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Punch intended? The Punch Marks on the Republican and Early Imperial *denarii* found in Hoards in the Netherlands

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Abstract: This paper delves into the presence of punch marks on Republican and early imperial *denarii* by analysing punched *denarii* deposited in coin hoards found throughout the Netherlands. Through this research strategy, this paper categorizes and then assesses these punches by coin type, total number of punched *denarii* per hoard, the punch's placing on coins, the average number per coin type, and by their appearance. Through implementing these various research analyses, the processed data suggests three possible, not mutually exclusive, aims for administering punch marks: either for testing, for authorising and for administrative purposes.

Keywords: punch marks, *denarii*, coin hoards, the Netherlands

Samenvatting: In dit artikel wordt dieper ingegaan op de aanwezigheid van de ingeponste merkjes op de Republikeinse en vroeg keizerlijke *denarii* gevonden in de gesloten muntvondsten in Nederland. Door deze onderzoeksstrategie kan dit artikel de verschillende merkjes categoriseren en vervolgens kwantificeren op munttype, het totale aantal gemerkte *denarii* per muntschat, de plaatsing op munten, het gemiddelde per munttype en op uiterlijk. De daaruit volgende onderzoeksresultaten suggereren drie mogelijke, maar niet elkaar uitsluitende, redenen voor het aanbrengen van de merkjes: een testmerk, een autorisatie-merk en een administratief merk.

Trefwoorden: ingeponste merkjes, *denarii*, gesloten muntvondsten, Nederland

In his *Commentarii de Bello Gallico*, Caesar writes that the whole of Gallia had been conquered up to the Rhine River. His conquests marked the start of various other Roman expeditions above the Rhine. Around AD 47, the Rhine became the quasi-fixed border of this northern part of the Roman Empire. With the Roman soldiers, Republican coins – and later also imperial – were carried to the northern areas on a regular basis and in large numbers. These Republican coins remained in circulation in high amounts throughout the Empire (Woytek 2022: 245). In the Netherlands, 36 coin hoards from Roman times included Republican silver coins; these are Voorburg-Arentsburg 1827 2; Denekamp 1869; Fyns 1880; Onna 1884-1886; Onna 1884; Onna 1886; Netherlands 1891; Rossum 1895; Venlo 1899; Helmond 1916; Nieuwe Krim 1926; Oude Horne 1946; Bijlandse Waard 1954; Urk 1977; Vechten 1986; Nijmegen 1987-1997 2; Vechten 1988 1; Nijmegen 1989 3; Nijmegen 1989 4; Nijmegen 1991 2; Opijnen 1991; Zoutkamp 1991; Nijmegen 1992; Vechten 1996 1; Linden 1997; Wedde 1999; Alphen aan de Rijn 2001-2002; Someren 2000; Lith 2006; Vlootbeek 2009; Cronesteijn 2015; Haps 2015; Meierijstad 2016; Berlicum 2017; Someren 2018; Houten 2019. The majority of them have a *terminus post quem* date (henceforth TPQ) dated before AD 47. Of these, 7 are found in the so-called barbaric regions above the Lower-Germanic Rhine *limes*, 6 in or near the *limes* and 2 in the Dutch hinterland below the *limes*. Of one, Netherlands 1891, the geographical find spot is not known. Most likely, these hoards are to be connected to the conquests and expeditions of the Romans from Caesar onwards. All later hoards containing Republican coins were deposited near the *limes* or in the hinterland, of which most are dated to the Flavian period. These hoards are: Voorburg-Arentsburg 1827 2; Rossum 1895; Helmond 1916; Nijmegen 1987-1997 2; Vechten 1996 1; Alphen aan de Rijn 2001-2002; Lith 2006; Vlootbeek 2009; Haps 2015; Meierijstad 2016; Berlicum 2017. Rossum 1895, the latest hoard containing a Republican coin has a TPQ dated to 388/408. The Republican coin is RRC 408/1 of C. Calpurnius Piso Frugi, issued in 67 BC.

This article will delve into the less explored presence of punch marks. These are punched figures and letter-shaped symbols on coins' surfaces after the coins were already brought into circulation. Other scholars also refer to these punches as banker's marks or testing marks. Visually, they differ from countermarks as these punch marks have a negative imprint, and in most cases, consisted originally only of one individual figure or letter-shaped symbol (Kemmers 2006: 73). On one coin, however, multiple punches could have been administered (fig. 1). In this research, coins could have up to even 8 punches.



