

Single finds as evidence for coin circulation in the Middle Ages – status and perspectives

I. Introduction

As the title states, this paper will deal with single finds of coins as evidence for coin circulation in the Middle Ages. This means that it will mainly consider coins used for economic purposes. It will only treat other uses – mainly religious, as offerings and grave deposits for instance – when it is necessary for the purpose of delimiting economic coin use. The period treated is mainly the Middle Ages, but the Ancient and Modern periods will also be dealt with to some extent. The scope is Europe, and most of the examples will be taken from Scandinavia, England and France.

This paper is not meant to be a full scale study. It will try to summarize the experiences gained from research during the last couple of decades. This means that many features will just be dealt with briefly. They often deserve a fuller investigation pondering their real importance, but that would necessitate an article of its own in each case. These features are nevertheless included in order to draw attention to their existence, and hopefully inspire scholars to push research further.

The distinction between hoards and single finds is one of the main tools in analysing the evidence from coin finds. A hoard is defined as two or more coins found together in an archaeological context which shows they were buried or lost together. A single find is defined as one single coin found in a context which shows that it was lost or buried alone. Several coins found at one site (e.g. a church floor), but in individual archaeological contexts should be regarded as a series of single finds (Mørkholm 1976). Some scholars treat this last case as a separate category called 'cumulative finds'. The term 'stray finds' is also used for single finds, but it is less precise, as it cannot include the cumulative finds just mentioned.

Usually the distinction between hoards and single finds is quite straightforward, but sometimes it is difficult to make as two examples will demonstrate:

(1) Many older finds were not fully recorded at the time of the discovery and sometimes it is hard to know the exact archaeological context and whether the coins were really found together. In my inventory of medieval hoards from Upper Normandy (France), I had to label 33 out of the 153 finds as either 'possible hoards' or 'probable hoards' because of insufficient information on the find circumstances. Some of them may well be series of single finds (Moesgaard, forthcoming).

(2) Some hoards have been destroyed by work in modern times, especially ploughing, and the coins will be dispersed over an area of several square metres (Kromann & Watt 1984, p. 31, fig. 4). In these instances, a find concentration will usually indicate that the coins are from one and the same hoard, but it will often be impossible to be certain regarding every individual coin. This is especially true if the hoard comes from a settlement area with single finds as well (see Horsnæs, this volume). If the hoard is from an isolated location without other traces of human activity, one can more safely ascribe all the coins to the hoard. However, coins of another age than the other coins will have to be excluded as the following example will illustrate. Coins of the hoard of Lessay (départ. Manche, France) were found on several occasions between September and December 1971 after the destruction of a hedge by a bulldozer. They were found in several places between the original spot of deposit and the spoil heap very close to it. The composition suggests that it is a savings hoard gathered by 1417, but there are two later coins, one of 1420 and one of the 1430/40s. The presence of the first made F. Dumas suggest that one coin was added to the savings in 1420 before the burial of the hoard, and this interpretation is supported by documentary evidence that the man whose seal ring was part of the hoard probably died in 1420 (Dumas & Monard 1978, particularly at p. 131, 134). The second coin – a blanc à la targe from the Duchy of Brittany (*ibid.*, p. 155, no. 536) – is more problematic. Even though its exact date is under debate, it cannot be before the late 1420s (Bompaire & Lhour 1989; Salaün 1998; Bompaire 2000; Moesgaard 2000a). The currency was totally renewed during the monetary reform of 1421, and the survival of such a big pre-reform sum is very unlikely in the late 1420s or 1430s (Moesgaard 1999a). The specimen is worn, and the most probable explanation of its presence at Lessay is that it is a single find, that has become mingled with the hoard due to the destruction by bulldozer of the original deposit of the hoard.

These problems underline the importance of recording the archaeological circumstances with much accuracy. Fortunately, in most cases, it is, however, possible to distinguish between single finds and hoards.

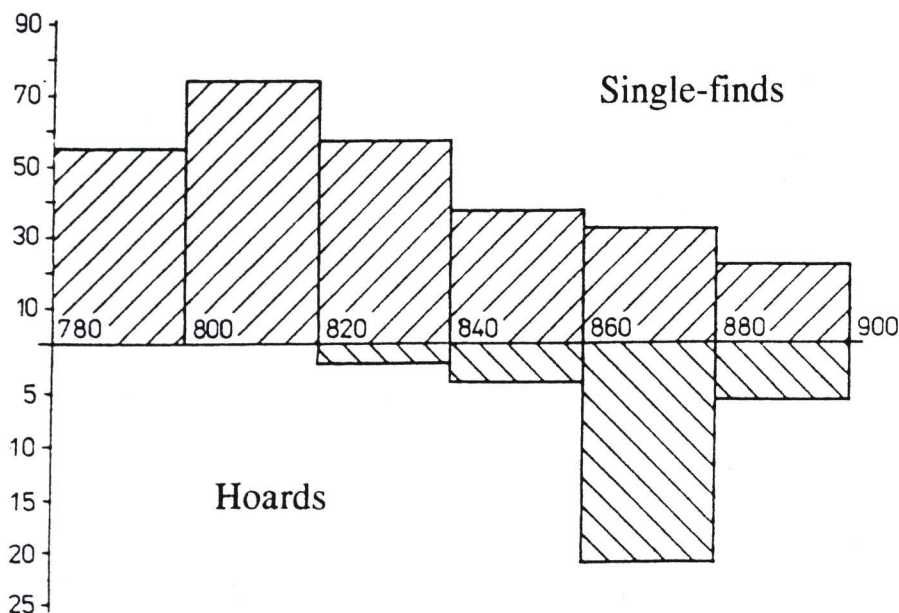


Fig. 2. Single finds, adjusted to reflect probable date of loss (above) and hoards (below) from Southern England, 780-900. Status 1989 (reproduced after Blackburn 1989a, fig. 1).

etc. etc.) in the soil of the church floors. Consequently, earth work in church floors in Scandinavia was made subject to compulsory archaeological control through full scale excavation or sieving of the soil as a minimum (Olsen 1958; Jensen 1977). The status of the church as a state church in the Scandinavian countries and the strong tradition of control of works by the antiquarian authorities greatly facilitated the application of the new rules. Even before that time, many coins were found in churches, but since then the figures have literally exploded. Thus in present day Denmark 11397 coins were recorded in churches by 1994. About half of them are medieval (Grinder-Hansen 2000, p. 165). In Sweden (medieval borders, but excluding Gotland) 7649 medieval coins had been found by 1990 (Klackenberg 1992, p. 29). The figure for the Swedish island of Gotland by 1985 is an impressive *c.* 25000 (Moesgaard 1987). In Norway, 14912 had been recorded by 1986 (Holst 1955; Skaare 1986; Müller 1989). The hey-day of church floor finds was the 1950s, 1960s and 1970s, when big works of restoration of churches and installation of heating systems in the floors were undertaken. Today's works are more modest in scope and often concern only a small part of the church floor. Finds still occur, but at a much lesser rate than a few decades ago (see Klackenberg 1992, pp. 31-32, tables 1 and 2). Finds from church floors are also recorded outside Scandinavia, but not on the same massive scale (see e. g. Dubuis & Frey-Kupper 1995).

(2) The focus and the techniques of medieval archaeological excavations have changed a lot during the last century. A few generations ago, the interest mainly focussed on castles and churches, but today also villages, farmsteads and town neighbourhoods are currently being excavated. Formerly, archaeologists looked for the walls and foundations, and they shovelled away the soil without examining it thoroughly. Now they excavate all the layers individually (when the time schedule and the budget allow them to). They try to understand the function of each layer and to find artefacts which can date them. Rescue excavations are now very common when old settlement sites are to be destroyed because of development and building activity. In conclusion, there are more excavations today compared to fifty years ago, they concern a broader range of types of settlement and the excavation techniques are, broadly speaking, more aimed at finding everyday small unimpressive artefacts, such as e. g. low value coins. However, the number of coins recorded in this way is much lower than the number of church finds and of detector finds.

(3) The metal detector as a tool for amateurs aimed at finding archaeological artefacts emerged in the 1970s. At first, professional archaeologists feared the damage that amateurs could cause by unearthing artefacts in huge numbers. In some countries, such as France and Sweden, private metal detecting was made illegal. Legal procedures against offenders of the interdiction in France (Petit & Meissonnier 1996) demonstrate that detectorists do detect anyway, and we have no means of measuring the amount of material that is never recorded and thus lost forever. In other countries, mainly England and Denmark, the professional archaeologists and numismatists decided to take advantage of the amateurs' enthusiasm by tolerating private metal detecting. The result has been the recording of many thousands of artefacts during the 1970s and especially the 1980s and 1990s. Another advantage of this fruitful collaboration has been the possibility of explaining archaeology to the detectorists. Thus, they have been taught to detect on ploughed fields where the archaeological stratigraphy is destroyed by the plough anyway, and where the extraction of the artefacts saves them from being destroyed in turn by the fertilizer. Moreover, in some regions, amateurs have been taught how to plot their finds very precisely on the map. Of course, metal detectors are not only used by amateurs. Professional archaeologists use them as well with very good results on excavations (Olsen 1984; Jensen 1988; Moesgaard 2000b).

Chance finds from farm work, gardening, demolition and construction etc. still occur as they have always done. Maybe there is a bigger awareness today of the importance of recording not only hoards but also modest unimpressive single finds.

Find category	Number	in %
Chance finds	1121 coins	14%
Church finds	1860 coins	23%
Excavation finds	1687 coins	21%
Detector finds	3383 coins	42%
	8051 coins	100%

Fig. 3. Single finds 1801-1994 of coins from the period 1241-c. 1340 in Denmark (present borders). Only identifiable coins are included.

Source: Grinder-Hansen 2000, p. 181.

Some finds fit in several of the categories outlined above. For the sake of clarity, I have used the legal status of the find situation for attributing a find to a category. E. g. I consider a coin found in a church floor by means of a metal detector during an archaeological excavation as a church floor find, because this category has got a special administrative status. A coin found with a detector during an excavation will be considered as an excavation find. Thus the category detector finds only contains coins found by private individuals. Chance finds are also made by private persons, whereas church floor finds and excavation finds are produced by public bodies only.

No overall statistics of the relative numeric importance of the different find categories have yet been attempted, but the figures presented by Keld Grinder-Hansen in his thesis on the Danish currency during the period 1241-1340 give an idea of the situation in a country where metal detecting is authorized (fig. 3). The figure gives the status in 1994, and since then there have only been few church and chance finds, some excavation finds, but several hundreds of detector finds. Thus, the proportion of detector finds made by amateur detectorists would be even more predominant if we were to recalculate the figures today, only ten years later.

A rough estimate of the relative importance of each of the four find categories has been attempted in fig. 4. It presents the situation in different countries with different laws and regulations on coin finds. It should be underlined that the table only takes into account the coins put on record and thus available for study. In some countries, many coin finds are not reported and thus lost for science. It is clear that the legal situation of coin finds is of the outmost importance for the number of recorded finds.

	France	England	Sweden	Denmark
Chance finds	x	x	x	x
Church finds	x	x	xxx	xxx
Excavation finds	xx	xx	xx	xx
Detector finds	-	xxx	-	xxx

Fig. 4. Rough estimate of the number of scientifically recorded coins recovered from different find situations in different countries.

- none or few coins.
- x some coins.
- xx many coins.
- xxx very many coins.

