

CHAPTER 4

THE PERIOD OF THE CAROLINGIAN-FRISIAN SILVER PENNY (c.750-c.1000)

How did the money of account, that had emerged in Frisia in the previous period, develop when the Frisian territory was gradually conquered by the Franks and put under Carolingian rule? That is the question to be considered in this present chapter, and it will not be easy to answer, partly because the rule of the Carolingians was severely tested by the raids of the Northmen, and the effects of this on Frisia are not very clear. In addition, the written evidence is scarce and not very enlightening, and the numismatic evidence is puzzling when applied to the subject of the money of account in Frisia. Consequently this chapter presents a good deal of confusion and uncertainty.

The historical context

The conquest of Frisia by the Carolingians did not in itself alter the fortunate conditions under which Frisian international trade had emerged in the previous period. As Lebecq suggests,¹ Carolingian society as a whole prospered by the trading activities of the Frisians. The economies of the Rhinish hinterland were especially stimulated. During the *pax carolina* (c.750-c.830), the Austrasian aristocracy, the main basis of the Carolingian power, was considerably favoured by this trade. The agricultural surplus of cereals and wine from the estates in the Rhine area could be exported in exchange for luxury goods from England, Scandinavia and - via the Baltic Sea and Russia - the Orient. No doubt the Frisian merchants, in their turn, benefited from this economic growth within the Carolingian realm. However, after the first quarter of the 9th century, the peaceful trade with Scandinavia became embroiled in violent plunder that lasted throughout the 9th and 10th centuries. The Scandinavian raids complicated and perhaps even hampered the further development of Frisia's overseas trade, but it was not wiped away; there is mention of Frisian colonies in Scandinavia, and there are traces of Frisian trade in England, after 834.² In the second half of the 10th century the Scandinavian raids came gradually - though not completely - to an end. The old business could be resumed, though things had changed a lot. This will be dealt with in the next chapter.

¹ Lebecq, "Commerce frison", 369.

² Lebecq, *Marchands*, 30-31: Haithabu (c. 850), Birka (middle and end of the 9th century); *ibidem*, 68: coins struck in Frisia during the 9th century are found in Cambridge, Lewes and Hamwih.

The foregoing economic development took place under Carolingian rule. This rule began officially in 751 when the Merovingian mayor of the palace, Pepin III the Short (751-768) - son of Charles the Hammer - displaced the Merovingian king and usurped the royal authority. Pepin's son, Charlemagne (768-814), after becoming king of the Franks, conquered East Frisia and subsequently Saxony between 772-775. However, it was only after the suppression of a vigorous revolt by Saxons and Frisians east of the Fli, that lasted from 777 to 785 and was led by the Saxon Widukind, that the whole of Frisia came under Carolingian rule.³

Within two generations, after the death of Charlemagne's son and successor Louis the Pious (814-840), the Carolingian realm began to dissolve. In 843 it was divided by the three surviving sons of Louis into three parts: a western, a central and an eastern part. Frisia belonged to the central part, usually known as Lotharingia, ruled by Lothar I (840-855) and Lothar II (855-869). By then the name Frisia already covered a smaller area. After c.840 most of Frisia Citerior - including the *emporia* Dorestad and Domburg - was no longer considered to belong to Frisia.⁴ Lotharingia became a bone of contention among the different heirs of the Carolingian realm and was itself divided into two in 870. The eastern part of Lotharingia, to which Frisia belonged, was acquired by the king of the eastern kingdom, Lewis II the German (870-876). However, the successive German Carolingian kings were unable to control the successive dukes of Lotharingia who, in their turn, were unable to control this peculiar conglomerate firmly. In 911 the last heir of the Carolingian dynasty died. In Germany, after 918, the Carolingians were succeeded by a Saxon dynasty, the Liudolfings. The first German king of this dynasty, Henry I the Fowler (918-936), did manage to take control over the Duke of Lotharingia, and from then on Lotharingia - and hence Frisia - remained formally part of the German kingdom.⁵

So much for foreign rule, but to what extent these rulers actually controlled Frisia is not quite clear. It is known that, in general, the Frankish kings did not try to impose political or legal institutions on the peoples they had conquered. They usually left the existing institutions as they were. They contented themselves with installing royal officers (counts) in the various regions, imposing a tribute on the population and obliging it to perform military services on command.⁶ This may have been true of the Frankish rule before the revolt of the Frisians and the Saxons in 784, but it seems that Charlemagne punished the Frisians and the Saxons for their resistance by depriving them their landed property.

³ Blok, *De Franken*, 46.

⁴ Bakker, "De grenzen", 123-124.

⁵ Previté-Orton, *The shorter Cambridge Medieval History I*, 297-379; 418-470; Linssen, *Historische opstellen*, 1-66.

⁶ Immink, "Remarques", 181.

It was given back to them again in 814 by Louis the Pious,⁷ and this deed may have been the basis of the Frisian formal relationship to the Carolingian kings and their successors in the following centuries: free men bound in fidelity to the king, the counts being considered only as his representatives.⁸

But in Frisia agencies often undermined this system. Since Charlemagne's conquest of Saxony, Denmark had become the next-door neighbour of the Frankish realm. The Danes tried vigorously to prevent the fate that Frisia and Saxony had undergone. Frisia was visited by a Danish fleet as early as 810 to exact a war contribution of 200 pounds of silver.⁹ Several decades of diplomatic struggle followed. From the second quarter of the 9th century onwards, when the weakening of the Carolingian power became apparent, the continent was raided regularly. The Danes, no less familiar with navigation than their Frisian trade partners, terrorised the Carolingian empire from the sea at various places during the rest of the 9th and the whole of the 10th century. For instance, Dorestat was sacked many times between 834¹⁰ and 863,¹¹ after which it lost its position as an important *emporium* (though this was probably because the riverbed had gradually changed¹²). The successors of Charlemagne did not succeed in keeping the Northmen - as these Danes were usually called - out. In their efforts to keep them out, they gave large parts of Frisia to Danish vassals - the idea being to fight Northmen with Northmen. In East Frisia, in Riustringen, a Danish prince was appointed count in 826; his son broke with the Carolingian king in 852 and began freebooting.¹³ The other end of Frisia, West Frisia north of the Meuse river as far as Kennemerland, was 'entrusted' to a Danish prince after the first attacks on Dorestat, in the mid 830s. This part included the famous trade centre of Dorestat. In 837, another Danish prince was appointed 'duke' alongside the count in the part of West Frisia south of the Meuse river, now known as Zeeland. The important trade centre of Domburg was situated here. Danish rule in West Frisia lasted until about 885.¹⁴ With Danish rulers at both ends, what happened to the parts of Frisia in between? Without control over the Scheldt-Meuse-Rhine estuary and without control over the mouth of the Weser, the Carolingian authority must have had problems there. It seems that the Franks followed a different policy in this area.¹⁵ The Frisians between the Fli and the Weser were discharged from military service to defend

⁷ Rau, *Quellen*, 294-295.

⁸ Immink, "Remarques", 182-183.

⁹ Brønsted, *De Vikingen*, 33. In Frisia this amount would be equivalent to the wergeld of 36 free men (kin's share excluded).

¹⁰ Boeles, *Friesland*, 388.

¹¹ *Ibidem*, 437.

¹² Van Es, "Dorestat centred", 152-153.

¹³ The foregoing section is mostly based on Gosses, "Deensche heerschappijen", 130-151.

¹⁴ See also Halbertsma, "Het Friese koninkrijk", 114-127.

¹⁵ Blok, *De Franken*, 78. The next section is mostly based on this book, particularly pages 97-98.

their country against the Northmen themselves.¹⁶ This Carolingian policy seems more or less to have been a deal between the king and the subjects concerned. The king probably had little choice. He was not able to defend the Frisian sealands as these were hardly accessible to an army,¹⁷ and only the Frisians themselves were able to supply the necessary maritime means.¹⁸ Notwithstanding the Carolingian efforts to keep the Frisians on their side,¹⁹ co-operation between Frisians and Danes, in piracy as well as against piracy, is chronicled.²⁰ Taken together, it appears that the authority of the Franks in Frisia must have become weak from at least c.830 onwards, and this lack of power is reflected in numismatic evidence.

