Wiadomości Numizmatyczne, R. LXIV, 2020, z. 208
DOI 10.24425/wn.2020.136908

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REGIONAL MONETARY STANDARDS AND MEDIEVAL BRACTEATES*

ABSTRACT: In the Middle Ages, tens of thousands types of uni-faced bracteate coins were struck in the period 1140−1520. The existence of hundreds of small independent currency areas with their own mints in central, eastern, and northern Europe and the strong link between bracteates and periodic re-coinage explain the large number of bracteate types. The classification and dating of coins can provide insight into economic and monetary development when studying coin hoards and cumulative finds. A central problem when classifying bracteates is that most of them are anonymous, i.e., there are seldom any legends or letters. However, bracteates struck in closely located mints almost always have the same regional monetary standard. In this study, I show how monetary standards in combination with social attributes can be used to classify bracteates when both legends and find information are lacking. I also provide an economic explanation why closely related mints voluntary joined a specific monetary standard.

ABSTRAKT: W średniowieczu, w latach 1140–1520, wybito kilkadziesiąt tysięcy typów jednolitych monet brakteatowych. Istnienie setek małych, niezależnych obszarów walutowych z własnymi mennicami w Europie Środkowej, Wschodniej i Północnej oraz silne powiązanie między brakteatami a okresową wymianą monet, wyjaśniają dużą różnorodność typów brakteatów. Badania monetarnych skarbów i znalezisk skumulowanych, dzięki wypracowaniu klasyfikacji i ustaleniu datowania monet, mogą dać wgląd w rozwój gospodarczy i monetarny poszczególnych regionów. Głównym problemem przy klasyfikowaniu brakteatów jest to, że większość z nich jest anonimowa, tj. rzadko pojawiają się na nich legendy lub litery. Jednakże brakteaty bite w blisko względem siebie położonych mennicach prawie zawsze wykazują ten sam regionalny standard monetarny. W niniejszej pracy pokazano, jak standardy monetarne w połączeniu z atrybutami społecznymi mogą być użyte do klasyfikowania brakteatów, gdy brakuje zarówno legend na ich stemplach, jak i informacji o miejscu znalezienia. Podano również ekonomiczne wyjaśnienie, dlaczego blisko powiązane ze sobą mennice dobrowolnie przystępowały do określonego standardu monetarnego.

KEYWORDS: regional monetary standards, bracteates, classification, Middle Ages, periodic re-coinage, transaction costs, seigniorage, coin hoards

SŁOWA KLUCZOWE: regionalne standardy monetarne, brakteaty, klasyfikacja, średniowieczne, renowacja monety, koszty transakcyjne, renta mennicza, skarby monet

1. Introduction

Bracteates are thin, uni-faced silver coins struck with only one coin die.[1] Historically, a piece of soft material, such as leather or lead, was placed under the thin flan (planchet) so that the mirror image of the design on the obverse appeared on the reverse of the bracteates.[2] This technology − originating from goldsmithing technology – was used to mint the most fragile coins ever produced.[3] Bracteates were minted for almost four centuries (1140–1520) in central, northern and eastern medieval Europe.[4]

More than ten thousand different bracteate types were struck in the Middle Ages. Many types were minted in the period 1140–1320 when bracteates were the main coin type. Later, in the 14th and 15th centuries, bracteates in the form of hohlpfennigs were mostly small change of a higher nominal (e.g., witten, groschen or örtug). Two phenomena explain why so many different bracteate types were minted. First, central, and eastern Europe were politically fragmented and consisted of hundreds of small currency areas with their own mints and coin types. Second, bracteates were strongly linked to periodic re-coinage, with new types being issued almost every year.[5]

Under the practice of periodic re-coinage, old coins were frequently declared invalid and had to be exchanged for new ones based on publicly announced exchange fees and dates. Such re-coinages were recurrent. In the 12th and 13th centuries, re-coinage could occur once or twice per year in Germany and central Europe, and a common exchange fee was four old coins for three new ones.[6] In practice,

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* The author thanks the participants at the Numismatica Centroeuropaea III seminar in Bystrzyca Kłodzka for their insightful comments. The author gratefully acknowledges financial support from the Sven Svensson Foundation for Numismatics, the Gunnar Ekström Foundation and the Helge Ax:son Johnson Foundation.

The Latin expression *bractea* (which means "thin piece of metal") for these uni-faced coins was used for the first time in a document from 1368; Höfken 1886, p. VI. At the end of the 17th century, the term 'bracteates' began to be used for these uni-faced coins in scientific publications (Olearius 1694).

[2] Kühn 2000, p. 2ff. The diameter of bracteates varies from 10 to 50 mm, and the weight is between 0.05 and 1.00 g. Bracteates are only 0.05–0.20 mm thick, but they are often stabilized by a high relief. A common misunderstanding is that all uni-faced coins are bracteates. Uni-faced coins that have not been minted through the specific technology of using soft materials under the flan are not called bracteates.

[3] In contrast to normal coin striking, in which the design is pressed into the flan, bracteate technology (like gold-smithing technology) implies that the design is created by bending the leaf-thin flan. While bracteate technology uses a die, goldsmithing technology uses punches to create the design.

[4] The first bracteates were struck in Thuringia and Saxony-Meissen in the 1120s. However, a breakthrough for bracteates occurred in the 1140s. Bracteates in the form of *hohheller* were minted as small change in Rhineland-Westphalia until the beginning of the 17th century.

[5] This monetary taxation system is also called coin renewal or, in Latin, *renovatio monetae*.

[6] Kluge 2007, p. 61ff; Röblitz 1986, p 21. Both the frequency and the exchange fee of coin renewals varied across Europe; for further reading, see Svensson and Westermark 2020, p. 823–25.

periodic re-coinage was implemented by changing the main design when re-minting the coins, whereas the monetary standard of the coinage (weight, fineness, diameter, and shape of the flan) remained largely unchanged.[7] This practice made it easy for coin users to distinguish between valid and non-valid types.

Periodic re-coinage was especially common in areas with relatively low monetization where there were few coins in circulation.[8] A low coin volume facilitated both re-minting on a frequent basis and monitoring/enforcement of the monetary system. Frequent renewals were also easier to undertake in regions with small geographical currency areas. Another condition for applying frequent renewals was the ability to exclude foreign coins from circulation.

Although periodic re-coinage had been practised in Europe since the 940s beginning in Normandy, bracteates were well suited for a system with frequent renewal.[9] First, only one die was needed, which reduced production costs and time. Second, bracteate dies lasted longer than those used for two-faced coins for two reasons. The soft material (leather or lead) under the thin flan cushioned the hammer strike, and the thin flan required less power when striking coins. Thus, a far larger number of coins could be minted with a specific die. Third, the relatively large diameter (up to 50 mm) made it possible to display various images on the coins, which made recognition of valid and invalid coins fast and reliable. Fourth, old bracteates were easy to hammer out and overstrike.[10] Finally, the bracteates were fragile but were not in circulation for a long period due to routine, frequent renewal.