Fig. 1. Denarius of T. Carisius, RRC 464/2 with several punches, such as the letter-shaped symbols C, F (inverted), L, T, and S (inverted – Houten 2019) – NUMIS n° 1153570/PAN n° 59934.

Some scholars think the habit started after 85 BC, as this year marked the passing of Marius Gratidianus' law regarding testing of the Republican *denarii*, which is mentioned by Pliny the Elder in his *Naturalis Historia* 33.46 (132 – Debernardi 2010: 339). However, this action was not an isolated case, as in Rome, more methods were created to regulate coin production as well as to authorize the authenticity of produced *denarii* with both control marks and serration. Recently, Yarrow convincingly demonstrated an increased frequency of control marks and serration on Republican coins during the period 115 to 100 BC and again during the period 90 to 70 BC (Yarrow 2021: 45-46; figure 1.40).

Punch marks were being applied on Republican *denarii* and early imperial *denarii*. The last *denarii* with a punch are dated to the reign of Tiberius, suggesting that the practice of administering these punches on silver coins seems to have stopped somewhere during his reign (Kemmers 2006: 74). In his study on the hoard of Liberchies, Thirion also refers to two punched *denarii* from the reign of Claudius, kept in the museum of Milano. Yet, no other post-Tiberian punched *denarii* are known (Thirion 1972: 72). However, the practice of applying punch marks, using similar figures and letter-shaped symbols, has also been observed on Republican and imperial *aurei* up to the reign of Trajan (Thirion 1972: 68-69; 71-72).

To study the punch marks on silver coins, this article adheres to the research strategy of only focusing on punched *denarii*, deposited in hoards within the Netherlands. Therefore, this study has collected hoards from the Netherlands which included Republican, Augustan and Tiberian *denarii* that have been punched. The choice to select hoards as part of the methodological framework is done in order to detect particular patterns and (by extension) the purposes, behind punching *denarii*. Here, hoards represent a closed group of coins, with a TPQ date as well as a solid geographical deposit location. Besides these characteristics, hoards also have other advantages for this kind of research. Firstly, the assemblage of coins within hoards is often the result of a complex selection process. In most cases, those coins that were placed in hoards were deposited because they were considered valuable enough to hoard. This could potentially suggest something about the hoarding of punched *denarii*. Second, the geographical context of hoards, found either within or outside the Roman Empire, could possibly hint at particular differences in agency (e.g. soldiers or provincial inhabitants) between the hoarding of these punched *denarii*. Lastly, the TPQ dates of the hoards could give insight into certain developments regarding coin selections throughout time (about hoards as a research instrument, see Noreña 2001: 148-150; Kemmers 2019: 13-14; 24-26).

In total, the study collected 36 hoards. Yet, 9 of them lack information on the total number of coins or do not give any information about the individual specimens. These hoards were therefore not taken into account for this study. These hoards are: Venlo 1899; Nieuwe Krim 1926; Urk 1977; Vechten 1986; Vechten 1988 1; Nijmegen 1991 2; Opijnen 1991; Linden 1997; Wedde 1999. The registration of the punches on the coins of the 27 selected hoards was sometimes also lacking, and when present, no exact information on the kind of punch (or punches) was given. If available, the photographs of the coins in the selected hoards were re-examined for this study, although for 2 hoards, Linden 1997 and Venlo 1899, all information regarding the punches seems to have been lost. In addition, not all photos of the coins of Zoutkamp 1991 and Vlootbeek 2009 hoards could be collected. Furthermore, the hoards registered in the *Die Fundmünzen der römischen Zeit in den Niederlanden* volumes often refer to the number of punches and also indicate on which side of the coin the punches were applied, but do not describe the actual shape of the punch. The list of punches for the hoards of Onna 1884-6, Feins 1880, and Oude Horne 1946 has been published in detail by van Es (van Es 1960: 142-143). In total, about 669 Republican *denarii* have been found in the 27 selected coin hoards. On 29% (N=200) of these Republican silver coins, one or more punches have been applied. Most likely, this percentage was a little bit higher as there are some hoards in the data where no further information on the punches could be found. For Augustan and Tiberian *denarii* the punches appear in much lesser frequencies, respectively ca. 5% (N=8) and ca. 3% (N=1). These percentages are more or less mirrored by those of single coin finds with punches, Republican as well as early imperial, found on the Hunerberg in Nijmegen (Kemmers 2006: 74). This relatively low percentage as well as its similarity to the single finds suggests that we cannot state that the punched coins were for any reason specifically favourable to hoard.

