coin hoards

DNA

The coins in a hoard are selections from the *coinage pool*. This consists of all the coins that are available for selection and can be divided into *currency*, those coins generally accepted for day-to-day transactions, and *curated* coins, which are coins either from earlier periods and are no longer generally accepted or from outside the currency system at the time. So, for example, the hoard from Avetrana in Italy contained 1,671 Roman Republican *denarii*, one halved *denarius*, 243 *quinarii* and four *denarii* of Juba I (CHRR[3] AVE). The Roman Republican coins would be currency, whereas the four coins of Juba I are curated coins, originally from Numidia.

[2] Aubin (2007) provides an extended discussion of different types of monetary deposits.

[3] The *Coin Hoards of the Roman Republic* database, online version available at numismatics.org/chrr

The coinage pool can be divided into the *global coinage pool* consisting of a series of *local coinage pools*. The global coinage pool is the region in which all the coins struck at the mint or mints of interest are circulating. These regions could be very large, *e.g.*, the Roman Empire, or quite small *e.g.*, the area where coins attributed to the Dobunni circulated. In part, the size of the global coinage pool for any particular study will depend on the aims of that study. For example, in late Anglo-Saxon England where many mints were operating (Naismith 2019), one could define the global pool as where coins of the mint of York were circulating, or where English coins from all mints were circulating. The global circulation pool may not be limited to the political boundaries of the issuing authority as in the case of the coins from the mint at York which are found in great numbers in Scandinavia.

The composition of the global coinage pool will depend upon the pattern of production of coinage, and the *decay rate* (also known as the loss rate or the wastage rate). Mint records, such as those published for the Swedish mint in the 17th and 18th centuries (Wallroth 1918), provide the pattern of production. For the ancient and medieval worlds this pattern has to be derived from the coins themselves, and usually from hoard evidence and die studies (*e.g.*, Crawford 1974). Estimating the numbers of coins struck per year is a controversial subject (Lockyear 1999) but not one that need detain us here. The decay rate is a simple compound depreciation caused by the loss or export of coins from the coinage pool. Although a single figure will not be true for all types of coins of all periods, a number of studies have shown that a decay rate in the region of 2-3% is common for silver coinage (Allen & Oddie 2015; Iossif 2015; Lockyear 1999; Lockyear *et al.* 2022; Patterson 1972). The global coinage pool is, therefore, constantly changing as new coins are added to it, and a proportion of them are lost every year. More rapid changes to the pool can be the result of monetary policy, such as the removal of pre-Neronian *denarii* under Trajan and Hadrian (Reece 1988[2]), or the removal of some denominations of pre-decimal coins from the British coinage pool in 1971. The absolute size of the coinage pool is dependent on the balance between input and output.

Local coinage pools are subdivisions of the global pool and are defined by the scale of our study. So, the province of Britannia forms one local coinage pool within the Roman Empire, individual towns within Britannia form a series of local coinage pools within the province, sites within a town form local pools within the settlement and so on. Local coinage pools will reflect the global coinage pool modified by patterns of supply and circulation. New coins from the mint cannot be released into the global coinage pool evenly, especially in the ancient and medieval worlds. They will, therefore, be released at the point the issuing authority uses the coins, usually for payment. Those coins will then circulate and over time their distribution will even out. It is unlikely, on a large scale, that the distribution will ever be entirely even and traces of the original pattern of supply may remain (*e.g.*, Britannia asses, see Clay 1989).

How quickly the distribution evens out will depend on the speed of circulation of coinage. Unfortunately, as far as I am aware, it has not proved possible, so far, to develop a method of detecting broad-scale changes in the speed of circulation (Lockyear 1993). The principal reason for this is that the pattern of production has a profound influence on the scale of inter-hoard variation (Lockyear *et al.* 2022). In periods of low coin production or supply, local coinage pools are very similar initially, and will become increasingly so over time. As a result, hoards exhibit little inter-hoard variation. Conversely, in periods where coin production or supply is high, hoards will exhibit a high degree of inter-hoard variability. Thus, if one is interested in examining the pattern of production or supply, hoards from a period where few new coins are entering the coinage pool are ideal (*e.g.*, Lockyear 1999). If, however, one is interested in studying where new coinage is released into the coinage pool and patterns of circulation thereafter, hoards from a periods with high coinage production will be more informative (Lockyear 2007, chapter 7).