Classifying and dating bracteates and other coins are important to date coin finds, to determine the circulation areas of coins and to estimate economic and monetary development. A central problem when dating and classifying bracteates is that most of them are anonymous, i.e., they lack legends and letters. However, bracteates struck in closely located mints almost always have the same regional monetary standard (weight, diameter, fineness, shape of the flan). The purpose of this study is two-fold. The first purpose is to show how monetary standards in combination with social attributes can be used to classify bracteates when both legends and coin information are lacking. Legends, coin finds and social attributes have been analysed in the book "Renovatio Monetae: Bracteates and Coinage Policies in Medieval Europe" and are therefore only summarized in section 2.[11] Stanisław Suchodolski applies similar methods (monetary standards, symbols, and coin finds) as in the present study when

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[7] Spufford 1988, p. 93.

[8] Svensson 2016, p. 1114ff.

[9] Svensson 2016, p. 1123.

[10] Dobras 2005, p. 9.

[11] Svensson 2013, p. 142–80. A fifth method is to analyse the silver fineness of bracteates, but this method is seldom available and not discussed here. However, there is an obvious pattern with respect to the fineness of bracteates over time. The silver fineness is mostly higher than 80 percent until the end of the 13th century in the context of periodic re-coinage. When coins became

classifying Pomeranian bracteates from the 13th century.[12] However, his study is restricted to a limited area and time period, whereas my study tries to set up methods that can be used when classifying bracteates *in general*.

The second purpose is to present an economic theory that explains why closely located mints may voluntarily choose to join the same monetary standard. Since *renovatio monetae* mostly were applied within the city borders, and any coins could be used on the countryside, coin hoards show that coins of the same monetary standard circulated together outside the city borders. The explanation is low transaction costs to estimate the internal value of coins. Thus, monetary authority could increase the circulation of its coins and the seigniorage by joining the monetary standard of neighbour mints.

This analysis of bracteates and monetary standards in the present study is restricted to *medieval* German areas, i.e., modern Germany and Northern Switzerland, Silesia, Upper and Lower Lusatia, Pomerania, and the Teutonic Order in Prussia. Bracteates were also minted in Scandinavia, the Baltic countries, Poland, Hungary, and Austria, but these areas are not considered here.[13] Analysis of late medieval hohlpfennigs is neither considered.

The study is organized as follows. In section 2, a short summary based on Svensson (2013) regarding legends, coin finds, and social attributes is presented. The tool of regional monetary standards to classify bracteates is discussed in section 3. The economic motivation for regional standards is analysed in section 4. The final section concludes. Appendix shows 90 pictures of bracteates, sorted by regions and monetary standards at the end of the study.

2. Legends, coin finds and social attributes

The best method for identifying and classifying bracteates is through legends. Legends are almost always written in Latin and state the name of the coin issuer, his title and sometimes the name of the mint (Pictures 13, 23, 26, 61, 63, 68, 77). Abbreviations are common. When a saint is depicted, the legend mentions his or her name (Pictures 21, 27, 62, 67). After 1200, the diameter of the bracteates shrinks, and the degree of artistry also degenerates (Pictures 14–16, 24–25, 64–66). Legends become progressively rare, and the bracteates become silent and anonymous.

Coin finds can be coin hoards, cumulative finds, or stray finds. The two latter finds are more useful for determining the mint of a coin. Hoards also provide information about the location of the mint since bracteates are seldom found far from their mints. An advantage of hoards is that they reveal which bracteates circulated

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long-lived − and renewal fees disappeared − beginning in the early 14th century, the fineness of both the bracteates and the higher nominal (e.g., groschen) rapidly decreased.

[12] Suchodolski 1996.

[13] For a classification of Swedish bracteates, see Svensson 2015.

together and the relative volumes of different mints and issues. The relative chronology of bracteates can be determined when several large hoards are available for analysis. Unfortunately, in Germany, there are few published studies on cumulative and stray finds. Many older publications about hoards are of inferior quality – the number of specimens of each bracteate type is often missing.

Social attributes on the coins is a practical method to determine mints, especially in combination with the regional monetary standard.[14] Coin issuers from different classes marked their authority with signs on the bracteates. Ecclesiastical coin issuers were more likely to signify their authority on the coins than imperial and especially civil issuers. Ecclesiastical attributes include mitres, crosiers, cross sceptres, books, and blessing hands (Pictures 3, 12, 14, 18, 19, 22–24, 30, 57–58, 61, 68–69, 71, 76, 84, 88). Sometimes the patron saint with a nimbus is depicted on ecclesiastical bracteates; this saint may be an ecclesiastical or a civil person (Pictures 16, 21, 27, 67). Kings and emperors mark their authority when portrayed by being shown crowned and holding power symbols such as orbs, lily sceptres or swords in their hands (Pictures 46–47, 59, 77–79, 86, 89). Portrayed civil coin issuers are armoured and either bare-headed or helmeted. The most common attributes in their hands are swords, banners, and shields (Pictures 26, 29, 31–43). Emperors and civil issuers are sometimes portrayed on a horseback (Pictures 63, 65, 70) or use a symbol of the city as design, for example, a tower wall/gate in Hamburg (Pictures 2, 4) and Ravensburg (Picture 87), a bull head in Mecklenburg (Picture 6), a lion in Lüneburg and Braunschweig (Pictures 1, 13, 15, 17) and Hessen (Pictures 73–74), an eagle in Hettstedt (Picture 20) and a deer in Stolberg (Picture 25).

3. Regional monetary standards

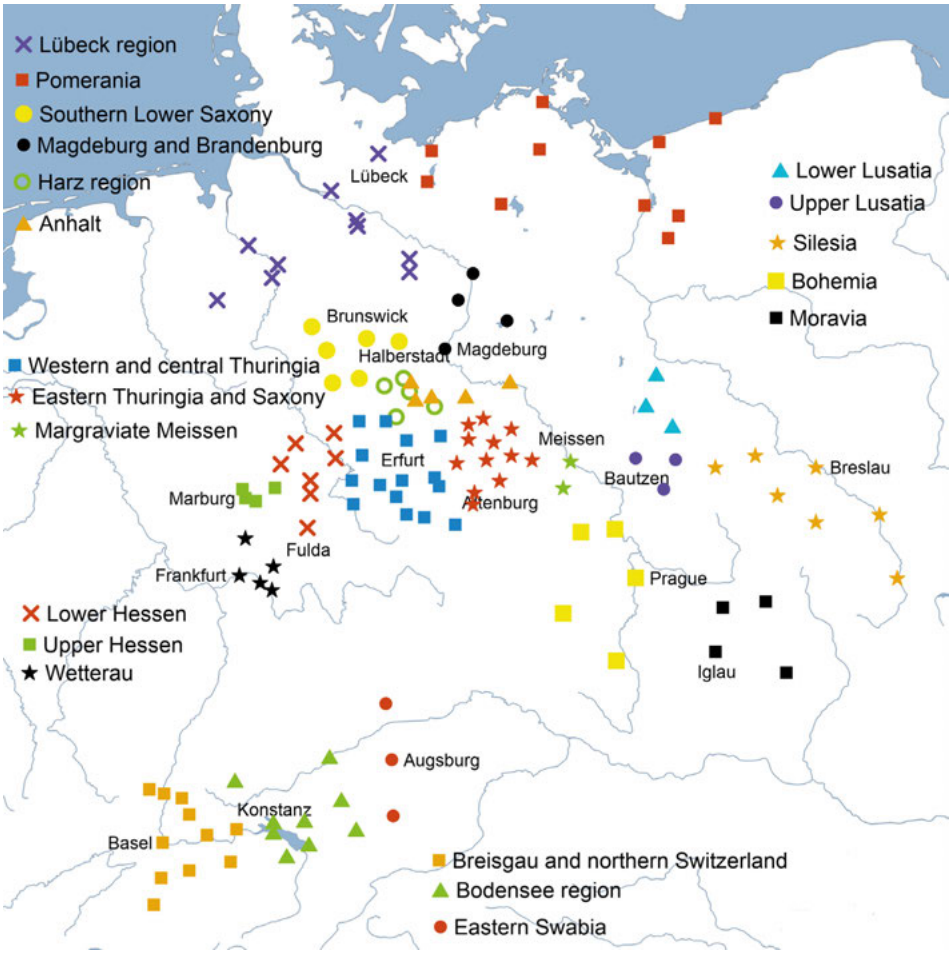
When neither coin finds nor legends are available, the classification and dating of bracteates are more difficult. A method for identifying anonymous bracteates is based on the fact that bracteates struck in the same region can almost always be linked to the same regional monetary standard (*Münzfuß*) or fabric.[15] A monetary standard is here defined as a common diameter, weight, relief, shape of the flan and appearance of the design. Bracteates minted according to these unified standards give a specific overall impression (see Appendix). However, although bracteates began to be struck in Thuringia and Saxony in the 1120s, it is not until the 1140s and 1150s that monetary standards began to be established.