The history of the means of payment

According to numismatic analyses, the currency in the north of Frisia during the Carolingian period developed in a way that deviated from the currency in the Carolingian mainland and the south of Frisia comprising Dorestat and Domburg.²¹ The difference is already noticeable in the silver currency, but it is even more striking in the use of gold coins. The northern Frisians - left politically to their own fate - apparently had sufficient economic power to do their own monetary business within the Carolingian realm. What happened?

¹⁶ The text on the freedom from military services has survived in the 10th general Frisian *kest* (presumably dating from the 11th century - see Buma, *Westerlauwerssches Recht I*, 18; 140-143). This *kest* states that the Frisians are not obliged to join a military expedition east of the Weser or west of the Fli and that they are free to return home each night because they must defend their country against the Northmen and the floods. In this *kest* it is stated that the favour was granted to the Frisians by King Charles, after he tried first to extend the Frisian military duty to the area between the Sincfal (= the Zwin, near the Scheldt) and Hitzacker (at the Elbe). Historians agree that Charlemagne could not have made this grant, but a measure such as this would have been in accordance with the policy of Louis the Pious after 821 or one of his successors (Algra, *De zeventien keuren*, 323-325).

¹⁷ This difficulty is described half a century later in the chronicle of Regino, abbot of Prüm. In 885, the Emperor declined to prevent a Danish conspiracy in Frisia by force on the grounds that Frisia “was not accessible to an army because of the numerous creeks of the various waters and because of the impenetrable moors”. (Dümmeler, *Die Chronik*, 79).

¹⁸ This could be successful, for in 873 the raid of an ex-ruler of Zeeland in Mid-Frisia was averted and the invader himself was killed. The commander of the Mid-Frisians was by then also a Northman (Halbertsma, “Het Friese koninkrijk”, 119-120).

¹⁹ A dilemma could occur when the Franks had to choose between the Danes and the Frisians. In 864 West Frisians had driven out the Danish prince who ruled over their region, but he was restored by the Carolingian King in 867 (Halbertsma, “Het Friese koninkrijk”, 119).

²⁰ Gosses, “Deensche heerschappijen”, 139-142; Boeles, *Friesland*, 392.

²¹ As no Carolingian coins have been discovered in West Frisia between the Old Rhine and the Fli as far as I know, the border separating the two currency zones may have been somewhere in between these waters. It seems obvious that at least the catchment area of Dorestat, including Kennemerland, would have belonged to the southern zone. Van Es, “Dorestat centred”, 170-171, assumes the northern border of the catchment area of Dorestat coinciding with the southern border of the catchment area of Medemblik; that is, approximately the southern border of what is now West Friesland.

In 754/755 the first Carolingian king, Pepin the Short, reformed the Carolingian monetary system.²² He introduced a new penny, somewhat heavier (c.1.3g of silver²³) than the Merovingian *deniers* had been in the previous decades.²⁴ These new pennies were also minted in Dorestat.²⁵ Fairly large quantities of these coins have been found near Dorestat and near Domburg in the south of Frisia. The main part of this area, Frisia Citerior, was situated south of the (Old) Rhine and was the part of Frisia that had belonged to the Roman empire; it had long been claimed as Frankish territory. It was the area readily accessible from Frankia, and it was probably marked by strong Frankish presence and influence.²⁶ But none of these coins have as yet been found in West Frisia north of the Rhine, or in Mid-Frisia and East Frisia.²⁷ The same is almost true for similar pennies of Charlemagne, struck before his monetary reform in 794, though one discovery in Mid-Frisia did contain a few of these pennies.²⁸ When this is compared with the discoveries of huge numbers of the previous Anglo-Frisian pennies in these areas, the question arises as to whether Carolingian pennies struck before the 794-reform - that I shall call 'pre-reform' pennies in this study - circulated in great numbers in the north of Frisia. If they did not, the only realistic possibility left is that the old Anglo-Frisian pennies, which are difficult to date precisely, were still being used even though they had officially been abolished. According to the *Lex Frisionum*, the Anglo-Frisian silver pennies were in use at least in East Frisia (conquered between 772 and 785) at the end of the 8th century.²⁹

In 793/794 Charlemagne reformed the Carolingian monetary system again, substituting the current pennies of c.1.3g of silver by new pennies of c.1.7g of silver.³⁰ The new weight was maintained by his Carolingian successors, although fluctuations are recorded.³¹ All the different types of Carolingian pennies, those of Pepin, Charlemagne, Louis the Pious and Lothar I, have been found in Dorestat and in Domburg. In the north of Frisia, numerous Carolingian pennies struck by Louis the Pious and Lothar-I have been

²² Jesse, *Quellenbuch*, 9, no.28 (= MGH *Cap*, 32 (no.13)).

²³ See Spufford, *Money*, 40, note 2.

²⁴ Scholten, "De Lex Frisionum", 7-10; 22 (after Gariel, *Les monnaies royales de France sous la race Carolingienne*, Strasbourg, 1883-1885).

²⁵ Van Gelder, "De Karolingische muntslag", 20.

²⁶ Niermeyer, "Het midden-Nederlands rivierengebied", 151-155.

²⁷ Van Gelder, "De Karolingische muntslag", 20; Kennepohl, "Geldumlauf in Ostfriesland", 7; Berghaus, "Die Ostfriesische Münzfunde", 47.

²⁸ Van Gelder, "De Karolingische muntslag", 19; Boeles, "Les trouvailles", 23-26; this finding consisted of 10 of these pennies, 3 of them struck in Dorestat.

²⁹ See Excursus 3.2: 'On the different kinds of money in the *Lex Frisionum*', sub (b) and (c).

³⁰ Morrison, "Numismatics", 414-415; Scholten, "De munten", 12; 22; Grierson, "La fonction sociale", 529-530, assumes that this silver penny came to be based on 32 wheat corns instead of on 20 barley corns.

³¹ Morrison, "Numismatics", 415-422.

discovered,³² but most of these differ from the usual Carolingian pennies of these rulers. Two types, very common in the north, are notably different; they are known as the ‘Christiana religio types of Louis the Pious’ and the ‘Dorestat with temple types of Lothar-I’.³³ We do not know whether these coins were actually struck in Dorestat or in the north of Frisia.³⁴ Between c.830 and c.900 the Carolingians had already lost their grip on Frisia to the Danes, particularly in Dorestat as we have seen. At any rate there is little or no evidence of Frankish central control over this minting.³⁵ Reliable metrological data of these presumably imitative types of coin are still waited for, but their weights were probably below the official norm.³⁶ A piece of information in a source dating from the end of the period of this chapter may throw some light on this question. The information is to be found in the Mid-Frisian synodal statutes, dating from the 10th century.³⁷ In the section dealing with money amounts for penalties³⁸ the first clause³⁹ has a peculiar addition. It tells us:

³² Berghaus, “Die ostfriesische Münzfunde”, 47-48; Boeles, “Les trouvailles”, 1-98; Boeles, *Friesland*, 445-446; Haertle, *Karolingische Münzfunde*, 50-57, 69-89, 111-120, 162, 302-317; 333-396, 581-597; Pol, “Spectaculaire schatvondst”, 66-71; Pol, “Münzfunde”, 189-194.

³³ Van Gelder, “De Karolingische muntslag”, 20-21. From his table on page 40 it can be inferred that roughly 95% of the about 1,950 post-reform pennies of Charlemagne, Louis the Pious and Lothar I, found in the north of Frisia and west of the Ems, belonged to a crude type of ‘Christiana religio of Louis the Pious’ or to a type to be identified as ‘Dorestatus with temple of Lothar I’. Kennepohl, “Geldumlauf”, 7: in Frisia east of the Ems the only Carolingian coins to have been discovered are ‘Christiana religio pennies of Louis the Pious’ (1950).