Deliberate removal of coinage will impact this pattern. Reece (1988) showed how the pre-Neronian debasement coinages were removed from circulation under Trajan/Hadrian as can be seen clearly in the hoard evidence. The medieval system of *renovatio monetae* where existing coins were reminted at regular intervals lead to the situation where coinage pools remain very localised. This can be seen in late Anglo-Saxon and Anglo-Norman hoards from England and Wales until the abandonment of the system in the 12th century at which point coins circulated for longer and the local pools evened out more (Andrews 2019, p. 143-164).

Birth

Coin hoards are 'born' at one moment in time. The reasons for their creation can be *incidental* or *deliberate*. Incidental hoards are created when the hoard is the result of an event, often a transaction. So, if someone goes to market with half a dozen chickens to sell, and returns with a purse containing coins, that hoard is an incidental byproduct of the transaction.

A deliberate hoard is where someone has decided to create a collection of coins. This might be as savings, or to facilitate a payment, or as part of a curated collection. My mother used to collect 20p pieces in a jam jar to pay the phone bill, my brother collects all coins less than 50p in a giant-sized whisky bottle to help pay for holidays. I, on the other hand, have a curated collection of US state quarters in a display folder, a collection of UK decimal halfpennies (introduced in 1971 and demonetised in 1984) and a mixture of Euros, Romanian lei and US currency in a plastic box ready for my next trips to those countries. Plautus' comedies *Aulularia* and *Trinummus* centre on coin hoards. In the former, a hoard of gold coins was hidden by the grandfather of one of the main characters, Euclio, under the hearth of the main hall. In the latter Callicles buys his friend's house from the spendthrift son, Lesbonicus, in order to protect his friend's hoard which is buried in the house (see de Callataÿ's

2015 discussion of coin use in these plays, and especially Table 3 for hoards). Andrews (2020a, p. 315) relates the story of James Huddelson who hid a hoard of gold angels in a post in his barn with the intention of spending it on lands and tenements but died before he had the chance.

Virtually all coin hoards are created by selection from existing hoards. That selection process may be entirely economic, *e.g.*, paying for the chickens mentioned above, or maybe deliberate selections depending on the purpose of the new hoard. So, my collection of state quarters was created by carefully sorting through my loose change to find those types missing from my collection. Similarly, the coins in the Sutton Hoo burial are examples from across Europe (Grierson 1970). Many hoards may be partially random selections. My mother's hoard of 20p pieces was not a random selection of coins in circulation but was a random selection of the 20p pieces in the coinage pool. I have argued that the *denarii* in most Roman Republican coin hoards are a random selection of the circulating *denarii*, even if those hoards are not a random selection of currency. In the Bjæverskov hoard older coins which should have been recycled were kept separate from the newer current coins (Moesgaard 2020). This aspect of coin hoards can be seen at other times and places (*e.g.*, Reece 1981) and is one cornerstone of applied numismatics.

Life

Once created, coin hoards can be divided into *dynamic, static, accretional* and *depletion* hoards. A dynamic hoard is one which is continually subject to depletion and accretion. A pot at a bar in Pompeii into which coins are added and withdrawn during the day as part of transactions would be a dynamic hoard. Conversely, a static hoard is one which is not subject to such processes. For example, the coins hidden inside a cow bone at Sedgeford was likely to be static (Dennis *et al.* 2004). My collection of decimal halfpennies is similarly static: no coins are being added or withdrawn. An accretional hoard is one to which coins are being added, either regularly or occasionally, but from which coins are not being regularly withdrawn. My mother's jar of 20p pieces would be an accretional hoard. The stratification within the Frome hoard could suggest that was accretional (Moorhead *et al.* 2010). A depletion hoard is one where large coin is added occasionally, but then spent bit-by-bit over time. A parish chest would be a good example. The churchwarden's accounts for Berkhamsted St Peter dated 7th January 1598 [f25v, 1598/99] show that £16, 13*s*, 3*d* was received in rent and was then paid out in a series of small sums: *e.g.*, 1*d* for a cord for the market bell or £1 to Edwarde Scott for 'kepinge of the clocke & for toilinge the schollars bell for this yere' (Brown 2023-2024, p. 54-56).

It is important to realise, however, that hoards may move through different life stages characterised by these states. My mother's jam jar hoard was created by multiple selection events from a dynamic hoard (her purse) and the addition of those selections to the jar. At regular intervals, the accretional jam jar hoard was returned to being a dynamic hoard as she paid the phone bill. My

collection of halfpennies was an accretional hoard created from selections from a dynamic hoard until the demonetization of the halfpenny at which point it became a static hoard.