The geographical distributions of 21 regional monetary standards for bracteates in medieval Germany are shown on Map 1. Although a specific coin issuer could have several mints in different regions, his coins were fully adapted to the regional monetary

[14] Svensson 2013, ch. 7.

[15] Kluge 2007, p. 35

standard and were valid as legal tender only in the cities where they were minted.[16] The characteristics of the different monetary standards are summarized in Table 1. To classify and date bracteates using this method, experience is required. An experienced eye can quickly detect the region and time frame of a seemingly anonymous bracteate. Then, social attributes such as headgear or objects being held or other symbols in the design may indicate the title of the coin issuer (ecclesiastical, imperial, or civil). It is often possible to determine the mint based on the design and social attributes.



Map 1. Regional monetary standards for bracteates in the period 1140–1290.
Note: The mints of the Teutonic Order in Prussia are not shown due to lack of space.

[16] For example, the German emperor struck bracteates in Lübeck (Lübeck region), Goslar (Southern Lower Saxony), Mühlhausen and Altenburg (Thuringia), and Frankfurt (Wetterau), etc., but these regions had different monetary standards.

In the Lübeck region, bracteates were struck from the 1180s. Important mints were Bremen, Verden, Hamburg, Lübeck and Lüneburg (Pictures 1–4).[17] The bracteates followed the monetary standard of Lübeck – approximately 22 mm in diameter weighing ca. 0.56 g. The artistic style is moderate. Relatively early (at the close of the 13th century) the bracteates transform into hohlpfennigs (Picture 5), which at first is the main denomination but later a smaller denomination to the *Witten* that was introduced in the 1360s. The minting of bracteates began relatively late in Pomerania (after a few decades in the 13th century) and in eastern Prussia by the Teutonic Order (ca. 1236). Well-known mints in Pomerania were Stralsund, Stettin, and various mints in the minor region of Mecklenburg (Pictures 6–8). The bracteates in Pomerania and Eastern Prussia are small (<20 mm) from the beginning and seldom weigh more than 0.4 and 0.3 g, respectively. The artistic style is simple. Often, the design shows simple symbols that are typical for a specific mint (e.g. a ray or banner for Stralsund, or a bull head for Mecklenburg), but it is considerably more difficult to date the various types. The Teutonic Order has a common type for all its mints (Königsberg, Thorn and Elbing, and later also Danzig), which vary across issues (Pictures 9–11).[18] However, the details likely represent different mints.

In Southern Lower Saxony, the coining of bracteates began in the 1150s. The mints Brunswick, Hildesheim, Helmstedt and Goslar had extensive minting. These four mints represent in turn dukes, bishops, abbeys, and emperors. Initially, the bracteates have a diameter of up to 35 mm and weigh almost 0.8 g (Pictures 12–16). These bracteates have a significantly higher artistic level than the previous two regions. In the Harz region, bracteates with a relatively large diameter began being struck in the 1140s (Picture 18). Together with Wetterau, the Harz region had the most beautiful artistic style during the second half of the 12th century (Pictures 19–21). In the period 1190–1210, bracteates were minted according to the Thuringia monetary standard (Pictures 22–23), but thereafter flan become smaller again (Pictures 24–25). The region Brandenburg and the mint Magdeburg struck relatively high weight bracteates in the 12th century, approximately 1.00 g. The monetary standards are very similar. Initially, the diameter is 30 mm but shrinks to 20 mm and the weight declines to 0.65 g (Pictures 26-30). There is no risk of mixing up the bracteates of the regions, since Magdeburg was controlled by the archbishops and almost exclusively civil authorities coined in Brandenburg.

The Margraviate Meissen produced large bracteates. In the period 1200–47, the diameter was approximately 45 mm, with a medium relief. The main design consists primarily of the margrave portrayed with disproportional body parts (Picture 41). There was probably a monetary union between the Margraviate of Meissen and the Kingdom of Bohemia during 1225–49 (or 53) since both areas had the same mon-

[17] The mints Salzwedel and Lüchow, normally classified to the region Brandenburg, also adopted this monetary standard.

[18] Paszkiewicz 2008.

etary standard. Often, the figures on bracteates from these regions have the same objects in their hands, the only difference being that the Bohemian king is crowned (Picture 46). Upper Lusatia also had the same monetary standard as Meissen in the second half of the 13th century. In this period, the relief is considerably higher to stabilize the leaf-thin bracteates, and the surface is grainy (Pictures 42, 43 and 45).[19]

A monetary standard that is easy to recognize is represented by the leaf-thin bracteates of western and central Thuringia minted in the 12th century in a highly artistic style (see Pictures 61–63). Their diameter is c. 45 mm, with a weight c. 0.80 g and a very low relief. These Thuringia bracteates are perhaps the most fragile coins in monetary history. Eastern Thuringia and Saxony also had large bracteates, but these were somewhat smaller (35–40 mm) and of higher weight, c. 0.90 g (Pictures 58–60). The nearby region of Lower Hessen had bracteates in the 12th century that were almost as large – 35–40 mm in diameter (Pictures 68–70). The bracteates of Upper Hessen have pellets or letters on the edge. The bracteates of Wetterau are also relatively easy to recognize and have perhaps the highest artistic style of all bracteates; their diameter is 25–30 mm, and they have a high relief, especially at the edge to protect the main design from wear and tear (Pictures 76–78).

Monetary standards from southern Germany are relatively easy to recognize. For example, bracteates from eastern Swabia have characteristic arches on the edge (Pictures 88–90), and those from the Bodensee region have pellets/crosses or quadrates on the edge (Picture 84–87). Bracteates from Northern Switzerland and Breisgau were typically struck on a quadrangular flan (Pictures 80–82). However, late-medieval Rappen bracteates are similar to Bodensee bracteates, with pellets on the edge but with a lower weight (Picture 83). All coin issuers in a region followed the monetary standard, irrespective of social class (emperor/king, churchman, layman or city).

The monetary standard of a region typically changed over time, with bracteates evidencing

- a shrinking diameter
- higher relief
- simpler and rougher designs
- declining weight

Examples of these trends are shown in Pictures 13, 15 and 17 from Southern Lower Saxony (Brunswick) and in Pictures 31–35 from Anhalt.