³⁴ Coupland, “Dorestat”, 5-26, (1988) contests the opinion of Van Gelder (1961) that the coins found in the north of Frisia may have been struck locally instead of in the official Dorestat mint; in his opinion there is no stylistic reason if the fact that, in the 840s, Dorestat was under control of Danish warlords, who may have attempted to introduce their own moneymakers is taken into account (p.21). The question is posed again after the discovery of a hoard in Tzummarum in 1991 (Pol, “Spectaculaire schatvondst”, 70-71).

³⁵ Van Gelder, “De Karolingische muntslag”, 38.

³⁶ Boeles, “Les trouvailles”, passim, has made a catalogue of the findings of Carolingian coins in Frisia between Fli and Ems. Van Gelder, “De Karolingische muntslag”, 41, after analysing these findings, found that two types are particularly present: (a) coins of Louis the Pious ‘Christiana religio’ and (b) coins of Lothar I, ‘Dorestatus with temple’. Scholten, “De munten”, 19-22, has established the gross weights of the heaviest and best preserved specimens of the Frisian discoveries; however, his grouping is not exactly the same. The coins (a) belong to a series with an average weight of 1.59g and the coins (b) to a series with an average weight of 1.51g. “But there is one final objection to choosing the heaviest and best preserved coins available as a standard: namely, the extreme variation in weight among pieces of any issue make it probable, if not certain, that the heaviest pieces, like the lightest, deviated from the norm” (Morrison, “Numismatics”, 414). Hence the average weight aimed at in these types of penny might be less than the specimens selected by Scholten.

³⁷ Buma, *Westerlauwersches Recht I*, 19.

³⁸ Van Buijtenen, *De grondslag*, 158, concludes that in the original text of the statutes the first part concerned the organisation of the court, and this was followed by the part dealing with the penalties.

³⁹ Van Buijtenen, *De grondslag*, viii (§32). This statement refers to fighting in the church on a holy day resulting in sacrilege, a crime which requires the highest penalty, namely 72 pounds money of Cologne (*agrippische pennenga* = pennies of Colonia Agrippina).

‘But the Frisians will enjoy the favour, stated by Widekin the first *asega* and later recorded by Herderic⁴⁰ with approval of the Pope, that always in cases regarding neck and head [that is, capital crimes] the penny that is new at the mint⁴¹ [will be valid].

Although this is a 10th-century source, it apparently refers to an older tradition. In Excursus 4.3 I have made a conjecture that would date the tradition from about 790; that is, shortly before Charlemagne’s second monetary reform. Apart from this dating, the favour must already have been very old at the end of the 10th century because the source makes reference to the ‘first’ *asega*. It was also a generally known favour, one that was recognised and accepted in the 10th/11th century by the Bishop of Utrecht, who was responsible for the Mid-Frisian synodal administration of justice. But was it a favour? The punishment of capital crimes by the imposition of money payments rather than by the death penalty might be considered as a favour resulting from Christianisation - the church was concerned with the abolition of death penalties, and that is why the rule was made with the approval of the clerical authorities and accepted by Widekin - but that is not the point of the message, or at least not the only point. It tells us that the penalty might be paid with money ‘new at the mint’ - in other words, just minted. Allowing penalties to be paid in ‘fresh’ money can hardly be seen as a favour; in fact the contrary is true. Therefore it is likely that this was not initially intended as a favour at all. Rather, it was a condition imposed on the Frisians by the Frankish ruler aimed at compelling the Frisians to use Frankish money (the ‘*nova moneta*’ in the *Lex Frisionum*) rather than the old Anglo-Frisian pennies (the ‘*veteres denarios*’⁴²). In later centuries these considerations were probably forgotten, or at least were no longer relevant. What had been a conditioned favour regarding punishment was transformed into a privilege regarding payment.⁴³ In the 10th century it could be interpreted in a profitable way; money ‘new at the mint’ could only be ‘money struck in Frisia’. This interpretation is confirmed in high medieval sources.⁴⁴ Obviously, the interpretation might have arisen as soon as minting in Dorestad ended. At that time Frisia was already reduced to the parts north of the Rhine. It ‘legally’ provided a way to resume the tradition of minting in Mid-Frisia. This conjecture is supported by another piece of information which tells us that - by implication in the 9th century - a moneyer named Rednath began minting in Frisia and that he minted gold as well as silver coins. It is dealt with below.

⁴⁰ Van Buijtenen, *De grondslag*, viii, has translated from the ms. *Jus*: ‘her Deric’ instead of ‘Herderic’.

⁴¹ Buma, *Westerlauwersches Recht I*, 182-183 (§31).

⁴² See Excursus 3.3: ‘On the different kinds of money of account in the *Lex Frisionum*’ sub (b).

⁴³ The evolution of imposed conditions into favours was not unusual in Frisian high-medieval law. Algra, *De Zeventien Keuren*, 341, mentions a comparable transformation: in the 16th *kest* a Carolingian duty evolved into a Frisian right.

⁴⁴ See next chapter and Excursus 4.3: ‘On the text of the clause regarding sacrilege in the Mid-Frisian synodal statutes’.

After the ‘final hour’ of Dorestat dominance in 863, other places alongside the traditional Frisian trading routes gained importance, including (in Frisia itself) Medemblik,⁴⁵ Stavoren,⁴⁶ Emden⁴⁷ and Jever.⁴⁸ But Strasbourg took over the role of the official minting of Dorestat.⁴⁹ Some silver pennies struck in Strasbourg have been found in Frisia, genuine ones and imitative types, dating from about the end of the 9th century onwards. Their weights are very varied, but the average of 8 genuine coins was c.1.3g; the imitative types being somewhat lighter.⁵⁰ The pennies of Strasbourg were soon succeeded by silver pennies of Cologne.⁵¹ Their silver weight may also have been c.1.3g,⁵² declining to c.1.2g in the second half of the 10th century.⁵³ But in addition to the official coins struck in Strasbourg and Cologne, the minting of the imitative coins was continued in Frisia. The type of the imitative ‘Christiana religio of Louis the Pious’ remained in production until about 990;⁵⁴ the weight of these pennies decreased to about 0.9g at about the end of the 10th century⁵⁵ and may have been even less (c.0.7g).⁵⁶ But the imitative post-Carolingian pennies of the Strasbourg type (c.1.3g to c.0.8g)⁵⁷ and of the Cologne type (c.0.9g)⁵⁸ have also been found in considerable numbers in the few hoards containing coins from the 10th century which have been discovered in Frisia. It seems that these light imitative Carolingian and post-Carolingian coins remained the bulk of the currency. At the beginning of the 11th century they were gradually succeeded by the pennies of the counts in Frisia. The emergence of these pennies, following

⁴⁵ Besteman, “North Holland”, 110.

⁴⁶ Boeles, *Friesland*, 445.

⁴⁷ Haarnagel, “Die frühgeschichtliche Handels-Siedlung Emden”, 76.

⁴⁸ Sello, *Östringen und Rüstingen*, 193-204. The first evidence of the existence of Jever is the minting in the name of Duke Bernhard II (1011-1059). But it is likely that Jever was a marketplace some time before that time. Traditions may confirm this conclusion: in the 9th of the *XVII Kesten* Jever is mentioned as the northern end of one of the seven trade routes with free passage by Frisians, granted them by Charlemagne (Buma, *Westerlauwersches Recht I*, 140-141). And in a stray clause in the Old Frisian so-called Fivelingo judge’s book, Stavoren and Jever are mentioned as the two places granted a mint by Charlemagne because of the Frisian contribution to the liberation of Rome, a clause apparently related to the so-called ‘Magnus-legend’ (Buma, *Das Fivelgoer Recht*, 172-173).