These categories are not hard-and-fast types but form a conceptual frame work for thinking about the process of hoarding. Reece considers assigning hoards to types as 'absolutely pointless', at least in part because no method has been devised to the surviving material into these types (Reece 2002, p. 72), as I demonstrated with Roman Republican hoards (Lockyear 1991). If, however, we are to move towards considering hoards as dynamic entities I would argue that it is worth considering these issues.

During its life, a hoard will be subject to a wide variety of possible events: dispersal, loss, recovery, concealment and deposition being just some possibilities. Of these, *deposition* is worth exploring in a little more detail. Deposition can be of two forms: with intent to recover and without intent to recover. The Lohe hoard hidden under the floorboards of the house is an example of a hoard that was deposited with intent to recover (Hedström 1937). The coins deposited in the *temenos* of the Roman temple at Harlow were likely to be depositions without intent to recover (France & Gobel 1985). Casey (1986, p. 53) argues that most hoards we have for study are 'failures' as they have *not* been recovered. I would argue that the 'failure' of a hoard depends on the intent with which it was deposited. Hoards deposited without the intent to recover, for example gifts to gods at a temple, may well be 'recovered' illicitly, and also represent a failure.

Two pairs of dates can be associated with the life of a coin hoard: the first pair are *closing date* and the *final collection date*, and the second pair are the deposition date and its *terminus post* (or *ante*) *quem*. The closing date of a hoard is the date of the newest coin in that hoard. The final collection date is the date at which the last accretion event took place. Depending on how common recent issues in circulation are, and how large the hoard is, there may be a time gap between these two dates. If we have some information about the pattern of production, this can be modelled (*e.g.*, Lockyear 2012, p. 203-207), but in general the gap between these two is unknown. The deposition date is that at which the hoard was placed in its final resting place. This date is usually unknowable. A hoard's *terminus post quem* (*tpq*) is the date after which the hoard was placed in its final resting place. The *tpq* may be provided by the coins themselves in which case the closing date and the *tpq* may be identical but may be provided by other archaeological information such as the date of the container, or the date of the layers with which the hoard is associated. The size of the gap between deposition and *tpq* is usually knowable. For example, the Poşot Forest hoard has a numismatic closing date of AD 188-189 but the *tpq* is provided by an associated axe which dates to the fourth century AD (Găzdac & Zăgreanu 2023).

Thus, each pair of dates consists of a usually unknowable date related to a event, and a numismatically or archaeologically derived date after which the event occurred.

A good, if unusual, example is provided by the Hackney (1940) hoards discussed by Richardson (2013). These two hoards were recovered in 1952 and 2007. The first consisted of 82 gold US double eagles, and the second of a further 80 coins. The coins in the 1952 hoard dated to 'around' 1890 (article from the *Daily Mail* 1952; Bland 2018, p. 23) and those in the second hoard to 1854-1913. Taking the better-known second hoard as an example, its closing date is 1913, but its final collection date is *c.*1938. Due to the historical record we know that the date of deposition was 1940, some 27 years after the closing date. The Kilner company went bankrupt in 1937 and so the jars in which the coins were found were earlier than the deposition of the coins but they would have still been available in 1940. A *terminus ante quem*, however, might have been provided by a layer of bomb debris from when the house was destroyed.

Death

The *death* of a hoard is not at the moment of its concealment or deposition, but at the moment that the existence of that hoard is no longer known. At that moment, the hoard passes from a systemic context to an archaeological context (Schiffer 1972). Although some scholars have argued that human beings retain ongoing relationships with material culture from the past, and artefacts do not therefore 'die' passing from a systemic context to an archaeological context, I find it hard to see how one can maintain an ongoing relationship with something no-one knows exists.

Coin hoards may, however, be subject to post-depositional processes at this stage. Bioturbation by roots or animals, geological events such as erosion, and incidental human impacts such as ploughing can all contribute to *disturbing* a hoard. Corrosion may impact the coin, and decay will impact some forms of container, such as the bags in which the Beau Street hoard were deposited (Ghey 2014).