Similar patterns in the diameter, relief, artistic style and weight of bracteates can be observed for the regions of Thuringia, Lower Hessen and Wetterau, as shown by a comparison of bracteates from the second half of the 13th century in Pictures

[19] The grainy surface makes it appear as if the coin is corroded. However, this is not the case. The bronze dies were cast in moulds of sand. After the casting, the engraved part of the die was not polished (Haupt 1961, p. 210). This polishing may have been abandoned due to the pressure of re-minting many coins.

64–67, 71 and 79 with the bracteates in Pictures 61–63, 68–70 and 76–78. In principle, all regions follow the trends mentioned above. One exception is the Margraviate of Meissen, where the diameter and weight increased circa 1200 (compare Pictures 38–40 with 41–43). Another exception is the Northern Harz region, where the diameter temporarily increases to Thuringia-standard in the period 1190–1210 (compare Picture 21 with 22–23).

4. Incentives to join a monetary standard

4.1 Voluntary or forced to join?

Whether closely related mints voluntarily adopted a common monetary standard or if they were forced to do so by a leading mint in the region remains an unresolved historical puzzle. The German numismatist Richard Gaettens suggested the interesting hypothesis that coins belonging to the same monetary standard would have been valid as a means of payment in each other's cities.[20] In other words, this implied that some form of monetary union existed between the mints belonging to the same monetary standard. The hypothesis is based on four fundamental points: 1) that the coins have obvious common characteristics, such as weight, fineness, diameter, relief and shape of the flan; 2) that the coins have common symbols on the edge (e.g., arches in eastern Swabia, pellets, crosses or squares in Bodensee region and pellets and letters in northern Hessen); 3) that some closely located mints striking two-faced coins have a common reverse (e.g., Worms and Lorsch; Nuremberg and Eger; Episcopal and ducal coins simultaneously struck in Regensburg); and 4) the fact that the coin hoards from this period (1140–1290) often have a concentration of coins belonging to the same monetary standard. Studying the most important German bracteate coin hoards, the dominating monetary standard often accounts for at least 80 percent of the coins in the hoards.[21]

Only two documented treaties establishing monetary unions between cities exist from medieval Germany. A treaty issued by Bishop Henry of Konstanz (1233–48) in 1240 lists the regulations for Konstanz and five other mints in the Bodensee region.[22] These include the imperial mints Überlingen, Lindau and Ravensburg and the St. Gallen and Radolfzell mints, which were controlled by monasteries. The directions include the weight, fineness and design of the coins but also regulations regarding the silver trade, foreign exchange and penalties for counterfeiting. Whether the coins of the different mints in the Bodensee region were valid in the other cities involved in the treaty is unknown. According to another treaty between

[20] Gaettens 1963, p. 65ff.

[21] Svensson 2013, p. 90–91.

[22] Gaettens 1963, p. 54–55.

the Lübeck and Hamburg mints in 1255, the coins should have the same weight (0.50 g) and fineness (15½/16) and be valid in both cities.[23]

However, several medieval documents state that only local current coins were valid within the city borders.[24] In 1231, the German king Henry VII (1222–35) published an edict in Worms stating that in towns in Saxony with their own mints, goods could not be exchanged for anything other than the coins from the local mint. Those discovered using foreign coins (i.e., coins from other cities/regions) would henceforth be regarded as engaged in counterfeiting.[25] The geographical currency constraint did not only apply to the city markets but rather the whole area within the city-border. This state of affairs is well documented in an 1188 letter from Emperor Friedrich I (1152–90) to the Bishop of Merseburg (Thuringia) regarding an extension of the city. The document plainly states that the market area boundary includes the whole city, and not just the physical marketplaces.[26] A document from Erfurt (1248/51) shows that only local current coins could be used for transactions in the town, *while old local as well as foreign coins were allowed for transactions outside the city-border*.[27]

Another fact contradicts such monetary conventions. Bishop Wolfger of Passau (1191–1204) travelled to Italy in 1203–04. During the return journey northwards in the summer of 1204 he passed, in turn, the mints Schongau, Augsburg and Donauwörth (eastern Swabia). A written document shows that in the three towns the Bishop exchanged four, three, and three marks of silver for local current coins.[28] Though these three mints had adopted the same monetary standard, the travelling Bishop had to exchange for the current local coins. It was hardly possible for a bishop along with his staff and servants to cheat with invalid coins when purchasing goods and services. This specification of travelling expenses contradicts Gaettens' hypothesis about monetary conventions between mints belonging to the same monetary standard. A full description of the travelling specification reveals that the Bishop exchanged local current coins at approximately 20 mints on the journey back to Passau.[29]

4.2 Lower transaction costs and larger circulation areas

The minting authority could monitor the coin circulation in their currency area in three ways:[30] firstly, by having exchangers and other staffs directly at the market; secondly, by designating the date of re-coinage in connection to an important event

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[23] Jesse 1967, p. 209.

[24] Hess 2004, p. 16; Mehl 2011, p. 33.

[25] Mehl 2011, p. 33.

[26] Hess 2004, p. 16.

[27] Hess 2004, p. 16.

[28] Stumpf 1994, p. 2.

[29] Heger 1970, p. 192ff

[30] Svensson 2016, p. 1118–19.

such as a major tax payment day or an annual market, when people would have incentives to exchange old coins for current ones; and thirdly, by requiring that taxes, tithes, fees, and fines must be paid with current coins.

The coin hoards indicate that many invalid coins circulated and were used for transactions in a specific currency area. These invalid coins mostly represented the same monetary standard as the current coins. Analysis of the most important bracteate hoards (e.g. Erfurt, Freckleben, Gotha, Hildesheim, Mödesse, Nordhausen Seega) shows that approximately 80 percent of the coins belong to the same monetary standard.[31] The economic explanation is that people preferred to use coins of the same monetary standard for daily transactions outside the city due to low transactions costs. In other words, the costs to estimate the internal value of the coins are the lowest when the coins in question have the same weight and fineness.

In general, the minting authorities in medieval Germany must have been aware that coins with the same monetary standard circulated together outside the city borders in daily transactions. Coin issuers thus certainly had an important incentive to voluntarily adopt a monetary standard: they hoped that their own coins minted consistent with the standard would gain greater circulation across the land, increasing the profit of their mint.

The coin hoards partly indicate the circulation areas of the coins. Particularly valuable is information about hoards with coins from a mint that has *changed* the monetary standard that guides its operation. The mints Halberstadt, Quedlinburg and Hettstedt in the Harz region did so. In the period 1140–90 these mints shared a common monetary standard with other mints in Harz (e.g., Ermsleben, Wernigerode) and western Anhalt (Aschersleben, Wegeleben, Ballenstedt). Between ca. 1190 and 1210 the Halberstadt and Quedlinburg mints instead struck bracteates adapting the monetary standard in Thuringia. After 1210, these mints returned to a monetary standard specific to the Harz region.

The coin hoards with bracteates struck in Quedlinburg show that the circulation areas of the bracteates changed during these three periods. Hoards from the first period (1140–90) have a relatively large geographic spread.[32] However, the largest and arguably most important hoard was found in Freckleben, close to Quedlinburg. When Quedlinburg minted bracteates of the monetary standard of Thuringia ca. 1190–1210, these bracteates are found in hoards concentrated around Thuringia. *By changing monetary standard, the circulation area of the coins also changed.* The Quedlinburg-bracteates minted with the Harz monetary standard after 1210 have been found in coin hoards concentrated in the area around Quedlinburg.