⁴⁹ Boeles, *Friesland*, 445.

⁵⁰ Ditto and Boeles, “Les trouvailles”, 53-59; 77-79.

⁵¹ Ditto.

⁵² Hävernich, “Der kölnner Pfennig”, 2: Little is known about the weight and fineness of the coins minted at the time of the Saxon emperors; from those coins that have been discovered it seems that the weight and fineness were according to the Carolingian standards. Dannenberg, H.: “Die deutschen Münzen der sächsischen und fränkischen Kaiserzeit” I, 12-13: average gross weight pennies of Bishop Bruno I (953-965) was 1.43g, of Bishop Pilgrim (1021-1036) was 1.37g. At Carolingian fineness of 0.96 (Spufford, *Money*, 102) this implies a silver equivalence of 1.37g and 1.32g, respectively.

⁵³ Spufford, *Money*, 102.

⁵⁴ Berghaus, “Die ostfriesische Münzfunde”, 26; Ilisch, “Friesische Münzen”, 67.

⁵⁵ Ilisch, “Friesische Münzen”, 67.

⁵⁶ Kennepohl, *Beiträge*, 9: The hoard of Dietrichsfeld I, buried shortly after 1014, contained still nearly 9% ‘Christiana religio’ pennies, weighing 0.68g in the average.

⁵⁷ Boeles, *Trouvailles*, 56-59; Kennepohl, *Beiträge*, 9.

⁵⁸ Kennepohl, *Beiträge*, 9.

the silver discoveries from the 960s in the Harz in Saxony,⁵⁹ marks the end of this era and the beginning of a new one for the silver currency in Frisia.

Gold minting was relatively unimportant in the Carolingian realm apart from Frisia. The official gold *solidi* were struck by Louis the Pious. They weighed about 4.4g of fine gold, the same weight as the Byzantine *nomisma*, and have not been found in large numbers. The imitative gold *solidi* aimed at the same weight, but over the course of time their weight declined and their quality decreased.⁶⁰ Many are less than 4.0g and often made of very base gold.⁶¹ Most of these imitations have been found in the north of Frisia.⁶² There can be no doubt that they were struck in Frisia between c.830 and c.900.⁶³ By then the Frankish central government had probably lost its grip on Frisia, as we have seen. The normal imitations would have been struck to serve the needs of commerce.⁶⁴ The duration of their use is unknown.

However, in the high Middle Ages memories of the gold *solidus* were still extant. It seems to be referred to, for example, in the so-called first general Frisian *Landriocht*, written down in the 11th century but probably having an archaic nucleus. The law itself deals with contumacy to attend a lawsuit ordered on behalf of the king, and it mentions three legal impediments. If someone wants to appeal to one of these, he has to pay for the court's activities *thre geldene pennengar ande there Rednathes menta islein* [= three gold pennies struck in Rednath's mint] according to one version.⁶⁵ The text of this version is believed to be the oldest of the surviving texts.⁶⁶ As no gold coins were minted in Frisia after the 9th century, the tradition must refer to these 9th century *solidi*. Radnath is a name which occurred in Frisia, probably in 855; among notes regarding a heritage, a piece of land is mentioned in the estate of Radnath in 'Keddingrip' in Wester-

⁵⁹ Spufford, *Money*, 74.

⁶⁰ Grierson, "The gold solidus", 13.

⁶¹ *Ibidem*, 2; Kenepohl, "Beiträge", 5-9: the weight of the imitative gold *solidi* found in the hoard of Delfzijl from c.900 is reported to be between 3.6g and 4.4g, with a fineness of about 0.7.

⁶² Lebecq, *Marchands*, 67, fig.15 (after Grierson, "The gold solidus", 25-27).

⁶³ Grierson, "The gold solidus", 11.

⁶⁴ *Ibidem*, 13.

⁶⁵ Buma, *Das Hunsingoer Recht*, 30-33 (§1); *Das Emsinger Recht*. 28-31 (§1).

⁶⁶ Algra, *Zeventien keuren*, 373-379.

⁶⁷ Kötzschke, *Rheinische Urbare II*, 14. It is assumed that the goods mentioned in these notes were parts of the gift by a rich man, named Folcker, to the monastery of Werden in 855, although the notes have been interpolated later on (*ibidem*, 9). The location Keddingrip is unknown. Kötzschke has: 'near Westhem?'; Van den Bergh, *Middelnederlandsche Geographie*, 142: Keddingrip = Goingaryp; Jaekel, *Die Grafen*, 44: Keddingrip is not Goingaryp but Jutryp. Künzel, *Lexicon*, 203: 'Kedding' is a man's name 'Kedde'+ suffix 'ing', 'rip' is a border, a bank.

go.⁶⁷ Furthermore, in a 16th-century manuscript, a tradition survives⁶⁸ that Rednath, a native of England, was one of the first moneyers in Frisia.⁶⁹

In addition to this minting of gold pennies, Rednath also struck silver pennies. The ninth of the *XVII Kesten* – the statutes valid for all of Frisia – bids the Frisians to pay the *huslotha*, a yearly tax to the king, being 2 pennies from Rednath’s mint from each house.⁷⁰ This tax is repeatedly mentioned in high and late medieval sources. From these sources it appears that the pennies specified were silver pennies.⁷¹ So, with appropriate provision, we may conclude that there are various indications of the indigenous minting of gold and silver coins in the north of Frisia in the 9th century, after or even at the same time as the official imperial minting in Dorestat in the south of Frisia.

The history of the measure of value

The *Lex Frisionum* provides us with information about the conversion from the previous kinds of money of account into what is called ‘new’ money of account. When the *Lex* was drafted, this conversion was not yet complete, though it had been announced in various ways. The *Lex* is apparently a source written at a time when, in Frisia, the gold-based unit of account was valid alongside a silver-based unit of account. Because the gold coins had in fact disappeared from circulation, the text was helpful in converting the amounts in the gold-based system of account into amounts in the silver-based system of account. By means of this source, we are able to witness this important transformation. The original money amounts in the surviving text are mainly quoted in the fossilised gold-based *solidus* as unit of account, as we have seen. But these amounts are to be converted into ‘new money’ units of account (silver-based *solidi*/shillings) by various mechanisms of conversion.⁷² Apart from some special cases, the conversion rate was 3; in other words, an amount in gold *solidi* could be converted into an amount in silver *solidi*/shillings by trebling it. Since a silver *solidus*/shilling was a multiple unit equal to 12 silver pennies, this implies that a gold *solidus* was converted into 3 x 12 = 36 silver pennies.

⁶⁸ GAG MANUSCRIPTS: RF ms. *in folio* no.17, section *Ex antiquis et diuersis codicibus collectae antiquae monetae Frisiae*; see also Van der Chijs, *Friesland, Groningen en Drenthe*, 278-281.

⁶⁹ Though no moneyer named Rednath has been found in England, at that time, Rednath in Frisia may have been akin to Eadnoth and/or Redmudh, minting during c.825-c.840 for the Mercian kings in East Anglia and London, respectively (Brooke, *English Coins*, 22-31). Two-syllable names were usual and the syllables were frequently mutually combined in the Merovingian-Carolingian era (Gyseling, “Overzicht”, 4-5). So Eadnoth & Redmudh -> Rednath could have been structured in the same way as, for example Eadwulf & Ethelstan -> Ethelwulf, the names of English moneyers in the same period and the same area.

⁷⁰ Buma, *Das Rüstinger Recht*, 36-37 (§9); Buma, *Das Hunsingoer Recht*, 24-27 (§9); Buma, *Westerlauwersches Recht I*, 140-141 (§9).

⁷¹ Klaarbergen, “De Huslotha”, 131-149.

⁷² Excursus 2.4: ‘On the different kinds of money of account in the *Lex Frisionum*’.