Resurrection and afterlife

The hoard is resurrected when it is discovered, either by deliberate means such as archaeological excavation or metal detecting, or by accidental means such as agricultural work or building renovations. The key here is whether the hoard has been recovered in a *controlled* fashion or an *uncontrolled* one. Hoards recovered in a controlled manner will provide higher quality data, *e.g.*, the Frome hoard (Moorhead *et al.* 2010) than those recovered in an uncontrolled one, *e.g.*, the Tingrith hoard (Deacon & Lockyear 1991). Even highly disturbed hoards initially found using a metal detector can be, at least in part, recovered in a controlled fashion, *e.g.*, the Sandridge hoard (Thorold 2014). In exceptional circumstances the hoard may be block-lifted and excavated in a conservation laboratory (Mahrer *et al.* 2019).

Recovered hoards may be divided into *parcels*. *Post-depositional parcels* can occur when a hoard is discovered in a series of discrete recovery events (*e.g.*, the Adrano hoard, CHRR AD1-AD4). The uncertainty which usually surrounds such a recovery necessitates maintaining the divisions in the record. Alternatively, 'a' hoard may be divided into *pre-depositional parcels*, for example divided into a series of vessels (*e.g.*, the Chalfont St Peter hoard; Bland 1992) or bags (*e.g.*, the Beau Street hoard; Ghey 2014, or the Bjæverskov hoard; Moesgaard 2020).

Due to the uncontrolled nature of the majority of recovery events, there are often uncertainties. For example, the Terranova de Sicilia and Manfria hoards are argued by Crawford to be two parcels of a single hoard (Crawford 1974, note to table XI, p. 67), whereas the La Oliva hoard (CHRR 197) is thought to be two hoards by Chaves Tristán (1996). For many hoards the coin list will be *incomplete*. The La Oliva hoard, for example, has only 45 coins recorded from an estimated 600-700. An excellent discussion of the problems that can be inherent in the identification of 'a' hoard is provided by Horsnæs (2000-2002).

Hoards do not gain a name until after their resurrection. The names are often a reflection of their findspot and date of discovery, *e.g.*, the Oleggio 1958 hoard (La Redazione 1958-1959, p. 250-251). Occasionally other factors may be taken into consideration such as the presumed original depositor of the hoard (*e.g.*, the Lohe hoard, Thordeman 1948) or, in the case of poorly provenanced hoards the numismatist who published them (*e.g.*, the 'Bahrfeldt' hoard, CHRR BHR, Lockyear 2007, p. 270) or their dominant contents (*e.g.*, the 'Cnut' hoard, Eaglen 1999, p. 63-65).

After a hoard has been found, the coins may be *dispersed*, either in their entirety or in part. This may take place prior to any further study, usually by the finders, or may take place after study if the legal owners do not wish to retain it. The hoard may, however, become once again a curated static hoard in a museum or other coin collection.

The concept of extraneous coins is surprisingly complex, and one which has seen little explicit discussion, as far as I am aware, despite the term being regularly used (*e.g.*, Crawford 1969). It is worth thinking about what ways are coins thought to be extraneous, and the reasons for their inclusion, or exclusion, from a hoard. A coin may be thought to be extraneous to a hoard for two reasons. Firstly, the type or date of the coin does not 'fit' with the rest of the hoard. For example, the coin may be considerably later than the rest of the hoard or come from an area not normally represented in other finds. Secondly, the coin may exhibit physical characteristics which differ from the rest of the hoard, *i.e.*, it may have a different patina or exhibit a different level and/or type of corrosion.

How might these coins have become associated with the hoard?

1. A coin may be added to a static hoard somewhat later than the bulk of the hoard was assembled.

2. The local coinage pool may exhibit an irregular supply of coinage. Hoards withdrawn from those pools may look like hoards of an earlier date from the source region in term of their overall profile but have a much later closing date. This is common in Republican hoards from Romania where many look like Italian hoards of the 70s BC but actually close in the 40s or 30s BC (Lockyear 2008).
3. A hoard recovered in an uncontrolled manner may include coins which were present nearby but not actually part of the hoard. For example, the Tingrith hoard includes a *Fel Temp Reparatio* coin which, despite being the newest coin in the hoard, is by far the most worn and corroded (Deacon & Lockyear 1991). It also does not 'fit', in terms of date, with the rest of the hoard.
4. After recovery, additional coins have become erroneously attributed to the hoard.

As the reasons for which a coin is described as 'extraneous' are decided by the person studying the hoard, these are known and should be made explicit. The manner in which a specific coin became associated with the bulk of the hoard may be unknowable.