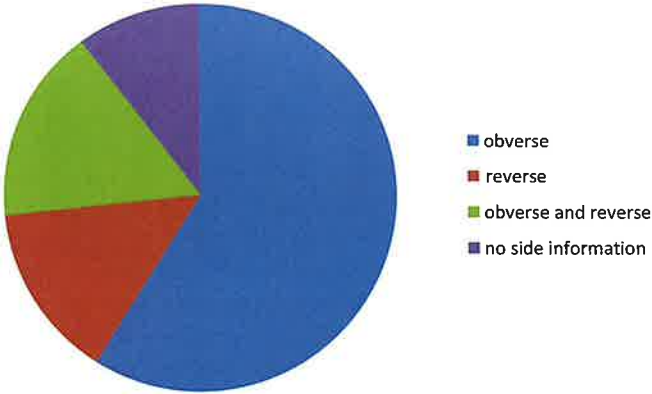


Fig. 2. Tiberian *denarius*, RIC I² 26
with letter-shaped punch mark C (Lith 2006)
NUMIS n° 1089141.

On 29% (N=200) of these Republican silver coins, one or more punches have been applied. Most likely, this percentage was a little bit higher as there are some hoards in the data where no further information on the punches could be found. For Augustan and Tiberian *denarii* the punches appear in much lesser frequencies, respectively ca. 5% (N=8) and ca. 3% (N=1). These percentages are more or less mirrored by those of single coin finds with punches, Republican as well as early imperial, found on the Hunerberg in Nijmegen (Kemmers 2006: 74). This relatively low percentage as well as its similarity to the single finds suggests that we cannot state that the punched coins were for any reason specifically favourable to hoard.

In our hoard data, the oldest Republican coin type with a punch is an uncertain *denarius* issued around 211-208 BC, most likely to be identified as RRC 46/1. The Tiberian type, RIC I² 26, is the youngest coin to bear a punch, which looks like the letter C (fig. 2). As has been noticed previously by several scholars, the majority of punches appear on the obverse of a coin, comprising almost 60% (N=127) of all

punches known (Graph 1, blue). In reality, this percentage is even higher, as the current assignment of obverse/reverse is based on a modern arbitrary rule, which identifies the portrait of a deity or person as the obverse of the coin. For some coins in antiquity without this typical portrait or with the inclusion of two portraits on both sides, the assignment of obverse or reverse could be undecided. In this dataset, 11% (N=35) of the punches were applied on a side which in antiquity could have been easily perceived as the obverse, but has been assigned in modern catalogues as the reverse. In sum, it is clear that there was a preference for administering a punch on the obverse, i.e. the portrait side, of the coin. We also observe that punches could have been issued on both sides of the same coin (Graph 1, green). For completion's sake, some publications do not mention on which side the punch was administered, and these (N=22) are also counted within the total (Graph 1, purple).



Graph 1. Position of the punches on the obverse or reverse of the coin.

The punches on the portrait side are also often administered on the neck or the cheek of the depicted bust, but the different random positions of some punches, occasionally even upside-down, suggests that it was not the intention that the punch was readable to coin users (Cruysheer forthcoming). Another notable observation is that multiples punches could be struck on the same coin, either on both sides or on the same side, sometimes even overlapping each other. It suggests that these punches mattered for the officials who punched the coins, but that it was less important for the users of the coins.