[31] Svensson 2013, p. 90–91.

[32] Svensson 2013, p. 94.

4.3 Link between monetary standards

The monetary standards in Table 1 are not randomly determined with respect to weight. Mostly, there is a link to the monetary standard of Cologne, the largest and leading mint in the Holy German Empire. Since the coins of Cologne kept a stable weight and fineness for a long period, they became very popular. The silver mark of Cologne weighed approximately 234 g. A total of 160 pennies were struck from this mark, i.e. 1.46 g per penny in Cologne. Many other German mints and regions based their own pennies on fixed fractions of this Cologne penny. They all had less weight and somewhat lower fineness. Mostly, the proportional weights were 3:2, 2:1, 3:1 or 4:1 to the Cologne penny.

Many mints with two-faced coins, e.g., Worms, Speyer, Mainz, Strasbourg, Würzburg, Nuremberg and Regensburg had the weight proportion 3:2 to the Cologne penny. Thus, they had a standard weight of 0.974 g and 240 pennies struck from one mark. Bracteates minted in Magdeburg, Brandenburg and Thuringia belonged to this weight group. Another group had the weight proportion 2:1 to the Cologne penny, giving a standard weight of 0.73 g per penny. In this case, there were 320 pennies to a mark. Trier and Tübingen, which struck two-faced coins, but also bracteates from eastern Swabia (e.g., Augsburg), belonged to this weight group. A third group had the weight proportion 3:1. Two-faced coins from Dutch mints as well as bracteates from the Bodensee region (e.g., Konstanz) belonged to this standard weight of 0.487 g. A last group with mints in northern Switzerland and Bresigau weighed 0.365 g and had the relationship 4:1 to the Cologne penny (Nau 1977:93). The weights of almost all these groups diminish continuously in the 12th and 13th centuries (see section 5.4).

However, the proportions to the Cologne penny were not always so simple. Mints in the Lübeck region and northern Lower Saxony in the 1180s started minting bracteates with a light monetary standard of 0.56 g. The proportion could be 8:3 to the Cologne penny. In Saxony, bracteates with a weight of 0.55–0.60 g were struck between 1170 and 1197, i.e., almost the same standard as the Lübeck region. In Hildesheim and Brunswick (southern Lower Saxony) as well as Halberstadt (Harz), a standard weight of 0.80 g was chosen, i.e., a weight corresponding to 55 percent Cologne penny or the proportion 9:5.

The reason why German mints chose fixed proportions to the Cologne penny may have been to lower transaction costs when coins of different monetary standards were exchanged against each other. Another observation is that all mints that did not have the monetary standard of Cologne chose lower weights. Gaettens argued that the logical explanation is that the Cologne penny with a weight of 1.46 g was too high a denomination for daily transactions at the local markets in other parts of Germany.[33]

[33] Gaettens 1963, p. 81.

In addition to the Episcopal mint Cologne, almost all dioceses with coinage right were protectors of a stable coinage. The bishops from the old mints of Cologne, Worms, Mainz, Speyer, Strasbourg, Magdeburg, Würzburg, Regensburg, Augsburg, Konstanz, and Basel had controlled the coin circulation since the Carolingians. Emperor Friedrich I Barbarossa (1152–90) announced in a judicial decision in the 1160s that nobody had the right to mint within a diocese without permission from the bishop.[34] Civil and imperial mints within the dioceses were enforced or chose on their own to adapt their coins – in terms of weight, fineness, diameter, and shape of the flan – to the monetary standards of Episcopal mints.[35]

From generation to generation, the stability of the medium of exchange within the empire fluctuated, but it was always the emperor who, as the top minting authority, had the task of monitoring the coinages of the Episcopal mints. In 1154, Emperor Friedrich I ordered that the coins minted by the bishops in Basel had to be improved, since they were too light and thin and of degraded fineness.[36] Thus, the emperor set specific minimal limits as Episcopal monetary standards, but he did not interfere with the frequency of coin renewals among the Episcopal mints.

[34] Nau 1977, p. 94.

[35] See the example of Konstanz above.

[36] Nau 1977, p. 94.

Table 1. Characteristics of different regional monetary standards

	Period	Diameter	Weight	Characteristics	Pictures
Lübeck region	1180–1230	22 mm	c. 0.56 g	Medium artistic style, low weight	1–3
	1230–1300	18–22 mm	0,40–0,50 g	hohlpfennigs by the 1260s	4–5
Pomerania	1230–1350	15–20 mm	0.35–0.40 g	Small flan from start, simple symbols	6–8
Teutonic Order in Prussia	1237–1364	16–19 mm	c. 0,20 g	Small weight and diameter, simple symbols	9–11
Southern Lower Saxony	1150–80	35 mm	c. 0.80 g	High artistic style, low relief	12–13
	1230–90	25 mm	c. 0.60 g	High relief, anonymous	14–16
	1290–1412	19–21 mm	c. 0.45 g	High relief, anonymous	17
Northern Harz region	1140–90	30–35 mm	c. 0.80 g	High artistic style, low relief, similar to Anhalt	18–21
	1190–1210	45 mm	c. 0.80 g	Same monetary standard as western Thuringia	22–23
	1230–1350	20–30 mm	0.50–0.60 g	Higher relief, smaller flan, anonymous	24–25
Magdeburg and Brandenburg	1150–90	30 mm	0.95–1.00 g	High artistic style, thick flan, low relief, legends	26–28
	1230–1300	20 mm	c. 0.65 g	Simplified artistic style, high relief	29–30
Anhalt	1140–80	25–35 mm	c. 0.80 g	High artistic style, low relief, similar to Harz region	31
	1180–1230	25 mm	c. 0,70 g	Relatively high artistic style, smaller flan and weight	32–33
	1230–1300	20 mm	c. 0.50 g	Simplified duke, high relief, anonymous	34–35
Margraviate of Meissen	1145–70	30–37 mm	0.70–0.80 g	Medium artistic style, low relief	36–37
	1170–1197	23–26 mm	0.55–0.60 g	Monetary standard similar to that of Lower Saxony	38–40
	1197–1247	35–45 mm	0.80–0.90 g	Disproportional body parts, medium relief and large flan	41
	1247–1315	45 mm	c. 0.80 g	As above, but very high relief and grainy surface	42–43
Upper Lusatia	1150–60	30–40 mm	c. 0.80 g	High artistic style, low relief (same as Saxony-Meissen)	44
	1225–1300	c. 45 mm	c. 0.80 g	Similar monetary standard as that in Saxony Meissen	45
Lower Lusatia	1220–1300	20 mm	0.35–0.45 g	Simple symbols and anonymous	52–53
Silesia	1180–1220	15–20 mm	0.15–0.20 g	Small flan and low relief	----
	1220–1350	17–25 mm	0.40–0.80 g	Heterogeneous monetary standard, simple symbols	54–56