All these new finds are not just 'more of the same'. They allow us to ask new questions and obtain answers that we could not get before. Indeed, 50 years ago, the single find material was so scattered and so little that it was unfit for statistically based serial analysis of the coin circulation. Now the material is so large that we can make the step into this new sphere of analysis. The first results – and the first thoughts on methods – were made by English numismatists working on the coin circulation in Roman Britain (e. g. Casey 1974). Soon the methods were used for the medieval period and for other countries, and many results have been produced concerning several aspects of the coin circulation, e. g.:

The process of monetization (introduction of the use of coins) in various sectors of society. The numerous finds of sceattas during excavations in 8th century Ribe (Denmark, Jutland), have proved that this trade and crafts settlement had a monetary economy, where coins were used by number (Feveile, this volume, with bibliography). This conclusion is quite extraordinary, because during the two following centuries the Vikings used coins by weight and not by number, with the exception of Hedeby and its vicinity in the 10th century (Wiechmann 1996). This underlines the status of Ribe as a separate area with specific rules for trade, guaranteed by the king.

Since the introduction of the metal detector as a tool for finding metal artefacts, the number of finds of 8th century sceattas has exploded in England. Many of the find spots are rural localities, and this phenomenon has made Michael Metcalf say that the degree of monetization of the English society was very high already in the 8th century, much higher indeed than in the 9th and especially the 10th century. It was not until the late 10th century and the 11th century that the monetary economy had recovered to the 8th century level. This is a very surprising conclusion,

quite contrary to the current idea of the economic state of Anglo-Saxon society (Metcalf, forthcoming).

A regular day-to-day coin use can be seen in Trondheim (Norway) from the middle of the 11th century on the basis of an spatial analysis of the excavation finds (Risvaag & Christophersen 2004).

Henrik Klackenberg has taken the well-defined homogeneous group of church floor finds from rural churches in Sweden in order to see when the use of coins became generalised in the countryside in various parts of the country (Klackenberg 1992). He shows that the monetization of the countryside of the Swedish core-land was completed around 1300. It has been assumed among historians that the Scandinavian peasant did not use coins to any extent in the Middle Ages, but this view is challenged both by studies of coin finds as quoted above and by historians themselves (see e. g. Poulsen 1985). This would bring Scandinavia more in line with the general European situation (Spufford 1988; Dyer 1998).

Variations in the intensity of coin use over time. This is what Mark Blackburn calls ‘the monetary activity’. Presuming that everyday monetary transactions have a constant loss rate, an increase in the use of coins in a society will be reflected by an increase in the number of recorded single finds, and a decrease will result in a decrease in the number of finds. It should be underlined that a large volume of coins in circulation with a low velocity will give the same result as a small amount of coins in circulation with a high velocity. One cannot measure the volume of currency in this way, only the evolution in the volume of transactions including coins. Finally, one should note that this method is only valid if the periods under comparison have a similar coinage system. A system with petty coinage will produce more losses and thus more finds than a system with a relatively high value coin as its lowest denomination. This is due to two phenomena. Firstly, low denominations are used more frequently because one can use them to buy small low price everyday commodities. Secondly, one will spend less time searching for a lost petty copper coin than a fine silver or gold coin (Blackburn 1989a, 1989b, 1993).

The composition of currency as evidence for origin of the coins. Keld Grinder-Hansen has examined the composition of the Danish currency 1241-c. 1340 on the basis of over 8000 single finds (plus c. 1300 from Scania) from churches, excavations, detector finds and chance finds. The Danish monetary system during most of this period is characterized by a *renovatio monetae* system and simultaneous regional currencies. The single finds have contributed largely to a refined analysis of, among other things, mint-attributions (Grinder-Hansen 2000).

The spatial distribution patterns of the products of a mint or an issue. Mapping find spots can give an idea of the distribution of coins

from a specific mint, and one can see how far they extended. The single finds can also give an idea of the relative output of the mints. These and many other questions on the early medieval English currency have been treated by Michael Metcalf (e. g. Metcalf 1998).

These are only a few examples of how scholars have used the evidence of single finds for the study of currency. The common point is that all these works are based on the assumption that the single finds – excluding obvious examples of non-economic uses of coins (grave deposits, etc.) – are predominantly accidental losses from everyday coin use. However, this can rarely be proved for each individual coin – with the exception of a coin found in an occupation layer of a market place site. This raises two fundamental questions:

- What kind of situations of handling of coins in the former society do the coins found today reflect?
- Are the finds representative of the currency employed in these situations?

Various aspects of these questions have already been discussed by the authors mentioned above and by others, but I think it would be appropriate to look at them once again.

II. What types of coin use do the single finds reveal?

The scholar has to be aware that coins have been used for many purposes in former societies. These purposes do not all belong to what we today would call the economic sphere. E. g. there are many clues that offerings at sanctuaries, i. e. a typical religious use, were one of the main purposes of coins in some Iron Age Celtic societies (Delestrée 1996).

In Viking Age Scandinavia, coins were used by weight and not by number. The Vikings were interested in the metal value, not in the face value. This is demonstrated by the composition of the hoards. Foreign coins of all origins and ages were used together along with silver ingots and silver jewellery. Both coins, ingots and jewellery were cut into pieces (so-called hack-silver), when smaller amounts were needed. The quality of the metal was tested by bending the coins or pressing a knife into the metal, the so-called pecking. This use of coins nevertheless belongs to the economic sphere.

Before the explosion in the number of single finds during the last decades, mainly hoards were recorded. Scholars thought that coins were stored by the Vikings as idle wealth without circulating. Now, the number of single finds both from cities and rural settlements is so big that it must

reflect losses from frequent coin use and thus a genuine circulation (see e. g. Gullbekk 1992, pp. 79-81; Koronen 1997; Moesgaard 1999c; Silvegren 1999; von Heijne 2004; Aarsleff, this volume). This hypothesis is supported by the fact that several groups of coins that must have come to Scandinavia together (parcels of die-identical specimens) are found in different hoards. Thus they must have spread through circulation within Scandinavia (Moesgaard 2000c, p. 85; Elfver 2001, p. 34). Another clue to circulation are the frequent finds of weights at Birka (Sweden) (Kylhberg 1986), Uppåkra (Scania, then Denmark, now Sweden) (Gustin 1999), Torksey (Lincolnshire, England) (pers. inf. Mark Blackburn & Michael Bonser) and many other places (e. g. Aarsleff, this volume). At least some of these weights were probably used for weighing small amounts of coins and hacksilver for use in payments.

The study of single finds as evidence for coin circulation in the Viking Age has just begun, and looks very promising. The spatial distribution of coins will probably teach us a lot (see e. g. Silvegren 1999, p. 109-10; Aarsleff, this volume). In cities there are conspicuous concentrations of coins that must be explained; attempts have been made, e. g. in Trondheim (see below) and in Lund (Carelli 2001, p. 188-205). In Dublin, a concentration of coin finds is interpreted as the merchants' quarter (Wallace 2001, p. 41; cf. Wallace 1986, pp. 212-13). The chieftain site of Tissø in Sealand shows a very interesting spatial distribution. About 100 Viking Age coins have been found during excavations and detector surveys. The bulk of the coins are Islamic, and they have been found scattered in an area which is interpreted as the market place. They are quite fragmented and must have been used for trade in the market. The relatively few Carolingian and Nordic coins have mainly been found in the dwelling area. A few, however, are from the ritual area, and only one single one is from the market. They are generally speaking whole and many have been pierced in order to use them as ornaments. The astonishing conclusion must be that the Arabic coins and European coins were used in different ways (Jørgensen, this volume).

Some rural settlements yield many coins, others none. This difference must also be explained. Three settlements near Køge (Sealand, Denmark) have been compared. The two settlements yielding coins also gave the finest and most expensive imported artefacts in precious metals, whereas the one settlement without coins was much poorer in other artefacts as well. In this instance, coins seem – not surprisingly – to have been available among wealthy people, not among the poor (Moesgaard & Tornbjerg 1999, p. 328-30).

Much more work needs to be done in this field. Of course, one should bear in mind how sites have been investigated (random chance finds,

systematic metal detector surveys or thorough excavations) before comparing sites and drawing conclusions from absence or abundance of coins.

Let us turn to the situation in the Middle Ages, the main topic of this paper. During this period, coins are predominantly used by number, not by weight. The archaeological context of a find is often the best guide in determining the nature of the deposit or the loss – especially in ancient and medieval times where written sources about everyday coin use are rare. Archaeology gives information on two levels:

(1) If the full archaeological context is recorded, the nature of the layer in which the coin was found (grave, post hole, garbage pit, etc.) gives precious and often precise information on the situation in which the coin was handled when it was lost or deposited. This information is of course only available for coins found during archaeological excavations, which form a minor proportion of all finds.

(2) The nature of the find spot (church, market place, castle, etc.) can give general – but not very precise – information about the situation and the social environment in which the coin was used.

If one looks at Medieval society, coins are clearly used both in the economic sphere and the religious sphere. Coins found in graves in immediate connection with the skeleton would be grave deposits. The examples are numerous (see e. g. Grinder-Hansen 1988; Dubuis *et al.* 1999; Ivanauskas 2001). On the other hand, coins found in the earth filling a grave are not necessarily grave deposits; they may have been in the soil before the burial, and been removed from their original position by the digging of the tomb (several examples at Tournedos-sur-Seine, dép. Eure, France, pers. inf. Florence Carré). Coins under a threshold (example: Moesgaard 1994, pp. 25-26, no. 39) or in the masonry of a chimney can be construction deposits in order to bring luck to the house (Suchodolski 1996, p. 323-4; Pilet-Lemière & Moesgaard 1992, p. 35, no. 1). The English sterlings in the concrete between the bricks of the masonry of the tombs at Notre-Dame-de-Corheta, Cagnotte (dép. Landes, France) is a marvellous example of a construction offering (Dhénin 1979). Coins found at springs are probably offerings thanking the healing effect of the spring as e. g. the coins from the Skvæt Mill Well at Skanderborg (Jutland, Denmark) (FP 3326, on display at the Museum of Skanderborg). Looped and neatly pierced coins have been used as jewellery. For various reasons (see below) coins used for cultic purposes and for jewellery are not necessarily representative of the general currency. It is important to stress that they should be omitted from studies of the economically based monetary activity.

It is sometimes difficult to interpret finds from some types of find spots. Take e. g. bridges and fords. This is a classical type of find spot which often provides numerous coins, especially when the river is dredged. Thus, at the site of the Roman bridge over the river Vesle (border between the communes of Chassemy and Ciry-Salsogne, *dép.* Aisne, France), 120 Celtic, Roman and early Medieval coins were found in 1987 (Debord 1987; 1989). At least 6 low value late Medieval and early modern coins were found accidentally in 1857 in the river at the bridge at Pont-de-l'Arche (*dép.* Eure, France) (Moesgaard 1994, p. 26, no. 41), and 35 modern coins at the bridge of Liège (Belgium) in 1929 (Dengis 2001). Are these coins offerings thrown in the river for the river's genius or for good fortune in travelling (Dengis 2001, p. 121)? The written documents show the existence of trunks for receiving the offerings of the people using the bridge. In Lyon (*dép.* Rhone, France), such a trunk was put up by the Cordeliers who celebrated two daily services at the Chapel of the Holy Spirit on the bridge (Bompaire 1999, pp. 362-4, 367-8). Sometimes, a municipal or private office was installed for receiving the toll for using the bridge. In Liège, this toll was so unpopular that the officers were forced to flee in 1657 and the installation with the money-box was thrown into the river! Some of the coins found there may have been lost at this event (Dengis 2001, pp. 118, 121). Are the coins found today offerings thrown into the rivers or losses by people searching for small change in their pockets for paying the toll? We even have records of people throwing devalued base coins into the river Seine in Paris in despair at their lack of value (see below)!