The question of what this ‘new money’ actually was has drawn much attention and caused much confusion among students of the *Lex*.⁷³ In fact the designation ‘new money’ (*novae monetae*) could simply refer to money ‘fresh’ from the mint, the opposite of ‘old money’ in the sense of worn money. In the context of this law, however, it is much more likely to refer to a new type of coin. It seems obvious that the term ‘new money’ used in the *Lex* refers to the new *deniers* of Charlemagne after his reform in 793/794.⁷⁴ His *Capitulare* of Frankfurt in the same year does indeed mention *novi denarii*,⁷⁵ but this interpretation is rather arbitrary because ‘new money’, of course, has a more general meaning. For the Frisians the transformation from the previous Frisian system of money of account to the Carolingian money of account system, in 754 or 768, was a renovation probably no less impressive than the transformation from the ‘old’ Carolingian penny before the reform of 793/794 as money standard to the ‘new’ Carolingian penny after that time. That first reform was the transformation of the money system based on the fossilised gold *solidi* and *tremisses*, and the still current Anglo-Frisian silver pennies (*veteres denarios*), into one based on foreign, by then ‘new’, Carolingian silver pennies. In other words, the ‘new money’ mentioned in the *Lex* may well also refer to the pre-reform Carolingian pennies. Although discoveries of Carolingian pennies of this type are rare in the north of Frisia, the fact that they were used as a model for the later Danish coins, together with the monetary reform in England by Offa c.792⁷⁶ restoring - as the Carolingians had done before - the English pennies to a silver content of c.1.3g, might indicate the acceptance of the new pennies of Charlemagne in the North Sea trade. Their use as standard of account would be obvious then.

⁷³ Siems, *Studien*, 234-244, has given a clear review of the various opinions. Most of these have in common the assumption of means of payment that have never been found in Frisia dating from around 800, or measures of value that have never been mentioned. Richthofen and Patetta: the *solidus* is the Frankish silver *solidus*/shilling and the *tremisses* or *denarii* are silver units worth $\frac{1}{3}$ rd of this *solidus*, i.e. 4 pennies apiece. Scholten: the *solidus* is a ‘small Frisian’ shilling worth 3 Carolingian post reform pennies; Vinogradoff: the *solidus* is based on gold *tremisses*/*denarii* (‘new money’) of Charlemagne, worth 12 silver pennies apiece; Heck: the *solidus* is the gold *solidus* of Louis the Pious, struck after 814; Hilliger, Kennepohl, Hävernick: the *denarius* ‘new money’ is the gold *solidus* of Louis the Pious, so the Frisian *solidus* was a giant *solidus*; Dopsch, Schröder: the *solidus* was based on gold *tremisses* of Charlemagne, struck in Lombardia. The consequences of these theories are not really credible because they are either based on money units that have never been heard of, or result in silver equivalencies of wergeld amounts which do not match the values in other Germanic laws. Siems himself is sceptical about these opinions and suggests (page 250) that the *solidus* might have been just a unit of account based on the antiquated gold *solidus* - with which I agree.

⁷⁴ Grierson, “Charlemagne”, 509.

⁷⁵ Jesse, *Quellenbuch*, 10 (no.31): 5. *De denariis autem certissime sciatis nostrum edictum, quod in omni loco, in omni civitate et in omni empturio similiter vadant isti novi denarii et accipiantur ab omnibus.* (Furthermore, regarding the pennies, it is decided and publicized by our decree, that in every place, in every town and in every emporium alike, these new pennies be obliged and accepted by everybody).

⁷⁶ Grierson, “Money and coinage under Charlemagne”, 510.

From the *Lex* itself we cannot derive directly what was the silver equivalence of the ‘new’ money of account, but it can be derived indirectly.⁷⁷ In two places in the *Lex* the compensation for homicide of a freeman in East Frisia is mentioned. In Title I it is $53\frac{1}{3}$ *solidi* or 160 *solidi*/shillings, kin’s share included, or $106\frac{2}{3}$ *solidi*/shillings⁷⁸ kin’s share excluded. In Title XV it is $5\frac{1}{2}$ pounds, presumably also kin’s share excluded; that is 110 *solidi*/shillings (as a pound is defined as consisting of 20 *solidi*/shillings⁷⁹). So the last two amounts are nearly equal. The first is quoted in new money and the second in old money. As this last designation is probably used to express worn, demonetised pennies,⁸⁰ which were not considered legal by the Carolingian authority, it has to be taken at a little discount. This discount is found in the difference between $106\frac{2}{3}$ *solidi*/shillings new money and 110 *solidi*/shillings old money (*i.e.* c.3%). Consequently the amounts are virtually equivalent. This implies that a penny of account new money had the same silver equivalence as the penny of account old money was supposed to have had before it qualified as old. As money after Charlemagne’s monetary reform of 793/794 (c.1.7g of silver apiece) could not possibly be designated as ‘old’ money, it follows that the old money must have consisted of Anglo-Frisian pennies and/or old Carolingian pennies of c.1.3g of silver each. Hence, the silver equivalence of a penny new money in the *Lex* must also have been c.1.3g.⁸¹ Very few of the pre-reform pennies of Charlemagne have been found in Frisia, but the fact that in Hedeby, a trade centre with a known Frisian presence in Denmark,⁸² these pennies were taken as the model for what a coin should look like,⁸³ together with their mention in the *Lex* (as just shown), encourages the assumption that they were used not only as means of payment but also as standard for the Frisian unit of account at that time.

It follows that the *Lex* must have been drafted before the monetary reform of Charlemagne in 793/794. This is not very surprising though. Charlemagne’s desire to embody and revise the various tribal laws in his realm was apparently not confined to the Diet of

⁷⁷ Excursus 2.4: On the different kinds of money of account in the *Lex Frisionum*.

⁷⁸ $\frac{2}{3} \times 160 = 106\frac{2}{3}$.

⁷⁹ LF, 138 (Title XIV, §7).

⁸⁰ Schrötter, *Wörterbuch der Münzkunde*, sv. *denarii antiqui, d. veteres, d. novi*.

⁸¹ Excursus 2.4: On the different kinds of money of account in the *Lex Frisionum*, ad (b).

⁸² Lebecq, *Marchands*, 362.

⁸³ Even at the end of the 10th century, when the Danes started their own minting in Hedeby, they did not imitate the c.1.7g post-reform but the c.1.3g pre-reform Carolingian pennies from Dorestat. Apparently these were the Hedeby merchant community’s notion of what a coin traditionally and properly should look like (Spufford, *Money*, 82). Spufford refers to the research of Malmer (Malmer, *Nordiska mynt*, 79-81). Malmer apparently has the pre-reform coins of Charlemagne in view; that is, coins struck between 768-793/794. So does Spufford himself as the weight of the Carolingian prototypes he mentions is about 1.3g. However, Spufford states that the Hedeby merchant community’s notion of proper money was fixed ‘early in the 9th century’. As the post-reform coins of Charlemagne (c.1.7g) were struck from 793/794, the fixation of the notion of ‘proper money’ in Hedeby must already have occurred before the end of the 8th century.

802. Some time before that he was well aware of the necessity of a careful and elaborate formulation of these laws for the benefit of an adequate governmental organisation of his realm. As soon as he had conquered East Frisia and Saxony, in 785, the *Lex Saxonum* was set down in writing,⁸⁴ so why not also the *Lex Frisionum*? Furthermore, it is well-known that the *Lex Frisionum* has formulations in common with the *Lex Alamannorum*,⁸⁵ which had been superficially revised in, perhaps, 788.⁸⁶ These activities indicate that the *Lex Frisionum* may have been drafted between 785 and 793/794. So, the *Lex Frisionum* provides us with information about an important step in the evolution of the money of account in Frisia - the change over from a gold-based to a silver-based unit - but not, if my corollary is true, about the consequences of Charlemagne's monetary reform in 793/794 on the Frisian measure of value.