Bohemia	1225–1249	40–45 mm	0.80–0.90 g	Monetary union with Saxony-Meissen	46
	1253–1300	25–30 mm	0.50–0.70 g	King or animal, heavy and light issues of each type	47–48
Moravia	1253–1300	20 mm	0.40–0.70 g	King or animal, heavy and light issues of each type	49–51
Saxony and eastern Thuringia	1180–1220	35–40 mm	0.80–0.90 g	Medium artistic style, large flan, medium relief	57–60
Western and central Thuringia	1140–1220	45 mm	c. 0.80 g	Leaf-thin flan with low relief, high artistic style	61–63
	1240–1300	25–30 mm	c. 0.40 g	Smaller flan, higher relief	64–67
Lower Hessen	1180–1220	35–40 mm	c. 0.80 g	Similar to Thuringia but higher artistic style and smaller flan	68
	1220–50	30–35 mm	0,50–0,70 g	Smaller flan and weight, still relatively high artistic style	69–70
	1250–1300	25 mm	c. 0.60 g	Fine style and broad edge	71
Upper Hessen	1230–90	22–25 mm	c. 0,60 g	Fine style, pellets or letters on broad edge	72–75
Wetterau	1170–1200	25–30 mm	c. 0.80 g	Very high artistic style with high relief	76–78
	1250–90	20 mm	c. 0.50 g	Simpler artistic style with high relief	79
Breisgau	c. 1250	15–18 mm	c. 0.37 g	Quadrangular flan	80–81
and northern	14th century	15–18 mm	c. 0.33 g	Quadrangular flan, but sometimes circular	82
Switzerland	15th century	18 mm	c. 0.37 g	„Rappen", circular flan with pellets on the edge	83
Bodensee region	1180–1300	20–22 mm	c. 0.45 g	Rough pellets (1180–1220), crosses or squares (1220–45) and fine pellets (after 1245) on the edge	84–87
Eastern Swabia	1180–1230	22–24 mm	0.75–0.80 g	Arches on the edge, low relief	88
	1230–1300	20–22 mm	0.65–0.70 g	Arches on the edge, high relief	89–90

Note: Periods, diameters and weights are approximate.

5. Concluding remarks

In the Middle Ages, tens of thousands types of uni-faced bracteate coins were struck in the period 1140−1520. Hundreds of small independent currency areas with their own mints in central, eastern and northern Europe and the strong link between bracteates and periodic re-coinage explain the large number of bracteate types. The classification and dating of bracteates and other coins can provide insight into economic and monetary development when studying coin hoards and cumulative finds. A central problem when classifying bracteates is that most of them are anonymous, i.e., there are seldom any legends or letters. This study has concentrated on how to use regional monetary standards to classify bracteates. Especially when legends and find information are lacking, monetary standards in combination with social attributes are practical tools.

As many as 21 monetary standards for German bracteates have been identified in the present study. To use the monetary standard as a classification method requires experience. Bracteate mints seldom deviated from the monetary standard used by mints located nearby. The monetary standard together with the depicted motive often reveals information about the mint, the class of the coin-issuing authority, and the approximate dating. For this type of analysis, it is vital to know how the monetary standards changed over time.

In the literature, it has been discussed whether coins from different mints with the same monetary standard were valid in each other's city markets and whether mints were forced or could voluntarily join a specific monetary standard. Several medieval documents contradict the first hypothesis since they show that only local current coins were valid within the city borders. The fines for using illegal coins could be severe. However, outside the city borders, any coins could be used. This is mirrored by the fact that the most important bracteate hoards on average contain more than 80 percent of coins from the same monetary standard. Thus, coins of the same monetary standard circulated together. The economic explanation is low transaction costs. People preferred to use coins of the same monetary standard for daily transactions outside the city since the costs to estimate the internal value of the coins are the lowest when the coins have the same weight and fineness. For this reason, minting authorities had incentives to voluntarily join a regional monetary standard to increase the circulation area of their coins and to increase the seigniorage.

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REGIONALNE STANDARDY MONETARNE I ŚREDNIOWIECZNE BRAKTEATY

(Streszczenie)

W średniowieczu, w okresie 1140–1520, wybito kilkadziesiąt tysięcy typów jednolitych monet brakteatowych. Setki małych, niezależnych obszarów walutowych z własnymi mennicami w Europie Środkowej, Wschodniej i Północnej oraz silne powiązanie między brakteatami a okresową wymianą monet, wyjaśniają dużą liczbę typów brakteatów. Badania skarbów monet i znalezisk skumulowanych, dzięki opracowaniu klasyfikacji i ustaleniu datowania brakteatów oraz innych monet, mogą dać wgląd w rozwój gospodarczy i monetarny poszczególnych regionów. Główną trudnością w klasyfikowaniu brakteatów jest to, że większość z nich jest anonimowa, tj. rzadko pojawiają się na nich legendy czy litery. Niniejsza praca skupia się na problemie, jak wykorzystać regionalne standardy monetarne do klasyfikacji brakteatów. Szczególnie w przypadkach, gdy brakuje legend i informacji o miejscu znalezienia, standardy monetarne w połączeniu z atrybutami społecznymi są praktycznymi narzędziami do badań w tym kierunku.

W niniejszym opracowaniu zidentyfikowano aż 21 standardów monetarnych dla niemieckich brakteatów. Zastosowanie standardu pieniężnego jako metody klasyfikacji wymaga doświadczenia. Mennice brakteatowe rzadko odbiegały od standardu monetarnego, który obowiązywał w oficynach znajdujących się w pobliżu. Standard monetarny wraz z przedstawionym na stemplu motywem często ujawnia informacje o mennicy, pozycji pana menniczego oraz przybliżonej dacie emisji. W przypadku tego typu analizy ważne jest, by wiedzieć, jak zmieniały się w czasie standardy monetarne.

W literaturze podejmowano już kwestię, czy monety z różnych mennic o tym samym standardzie monetarnym zachowywały ważność także na rynkach innych miast, a także czy mennice były zmuszane, czy też dobrowolnie dołączały do określonego standardu monetarnego. Kilka średniowiecznych dokumentów zaprzecza pierwszej hipotezie, ponieważ pokazuje, że w granicach miasta ważne były tylko monety lokalne. Kary za używanie nielegalnych monet mogły być surowe. Jednakże poza granicami miasta można już było używać dowolnych monet. Potwierdza to fakt, że najważniejsze skarby brakteatów zawierają średnio ponad 80% monet o tym samym standardzie monetarnym. Tak więc monety takie obiegały razem. Pod względem ekonomicznym wyjaśnić to można niskimi kosztami transakcyjnymi. Ludzie woleli używać monet o tym samym standardzie monetarnym do codziennych transakcji poza miastem, ponieważ koszty oszacowania wewnętrznej wartości monet są najniższe, gdy mają one tę samą wagę i próbę. Z tego powodu zwierzchności mennicze dobrowolnie przystępowały do regionalnego standardu monetarnego w celu zwiększenia obszaru obiegu ich własnych monet, a tym samym zwiększenia dochodów z tytułu emisji pieniądza.