The church floor finds are another ambiguous case of how to determine whether the coins are offerings or accidental losses. Coins in graves are straight-forward, they must be offered at the burial, but they only constitute a very small part of the finds. Most coins are found in the soil of the churches, sometimes in floor layers, but very often in the filling soil. It has been suggested that they could be coins from disturbed graves or coins deliberately deposited in cracks in the church floor as intentional offerings (e. g. Svarstad 1959, Berg 1989, see also Müller 1989). Henrik Klackenberg has treated the available documentary and archaeological information, and his conclusions are clear: there are very significant concentrations of coins where the altars stood and where there must have been offertory trunks. There have been offertory chests, e. g. for the crusades, in the churches. A collection box was often circulated during the mass as still today in Catholic churches. The most reasonable explanation of the church floor finds is that they are accidental losses of small change during the mass and while offering at altars (Klackenberg 1989a; 1989b; 1992, pp. 34-38, but see also Sortland, this volume).

Klackenberg is thus right, when he uses the rural church floor finds as evidence for monetization of the peasant economy¹.

Generally speaking, as for the coin types represented, the church floor finds are in line with detector and excavation finds, although there are exceptions (see below). For the time being, it remains however a fair assumption that the church floor finds constitute a sample of the small change available in the parishioners' everyday life.

Coins from other provenances than rivers, bridges, fords and church floors are numerous. They come from excavations in cities and in the countryside of villages and castles and from detector finds from plough fields. The above mentioned studies using single finds as evidence for the currency are based on the assumption that they are random losses from everyday coin use. This can sometimes be proven from the archaeological context. A good example are the coins found during the excavation of medieval houses in the small port town of Dragør (island of Amager, Denmark). During the 15th and early 16th centuries, there was a clear concentration of coins in the rooms towards the street, interpreted as the shop, and no coins in the rear rooms, interpreted as the dwellings (Liebgott 1979, pp. 40, 43, 162). Similarly, the two dozen 11th century coins found as single finds at the Public Library site in Trondheim (Norway) (Skaare 1989) show a significant concentration in the front shops, workshops and goods storages, whereas only one coin was found in the living rooms in the middle of the plots (Risvaag & Christophersen 2004). At Horsens (Jutland, Denmark), over 100 late medieval coins were found scattered on the paved floor of the open shops built against the walls of the church (Mikkelsen & Smidt-Jensen 1995, p. 9; Larsen 1999, p. 220). These examples not only show everyday coin use, but prove – unsurprisingly – that it was linked to the small everyday retail trade.

However, the vast majority of coin finds, and especially the detector finds, do not have such a precise archaeological record. The Polish numismatist S. Suchodolski has pointed out that there may be many other good explanations of the presence of single finds than random losses from everyday coin use: one high value coin can be the deposit of the savings of a person, coins may be lost by coin collectors many centuries after their period of use (see also Horsnæs, this volume), a singly found coin may be a stray from a hoard, there are various ritual uses, and finally ceremonial spreading of coins by rulers to their subjects may also explain

¹ I have been quoted as disagreeing with Klackenberg (Carlsson 1997, p. 20). This is incorrect. I have said – in agreement with Klackenberg – that church floor finds reveal that people had access to coins. On the other hand, church floor finds do not tell us in what situations people used coins outside the church (Moesgaard 1987, p. 134).

some finds (Suchodolski 1996). He is very right about this, but the question is whether these explanations account for a small or for an important part of the single finds. In the first case, they do not challenge the method of using single finds as evidence for the currency, but in the second case, they do.

I believe that there are two ways of dealing with this problem. The first is the argument that has already been advanced by several scholars. The chronological distribution of the coins as well the assembly of coin types at different sites within a region are very similar, suggesting that the coins come from the same pool of currency through the same selection process, which most likely would be accidental losses from day to day coin use (Casey 1974; Dyer 1998, p. 37, fig. 2; Blackburn 1989a; Blackburn 1993, pp. 40-41; for French church finds, see Bompaire & Pilet-Lemière 1995). This is in my opinion a very strong argument. However, I will not investigate it further here, as many scholars have already dealt with it.

The second method is the examination of archaeological contexts. Coins from excavations with recorded archaeological contexts do give information about their loss or deposit. Unfortunately, they only count for a minor proportion of the total number of finds. But despite their small number, they give us a unique chance of checking general trends, which one may assume are valid for the whole material.

Michael Dolley was a pioneer when he published the coins found in Southampton (England) during the 1966-69 excavations with a full archaeological record for each coin under the subtitle 'context and associated material' (Dolley 1975). He states that the usual scholarly use of coins in isolation from their context deprive them 'of a very considerable part of their value' (p. 316). Unfortunately, his example has not been followed systematically. The coins found in York (England) 1971-81 were published with excavation numbers, but without details about the context of each coin (Pirie 1986). A general chapter on the archaeological contexts helps a little (pp. 15-25). The coins found at the excavation in Fécamp (départ. Seine-Maritime, France) are published in the general publication of the excavation. The coin lists only give excavation numbers, but with some work one can find all the relevant information about the contexts elsewhere in the book (Renoux 1991). But still many excavation coins are published without archaeological record. This is probably due to tradition. But lack of time is also responsible, because much time is needed to get the basic archaeological information from the excavator and discuss its implications with him. The worlds of archaeologists and numismatists are too often apart.

A few years ago, I conducted a small study on the archaeological contexts of 121 coins from 8 excavations in Upper Normandy (France)

(Moesgaard 1998²). This sample is of course too small to be entirely reliable, but some trends nevertheless emerge. First and foremost, no less than 3/4 of the coins are from disturbed layers. Moreover, this impressive figure is probably too low, as archaeologists tend to excavate disturbed layers such as destruction layers and ploughed top soil less thoroughly than occupation layers. This means that the vast majority of the coins were no longer at the spot where they were lost. In these cases, the archaeological context cannot tell us anything about the situation which led to the loss or the deposit of the coin. Many of the coins that do come from primary contexts were found in waste pits and latrines, and only a few from occupation layers in houses (see below). A few were from masonry and may be offerings, but may also be accidental losses during the construction. This somewhat deceptive result underlines the necessity of having a huge number of finds when doing this kind of analysis. On balance, my impression from the small sample I studied was that most of the coins could very well be accidental losses.

A serious problem to be addressed when speaking about the individual archaeological context of each coin is whether or not coins can move within the soil from one layer to another over the centuries. It is clear that mice can move coins as demonstrated by the example of the hoard of Bjæverskov (Sealand, Denmark). Here the coins were kept in leather bags in a big copper pot. Mice had eaten part of the leather and removed a few coins to the surrounding soil. Some coins were even brought outside the vessel (Moesgaard 2000d; Moesgaard & Tornbjerg 2004).

Another, more serious example is the two coins of the second half of the 11th century (Skaare 1989, nos. 8, 34) that were found in the late 10th century layers at the Public Library excavation in Trondheim (Norway). Two other coins of a similar date (Skaare 1989, nos. 4, 37) were likewise found in layers from the second quarter of the 11th century (Risvaag & Christophersen 2004; pers. inf. Jon Anders Risvaag). All these coins were up to c. 70 years younger than the layer in which they were found! Unless there is an archaeological error, this feature raises the question of how these coins moved vertically from their original spot of loss or deposit to the place where they were found. The reliability of the stratigraphical position of a coin – and thus the indications it gives on the coin use situation – is at stake.

A very large proportion of the detector coins are found in open fields. How should one interpret that? Sometimes the site has been settled before. Thus the site of the city of Tårnborg near Korsør (Sealand, Denmark) that was abandoned in the early 15th century, has yielded more

² I am planning an expanded version of this article in French for publication in the *Revue numismatique*.

than 4000 medieval coins, of which most are detector finds from the top soil (Grinder-Hansen 1994a; 2000, pp. 217-34). The city of Dunwich (Suffolk, England) was gradually destroyed by coastal erosion from the 14th to the 17th centuries, and many coins have been found on the beach (Hancox 1908; Seaman 1972; Allen & Doolan 2003). Small port towns with fairs have also yielded many coins, as shown by the example of Llanfaes (Wales). Today it is just a village, but in the Middle Ages it was a small town that was transferred to another site a few kilometres away around 1300. On a field outside the village about 700 coins have been found (Besly 1996). In the fields around South Ferriby (Humberside, England), 500 medieval and modern coins have been found, reflecting the activity at a minor river port (Cook 1999). Most of the coins found at the above mentioned sites must reflect losses from everyday handling of small change in an urban or semi-urban context.

Purely rural contexts yield coins as well. The Albany, Ipswich (Suffolk, England) has been interpreted as a possible medieval fair site. 45 medieval coins were found by a detectorist in the spoil from excavation and development works (Newman 1995). At Hjulby near Nyborg (Funen, Denmark), many medieval coins have been found at the site of a long abandoned and demolished church. The coins are detector finds from the top soil, and it is impossible to say whether they derive from the church building or the cemetery (FP 5281, 5381, 5911, 6046, 6325, 6416, pers. inf. Mogens Bo Henriksen). A field in the parish of Ågerup near Holbæk (Sealand, Denmark) has yielded many coins (FP 4050, 5988, 6047). The investigation of the historical sources tells us that it is the site of the lost village of Vinderup. A similar case is presented by the lost village of Legerup in Gevninge parish (Sealand, Denmark) (FP 3937, 4187, 4188, 4591, 4745, 5196, pers. inf. Michael Andersen). In this respect, it is important to underline that detector finds in plough soil most often have not moved very far from their original place of deposit. Indeed, when detectorists have mapped their finds precisely, concentrations of finds often turn out to be the site of a house or another structure, and one can with a large degree of certainty assign the plough layer finds to the house/structure beneath it, as has been demonstrated by several Danish excavations (S. Jensen 1987; Jørgensen 2000).

Archaeological excavations of lost villages or abandoned settlements in the countryside often reveal coins, e. g. at Charavines (départ. Isère, France) (Dhénin 1993), Mondeville (départ. Calvados, France) (pers. inf. C. Lorren & J. Pilet-Lemière) and Grosley-sur-Risle (départ. Eure, France) (Pilet-Lemière & Moesgaard 1992). This last settlement is now situated in a forest, but it was formerly in open land (Lemaître 1992).

Sometimes coins are found on the fields around an existing or lost village in a zone where nothing points to human settlement. Most likely

these fields were also fields when the coins were deposited. It has been suggested that the coins come with waste from the village that was spread on the fields as fertilizer by the villagers (Bompaire 1994, p. 25; Suchodolski 1996, p. 319; Dyer 1998, p. 36).

All these examples show that peasants had access to and used and lost coins, which is confirmed by historians on the basis of the written sources (e. g. Poulsen 1985; Spufford 1988; Dyer 1998).