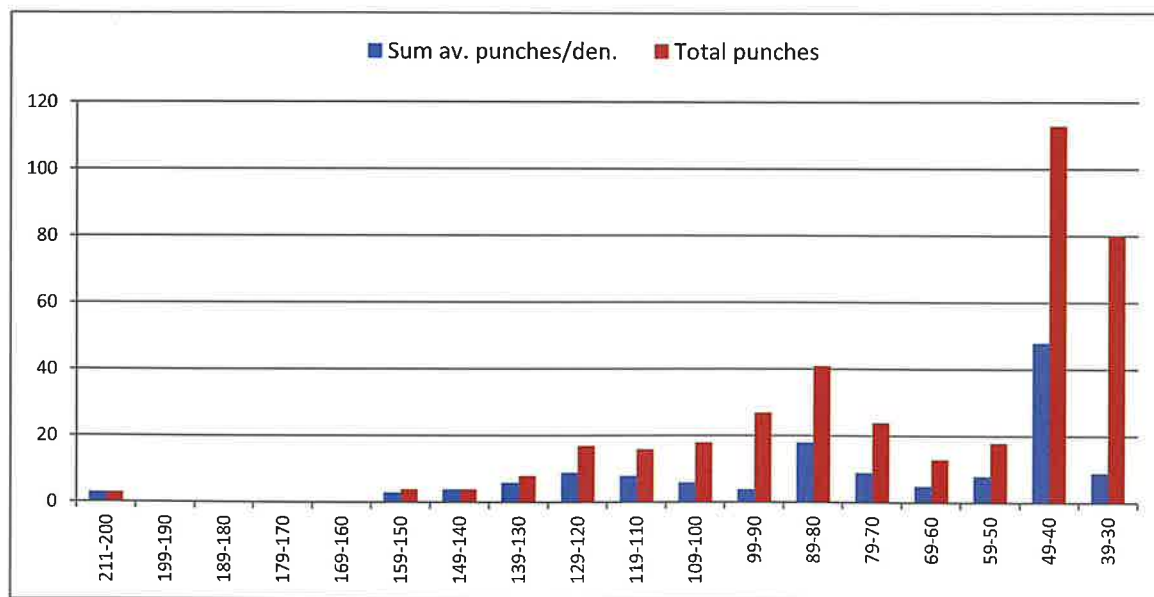
The following table shows an overview of the total number of punched *denarii* chronologically placed based on the TPQ's of the 27 selected hoards (Tabl. 1). The percentages are calculated in relation to the total number of coins within each hoard. The TPQ's of

Hoard name	CHRE no.	N total	Before 20 BC	20-11 BC	10-1 BC	01-10	11-20	21-30	31-40	41-50	2 nd H 1 st CE	2 nd CE	3 rd CE	4 th /5 th CE
Cronesteijn 2015	12557	5	20											
Houten 2019	20572	7	71											
Denekamp 1869	9870	29		34										
Nijmegen 1989 4	12615	24		0										
Bijlandse Waard 1954	9863	60			28									
Onna 1886	9985	16			56									
Somerens 2000	10013	10			30									
Nijmegen 1989 3	12616	19					16							
Nijmegen 1992	12612	86					67							
Onna 1884-1886	9984	5					0							
Oude Home 1946	21005	14					86							
Netherlands 1891	10041	103					8							
Fyns 1880	9898	59							24					
Onna 1884	9983	238							36					
Somerens 2018	13963	17							41					
Zoutkamp 1991	10053	36							22					
Vlootbeek 2009	13949	74								14				
Vechten 1996 1	10037	48								6				
Nijmegen 1987-1997 2	12617	5								20				
Alphen aan de Rijn 2001/2	20077	5								20				
Lith 2006	9942	27								19				
Berlicum 2017	17468	109										1		
Meerijstad 2016	17466	96										5		
Haps 2015	12636	33										0		
Voorburg-Arentsburg 1827 2	12566	12										0		
Helmond 1916	9919	25											0	
Rossum 1895	10002	251												0

Tabl. 1. Percentages of punched *denarii* in relation to the total number of coins within each hoard, containing Republican *denarii*, sorted per TPQ of the hoard.