Apart from the *Lex Frisionum*, there are hardly extant sources providing information on the measure of value in Frisia during the period under consideration. There are registers of income and taxes relating to properties in Frisia of the abbeys of Fulda⁸⁷ and of Werden⁸⁸ in the 9th and 10th centuries. As well as payments in kind (often *pallia*), they include payments quoted in *deniers*, *siclos*,⁸⁹ *uncia* and *libra*. It seems likely that these units of account refer to the silver-based multiple units of account.⁹⁰ In case the amounts refer to places in the north of Frisia, we might try to verify whether the silver-based unit of account was based on the post-reform standards of Charlemagne. But so far the surviving data do not enable us to determine the value of these units with adequate certainty. Kötzschke interprets a *siclus* as a shilling.⁹¹ Less frequently the registers also include payments quoted in *solidi*. These may have been *solidi*/shillings, thus

⁸⁴ Ganshof, "Charlemagne", 395.

⁸⁵ Siems, *Studien*, 355-360; MGH, *LLnG* V, 1; Brunner, *Über das Alter*, 171: the *Lex Alamannorum* is most likely to have been formulated between 717 and 719.

⁸⁶ Ganshof, "Charlemagne", 395.

⁸⁷ OFU2, Anhang B.

⁸⁸ Kötzschke, *Rheinische Urbare II*, 46-54; 60; 73-74; 95-96; 98-99; 101; 110-114; 123-124; OFU2, Anhang A.

⁸⁹ See: Halke, *Handwörterbuch*, sv. siglos; sv. stater. The word *siclus* in medieval Latin texts may refer to the word *siglos*, the Greek name for the oldest silver coin in Persia (called *sekel* in Median). The Hebrew word *shekel* has the name in common with this coin, but only that. The *siclus* was related to the gold *stater*. In Byzantium the gold coin *solidus* was also called a *stater* (Spufford, *Money*, 12-14, citing Procopius). The relationship between the antique gold *stater* and the antique silver *siglos* may have been reflected in the relationship between the medieval gold *solidos* and the medieval silver *siclus* - although not in the rate. The *siclus* weighed $\frac{2}{3}$ rd of the *stater* (the *siglos* æ about 5.5g of silver, the *stater* æ about 8.4g gold).

⁹⁰ Doehaerd, "Impôts directs", 85, understands an *uncia* to be a quantity of gold when she refers to the following message in the polyptic of the abbey of Prüm (which is usually dated at 893 in origin): *Fresones qui manent in Dusburgh solvunt ad festivitatem S.Martini uncias VIII, ad Pascha uncias V et denarios XII* (cf. Lebecq, *Marchands II*, 389). But this interpretation seems unlikely as an ounce is 1/12th of a pound and a pound in these contexts usually denotes a quantity of silver. See also: Lebecq, *Marchands I*, 29.

⁹¹ Compare for instance Kötzschke, *Die Rheinische Urbare II*, 17 and 18 with Kötzschke, *Studien*, 17.

silver-based units of account, but they may also refer to the indigenous gold *solidi* which remained current in Frisia. One might assume that, particularly in Frisia, the word *siclus* was used for a shilling silver as distinct from the word *solidus* denoting the gold-based unit of account. This indeed seems possible according to a further analysis of the use of the word *solidus* in these registers.⁹² But both these nouns also occur in the registers outside Frisia even though the gold *solidus* as a coin is assumed hardly to have circulated outside Frisia.⁹³ So my interpretation of the word *solidus* (as used in these registers) for Frisia is open to doubt. If the word *solidus* does not in fact refer to the gold coin but to a unit of account of 12 silver pennies, the question arises as to why *siclus* was used in the same context. If a *siclus* had been a unit of 9 post-reform pennies, it would correspond to a pre-reform shilling of 12 pennies. It would confirm the possibility that in Frisia the unit of account was not adapted to the post-reform Carolingian silver penny. But so far the indications that point to this solution are too weak for it to be assumed.⁹⁴ Apart from this possibility, implying that the antiquated Anglo-Frisian or Carolingian pre-reform silver penny remained the standard for the silver-based unit of account, it seems possible that after c.850 the assumedly lighter Frisian imitative Carolingian post-reform penny became the standard, but there is no evidence for this either.

A *capitulare* of Louis the Pious in November 816 also throws some light on the system of money of account in Frisia after the monetary reform of Charlemagne in 793/794.⁹⁵ This *capitulare* was probably proclaimed to comply with a petition of the Council of Rheims in 813.⁹⁶ The Council requested the Emperor to abolish the use of the fossilised *solidus* worth 40 *deniers* in the *Lex Salica* because its existence alongside the *solidus* worth 12 *deniers* gave rise to perjury and false testimony. In the *capitulare* of 816 the Emperor confirmed that, in settlements of disputes in Frankia according to the *Lex Salica*, a *solidus* had to be reckoned at 12 pennies except in disputes with Saxons and Frisians. In these cases a *solidus* owed by the Saxon or Frisian to the Frank concerned in the dispute had to be reckoned at 40 pennies. As I see it, this decree was not intended to discriminate between Franks on the one hand and Frisians and Saxons on the other since such an intention would have been completely contrary to a measure taken by Louis only a few years before. In 814, shortly after he had become king, he had returned to these peoples the rights of patrimony that had been taken from them by Charlemagne, probably because of their rebellion c.785. Louis returned them to gain their loyalty

⁹² Excursus 4.1: 'On the *solidi* and the *siclos* in the revenue registers of landed property in Frisia of the abbey of Fulda'; Excursus 4.2: 'On the *solidi* and the *siclos* in the revenue registers of landed property in Frisia of the abbey of Werden'.

⁹³ For instance the words *siclus* and *solidus* are used together in the returns of one possession in the register Langewide: Köttschke, *Rheinische Urbare II*, 45.

⁹⁴ Excursus 4.2: 'On the *solidi* and the *siclos* in the revenue registers of landed property in Frisia of the abbey of Werden', sub (d).

⁹⁵ MGH Cap I, 268 (§134, 3).

⁹⁶ Jesse, *Quellenbuch*, 11, no.37.

- and he was successful according to his biographer.⁹⁷ The exception in the *capitulare* of 816 had another cause. At that time a man was bound to the law of his own nation, not of the territory in which he was at law.⁹⁸ If a Frisian was at law in Frankia, the money he was using (as measure of value) was different from the money the Frank was using. This is essentially what the *capitulare* refers to.⁹⁹ Apart from the problem of the rate itself, there can be little doubt that a Frisian *solidus* of so high a value must have been the gold-based unit of account and not the silver-based *solidus*/shilling that the Franks were accustomed to.¹⁰⁰ So, apparently, the gold-based unit of account was still valid in Frisia.

As far as the rate of 40 pennies itself is concerned, there are at least 6 possible interpretations to be derived from this *capitulare*. The *solidus* in view might have been either the fossilised Merovingian *solidus* of c.3.9g of gold or the Frisian imitative Carolingian *solidus* of Louis the Pious of c.4.4g of gold. The silver pennies might have been either the fossilised Merovingian pennies of c.1.2g of silver, the pre-reform Anglo-Frisian or Carolingian pennies of c.1.3g of silver or the post-reform Carolingian pennies of c.1.7g of silver. Each combination results in a corresponding silver:gold ratio:

<u>Gold <i>solidus</i></u>	<u>Silver penny</u>	<u>40 Silver pennies</u>	<u>Silver:gold ratio (rounded)</u>
3.9g	1.2g	48g	12
3.9g	1.3g	52g	13
3.9g	1.7g	68g	17
4.4g	1.2g	48g	11
4.4g	1.3g	52g	12
4.4g	1.7g	68g	15

⁹⁷ Rau, *Quellen I*, 294-295 (translation of Astronomus, *Anonymi vita Hludowici Imperatoris*).

⁹⁸ Buchner, *Geschichtsquellen*, 45-46. Contrary to the tribal laws the *capitula*, in general, were valid in the whole Carolingian realm. But the *capitula legibus addenda* were additional to the tribal law concerned.