There are, however, some rural sites yielding extremely large numbers of coins and other metal items. Several sites in the outskirts of Aalborg, on the fields outside Nibe and near villages such as Nørholm, Sønderholm, Mellemholm and Gjøl (all in northern Jutland, Denmark) and just outside Kalundborg (Sealand, Denmark) have each delivered impressive series of scores and scores of medieval coins and other artefacts, that cannot easily be explained (see the yearly find lists in AUD). The sites near the cities (e. g. Aalborg and Kalundborg) at least may be waste dumps from the cities. There is also a lot of modern material among the finds, and maybe their deposition dates from as late as a century ago or so. Some of the sites are, however, purely rural (Nørholm, Mellemholm, Sønderholm, Gjøl) and this explanation is hard to accept for these sites. Here is another field where archaeological research in the future hopefully will bring new knowledge. Or is the very high number of finds just the normality, which we have not yet detected on other sites that have been less thoroughly surveyed? Indeed, amateur metal detectorists have worked intensively year after year on the Nørholm etc. sites.

It would be interesting to make a study of the types of sites yielding single finds of coins. Such an enquiry would allow us to map where and in which circumstances coins are used, i. e. to address the topography of coin use. Many years ago Rigold attempted a rough analysis of the monetary topography in England (Rigold 1977), but the material is so much bigger now that more refined analysis should be possible. This is yet another scientific potential of the single finds.

There is one important factor that may explain the existence of some single finds that has been very little considered by scholars previously: could they be base coins with little metal value which lost their fiduciary value at an official decree of demonetisation or devaluation, and then were thrown away as worthless items? Some medieval texts may point in that direction. When the French double tournois struck in 1421-1422 was devalued in 1426/27, a Parisian chronicler tells us that people threw the devalued coins into the Seine River in despair ('Bourgeois', § 445). We do not know if this should be understood literally. Would a similar case explain the thousands of badly debased so-called W-bracteates found in church floors on the island of Gotland (Sweden)? Indeed, this coin type

Fig. 5. Mutilated coins.

A. In order to make them invalid:

1-2. Denmark, pennies, early 14th century. Bent.

Found at Nørholm, Jutland, FP 6504.15-16.

3. Denmark, kobbersterling, c. 1420-40, mint:

Næstved. Pierced. Found at Herslev, Sealand, FP 6499.2.

4. Same type. Pierced. Found at Nørholm, Jutland. FP 6528.3.

5. Denmark, penny, early 14th century. Pierced.

Found at Nørholm, Jutland, FP 6573.4.

B. In order to use them as jewellery:

6. Nürnberg, token. Master C. Lauffer (1658-1711), Mitchiner 1777-8. Pierced twice. Found at Nibe, Jutland. FP 6507.12.



which was struck c. 1270/80-1450 accounts for c. 22200 out of the almost 25000 coins found in the church floors (almost 90 %) (Moesgaard 1987). Moreover, when in 1985 I examined an important sample of W-bracteates from Gotlandic church floors at the Royal Coin Cabinet in Stockholm, I found that the vast majority of the W-bracteates are of the very debased issue of almost pure copper, struck only during the decade or two before 1450. Even when we take into account that this type circulated after 1450 to some extent (Östergren & Jonsson 1998), it would be very hard to explain the dramatic increase in the loss rate (c. 22200 coins lost during 50 years at the maximum, c. 1430/40-1450/80, against c. 2500 from the 750-800 years, c. 1140-c. 1430 and c. 1480-1965) by the usual explanation, that petty coins have a high loss rate. Maybe people just threw them away in despair at their worthlessness?

Another feature among single finds may point in this direction. Many Danish detector finds have been voluntarily mutilated before being lost or deposited. Some coins are bent and others are pierced with a knife, leaving a rough triangular hole in the coin and yet others are partly cut (fig. 5).³ We know from medieval texts that piercing was an official measure to invalidate a false or prohibited coin (Saulcy 1879, p. 194). No overall study of the occurrence of these phenomena has yet been attempted, but I have the impression from my everyday work identifying coins found in Denmark that it is quite frequent and mainly concerns low value base coins. I will mention three characteristic groups here:

(1) Danish debased pennies of the early decades of the 14th century. These coins are very numerous among the single finds in Denmark (Grinder-Hansen 2000, p. 182, fig. II-III). They may have remained in

³ This bending and piercing with a knife is very different from the actions performed on Viking Age silver coins in order to test the quality of the metal.

circulation as small change for some decades after Danish coin production ceased in the 1330s (Grinder-Hansen 1998, p. 38; Mikkelsen 2002; Moesgaard 2002). It is likely that the authorities at some stage have tried to invalidate them by piercing or bending them (fig. 5.1-2, 5).

(2) Danish debased copper sterlings struck *c.* 1420-*c.* 1435. The bad quality of this pure copper coin was one of the complaints made against the king of Denmark, Sweden and Norway, Eric of Pomerania (1396-1439), when he was removed from the throne in 1439. These coins are extremely common among single finds in Denmark. As with the former group, a campaign of piercing in order to invalidate these coins is very likely (fig. 5.3-4).

(3) Nürnberg tokens of the 16th-18th centuries. Several authors have suggested that the tokens could have been used as petty coinage, at least during the 15th-16th centuries (Spufford 1988, pp. 331-2, 335; Labrot 1989; Dyer 1998, p. 40). They are common among the detector finds in Denmark (Jensen 1988, pp. 227-228; Kromann & Jensen 1990). Many are pierced in order to be used as pendants or cloth decoration (fig. 5.6), but others are pierced less neatly, with a rough cut presumably in order to prevent their use as coins.

This feature deserves a full scale study in order to determine the real proportion among different coin types and to map differences in the occurrence according to types of find spots (in this respect, one may expect more mutilated coins in waste pits than in occupation layers).

To sum up, I think that the frequent occurrence of coins on a whole range of sites, both urban and rural, points to the coins being accidental losses from everyday coin use in retail trade. The fact that the same types of coins are found in approximately the same proportions within a region points in the same direction. The study of the individual archaeological context of each coin will probably yield more information about coin use in the future. So will the study of monetary topography. Of course the nature of the find spot and the archaeological contexts prove that some coins were used ritually. Maybe other coins were just thrown away as worthless.

Thus, one cannot give a simple explanation covering all the finds, but my impression is that accidental losses account for the vast majority of the finds.

III. Are the single finds representative of the currency or aspects of it?

Single finds provide excellent evidence for the study of coin circulation (the 'currency'). One can study both the volume of the currency (the

number of finds) and the composition of the currency (proportion of foreign coins, false coins etc.). But is the corpus of recorded finds (the 'corpus') representative? In other words can the 'corpus' be regarded as a random sample of the 'currency'?

Before trying to answer that question, one should be aware that the study of coin circulation can be undertaken on several levels. As already pointed out, a recorded archaeological context can be used to describe the situation in which the coin was used. One find is just anecdotal, but the cumulative evidence of many finds allows conclusions of general value to be drawn on the various aspects of coin use. This kind of analysis needs finds recorded to a very high degree of detail. I will label it 'level 1 analysis'. If the precise find spot is recorded (but not necessarily the archaeological context), one can make comparisons between different kinds of sites: were the same coins circulating in e. g. market places and castles? Or in rural or urban settlements of the same region? I will call this type of analysis 'level 2'. If only an imprecise indication of the region of the find (but no exact find spot) is recorded, this information can still be included when studying the broad picture of the currency of a region, i. e. the cumulative evidence of all single finds. I call this analysis 'level 3'. The quality of the record of the find spot and circumstances will determine whether or not a coin find can be used for each category of analysis – all finds can be used for level 3, many for level 2 but only a minority for level 1. The problems of representativeness are not the same for the three kinds of analysis. I will take this difference into account in the following discussion of factors biasing the representativeness of the 'corpus'.

Some factors distorting the representativeness were already active at the time of the use of the coins, others are related to the stay of the items in the soil and yet others are linked with the present day recovery of the coins. It is very difficult to evaluate the impact of these factors, but it is important to bear them in mind when using single finds as evidence for monetary activity in the past. In the following, I will outline some of these factors.

A. Then (at the time of loss or deposit):

To be a random sample of the currency of former times, the coins contained in the soil should represent a fixed proportion of the coins handled in different situations at the time of loss or deposit of the coins. This is clearly not the case. Some kinds of transactions have a higher proportion of coins getting into the earth and staying there. Similarly, some kinds of coins have got a higher probability of loss than others.

Offerings were meant to remain in the soil. To be effective, one should leave them where they had been deposited. On the contrary, someone

accidentally losing a coin would try to find it again. The ones we recover today are only the few that were not found again by their owners or by other people passing by. Thus offerings will have better survival rate than accidental losses. This should be borne in mind when working with find patterns of Celtic coins (cf. e. g. Delestrée 1996). There may be many more coins on sanctuaries in North-Western France than on other types of sites, such as settlements. But this does not necessarily mean that coins were not used on other types of sites, simply that if they were lost, people would try to recover them immediately, and they do not remain in the earth to be found today. The offerings at the sanctuary were left untouched by the contemporary people to be found by us today. Maybe coins were indeed used more on sanctuaries than on other sites, but the sheer comparison of numbers of coins found is not enough to make the argument.

In other circumstances offerings were recovered very thoroughly a short time after they were made, and nothing is left to be found today. We know from written sources of the early 17th century that coins were given as offerings at the small well chapel consecrated to the local saint Nicholas in Viby near Århus (Jutland, Denmark) (Jørgensen 1974, pp. 48-49). When this chapel was excavated in 2001, metal detectors were used systematically and all the soil was sieved. Nevertheless, not a single coin was found. One has to believe that the offerings were put into a trunk, which was regularly and very thoroughly emptied by the priest on duty (Skov 2002). Thus, we know that coins were used, but not one single coin was left for us to discover.

Coins used for cultic purposes are not necessarily representative of the general currency at the time of the deposit. The chronological distribution of coins used for ritual purposes reflects changes in fashions of belief rather than changes in the general use and availability of coins. Thus the coins in the graves of the leper hospital of La Madeleine near Bernay (départ. Eure, France) cover the 12th to 17th centuries, but the peak occurs during the 14th-16th centuries accounting for 57 out of the 65 identified coins (Metayer-Masselin 1868⁴). Moreover the 4 coins from the 12th-13th centuries may well have remained in circulation to be deposited in the 14th century. The chronological distribution of these coins thus reflects the chronology of the habit of putting coins in graves, not of the availability of coins in the Bernay region.

Moreover, people might have chosen specific coin types considered more holy than others – because of a religious symbol or an effigy of a saint in the design of the coin. E. g. almost all of specimens found in the Baltic Area of the rare, so-called *Agnus Dei* type, struck in England c.

⁴ I am preparing a republication of the coins of this excavation.

1009, have been mounted as pendants. The religious images represented on the coin – the Pascal Lamb on one side and the Dove of the Holy Spirit on the other – suggest that this particular type was picked out for amulets because of the design (Moesgaard & Tornbjerg 1999 with full bibliography). Specific types have also been selected for jewellery, such as the very common early 18th century Danish silver 8-skilling pieces which were contemporarily made into buttons by wealthy peasants (Hede 1978, pp. 75-76, no. 42, p. 78, no. 58, p. 133, no. 6). It had the right size and a nice design.

Are coins used for offerings in churches and other trunks then representative of the petty coins in general use? Would people have used obsolete coins for the offerings, like the famous button, that makes the same noise as a real coin when put in the collection box?