two hoards, Houten 2015 (TPQ 42 BC) and Cronesteijn 2019 (TPQ 77 BC), are dated to the Republican period, all others are from the imperial period. Unfortunately, no direct information was being retrieved from this chronological overview regarding when punches were administered intensively, nor when the habit stopped. The overview, however, shows that coins with punches were relatively well represented up to the reign of Augustus. Curiously, one early Augustan hoard, Nijmegen 1989 4, included not a single punched *denarius*. Could this hint at a singularly negative attitude towards punched coins? For completion's sake, the coins of the Onna 1884-1886 hoard also do not bear any punches, but these coins most likely belonged to Onna 1884 or Onna 1886, which contained multiple punches. The percentages of the punched *denarii* decrease a little bit during the later Julio-Claudian period, but the punched *denarii* remain consistently present in hoards up to the reign of Nerva. Here, it would be interesting to do further analysis on whether a correlation exist with the presence of punches on *aurei*, which also disappear around this period. Although the overall presence of these Republican and early imperial *denarii* decreased in number, punched *denarii* seem to be hoarded less from the second century onwards. No particular difference was noticed between the deposits of the hoards in the so-called *barbaricum*, near the *limes* or in the hinterland (on the current territory of the Netherlands). This state of affairs is not that remarkable as previously van Es has argued that the hoards of Onna, Fyns and Oude Horne must have been related to the Roman campaigns in the north through which they look very similar to the hoards found within the Dutch part of Roman Empire (van Es 1960: 30-33).

For the Republican *denarii*, punches appear on 111 different *denarii* types, which were issued between 211 BC and 31 BC. This study has calculated the total number of each type from the selected hoards found in the Netherlands in relation to the total number of punches found on each individual type. Here, it turned out that most punched types are *RRC* 46/1 (211-208 BC); 257/1 (130 BC); 278/1 (121 BC); 325/1a (101 BC); 393/1a (76-75 BC); 464/2 (46 BC); 473/1 (45 BC); 473/1 (45 BC); 494/42c (42 BC) and 523/1a (40 BC) with an average of 3 punches per coin type; 494/40 (42 BC) and 533/2 (38 BC) with an average of 4 punches per coin type and *RRC* 455/2a (47 BC) with an average of 5 punches per coin type. Here, the issue period in the 40ties of the first century BC is well presented. Alternatively, a graph has been made, showing the issue dates of the Republican *denarii* types in intervals of 10 years on the X-axis (Graph 2). On the Y-axis are absolute numbers. This graph 2 illustrates 2 kinds of processed data. The blue column represents the sum of the averages of the punched *denarii* of each Republican *denarii* type. This latter is relevant for it demonstrating the relative presence of the punches on the Republican *denarii* types during each 10 year interval. The red column is the total number of punches on these Republican *denarii* types. The graph shows that the highest peak both for the sum of the averages of the punches as well as the total number of punches was during the period between 49 and 40 BC. This peak shows that types, issued between 49 and 40 BC, were punched the most. There is no reason to believe that the 2% drop of silver in comparison to previous issues produced between 62-49 BC gave reason to test these *denarii* more. This also as some silver issues of before 62 BC also flirted with



Graph 2. The sum of the averages of punched *denarii* per *denarius* type (blue) and total punches of all *denarii* types per interval (red).

the rate of 95% of silver fineness (Walker 1980: 61-66). Moreover, one would expect that the highest average of the punches would have been in the period of 39-30 BC, during which the number of types is dominated by the low silver-legionary types of Marcus Antonius (Walker 1980: 66-72). Could we therefore tentatively suggest that the peak in 49-40 BC indicates that the practice of punching Republican *denarii* was intensively performed around this period? Of course, the author is aware that one could also pose the counterargument that punched Marc Antony coins could have been proven to contain bad silver, and therefore were not hoarded. A second significant, but earlier, peak for both collected data fields is observed for the period 89-80 BC, the period where Gratidianus' law on testing silver was passed. Could this peak suggest that the practice to punch *denarii* started at the instigation of Gratidianus' law? If so, this had been administered in Italy or elsewhere in provinces, which were already under Rome's realm of power. The period 49-40 BC, then, could mark a second wave of punching. It appears that this second wave started after Caesar's conquests in the north. Maybe the influx of Roman *denarii* in these newly conquered territories needed to be supervised and authorised, from which we could also tentatively suggest that the punch producers of this second wave were located predominantly in the north, and were potentially related to financial officials in the military forts. Here, the previous suggestion of Besombes is interesting, as he hinted that the punches could signal fiscal zones who collected money in order to reuse it for e.g. military payments (Besombes 2003: 59).