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Appendix

Lübeck region

1. Lüneburg, Emperor Otto IV (1195–1218). 0,42 g, Ø 21 mm. Kestner 416, Bonhoff 86, Reitz 54a.

2. Hamburg, Governor Albrecht von Orlamünde (1203–25). 0,45 g, Ø 20 mm. Kestner 143, Bonhoff 131, Hatz 29.

3. Bremen, Archbishop Gerhard von der Lippe (1219–58). 0,60 g, Ø 21 mm. Kestner 43, Bonhoff 19.

4. Hamburg, Count Adolf IV von Schauenberg (1225–39). 0,55 g, Ø 21 mm. Kestner 1289, Bonhoff 140, Hatz 82.

5. Lübeck, City (after 1250). 0,34 g, Ø 18 mm. Kestner 262, Jesse 181.

Pomerania

6. Mecklenburg, Duke Johann I (1226–64). 0,46 g, Ø 20 mm. Kestner 282, Oertzen 18.

7. Cammin, anonymous bishop (1270–1300). 0,29 g, Ø 16 mm. Kestner 312, Dannenberg (Pomerania) 169.

8. Pomerania, unknown mint and issuer (1280–1350). 0,34 g, Ø 15 mm. Previously unpublished, compare with Kopicki 4854.

Teutonic Order in Prussia

9. Unknown mint, 1st issue (1237–47). 0,20 g, Ø 20 mm. Kestner 1932, Paszkiewicz T1.2.

10. Unknown mint, 2nd issue (1247–57). 0,32 g, Ø 19 mm. Paszkiewicz T2.1.

11. Unknown mint, 5th issue (1277–87). 0,14 g, Ø 16 mm. Paszkiewicz T5.6.

Southern Lower Saxony

12. Hildesheim, Bishop Adelbog von Dorstadt (1170–90). 0,74 g, Ø 28 mm. Kestner 1088, Bonhoff 212, Mehl (Hildesheim) 56.

13. Brunswick, Duke Henry the Lion (1142–95). +PCFEOEL-DVCX-PIN-RICSSO-LEOA. 0,78 g, Ø 29 mm. Kestner 599, Bonhoff 354, Denicke 19a.

14. Hildesheim, Bishop Konrad II or successors (1240–60). 0,79 g, Ø 27 mm. Kestner 1150, Mehl (Hildesheim) 145.

15. Brunswick, Duke Otto the Child (1227–52). 0,72 g, Ø 27 mm. Kestner 2763, Denicke 138.

16. Goslar, anonymous emperor (1260–80). 0,65 g, Ø 25 mm. Kestner 1237, Bogon 65.

17. Brunswick, City (1296–1412). 0,47 g, Ø 19 mm. Kestner 985, Denicke 336.

Northern Harz region

18. Halberstadt, Bishop Ulrich I (1149–60). 0,89 g, Ø 28 mm. Kestner 1263, Bonhoff 457, BBB 14.09.

19. Quedlinburg, Abbess Adelheid III of Saxony (1161–84). 0,88 g, Ø 20 mm. Kestner 1421, Bonhoff 1521.

20. Hettstedt, Seigneur Albert (1199–1241). 0,86 g, Ø 29 mm. Kestner 2852, Bonhoff 571.

21. Halberstadt, Bishop Gero von Schermbke (1160–77). S-STEPHANVS PROTOMART. 0.77 g, Ø 27 mm. Kestner 1325, Bonhoff 482, BBB 15.16.

22. Halberstadt, Bishop Gardolf von Harbke (1193–1201). 0,94 g, Ø 48 mm. Kestner 2816, BBB 17.01.

23. Quedlinburg, Abbess Agnes II von Meissen (1184–1203). +AGNES-AB-ATISA-INCVDDELLIIE-O. 0,65 g, Ø 43 mm. Bonhoff 523, Mehl 126.

24. Halberstadt, anonymous Bishop (1236–91). 0,53 g, Ø 21 mm. BBB 31.08.

25. Stolberg, Count Heinrich II (1242–72). 0,34 g, Ø 21 mm. Kestner 1249.

Magdeburg and Brandenburg

26. Brandenburg, Margrave Otto I (1157–84). BRANDE-BVRGENSIS OT-TO. 0,83 g, Ø 27 mm. Kestner 1663, Bonhoff 792, Bahrfeldt 39.

27. Magdeburg, Archbishop Wichmann von Seeburg (1152–92). SC-S MAVRICIVS DVX. 1.01 g, Ø 25 mm. Kestner 1513, Bonhoff 641, Mehl (Magdeburg) 245.

28. Magdeburg, Archbishop Wichmann von Seeburg (1152–92). MAGDEBVRGENSIS. 1,03 g, Ø 23 mm. Kestner 1612, Bonhoff 649, Mehl (Magdeburg) 302.

29. Stendal, Margrave Otto II (1184–1205). 0,84 g, Ø 21 mm. Bonhoff 809, Bahrfeldt 87.

30. Magdeburg, Archbishop Albrecht von Käfernburg (1235–54). 0,78 g, Ø 21 mm. Kestner 1635, Bonhoff 748, Mehl (Magdeburg) 521.

Anhalt

31. Wegeleben, Margrave Albrecht the Bear (1123–70). 0,90 g, Ø 26 mm. Kestner 1752, Bonhoff 538, Thormann 14.

32. Wittenberg, Duke Bernhard von Sachsen (1180–1212). 0,72 g, Ø 26 mm. Kestner 1829, Bonhoff 877, Thormann 214.

33. Wittenberg, Duke Bernhard von Sachsen (1180–1212). 0,70 g, Ø 24 mm. Kestner 1842, Bonhoff 878, Thormann 188.

34. Unknown mint, Margrave Heinrich I or successors (1245–1300). 0,55 g, Ø 21 mm. Kestner 1779, Thormann 256.

35. Unknown mint, Margrave Heinrich I or successors (1245–1300). 0,50 g, Ø 20 mm. Kestner 1791, Bonhoff 556, Thormann 420.

Margraviate Meissen

36. Meissen, Margrave Konrad I (1130–56). 0,87 g, Ø 32 mm. Kestner 1877, Bonhoff 992, Schwinkowski 19.

37. Meissen, Margrave Konrad I (1130–56). Unreadable legends. 0,76 g, Ø 29 mm. Kestner 1879, Schwinkowski 26.

38. Meissen or Freiberg, Margrave Otto the Rich (1156–90). 0,56 g, Ø 26 mm. Kestner 1886, Bonhoff 1004, Schwinkowski 289.

39. Meissen or Freiberg, Margrave Otto the Rich (1156–90). 0,45 g, Ø 25 mm. Kestner 1885, Bonhoff 999, Schwinkowski 281.

40. Meissen or Freiberg, Margrave Otto the Rich (1156–90). 0,45 g, Ø 24 mm. Schwinkowski 287.

41. Meissen or Freiberg, Margrave Henry III the Illustrious (1221–88). Struck c. 1230–49. c. 1,02 g, Ø 40 mm. Schwinkowski 980.

42. Meissen or Freiberg, Margrave Henry III the Illustrious (1221–88). 0,97 g, Ø 37 mm. Schwinkowski 728.

Bohemia and Moravia

43. Meissen or Freiberg, Margrave Henry III the Illustrious (1221–88). M-M-M-M on the edge. 0,86 g, Ø 39 mm. Schwinkowski 791.

46. Bohemia, King Wenzel I (1230–53). Struck c. 1230–49. c. 0,92 g, Ø 40 mm. Cach 712.

Upper Lusatia

44. Bautzen, Konrad the Great, Margrave of Meissen (1127–56). 0,80 g, Ø 32 mm. Kestner 1924, Bonhoff 1041, Schwinkowski 38.