The finds reveal differences in the sample of coins found in parish churches compared to monasteries and to detector and excavation finds. 14th and 15th century bracteates are very common among the Danish church floor finds (Bendixen 1972, pp. 66-68; Jensen 1977; Jensen 1981, pp. 165-6) and in hoards (Jensen et al. 1992), but relatively rare in monasteries (Jensen 1981, p. 167, dealing only with Danish crown bracteates) and particularly among detector finds and excavation finds (Jensen 1988, p. 227; Grinder-Hansen 1998). Is this due to a real difference, where low value bracteates were deliberately chosen for offerings in the parish churches? Or is it due, as Grinder-Hansen has suggested, to physical factors? Indeed, the thinness of the bracteates means that corrosion easily makes them disappear in outdoor soil whereas the indoor milieu in churches may protect them. Moreover, maybe the metal detectors cannot spot them because of their tiny metal content, whereas the sieving of the church floor soil is a better method of finding them. To solve this paradox, one needs to establish a research program on two levels: first select several series from various regions of different types of sites, such as a town neighbourhood, a modern ploughed field and a church floor, and examine the chemical composition of the soil and evaluate their degree of destructiveness on metal, and then sieve the samples of earth from the different sites and compare the number of coins found. Thus one will be able to know whether there is a real or just an apparent difference in the samples of coins from parish churches compared to other sites.

Another possible way to investigate what people used for offerings is the trunk at the bridge over the river Rhone in Lyon (département Rhône, France). The 15th century accounts of its contents have survived. Lyon is a border town, and in some years the coins of neighbouring Savoy and Dauphiné outnumber the official royal coins (Bompaire 1999). Did people get rid of their spare foreign coins at the trunk in order to avoid paying the fee

for changing them at the money changer's desk? During the heavy inflation in France in 1420-1421, the base royal coins replaced the foreign coins as the dominant group. Were they the only coins available or did people want to get rid of them and keep the better coins? A text from Wismar (Mecklenburg, Germany) from 1424 shows that people deliberately chose base Danish copper sterlings for offerings in the churches (Jensen 1989, doc. no. 670). On the other hand, a mixture of coins, domestic, foreign and partly exotic, including two Ancient Greek tetradrachms and several Roman coins, were placed as a building offering in the globe at the summit of the spire of the Saint Nicholas Church in Berlin (Germany) (Krause & Winkler 1997; Engelmann 1997). I think no one would claim that Greek tetradrachms constituted the general currency of early modern Berlin!

Thus there is good reason to suppose that the coins used for ritual purposes and jewellery are not representative of the coins in general circulation. Therefore one should exclude both coins found in ritual contexts and those transformed into jewellery from a study of the evolution of the currency. To determine the extent to which the church floor finds differ from settlement finds will necessitate more research. For the Viking Age, coins turned into jewellery should nevertheless be included, because jewellery and ingots were part of the currency at that time.

Turning to more general circulation, small coins will usually have a higher velocity than bigger ones, simply because they are better fitted for the frequent everyday small scale transactions. Therefore they will also be lost more frequently than bigger coins. Bigger coins are better suited for savings. If someone loses a high value coin (gold coin, bigger silver coin) anyway, he will devote more time to finding it than someone losing a petty coin. Moreover, it will be easier to find, because it is bigger and brighter. Small coins will thus be over-represented in the corpus of single finds.

The finds of Carolingian coins in France give a good illustration of this feature. Only two denominations were struck during the Carolingian period. The main one was the silver denier. Beside that, only the silver half-denier, called obol, was struck. Obols are rare in hoards (from 0 % to *c.* 20 %, see the find lists in Duplessy 1985), whereas they count for up to *c.* 30 or 40 % of the single finds in some regions (see tables for Poitou, Jeanne-Rose 1996, pp. 250, 255). The chronological and geographical occurrence of obols within the Carolingian Empire is apparently not even – a question that ought to be examined more closely – but even so the difference between single finds (*i. e.* circulation) and hoards (*i. e.* savings) seems clearcut.

With the introduction of the multi-denominational and pluri-metallic coinage system in the 13th/14th centuries, the difference between the various levels of coin use became even more marked.

Anyone who has used a metal detector or participated in an archaeological excavation will know that base billon coins largely outnumber gold and silver coins among the single finds. But even within the group of base billon coins, the smaller denominations are more numerous than the bigger ones. Comparison with the composition of lost purses shows that the single finds are not representative for the currency at the time. This must be due to a higher loss rate of the very smallest denominations. E. g. 7 single finds of base billon coins from the period 1337-1361 are recorded from Upper Normandy. 5 are deniers and 2 double deniers. In two lost purses of the same period (unknown, probably Norman, origin and Saint-Aubin-Epinay, *dép.* Seine-Maritime, France), the double-deniers dominated: 9 doubles in the first and 6 doubles and one silver gros in the second (Moesgaard forthcoming, nos. 58, 67). There are no deniers at all in these two purses. Similarly for the period 1385-1419: the 9 single finds comprise 2 half-deniers, 7 deniers and no double deniers, whereas the lost purse of Saint-Eustache-la-Forêt (*dép.* Seine-Maritime, France) contained no half deniers, only 1 denier, 6 double deniers and several silver blancs (Moesgaard, forthcoming, no. 80). A whole range of middle and small value coins would be kept in a purse. The smallest denominations would be used most often, they would be lost more frequently than the bigger ones, and one would not look as much to try to find them again. They will thus be over-represented in the corpus of single finds compared to the part they played in currency. However given the higher velocity of the smaller denominations, the finds may well give a representative picture of the coins used in 'monetary activity', as defined above.

If petty coins in general are over-represented among the single finds, very base coins would be even more over-represented. Coins can be so base that people do not bother to pick them up and even throw them away deliberately (see above). This means that there are two important thresholds when comparing single finds: one between very base coins and less base petty coins, and one between petty coins in general and bigger coins. One should never compare numbers of coins between these groups, because the factors governing the number of finds are too different.

The level of hygiene is very important to the survival of accidental losses of coins. The better the tidying and cleaning of dwellings, courtyards, streets and squares, the more coins would have been found shortly after the loss. The result is fewer coins left for us to recover. One will more often find coins in dirt pits than in occupation layers (floors, etc.).

At Bourges (départ. Cher, France), e. g., the 31 coins and tokens from the castle excavation all come from a toilet and dirt pit (Trombetta & Roche 1999; Monnet 1999, pp. 39-42). At Compiègne (départ. Oise, France), the 10 single finds of pre-1200 coins from the excavation of the Carolingian Palace (later turned into a market place) come from various contexts: only 2 from occupation layers (cat. nos. 3, 12), 1 from a demolition layer (no. 10), 6 single finds from pits (nos. 2, 14-15), toilets (nos. 13, 16) or filling of abandoned structures (no. 11). The last coin comes from a later context (no. 1). A small hoard of 6 coins from a pit (nos. 4-9) reinforces the impression that pits and related structures give more finds than occupation layers (Petitjean 1994, pp. 18, 21, 28, 50-52; Dhénin 1997). At the castle of Epinal (départ. Vosges, France), most coins were found near the walls of the rooms and none in the middle, which made the excavator think that they were forgotten while cleaning the room. This, on the other hand, implies that many lost coins must have been found and recovered while tidying the rooms shortly after their loss (Bur & Poinssignon 2001, p. 49-50; Michel Bur, pers. inf., June 2001). The castle motte of Moulins-sur-Céphons (départ. Indre, France) was well kept. The finds in the occupation layers were few and no artefact that could still be used was left as waste on the site (Querrien 1988, p. 31).

At the 'manor house' of La Colletière at Charavines (départ. Isère, France) fewer coins were found in the aristocratic dwelling than in the ordinary dwellings. This may be due to improved excavation methods during the last phase of the excavation, when the latter were explored. Another explanation could be different patterns of use of coins in different social classes, the lower classes losing more coins than the higher ones. But a third possible explanation would be that the aristocratic dwelling was better cleaned than the other houses, and therefore fewer coins are left for us to find (Colardelle & Verdel 1993, pp. 183-5). A similar explanation has been suggested for the distribution of metal artefacts found by detector at the high aristocratic settlement of Tissø (Sealand, Denmark). Here the finds are much rarer in the central area with a great hall and a (cultic?) enclosure than elsewhere in the settlement. This can best be explained by a particularly good cleaning of the hall and the enclosure (Jørgensen 2000, cf. Jørgensen, this volume).

The municipal regulations on hygiene in the towns will then influence the number of coins found today. In many towns, the banning of getting rid of one's dirt in the public streets became effective during the last century of the Middle Ages. This can be seen in the archaeological layers: after centuries of accumulation of dirt gradually elevating the ground level, the level all of a sudden ceases to grow and remain almost unchanged for centuries until today. In Roskilde (Sealand, Denmark), e. g., the accumulation stopped in the 15th century. Of course when people

ceased to put their dirt in the street, fewer coins and other artefacts would be deposited with the dirt and the chronological distribution of coins found during an excavation will be biased (Koch 1999). The dirt was taken elsewhere. Is this why we see so many late medieval and early modern coins in fields around cities (see above)?

Building activity with all the mess of a construction site leaves more coins on a site than ordinary occupation periods (Moesgaard 1998). Some of these are probably lost by the workmen during the building period, but others that were in the soil on beforehand must have been moved around by the earthwork. So if one looks at each individual site, the coin finds as a sample of the local currency will be biased by the history of the site. The smaller the excavation, the more biased the material will be, because bigger excavations will tend to reveal a more complex history of the site, and the complexity will tend to level the biases.

The circulation time of coins constitutes a very difficult problem. It affects representativeness if one wants to study the chronological evolution of the monetary activity. One can always determine at least the approximate date of production of a coin. But how long a time elapsed from the striking of the coin until its loss or deposit? The wear of a coin can give a hint of the circulation time, but this feature is not very precise. Sometimes the coin is found in a well-dated archaeological layer, which will then provide a date of loss and deposit, but this phenomenon is not frequent and rarely precise enough to draw a firm conclusion. This is a real problem for the study of monetary activity, when one wants to know the variations in losses over time. The important point is then the date of loss and not the date of striking. The circulation time is determined by several economic and political factors which it is not possible to explain in detail here. Some coin types circulate for decades or centuries, other only a few months or a few years. A good example of the first case are the base 15th century coins (mainly bull's head bracteates from Mecklenburg) found in money-boxes of the 17th century in Denmark (Jensen 1973). A short circulation time is known for the Danish base silver klippings struck in 1518-1523. They were demonetized by royal decree in 1524, and the relatively small number of single finds recorded – despite the huge production documented by the mint accounts – seems to confirm that the demonetization was effective (Grinder-Hansen 1994b; Gullbekk 1995). The well-known *renovatio monetae* system also meant short circulation time.

Thus it is often impossible to know the circulation time for a specific specimen. On the other hand, one can attempt to determine the circulation time for the type in question. There are three ways of doing this. From the late Middle Ages onwards, we often have royal decrees demonetizing

particular coin types. However, we cannot be sure that the decree was followed by the coin users. The real circulation can be studied in contracts and accounts, where the coin types employed sometimes are specified. This is though rather scattered and incomplete evidence. The best way of knowing the circulation time is to look at the composition of coin hoards: the difference between the date of striking of an individual coin and the date of deposit of the hoard will indicate the time of circulation of this particular specimen. If one accumulates evidence from several hoards, one will obtain a general picture of the circulation time for each coin type. This has been done for England in an excellent article by Marion Archibald (Archibald 1988), partly for Denmark by Jensen and Grinder-Hansen (Jensen 1996; Grinder-Hansen 1997), but it still needs to be done for other countries.