⁹⁹ Brunner, *Deutsche Rechtsgeschichte*, 216, is of the opinion that this *capitulare* was made in order to prevent that the compensation for homicide of a Salian living among Frisians or Saxons being less, as a consequence of the new rate of a *solidus*, than the compensation for homicide of a Frisian or Saxon nobleman. According to the Salian law the compensation for homicide would be 200 *solidi* = 200 x 12 = 2,400 *denarii* (Siems, *Studien*, 279-280). The compensation for a Frisian nobleman was 80 *solidi* = 80 x 40 = 3,200 *denarii*. Hence, in Brunner's exegesis of the *capitulare*, the compensation for a Salian among Frisians should become 200 x 40 = 8,000 *denarii*. This discrimination I cannot believe either. But anyway his opinion assumes the use of a *solidus* of 40 *denarii* in Frisia because, if in Frisia the *solidus* would also count 12 *denarii*, the compensation for homicide of a Frisian nobleman would be only 80 x 12 = 960 *denarii* and the *capitulare* would be redundant in his exegesis.

¹⁰⁰ Jesse, "Noch einmal der Denar", 16-18: The origin of a rate of 40 pennies to the *solidus* in the *Lex Salica* may go back to the end of the 7th century until the second half of the 8th century, when the first silver *deniers* were struck in Frankia.

There is no definite answer to the question of what the *capitulare* referred to. It seems to me most likely that it referred only to the first case, the fossilised rates of the system of account in the Merovingian law system that had to be adapted.¹⁰¹ In that case the rate gives no further information on the Frisian system of money of account in 816.

Without supplemental data we can only assume that the Frisian money of account system, at least between 793/794 and c.850, was based on the circulating means of payment. Because silver as well as gold coins were in use, a continuation of the Frisian bimetallic system seems obvious in that case. This would imply a system of account based on the silver post-reform Carolingian penny at c.1.7g as silver standard and the gold *solidus* of Louis the Pious as gold standard. As the *solidus* in Frisian law had hitherto been reckoned at 3 shillings or 36 pennies, it follows that this system required a silver:gold ratio of 14 to be stable.¹⁰² We do not know the ratio at that time in Europe, but it was about 16 in the Islamic countries and still increasing.¹⁰³ According to Bolin¹⁰⁴ the Western European ratios would have followed the Islamic development though obviously with a time lag. The actual decline in the gold content of the Frisian imitative *solidus* during the 9th century would reflect a rise of the gold price in terms of silver.¹⁰⁵ This would be in harmony with Bolin's view.

In conclusion, without further information the story of the measure of value in Frisia during the 'Carolingian' period can only be conjectural. As the scarce information concerns the Frisian unit of account only in legal transactions, any conclusions regarding the unit of account in commercial transactions are merely guesswork. In the bimetallic system of account the assumed continuation of the fixed conversion rate of 36 silver pennies for 1 gold *solidus* is also not based on evidence. On this understanding, my suggestion regarding the unit of account in the north of Frisia would be as follows, on the grounds that the unit of account in the south of Frisia would have adapted the Frankish system.

¹⁰¹ Jesse, *Quellenbuch*, 2 (no.6, taken from the Lex Salica); Jesse, *Noch einmal der Denar*, 16; Grierson, "The gold solidus", 3, note 7.

¹⁰² $36 \times 1.7\text{g of silver} : 4.4\text{g of gold} = 13.9$.

¹⁰³ Bolin, "Mohammed, Charlemagne and Ruric", 16; Watson, "Back to Gold", 27.

¹⁰⁴ Bolin, "Mohammed, Charlemagne and Ruric", 5-39.

¹⁰⁵ Unless at the same time the silver content of the penny decreased proportionally and the unit (= penny) of account accordingly, *quod non*.

Survey of the evolution of the Frisian money of account system

c.750-c.1000

Period	Standard coin	Equivalence	Unit of acc/ multiple units
.750/ c.794	Anglo-Frisian penny and/or pre-reform Carol.penny	1.3g of silver	1 d. = 1 standard 1 shilling = 12 d. 1 ounce = 20 d. 1 pound = 240 d.
do.	Merovingian <i>solidus</i>	3.9g of gold	1 d. = 1/36th standard)
c.794/ c.850	post-reform Carol.penny?	1.7g of silver	1 d. = 1 standard 1 sh = 12 d.
c.850/ c.1000	(imit.) Carol. penny	1.7g?/0.9g of silver	1 ounce = 20 d. 1 pound = 240 d.
c.814/ c.900)	(imit.) <i>solidus</i> of Louis/Pious	4.4g/4.0g (or less) of gold	1 d. = 1/36th standard

Economic analysis

The economic analysis of the evolution of the system of money of account in the period under view must, of course, account for the very scarce historical facts and underpin the conjectures in the foregoing sections. The following changes in the development of the Frisian unit of account from c.750 to c.1000 AD have to be analysed:

- A possible substitution of the Anglo-Frisian penny by the 'pre-reform' Carolingian penny as silver standard in 754/755 and/or 768.
- The assumed substitution of the Anglo-Frisian or Carolingian 'pre-reform' penny by the Carolingian post-reform penny as silver standard in 793/794.
- The assumed decline of the silver equivalence of the penny of account from c.1.7g in 793/794 to c.0.9g at the end of the 10th century.
- The assumed substitution of the Merovingian gold *solidus* by the gold *solidus* of Louis the Pious of c.4.4g as gold standard in 814.
- The assumed decline of the gold equivalence of the gold *solidus* during the 9th century.

The substitution of the Anglo-Frisian penny by the 'pre-reform' Carolingian penny as silver standard, if it indeed occurred, was determined by political interference. It would have been the consequence of enforced currency changes in 754 and 768. Such an operation required a powerful authority, able to withdraw the current (Anglo-Frisian) coins and to prosecute keepers of the illegal old coins. It is hard to believe that such an

operation could have been effective at that time in the wetlands of Frisia, with its numerous small merchant-shippers dispersing not only within the Carolingian realm but also outside it along the coasts of the North Sea. People may have been reluctant. It may have had some effect if the local authorities in Frisia were loyal to the king and capable within their own jurisdiction. However, it is not only the change of coin that matters. It is also the change of accounting prices and tariffs. This change was moderate, the new pennies being equivalent to the initial value of the Anglo-Frisian pennies. The silver weight of the Anglo-Frisian pennies would have undergone 'normal decrease' during the past two or three generations, but as the velocity of circulation would also have been low, this decrease may have been only slight. Therefore the change would not necessarily have caused a great disturbance of the trust built up in the overseas networks. This, together with a supposed trust in the king to keep money value stable - that is, to improve reduction of price uncertainty, might have induced the Frisian merchants to accept the new coins as the silver standard, thus restoring the legal standard.

The assumed substitution of the Carolingian 'pre-reform' penny¹⁰⁶ by the Carolingian 'post-reform' penny as silver standard was also determined by political interference, presumably in the face of strong reluctance (social inertia) among the users of money, because this time the reform was a big leap. According to Bolin and others, this monetary reform was decreed by Charlemagne because prices (quoted in pre-reform Carolingian silver money of account) had risen too much as a result of an abundant influx of silver.¹⁰⁷ This phenomenon would also have been reflected in the rise of the silver:gold ratio. Hence, augmenting the silver content of a penny would neatly have neutralised its loss of purchasing power, and the prices could be restored to the usual level. Grierson rejects this theory.¹⁰⁸ He concludes that the reform "had no economic justification at all, but was only one aspect of the reform of weights and measures which was a feature of Charlemagne's administrative policy." His argument implies a vigorous clash between Charlemagne's policy and the existing economic conditions. The silver equivalence of existing debts and customary tariffs, such as wergelds, compensations and fines in the Carolingian realm, would have increased in silver equivalence by over 30% at a stroke! Grierson accepts this: "... the vast majority of customary payments must have continued to be reckoned as they were before, to the loss of those from whom they were due". If so, the new system might have been imposed upon the obedient population in Charlemagne's kingdom, but it would not have worked in international payments outside the Carolingian realm. For example, the Scandinavians and the Anglo-Saxons - the habitual trading partners of the Frisians outside the empire - could not be compelled to adapt an entirely new system of account. We must assume that, by negotiating prices, they were used to the standard of 20 grains (= 1.3g) of silver represented by pennies

¹⁰⁶ And/or the Anglo-Frisian penny if the previous reforms were not effective or complete.