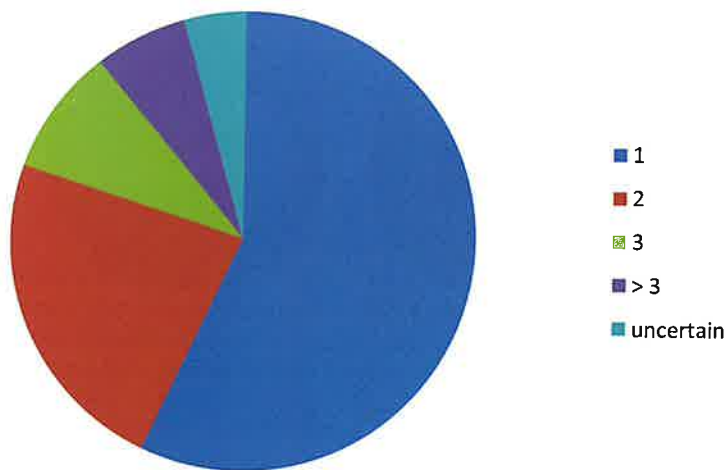


Fig. 3. *Denarius* of C. Naevius Balbus, RRC 382/1b with letter-shaped punch mark R (Someren 2018) – NUMIS n° 1145089/PAN n° 49306.

The analysis of graph 3 suggest that one main aim for the punches was to test the silver value of *denarii* in order to detect debased and plated coins, a theory that has been suggested previously by several scholars (Crawford 1968: 56; van Es 1960: 76; Thirion 1972: 66; Debernardi 2010: 339). However, a counterargument for this theory is provided by the *denarii serrati*, as 38% (N=14) of them were also punched. The presence of punches on these *serrati*, which occur at a relative high percentage, instead suggests that the users of these coins, whether private users or local officials, still had the urge to punch these serrated coins (fig. 3). Yet, in her research, Yarrow convincingly demonstrated that the serrated edges of the *denarii serrati* were produced to increase the coin's authenticity by displaying its silver core (Yarrow 2021: 45-46 and figure 1.40. Contra Woytek 2012: 323). Why then still punch these *serrati*? Of course, specimens have survived of serrated coins that were plated (Crawford 1968: 56, plate XIV). Or are other aims regarding the punch marks involved here?

Furthermore, we could also hypothesise that those *denarii* that were significantly worn needed a punch to confirm that they were still coins of good quality, and subsequent, of legal tender. The condition of each *denarius* within our selected hoards was quite difficult to recover, because it was often not recorded in previous publications, nor were photographs available for all the coins anymore. As a result, we cannot state the condition of 80% (N=524) of all the punched *denarii* under investigation. In total, this study made four categories: 1) little to no wear; 2) used; 3) heavily worn and 4) extremely worn. Of the 20% that could be reconstructed, 73% (N=95) were heavily worn or even extremely worn. Within this heavily worn and extremely worn group, however, only one-third of them (N=34) were punched, among them one silver-plated one. The plated coin is a type from T. Carisius, RRC 464/3a, deposited in the saving hoard of Lith 2006 (NUMIS 1089152). Of course, for obvious reasons, it is not so strange to find only one plated coin in the hoard material. One-third seems rather a relatively low percentage for these worn *denarii*. One would assume that at least half of them would have been punched, whereby we could suggest that the punches were not, or not only, for testing. Furthermore, it is remarkable that if the punch on the plated *denarius* was meant to be a test mark, the plated coin was still perceived suitable to be hoarded.

This brings us to another argument against the idea that these punches were test cuts: why do these Republican *denarii* bear multiple punches? One punch would have sufficed to state the good or bad quality of the coin (Kemmers 2006: 73). The graph below, Graph 3, shows how many punches had been punched on one side; here the obverse and reverse sides are combined (N punched Republican *denarii*=279). The graph is divided into coins with 1, 2, 3 punches or with more than 3 punches. The category uncertain contains all coins which have an uncertain number of punches, because the number of punches is not registered or is not clear because of the presence of half-pressed punches. Here, 42% of the analysed coin sides which were punched, bore two or even more punches. Most likely, the process of punching was a quick, but time-consuming process that needed to be done within a limited amount of time. As a result, these punchers could decide only to rely on their own test cut. When selecting a portrait side, they did not take into account any previous punched test cuts, and in a quasi-continuous process administered their punch quickly in order to test the silver themselves.