One should be aware that the circulation time for a particular coin can be very different from one region to another, e. g. in its own homeland and abroad. The classical example are the Anglo-saxon pennies of Æthelred II (978-1016) and Canute (1016-1035), that were demonetized after *c.* 6 years on the introduction of a new type in England, whereas they were used for decades afterwards in Scandinavia. Even coins of the same issue can have different circulation times. Thus the petty coins circulated much longer than the silver coins during the inflation period in France in the middle of the 14th century (Moesgaard 1999b).

B. Meanwhile (in the soil):

During their stay in earth, the coins suffer from corrosion. Various factors are active in this process. Some of them are inherent to the nature of the coin and/or the soil. Indeed, some metals are more resistant to corrosion than others, the thick coins are stronger than thin ones, the geological composition of the soil can be more or less aggressive to metal. These factors are described in the papers of Henning Matthiesen and Lone Brorson Andersen in this volume (see also Mourey and Robbiola 1998, pp. 71-110). Here, I will just give one example of the effects of corrosion: in 1998, I examined a find of a Danish 2-øre made of zinc of the type struck from 1948-1972 (year not visible). Only shadows of the design were visible and the weight had diminished 46 % from the original 3.20 g to a mere 1.73 g. This coin had only been in the soil for at most 40 years. On the other hand, we find antique gold coins as good as new nearly 2000 years after their loss.

Modern farming methods also make artefacts suffer: ploughing will turn the soil and expose coins formerly safe to the corrosive action of oxygen. Fertilizers and other chemical products used in modern farming can be very damaging to coins and other artefacts. The modern farming machines can tear an archaeological item into pieces (see coins of

Freerslev hoard, Hougaard & Moesgaard, forthcoming). Coins in plough layers are thus at high risk of deteriorating, and they will probably disappear entirely if they are not recovered quickly. This is the best argument for letting skilled and archaeology-minded amateur detectorists survey farmlands and report their finds, as it happens today in Denmark. Their action saves thousands of finds that otherwise would disappear.

To summarize: a coin made of precious metal in a ‘harmless’ soil type which is not cultivated will have much better chances of survival than a copper-alloy coin on farmland. Even copper-alloy coins which do survive are much more subject to being deteriorated so badly by corrosion that one cannot identify them precisely any longer.

The above mentioned factors concern the number of coins found and how many of them are identifiable. It will be clear that these factors are not active to the same extent at various places. Mapping the differences precisely is probably not possible, but one should at least bear the bias in mind in a broad manner when comparing number of coins from various sites and regions.

Not only the number of coins can be biased. The quality of the available information can also be a source of distortion. Every loss of a coin is due to an individual, specific historical situation. This situation will be fossilized in its archaeological context. But very often this primary context – the one in which the coin was lost or deposited and which could give us important information – has been destroyed at some stage between the loss or deposit of the coin and the recovery and recording of the coin. We thus have two types of single finds: those with a full archaeological context, and those without. For refined analysis of the currency (level 1 analysis), only the first group can be used, whereas broader analysis of the regional circulation pattern may use both groups – indeed this kind of analysis requires a significant number of finds to be valid (level 2 and 3 analysis).

In the following, I will describe how earthwork can destroy the primary archaeological context. Earthwork is not only a modern phenomenon. This will be clear from looking at the extremely instructive tables produced by Audra, Jacquin and Villedieu (1990). They show the distribution of the 235 coins from the excavations of avenue Adolphe Max in Lyon (département Rhône, France) according to the chronological phases of the settlement. Many Roman coins were found in Medieval and Modern layers. These coins were not used and lost during the Middle Ages and Modern times. They were presumably lost in Antiquity, and then they stayed in the soil until earthwork destroyed their original context and left them in secondary contexts. The excavation gives us an

idea of the dates and the circumstances of the earthwork. E. g. the existence of 2 Roman coins in the layers of phase 5 (late 18th century) is due to construction of a new house. The 14 Roman coins of phase 15 (14th century) are also due to construction of houses and the 4 coins of phase 16 (9th-13th centuries) can be explained by the digging of pits. Likewise the three Roman coins from the excavation in Medieval Southampton (England) are all from later contexts. Two are from cesspits dated c. 1150-1200 and one is from a mixed destruction layer, which is probably early modern (Dolley 1975, p. 317, nos. R.1-3).

This means that these coins cannot be used for detailed analyses of archaeological contexts as evidence for particular situations of coin use (level 1 analysis). On the other hand, the earth disturbed during the digging of pits and construction of houses probably belongs to the site – it was not brought in from far away. So the coins can confidently be used for statistical analysis of the sample of coins from the site or the neighbourhood (level 2 and 3 analysis).

The same can be said about coins from plough layers in the countryside. A very instructive example (but with no coin finds) of the damage made by ploughing is given by the ploughing prior to planting trees on a plot near Bjerringbro (Jutland, Denmark). In this particular case, it was still possible to excavate an ‘upside-down’ stratigraphy, because the plot had only been ploughed once and the farmer warned the local museum (Kristensen 1999). But very often sites are completely destroyed by continuous ploughing. Even when the plough has destroyed the archaeological context, the artefacts are not far from the spot where they were lost – at most a few dozens of metres. Examples of the spreading of a hoard in plough layers reveal something of how far items can be brought by the plough (see distribution map, Kromann & Watt 1984, p. 31, fig. 4).

Churches and churchyards are subject to intensive earthworks when graves are dug. Of course coins in former graves or just accidental losses will be disturbed by this activity. This is why many coins are found in the filling earth of a burial. These coins should not be regarded as grave goods in the grave where they are found, but as secondary finds. This implies that we cannot know for each individual coin whether it was deposited in a grave (intentional offer) or just an accidental loss. On the other hand, it is unlikely that the earth would have been brought in from far away.

Bigger earthworks over long distances create problems of representativeness. A good example is the 3rd century imitation found in layers of phase 4 of the above mentioned Lyon excavation. These layers are a levelling of the soil with earth brought in from elsewhere in the 19th century. We do not know exactly where the earth came from (Audra,

Jacquín & Villedieu 1990, p. 163). One can presume that it was not brought in from far away. If this is correct, the coin can be included in analysis of the regional currency (level 3 analysis), but not of the local currency (level 2 analysis).

Earthworks over distances are more and more frequent today, and the increased engine power of modern society accelerates the process of destruction. E. g. the earth brought in to fill a gravel pit at Favrskov, parish of Tanderup (Funen, Denmark), contained a Danish copper sterling of *c.* 1420-1435 (FP 6323). We do not know where the soil came from. Sometimes we are so lucky as to know where the earth came from. Three Merovingian silver coins were found *c.* 1975 by the Seine riverside at Amfreville-la-Mi-Voie, a little upstream from the city of Rouen (dép. Seine-Maritime, France). Fortunately the finder reported that the earth was spoil from developments in the centre of Rouen. We do not know exactly where, but at least the coins can be added to the corpus of Merovingian coins found in Rouen in a broad sense (Lafaurie & Pilet-Lemière 2003, p. 305, nos. 76.540.1-3). Similarly, eight medieval coins found at Gisseløre hockey field really come from soil from the site of Møllebakken in Kalundborg (Sealand, Denmark) (FP 6131). Scholars should be very much aware of this problem and record all available relevant information whenever possible.

As a kind of 'worst case', I will quote the Dutch-Frisian Early Medieval villages built on small hills called 'terpen'. The soil of the terpen is extremely fertile, and the majority of terpen were dug away in the 19th century, and the soil brought several hundreds of km south to be used as fertilizer (paper read by Egge Knol, November 4th 1999, Institute of Archaeology, University of Copenhagen). At the time, many archaeological finds were recorded (see e. g. Boeles 1915), but one may assume that many artefacts remained in the soil. They may now be found in the southern parts of the Netherlands, very far from the place where they were lost or deposited. If one is not extremely careful, this will distort the whole picture of the settlement pattern as well as of the coin circulation.

The degree of earthworks disturbing the archaeological layers varies a lot. Urban sites often have a very high degree, as at the excavation at Lyon quoted above, and so have redundant rural settlements later destroyed by ploughing. At the other end of the scale with almost no disturbance are sites like early medieval Novgorod (Russia), where all the coins seem to have been found exactly where they were lost (Potin 1982) and many lost villages in fossilized surroundings like forests, such as Grosley-sur-Risle (dép. Eure, France) (Pilet-Lemière & Moesgaard 1992) or areas covered with flying sand, such as Lindholm Høje (Jutland, Denmark) (Johansen & Trolle 1994). The motte of Moulins-sur-Céphons

(dép. Indre, France) has not been occupied since the 16th century, which has left the coins untouched in the soil.⁵

C: Now (finding and recording today)

Several factors in the process of recovering coins in modern times distort the representativeness of the finds (the 'corpus'). These factors concern the process of selection of sites producing finds as well as the thoroughness with which the coins are recovered, and the degree to which finds are reported and recorded. This is the case for chance finds, excavation finds and detector finds.

The process of *selection of sites* producing coin finds is governed by factors in modern society, which do not necessarily reflect the real distribution of coins contained in the soil. Some of the factors depend on deliberate choices made by archaeologists – professional and amateurs – others are completely independent of the archaeological world and linked to the general structures of modern society.

First and foremost, the geographical locations of areas of economic development determine zones of building activity, which means earth works leading both to chance finds and to the necessity of undertaking rescue excavations before building. This implies more finds from the centres and outskirts of big thriving cities than from elsewhere. The geography of modern agriculture is conditioning zones of finds. Of course, modern economic geography does not fit the activity areas of former times, and thereby introduces a bias to the find material. Changes in agricultural and building technology influence the number of finds. For example the change from ploughing by horse-power to ploughing by engine-power diminished the number of discoveries of hoards in Denmark, because the modern farmer mounted on a tractor does not look as closely at the soil as his father and grand-father did while walking behind the plough at ground level (Grinder-Hansen, in Jensen *et al.* 1992, pp. 123-4).

Research programs in archaeology will also distort the distribution of finds, because archaeologists will excavate a particular type of site – castle ruins, redundant churches or villages for example – in great numbers. This particular type of sites will then be over-represented in the 'corpus' compared to their role in the 'currency'. For a long time coins

⁵ History of the motte: Querrien 1988, pp. 25-28. Catalogue of the coins: *ibid.*, pp. 50-51. Stratigraphical summary: *ibid.*, p. 31. More precise stratigraphical information was given in the texts of the exhibition shown in Chambéry (seen by the author in June 1993): phase 1-3, occupation layers, coins nos. 48 and 49 (11th-12th c.); phase 6: new constructions, occupation layers, coins nos. 42 and/or 43 and 50 (1405-22); phase 7-8, destruction layers, filling layers, coins 44 and 45 (1427, 1431). The coins nos. 46, 47 and 51 were not accounted for in the text.

from church floors were the prevailing group of single finds in the Scandinavian countries, but this dominance was due to the more thorough procedure of archaeological surveillance in churches than elsewhere (Olsen 1958; Jensen 1977; Klackenberg 1992).

Amateur detectorists do their surveys for the pleasure of finding, therefore they will prefer prolific sites with many finds rather than poorer sites. The more intensive surveys of the prolific sites will tend to exaggerate their importance compared to less prolific and less surveyed sites. From a scientific point of view, less prolific sites are as interesting as prolific ones. Indeed, for research purposes, firmly documented absence of evidence can be as good evidence as abundance of evidence.