Commemoration and fictionalisation

Hoards can be commemorated by publication of which there is a surprisingly wide variety. Individual hoards may be published in a dedicated article (*e.g.*, Poenaru Bordea & Ştirbu 1971) or book (*e.g.*, Holland Goldthwaite 2021); lists of hoards are published in *corpora* which may just provide summary details (*e.g.*, Crawford 1969; Thompson *et al.* 1973) or may provide details of the contents of hoards where known (*e.g.*, Backendorf 1998; Chițescu 1981); books dedicated to discussing and interpreting large assemblages of coin hoards (*e.g.*, Lockyear 2007) may also incorporate some form of summary listing. One of the problems with traditional printed *corpora* is that new finds are always being made, and old finds are being rediscovered or reappraised (*e.g.*, the Madeley Court 1899 hoard; Andrews 2020b). As a result, there are an increasing number of databases in use, such as my *Coin Hoards of the Roman Republic* database which exist in two forms: my personal version and a publicly available online version.[4]

The other form of commemoration are displays of hoards, usually in Museums. The Sandridge hoard is on display at Verulamium Museum, and the Beau Street hoard is in Bath. Hoards are, however, difficult to display effectively. The tableau showing the coins in a cascade, such as the photograph on the front cover of *Coin Hoards and Hoarding in the Roman World* (Mairat *et al.* 2022) looks great photographically but creates problems for cataloguing as coins in a heap will be hard to reconcile with detailed records. Coins displayed individually are, however, hard to see in a museum cabinet and may be displayed along with large-scale photographs or some way of magnifying the coin.

[4] numismatics.org/chrr

John Casey's chapter on coin hoards opens with a sketch of the popular idea of hoards:

> "Coin hoards are inextricably mixed up with the idea of buried treasure… there are those films in which the hero fights his way through horrific hazards to find the loot… [he] trickles the shiny stuff through his fingers: lahks of rupees, myriad moidores, écus, pieces of eight…" (Casey 1986, p. 51).

Unfortunately, the most common questions asked of hoards by the public are generally unanswerable. Why was a specific hoard deposited? Who deposited it? Was there significance in the place of deposition? Why was it not recovered? There are studies of *corpora* of hoards that look for patterns in the data such as those by Andrews (2019) and Bland *et al.* (2020). Even when patterns have been identified, however, the meaning of them will always be a matter of interpretation strongly influenced by the analyst and the current academic context (de Callataÿ 2017, p. 313). These broad patterns may help identify how a specific hoard conforms or varies against a background pattern but will be less help in answering the popular questions asked of a specific hoard (de Callataÿ 2017, p. 314-315).

I personally see nothing wrong in speculating as to the circumstances around a specific hoard. Why was the Vestal hoard hidden under the floor of the toilet of the Casa delle Vestale in AD 472 (Fischer 2014)? How did the Brescello hoard consisting of almost two thirds of an Imperial UK ton of gold come to be lost (Buttrey 1999, p. 531-532; Casey 1986, p. 52; Lockyear 2007, p. 29)? I would argue, however, that we must make clear what is fact, what is interpretation, and what is speculation or *fictionalization*. Reece (2002, chapter 3) provides an entertaining but nonetheless important critique of the interpretation of hoard evidence.

Conclusion

Coin hoards are a vital source of data for numismatists helping to give relative dates to coin issues (Lockyear 2022), to examine the production of coinage (Lockyear *et al.* 2022), to examine patterns in coin circulation over large areas and time periods (Lockyear 2007) or for more specific times and places (Lockyear 2018). On the whole these studies, including my own, treat hoards as static pieces of data. Deviations from the broad, underlying patterns are seen as aberrations, problems to be noted and put to one side. For large-scale broad-scope analyses, this is unavoidable.

In this paper I have attempted to use life as a metaphor to develop a vocabulary for discussing hoards which gets away from seeing them as static entities. The study is not a true 'biographical approach' as has often been applied in archaeology (*e.g.*, Joy 2015) but this framework enables us to discuss individual hoards in a more flexible fashion beyond simply giving examples of specific problems. The availability of coin dates allows for a nuanced discussion of production, supply, circulation and deposition which is often unavailable in other situations, for example with prehistoric hoards (*cf.* Bradley 2016).

The growth of online databases as part of the semantic web requires the development of ontologies which allow consistent data recovery across multiple data sets. The nomisma[5] project has been leading the way in numismatics. I hope this paper will go a little way to developing an ontology for coin hoard studies which may allow us to examine problems beyond date, production and distribution. Although this paper has focussed on coin hoards, it would be beneficial to extend the basic premise to hoards of other types of material.

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