47. Bohemia, King Premysl Ottokar II (1253–78). 0,67 g, Ø 26 mm. Kestner 1948, Bonhoff 2100, Cach 823.

45. Zittau, Wenzel II, King of Bohemia (1278–1305). 0,73 g, Ø 37 mm. Hoard Zwickau 14.

48. Bohemia, King Premysl Ottokar II (1253–78). 0,67 g, Ø 26 mm. Kestner 1962, Bonhoff 2109, Cach 843.

49. Moravia, King Premysl Ottokar II (1253–78). 0,62 g, Ø 17 mm. Kestner 1972, Cach 921.

50. Moravia, King Premysl Ottokar II (1253–78). 0,44 g, Ø 16 mm. Kestner 1975, Cach 951.

51. Moravia, King Wenzel II (1278–1305). 0,43 g, Ø 20 mm. Kestner 1959, Cach 1001.

Lower Lusatia

52. Unknown mint and issuer (1250–1300). 0,47 g, Ø 21 mm. Bahrfeldt (Niederlausitz) 305.

53. Unknown mint and issuer (1250–1300). 0,46 g, Ø 21 mm. Kestner 2935 Bahrfeldt (Niederlausitz) 331.

Silesia

54. Unknown mint and issuer (1290–1350). 0,64 g, Ø 27 mm. Friedensburg 111.

55. Unknown mint and issuer (1290–1350). 0,66 g, Ø 25 mm. Kestner 1944, Friedensburg 207.

56. Unknown mint and issuer (1290–1350). 0,38 g, Ø 20 mm. Friedensburg 272, Bahrfeldt (Niederlausitz) 57.

Saxony and Eastern Thuringia

57. Strehla, Wichmann von Seeburg, Archbishop of Magdeburg (1150–54). 0,88 g, Ø 30 mm. Kestner 1918, Bonhoff 984.

58. Naumburg, Bishop Berthold II (1186–1206). IER-HOLDVS-DEI. 1,00 g, Ø 37 mm. Kestner 1988, Bonhoff 925, Posern-Klett 962.

59. Altenburg, Emperor Friedrich I Barbarossa (1152–90). 0,86 g, Ø 33 mm. Bonhoff 1162, Hoard Gotha 321.

60. Pegau, Abbot Siegfried von Rekkin (1185–1224). 0,97 g, Ø 34 mm. Bonhoff 958, Posern-Klett 1090.

Western and central Thuringia

61. Erfurt, Archbishop Heinrich I von Harburg (1142–53). EPPES FORDI / HENRC. 0,80 g, Ø 38 mm. Kestner 2119, Bonhoff 1091.

62. Nordhausen, Abbess Berta (1160–80). SC-SEVSACHIVS VERTAAB-BATISSADENOE. 1,05 g (including paper), Ø 40 mm. Kestner 2162, Bonhoff 1192.

63. Mühlhausen, Emperor Henry VI (1190–97). HENRIC-VS-IM-PERA-TOR. 0,91 g, Ø 44 mm. Bonhoff 1210.

64. Eisenach, Landgrave Albrecht II the Degenerate (1265–131). H + H + on the edge 0,36 g, Ø 26 mm. Bonhoff 1352.

65. Gotha, Landgrave Albrecht II the Degenerate (1265–1314). **V** tower **V** tower on the edge. 0,36 g, Ø 26 mm. Kestner 2203, Bonhoff 1316.

66. Arnstadt, Heinrich V von Boineburg, Abbot of Hersfeld (1270–92). **V**-A-V-A on the edge. 0,39 g, Ø 23 mm. Posern-Klett 70, Heus 276.

67. Erfurt, Archbishop Gerhard II von Eppstein (1289–1305). S-MHR-TI-NVS. 0,32 g, Ø 25 mm. Posern-Klett 278.

68. Hersfeld, Abbot Johann I (1201–13). IOHANNES HERSFEL. 0,57 g, Ø 39 mm. Kestner 2265, Bonhoff 1389.

69. Fulda, Abbot Konrad III von Malkos (1222–49). 0,48 g, Ø 35 mm. Bonhoff 1366, Gaettens 93.

70. Kassel, Hermann II, Landgrave of Thuringia (1227–42). V-S-V-S on the edge 0,63 g, Ø 36 mm. Bonhoff 1420, Hoard Niederkaufungen 59.

Lower Hessen

71. Fulda, Abbot Berthold IV von Bimbach (1274–86). **B-R-H-T** on the edge. 0,62 g, Ø 24 mm. Kestner 2297, Bonhoff 1376.

Upper Hessen

72. Marburg or Alsfeld, Sophia (1247–64). 0,73 g, Ø 28 mm. Schütz 18.

73. Marburg, Landgrave Heinrich I (1244–1308). Struck c. 1250–70. +MARBVRCH. 0,64 g, Ø 25 mm. Kestner 2321, Schütz 37.

74. Marburg or Alsfeld, Landgrave Heinrich I (1244–1308). Struck c. 1280–90. A-M-E-N. 0,55 g, Ø 22 mm. Kestner 2326, Schütz 65.

75. Wetter, Landgrave Heinrich I and Werner von Eppstein, Archbishop of Mainz (1263–80). 0,50 g, Ø 26 mm. Kestner 2315, Schütz 212.

76. Aschaffenburg, Konrad II von Wittelsbach, Archbishop of Mainz (1183–1200). RACN-NEVC. 0,82 g, Ø 29 mm. Kestner 2388, Bonhoff 1502, Hävernick 86b.

77. Frankfurt, Emperor Heinrich VI (1190–97). HEINRIC R-EXROMAI. 0,73 g, Ø 28 mm. Kestner 2360, Bonhoff 1523, Hävernick 99.

78. Gelnhausen, Emperor Friedrich I (1152–90). FRID-RICVS. 0,75 g, Ø 25 mm. Kestner 2344, Bonhoff 1495, Hävernick 69.

79. Frankfurt, Emperor Konradin (1254–68). 0,56 g, Ø 21 mm. Kestner 2375, Bonhoff 1536, Hävernick 243.

Breisgau and northern Switzerland

80. Oberelsass, unknown mint, bishops of Basel (1234–75). 0,37 g, Ø 17 mm. Kestner 2419, Wüthrich 43.

81. Schaffhausen, anonymous issuer (1225–50). 0,35 g, Ø 16 mm. Kestner 2463, HMZ 1-427.

82. Solothurn, City (1350–1400). S-O on the edge. 0,18 g, Ø 14 mm. HMZ 2-168a.

83. Basel, City (after 1500). 0,24 g, Ø 15 mm. Bonhoff 1774, HMZ 2-69.

Bodensee region

84. Konstanz, Bishop Eberhard von Waldburg (1248–74). 0,32 g, Ø 20 mm. CC 27.

85. St. Gallen, anonymous abbot (1250–70). 0,42 g, Ø 20 mm. Kestner 2501, CC 78.

86. Ulm, Emperor Konradin (1254–68). 0,45 g, Ø 20 mm. Kestner 2616, Bonhoff 1870, CC 172.

87. Ravensburg, Emperor Rudolph von Habsburg (1273–91). 0,43 g, Ø 21 mm. Kestner 2551, Bonhoff 1846, CC 260.

88. Augsburg, Bishop Udalschalk von Escherlohe (1184–1202). 0,82 g, Ø 25 mm. Kestner 2628, Bonhoff 1901, Steinhilber 60.

89. Donauwörth, Emperor Friedrich II (1215–50). 0,63 g, Ø 22 mm. Kestner 2672, Bonhoff 1935, Steinhilber 130.

90. Augsburg, Bishop Hartmann II von Dillingen (1250–86). 0,79 g, Ø 22 mm. Kestner 2646, Bonhoff 1913, Steinhilber 82.