The range of sites surveyed, excavated or just providing chance finds is thus not representative, making comparisons in the number of coin finds between regions or specific types of sites difficult (level 2 and 3 analysis). As we will see below, differences in legislation and traditions make comparison between countries even more difficult. To face these problems, one will first of all need a huge number of finds, which by their sheer number will diminish the distortions in the material. Moreover, many finds mean many find spots, which in most cases will secure representation of sites of various kinds, thus strengthening the representativeness of the 'corpus'. Last but not least, the scholar should be aware which of the factors enumerated above have influenced the creation of the corpus of coin finds that he is working with. Thus he can avoid a certain number of mis-interpretations due to factors in modern society and not in the former society.

Factors in modern society also influence the *degree of recovery* of coins. Put in another way: once a site is recognized, will all coins then be recovered?

As for archaeological excavations, a number of factors determine how many coins will be recovered from each individual excavation. Indeed, it will never be possible to find all artefacts, because even the best archaeologist will always miss some finds. Apart from the skill of the individual archaeologist, the administrative status of the excavation is an important factor. When a developer wishes to build on a plot with archaeological remains, a rescue excavation is undertaken in order to examine these remains, which would otherwise be destroyed without recording. This excavation has to be done within a strict time limit, because the plot must be given over to the developer on a certain date in order to avoid delays in the building project and extra expense. In the real world, the time schedule of a rescue excavation forces the archaeologists to make choices of what to excavate in detail, and what to excavate quickly and what to shovel away without excavating at all. Very often, the

archaeologist will chose to record the remains of buildings and other structures, rather than recovering the maximum number of artefacts. Moreover, the topsoil will often be removed without thorough survey, as will thick destruction layers and levelling layers, whereas occupation layers will be excavated in more detail. Nevertheless some rescue excavations take the time and the pain to sieve the soil – with very good results, as shown by the marvellous finds of sceattas in Ribe (Jutland, Denmark) (Feveile, this volume).

Research excations will have more time. They are often carried out over several years. Often the recovery rate of artefacts will be higher than on rescue excavations. A good example is the excavation of Charavines (départ. Isère, France) where all the soil was sieved (Colardelle & Verdel 1993). Even though this settlement is quite small and was shortlived, it has delivered far more 11th century coins than any other excavation in France. But even on research excavations scientific priorities and/or lack of funds sometimes imply that some layers are excavated quickly, with an inevitable loss of artefacts as a result. Many good finds are made on spoil heaps!

Nowadays, at least in some countries, archaeologists will often make a survey with a metal detector before removing layers that he cannot excavate in detail. Metal detectors are also used on all kinds of layer to discover where to be cautious before starting to dig. The use of metal detectors has highly improved the recovery rate of metal items. At the Celtic sanctuary at Fesques (départ. Seine-Maritime, France), the very high number of coin finds was due to intensive use of metal detectors (Mantel 1997). Metal detecting by professional archaeologists is almost standard procedure in Denmark, but it is never done in Trondheim, Norway, for example. Sieving of the soil cannot always be done – in Norwegian urban excavations it is almost never done because of lack of money and staff (pers. inf. Jon Anders Risvaag). In this way, many artefacts still find their way to oblivion in the spoil heaps.

However, this is not only a question of money and staff, but also of tradition and archaeological standpoint. For a long time, the archaeological dogma was that ‘real’ archaeology aimed at understanding a site, not recovering artefacts. The archaeologist would recover a few items from each stratigrafic layer in order to be able to date the layer. This doctrine states that artefacts found outside the archaeological stratigraphy were not worth recovering and recording! Recovering artefacts was regarded as treasure-hunting, which was not considered a scientific approach. Fortunately this mentality has evolved in many countries (but not everywhere), as archaeologists have become aware of the light artefacts can shed on the nature of the activity of the site, and sometimes even distinguish different zones of activity within a site (Stig Jensen 1987; Jørgensen 2000).

So when comparing the numbers of coins from different excavations, one has to take into account first and foremost whether it was a rescue or a research excavation, and secondly which scientific priorities were set up, and finally which methods and tools were used, especially whether the soil was sieved or metal detectors were used. The number of coins recovered can vary tenfold or twentyfold.

There is another problem in assessing the representativeness of amateur finds. In some regions, the detectorists are much more active than in others. This can be due to an active local detectorist association or efforts from the local museum to get in touch with the detectorists and thus increase the rate of reporting. In Denmark, Bornholm and the Aalborg area are examples of very active areas, Ringkøbing, Hjørring, Odense, Korsør, Kalundborg, Holbæk, Roskilde, Køge and Northern Seeland are relatively active areas, whereas other regions are less active (see the annual lists of finds in AUD). The activity of one single amateur at a very prolific site, Tårnborgh near Korsør (Sealand, Denmark), thus accounts for 2379 coins or 70% out of the 3383 identifiable coins found by detector that Keld Grønder-Hansen analysed in his work on the Danish currency 1241-1340. Another 408 coins or 12% were found by the very active detectorists in the Aalborg region in Northern Jutland, Denmark, leaving only 596 coins or 18% for the rest of the country (Grønder-Hansen 2000, pp. 181, 202, status 1994). This representation is of course more due to factors in modern society than in former societies, and it is a problem for evaluating the representativeness for inter-regional comparisons.

Another problem is that amateurs – even skilled and archaeology-minded ones – are working for the pleasure of finding. As already pointed out, they will tend to search a productive site more thoroughly than ordinary sites. Even within a single site, they will work more intensively on fields with many finds than fields with few finds. This has been demonstrated at Uppåkra near Lund (Scania, Sweden) by comparing the distribution of finds made by amateurs with the distribution of finds made by professional archaeologists surveying all the fields in a systematic way (Paulsson 1999). The amateurs had a higher find rate, but the finds of the professional archaeologist covered a much bigger area.

It is easier to find a big coin than a small one or a fragment with a metal detector. An English detectorist once threw 25 large and 25 small specially made tokens on a field, and saw how many years it took to get them back. He found the large ones much quicker than he found the small ones (pers. inf.). It is needless to say that more coins are found if the detectorist is experienced and if he has a good detector. A coin positioned upright in the plough layer is very difficult to find. Small late medieval bracteates may be difficult to catch with a metal detector because of their

thinness and very low weight. As pointed out above, they are indeed underrepresented among detector finds.

Finally, one should not forget that finding a coin implies destroying the archaeological context (very often the context was, however, already destroyed by the plough). Only coins found during excavation will have their context recorded, as the professional archaeologist is educated to record contexts. Chance finds will never have a full archaeological record, even when the precise find spot is recorded.

Last, but not least, one should look at the *degree of reporting and recording* of the finds. For the moment being, the policy towards metal detecting is the main issue in this respect. Thanks to their liberal policy, countries like England and Denmark have witnessed a spectacular increase in the number of recorded coin finds since the introduction of the metal detector as a tool for amateur archaeologists in the 1970s. Of the c. 150 single finds of 8th century sceattas recorded for East Anglia by 1987, only 33 were found before 1977 (Metcalf 1988)! That is, one single decade of metal-detecting had brought to light four times as many coins as several centuries of non-detecting! And more have been found each year since 1987, as one will see when reading the annual find lists in the 'Coin Register' in the *BNJ*. On the contrary, countries which have adopted a restrictive policy towards metal detecting will not benefit from this increase in the number of finds. E. g. in the French region of Upper Normandy, only about a fifth of the finds of Carolingian coins are post-World-War-2 (Moesgaard 1995). The same type of figures can be produced for other categories of artefacts. Lund (Scania, Sweden) and Roskilde (Sealand, Denmark) were both very important cities in the Middle Ages and they can in many respects be considered comparable. Broadly speaking, the number of finds of medieval seals was identical in the two cities until c. 1980. There was one find every 5th or 10th year. After c. 1980, this find rate has been maintained in Lund, whereas there are on average 1 or 2 finds every year in Roskilde! The reason is that private metal detecting is legal in Denmark, not in Sweden (Andersen 1996, p. 36). Today in Denmark, about 80 % of the coin finds are due to private detectorists! Comparison of the number of finds between countries allowing private detector use and countries banning it is thus impossible!

The important point is to know whether people use detectors anyway despite a ban. In France several people have been prosecuted for metal detecting (Petit & Meissonnier 1996, pp. 99-100). These are the ones who have been caught. But how many are not? Their finds will never be reported and the information of the find spot is thus lost for ever. Archaeological finds are a limited, non-renewable resource, and the more

detectorists find without reporting, the less will be left for future archaeologists to record.

One cannot stress enough the importance of local people being aware of archaeology for the recording of chance finds. The activity of one single person can change the number of recorded finds considerably. If e. g. one looks at the number of coin finds recorded in the Norman town of Fécamp (départ. Seine-Maritime, France) over the last 200 years, it is clear that finds are only reported and recorded when there are archaeology-minded people around. The local historian Léon Fallue recorded finds in the early 19th century. In the middle of the 19th century, the archaeologist Cochet and the collector A. Legrand recorded finds. Then almost no finds are known for a century, before Dr. Soullignac, correspondant of the Commission départementale des Antiquités, kept an eye on local finds in the 1960s and 1970s and reported them to the Cabinet des Médailles in Paris. During the periods without such people, there have probably also been finds in Fécamp, but they were never reported, and they are lost to research (Moesgaard 1996). The efforts of the archaeologist Etienne Mantel during the last decade in recording finds in the North-Eastern part of the county Seine-Maritime (France) has made this area the most dense in find spots of the whole region. The information on many detector finds of early medieval coins in England has been saved by the pioneer recording work of Michael Bonser. One individual can make a difference.

The variation in the numbers of recorded finds has also been highlighted by the Portable Antiquities Scheme in Great Britain, a scheme set up in 1997 in order to persuade finders (detectorists and others) to report their finds. Regions like Norfolk, where the Norwich Castle Museum has a long tradition for collaboration with detectorists still record many more finds than other regions, but the mere fact that the scheme has been launched has led to an increase in recording in other regions as well (*Portable Antiquities, annual reports*).

Institutions like high schools, universities, and bodies like regional history societies with their network of local correspondants are of paramount importance for breeding people interested in archaeology. These institutions are often located in cities, and therefore finds from the vicinity of cities tend to be better recorded, at least if we speak of pre-World-War-2 finds.

The aim of 19th century scholars was to constitute a corpus of known coin types and to date them, and the archaeological interest of recording find spots exhaustively for every coin was not in the first line. They were more interested in unpublished, rare and spectacular coins. This feature has been brilliantly demonstrated by Simon Coupland. Taking the example of single finds in Wijk-bij-Duurstede (Holland, site of the early

medieval trade town Dorestad), he shows how finds of the very common Christiana Religio issue of Louis the Pious (814-840) were poorly – or even not at all – recorded by the 19th century archaeologists and numismatists, who put all their attention on the rarer coins of Charlemagne (768-814), the mint-signed issues of Louis the Pious and coins of his sons (Coupland 1988, pp. 9-10). In a very similar manner, comparison between the recorded single finds of the 19th century and excavation finds of the post-World-War-2 period in Upper Normandy show that the former comprise relatively many gold coins, many silver coins and very few base silver and copper coins. On the contrary, the latter consist of plenty of base silver and copper coins, relatively many silver coins, but very few gold coins. The focus of research has clearly changed.

This of course greatly affects the representativeness of the part of the 'corpus' recorded in the 19th century. In some countries, the explosion in the number of new finds mainly due to private metal detecting has dramatically diminished the 19th century part of the corpus, and this aspect of the problem of representativeness is thus resolved.