¹⁰⁷ Bolin, "Mohammed, Charlemagne and Ruric", 5-39; see also Doehaerd, "Les réformes", 14-18.

¹⁰⁸ Grierson, "Money and coinage under Charlemagne", 528-530.

such as the Anglo-Frisian pennies at the beginning and perhaps the pre-reform Carolingian *deniers* later on. If the new Carolingian penny became the new standard for the Frisian silver-based unit of account, then it must have generated a wide disturbance of the pricing habits. The monetary unity of the North Sea area was broken. There are no reasons to suppose that in England and Denmark the merchants imitated the Carolingian system of account based on the 1.7g silver penny.¹⁰⁹ Even at the end of the 10th century, when the Danes started their own minting in Hedeby, they did not imitate the 1.7g post-reform pennies but the 1.3g pre-reform Carolingian pennies of Dorestad, as we have seen. There is little doubt as to the acceptance of the reformed Carolingian penny as a medium of payment, but, in the light of the weaknesses of Charlemagne's reign,¹¹⁰ it is difficult to believe that it was also accepted as the standard for the Frisian silver-based unit of account if the measure had no other justification than that suggested by Grierson. Perhaps a similar reluctance within the Carolingian realm is found in southern Italy, as this part belonged to the Arab and Byzantine dominated Mediterranean economies, whose monetary system was gold-based.¹¹¹ However, so far there is no indication of an alternative Frisian solution, that of incorporating the new pennies into the old money of account system, since 9 of these Carolingian pennies would be equivalent to 1 shilling of the old system.

The assumed decline of the silver equivalence of the penny of account is almost completely based on what we know about the currency; that is, about the silver content of the Carolingian and post-Carolingian pennies. As far as the genuine Carolingian pennies are concerned, I can only understand the tenacity of the initial level until the end of the 9th century as resulting from governmental interference in the Carolingian realm itself. For some time this level may have been followed by the mechanisms of monetising bullion and mint enterprise in Frisia in so far as Frisian currency was struck without Frankish control north of the Rhine. If, after c.850, the presumably lighter Frisian imitative Carolingian pennies became the standard in the North, then the decline in the silver equivalence of the penny of account during the 9th and 10th century in this part of Frisia would have been more equable. Whatever may have happened in Frisia during the 9th century, it is assumed that after 900 the genuine as well as the imitative Carolingian silver penny had a silver content of c.1.3g. It is improbable that the decline of these silver coins in Frisia from c.1.3g to c.0.9g during the 10th century was mainly due to normal decrease in a market controlled silver currency. In the late Middle Ages the normal decrease was c.0.45g per century,¹¹² but, as the velocity of circulation of coins must have been much lower in the 9th and 10th century, it goes without saying that the

¹⁰⁹ Following Brooke, *English Coins*, 48-55, only since Edward the Elder (900-925) have Anglo-Saxon coins weighing c.1.7g been struck, and then only a few of the common types, the rest being rare types.

¹¹⁰ Ganshof, "Charlemagne's failure", 256-260.

¹¹¹ Day, "The monetary reform", 30.

¹¹² See Chapter 2, 'Data changes': the mechanism of deterioration.

deterioration would have been lower too. It was probably almost zero. So other forces must have dominated. The impressive tributes imposed by the Northmen in the Carolingian realm may have caused a shortage of silver and a rise in the silver price during the 9th and early 10th centuries, but this outflow of silver was probably detrimental to the coin outflow from normal trade to Scandinavia itself.¹¹³ It is more likely that economic forces caused the silver price to rise. Once the Carolingian conquests had come to an end, the export of slaves to the East slowed down whereas the import of luxury goods continued, and hence silver had to fill the gap in the growing imbalance of payments. Moreover, the heyday of the silver mines in Frankia (Melle) had passed, so silver production fell short.¹¹⁴ These economic forces, of course, worked in the whole of the former Carolingian realm, but they did not affect the silver content of the genuine post-Carolingian pennies as much as they did in Frisia. In other parts of the realm the quantity of coin in circulation and the number of occasions on which men used money declined at the same time.¹¹⁵ At the official silver price, the mints there must have had little work.

The assumed substitution of the Merovingian gold *solidus* by the gold *solidus* of Louis the Pious as gold standard would have been determined by the need of the users of the money system to reduce price uncertainty and by the entrepreneurial creativity of one or more moneyers. It is a remarkable history. In no part of the Carolingian realm apart from Frisia was a bimetallic money system continued. There was a mint for gold coins operating (Rednath's?) to meet this demand. From the *capitulare* of 816 we may assume that this coin was also used as conventional unit of account in Frisia. For a coin to be selected and maintained as money standard we have recognised that it must serve two ends: facilitate communication in trade and reduce uncertainty of future prices. Neither of these is easy to understand in the context of Frisia at that time. Gold *solidi* did not play a role in international trade, the Frisian speciality, which virtually eliminates the first end. There was also no particular reason to distrust the Carolingian silver minting, which had succeeded in keeping the penny at a stable silver content. Only if silver had not been a stable measure of value in itself would the price uncertainty be a comprehensible motive for the Frisians to keep the gold standard. According to Bolin's thesis, the silver:gold ratio was still increasing in the first half of the 9th century¹¹⁶ owing to the superfluous silver production in the Arabic realm. If this is true, it implies not only that the price of gold was increasing but also that other prices may still have been rising. With a wide and long trade experience, the Frisians may have been aware of this tendency and hence been motivated to hold on to gold as standard.

¹¹³ Spufford, *Money*, 64.

¹¹⁴ *Ibidem*, 61.

¹¹⁵ *Ibidem*, 60.

¹¹⁶ Bolin, "Mohammed, Charlemagne and Ruric", 16.

This end, and a market-controlled currency, would also account for the last feature of the evolution of the Frisian money system: the assumed decline of the gold equivalence of the *solidus* of account. In a bimetallic system, both standards are valid only if their conventional rate is in accordance with the current silver:gold ratio. If not, the undervalued metal is ousted (Gresham's Law). So, as soon as the silver:gold ratio in Frisia rose over c.14, the *solidus* coin would have begun to disappear. To prevent this, either the silver content of the Carolingian pennies had to be increased or the gold content of the *solidus* had to be decreased. The first option was not for the Frisian moneyers to decide, but the second was. A gold *solidus* of 4.0g, for instance, would be accepted under the condition of a current silver:gold ratio risen to about 15.3¹¹⁷. But as soon as the silver:gold ratio decreased - the reverse movement - augmenting the gold content of the *solidus* would not have been possible within the Frisian mechanism of monetising bullion. This situation may have occurred after silver became more scarce. Hence the circulation of the heavy silver pennies would have come under pressure: the gold money would have driven out the silver money if the gold money had indeed been legal payment for 36 silver pennies or if the convention implying that rate had been strong enough. In the case of the Frisian *solidus* there was neither a legal rate nor, apparently, a strong enough convention. The much wider acceptance of the penny was obviously too strong a force to be overcome by the Frisian *solidus*. No-one could be compelled to accept the *solidus* at 36 pennies if, for instance, its value in the market was only 34 pennies. If no-one accepted the coins conventionally in payment for 36 pennies, the basis of the bimetallic system was broken.

¹¹⁷ $15.3 \times c.4.0g = 14 \times c.4.4g$

Map 3: Frisia in the high Middle Ages