It has been presumed that amateur detectorist record finds with less precision as to find spots than professional archaeologists would do. This presumption has been used as an argument against allowing amateurs to use detectors in order to find coins (cf. Koronen 1997, pp. 9-10). The Danish experience shows that the precision of the records of the find spot do indeed vary, and sometimes we only know in which field or which farm the coins were found. But the close collaboration between local museums and amateurs has given the latter a better awareness of the importance of recording the exact find spot. Many local museums have trained the amateurs to measure the find spot to less than a metre's precision. The experience of Bornholm is a model in this field (Watt 2000; Nielsen 2000).

Under ideal conditions, how many coins is one to expect from a town, a village, a farm, a manor, a church? Only full-scale excavations conducted with methods aimed at recovering small metal artefacts (systematic sieving and/or use of metal detectors) can tell us. The duration of the settlement and the approximate population must be known in order to calculate an average loss rate. Unfortunately all these factors are very rarely gathered in one single excavation, so it will be hard to give an overall view. I will mention a few examples, just to give a broad idea. By comparison, the figures quoted may also give us an idea of how many coins are not recovered in rescue excavations, where time and resources do not allow the archaeologist to use thorough and refined methods...

The fortified 'manor' of Colletière in the commune of Charavines (département Isère, France) was founded in 1003 (dendrochronological date) and

abandoned *c.* 1035 because of flooding due to the worsening climate. That is an occupation of about 30 years. The population is estimated to have been between 60 and 100 people, being composed of knights/farmers and their servants. Two out of the three buildings have been excavated, and so has the greater part of the courtyard. The methods have improved from year to year, and during the last part of the excavation, all the soil was systematically and very carefully sieved. No less than 27 10th-11th centuries silver coins (21 deniers and 6 obols) were found, along with 7 Roman bronzes presumably used as small change. That makes approximately 0.01-0.02 coin per year per inhabitant. The fact that at least 10 of the coins were struck after 1034, and thus lost during the very last few years of the settlement, seems to indicate that this loss rate hides variations over time, with more coins lost as the settlement became richer towards the end of its existence. These figures are astonishing high, the more so given that the coins are relatively high value silver coins, and the settlement is a rural one (Colardelle & Verdel 1993).

La Isabela (Dominican Republic) was founded by Christopher Columbus in 1494 and abandoned about 1498/1500. *C.* 1200 men lived here. The settlement is divided into two parts: the 'Solar de las Americas' was the area of the official buildings in stone and the 'Pueblo' was the living area. The Solar area has been fully excavated, while the Pueblo which is today occupied by a village has only been very partially excavated. Unfortunately it is not stated in the publication what methods were used (sieving, metal detecting?). Moreover, part of the top soil and the occupation layers were removed in order to level the area some 50 years ago. 78 coins (74 base silver and 4 silver coins) were found, that is *c.* 15 per year of existence of the settlement or 0.013 coin per year per inhabitant. These figures are minimum figures, because the Pueblo has not been fully excavated, and because of the destruction of parts of the archaeological layers before the excavation. This site is of course exceptional in being an isolated European colony. The coins are small denominations and reflect everyday life inside the settlement, which could not use base petty coins for its contacts with the external society. The contemporary agricultural settlement of Las Coles was also excavated, but no coins were found there (Stahl 1995).

Tårnborg (Sealand, Denmark) is today an isolated church and a castle motte near Korsør on the strait of Storebælt. From *c.* 1200/1250 to *c.* 1425, this was a thriving city with trade and craftsmen. We have no accounts of the population figures, but Danish Medieval towns rarely exceeded 1000 inhabitants, and most were rather smaller. Intensive detector surveys by amateurs over several years have yielded over 4000 medieval coins. Limited excavations have brought to light a few hundred more, so the total figure is 4414. That is a little bit more than 20 per year,

or 0.04 coin per year per inhabitant if we put the population at 500 (high estimate). This figure is higher than the ones quoted before, but this is presumably due to the fact that the coins are very base, low value coins, which are common as single finds. Moreover, the settlement is a town, meant for trade (Grinder-Hansen 1994a; 2000).

Llanfaes (Wales) is a similar case to Tårnborgh. The town was a regional commercial centre and contained a fair and an important port of import and export, and a fishing place. The heyday of the town was the 13th century. About 700 silver coins have been found by metal detecting, the vast majority being from the 13th century. This gives 7 coins per year and at a population of say 500, this makes 0.014 coin per year per inhabitant. This lower figure compared to Tårnborgh can easily be explained by the fact that these coins are silver coins, and that the detector survey has been less thorough (Besly 1996).

At the important 8th century trading place of Ribe (Jutland, Denmark), about 200 coins have been found by now (Feveile, this volume). 80 were found in two excavations, covering 115 m², by systematic sieving of all the soil. If the find frequency per m² is the same throughout the settlement, a full scale excavation (which is impossible, because part of the site is urbanized) would give more than 8000 sceattas for less than a century's settlement (Feveile & Jensen 1993, p. 76)!

The castle of Paphos (Cyprus) was built shortly after 1192. It was destroyed by an earthquake in 1222, so it was only used for less than 30 years. The excavations have revealed about 50 coins, of which a few are earlier and a few later, but most of the coins are from the just mentioned period of 30 years. This makes more than 1 coin a year. I do not know how extensive, nor how thorough the excavations were, nor which methods were used, so this figure should be regarded as a minimum (preliminary publication: Metcalf 1995, pp. 360-1).

Even a village can deliver quite a few coins. At the site of the lost village of Vinderup in Ågerup (Denmark, Sealand), private detectorists have found more than 100 coins of which 83 are medieval covering the period 1234-1536 (FP 4050, 5988, 6047). The research has not been very intensive, but even so this gives a coin every 4 years on average. At the lost village of Legerup in Gevinge parish (Sealand, Denmark) one single private detectorist found 65 coins of which 55 are medieval from the second half of the 13th century to the beginning of the 16th (FP 3937, 4187, 4188, 4591, 4745, 5196). That is, once again, one coin every 4 years. Unfortunately we cannot judge the number of inhabitants in either of these villages.

In a church, the number of coins varies considerably. Fully excavated churches in Sweden can give from a score to several hundred medieval coins (Klackenberg 1992, find lists). In Gotland, more churches have

yielded well over 1000 coins or even several thousand coins, but if one subtracts the numerous W-bracteates discussed above, we get figures comparable to mainland Sweden (Moesgaard 1987). Of course there are differences between a small parish church and an important pilgrimage church. 400 medieval coins in some Swedish church; that is approximately 1 coin lost per year in the period c. 1200–c. 1550.

In the Saint Stephen Church of Oiartzun (prov. Gipuzkoa, Basque Autonomy, Spain), the excavation of almost the entire surface of the church revealed 900 coins. They cover a period of 800 years from the 12th to the 19th century, but interestingly, they show a peak from the 14th to the 17th century as if the custom that led to the loss of coins emerged only in the 14th century to disappear in the 17th century (Ibáñez 1997).

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Abbreviations

- AUD = Arkæologiske Udgravninger i Danmark
 BAR = British Archaeological Reports
 BCEN = Bulletin du Cercle d'études numismatiques
 BNJ = British Numismatic Journal
 BSFN = Bulletin de la Société française de numismatique
 FP = Find register of the Royal Collection of Coins and Medals, National Museum of Denmark
 HBN = Hamburger Beiträge zur Numismatik
 JMP = Jaarboek voor Munt- en Penningkunde
 NC = Numismatic Chronicle
 NNUM = Nordisk Numismatisk Unions Medlemsblad
 NNÅ = Nordisk Numismatisk Årsskrift
 RN = Revue numismatique

Summary

Single finds as evidence for coin circulation in the Middle Ages – status and perspectives

The number of recorded single finds has increased dramatically during the last decades. This is first and foremost due to the use of metal detectors, but also to more and better rescue excavations and better archaeological control of work in the church floors. We now have so many finds on record, that they are fit for serial analysis. This new evidence has already been used in studies of various aspects of the coin circulation. It is assumed that most of the coins represents accidental losses from everyday coin use. Based on a wide range of examples of finds throughout western and northern Europe, this paper discusses whether this assumption is correct. In particular the archaeological context of the coins and the distribution patterns within an excavated site are analysed. It is concluded that the bulk of the finds must represent chance losses, but some are clearly votive deposits and others simply reflect people getting rid of obsolete base coins.

The paper then discusses factors that may have distorted the corpus of single finds as a representative sample of the past currency. Some distortion happened already at the time when the coins were lost. Petty coins are clearly over-represented. In well-cleaned houses, a lost coin will be found again. Votive deposits were not meant to be recovered at all, and the coins may have been selected for other reasons than their availability in currency. The stay in the soil will disintegrate some coins, mainly of base metal. Some soil type are more corrosive than others. Earth work will destroy archaeological layers. As for the present day recovery of the coins, several factors are at stake: the proces of selection of sites to excavate, the archaeological methods (sieving, metal detectors), the laws regarding coin finds by private individuals (metal-detecting is banned in several countries), and so forth.

Finally, a few examples of well-conducted excavations are given in order to get an idea of how many coins a site can yield.

Resumé

Enkeltfund som kildemateriale til middelalderens møntomløb – status og perspektiver

Antallet af enkeltfundne mønter er steget kraftigt i de sidste par årtier. Det skyldes først og fremmest fremkomsten af metal-detektoren, men også flere og grundigere nødudgravninger og mere arkæologisk kontrol med anlægsarbejder i kirkernes gulve. Vi har nu registreret så mange fund, at de kan bruges til statistiske analyser. Det nye materiale har allerede været brugt i en del undersøgelser af forskellige aspekter af møntomløbet. Det forudsættes her, at de fleste af mønterne er tabt tilfældigt under hverdagens møntbrug. Ud fra en række eksempler fra Vest- og Nord-europa diskuteres det i denne artikel, om denne antagelse er korrekt. Artiklen analyserer især den arkæologiske fundkontekst for den enkelte mønt og fundenes spredning ud over en plads. Konklusionen er, at de fleste mønter må være tilfældige tab, men der er også kultisk motiverede nedlæggelser, og nogle ringholdige småmønter er sandsynligvis blevet smidt væk som skrot.

Dernæst ananalyseres det, om de møntfund, vi kender i dag, er repræsentative for fortidens møntmasse. Allerede da mønterne kom i jorden, var de ikke fuldstændigt repræsentative. Der er flest småmønter. Mønter blevet fundet igen i velrengjorte huse. Det var ikke meningen, at man skulle grave kultisk motiverede nedlæggelser op igen, så de er overrepræsenterede. Mønter i kultisk brug kan være udvalgt p.g.a deres motiv. Mønternes ophold i jorden betyder, at nogle af dem går til. Det gælder især dem af dårligt metal, og nogle jordbundstyper er mere aggressive end andre. Store jordarbejder flytter rundt på mønterne og andre arkæologiske genstande. Ved fundsituationen i vore dage spiller flere faktorer ind, f.eks. valg af steder at udgrave, brug eller ej af metaldetektor eller soldning af jorden, lovgivning omkring privatpersoners fund af mønter (om detektorbrug er forbudt eller ej).

Endelig forsøges der ud fra nogle eksempler på veldokumenterede udgravninger at give et bud på hvor mange mønter, man egentligt kan forvente at finde.