Graph 3. The percentages of *denarii* with 1, 2, 3 or with more than 3 punches on punched Republican *denarii*.



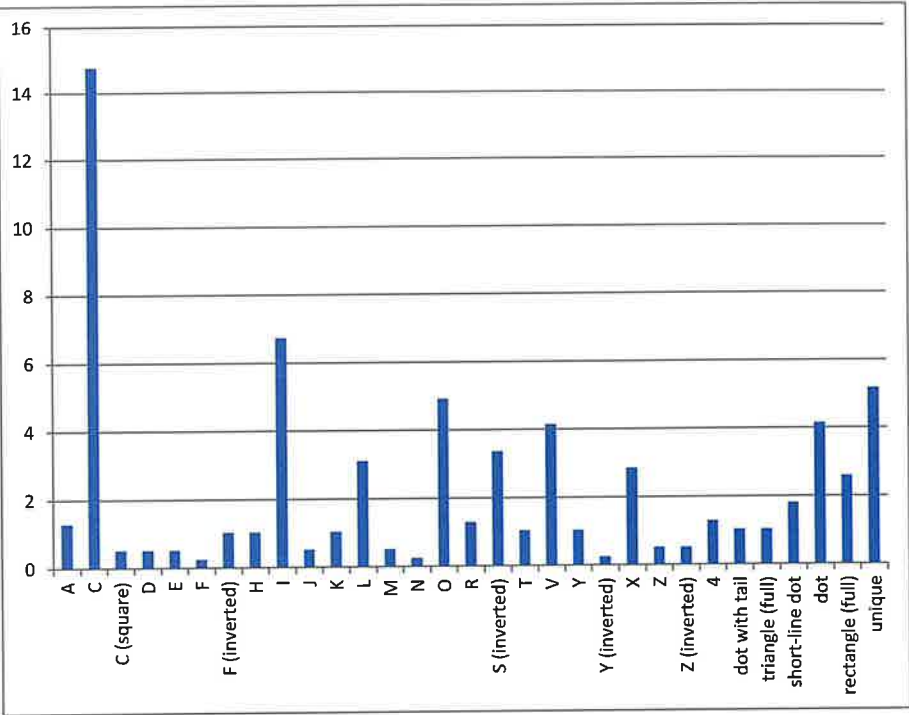
Fig. 4. *Denarius* of L. Scribonius Libo, RRC 416/1a with the punch VE together and twice a letter-shaped punch C (Somerén 2018) – NUMIS n° 1145074/PAN n° 49300.

Finally, as we have mentioned before, the punches seem to exist in two forms: figures and letter-shaped symbols. Graph 4 gives an overview of how often a punch appears on the obverse or reverse of the analysed *denarii*. For the readability of the graph, the category *uncertain or unknown* was left out, which in total represented 32%. Most of the letter-shaped punches, such as the A, D, E, F, F (inverted), H, J, K, M, N, R, T, Y, Y (inverted), X, Z and Z (inverted) appear in small percentages, *ca* less than 1% to 2%. Except for an F (inverted) once, T once, a Z (inverted) once, and 3x a R, none of them figured on coins of which we know that the condition was (heavily or extremely) worn. The figures (4, triangle, rectangle, dot with a tail and a short line with a dot) also featured marginally as punches on the coins. Here, almost all full rectangle punches (N=7) are counted on the known heavily and extremely worn coins. Among the unique punches, all sorts of figures or unclear letter-shaped forms are included. Among this unique group, the different kinds of punches only occur once on the *denarii* analysed here. In this unique category group, some combinations of letters, such as AP, RA, VE and MIC – the first three also written in ligature – were also included (fig. 4).

The letter-shaped punches I, L, O, S (inverted), V, X and the dot punch are more common, with percentages ranging from 3% to 6,5%. Of these, all, except for the O and the X, are seen multiple times on the known heavily and extremely worn coins. The letter-shaped symbol C figures the most on the punched *denarii* at 15%, although it is also possible that this punch could also be intended to be a half circle, a moon, an arch (Van der Vin 1993: 249). According to van Heesch (pers. comm.), it is even possible that this C punch was originally an O, which had been only half-pressed. It is, therefore, possible that this 15% is somehow misleading, and that multiple figures were to be meant here. Almost half of these C punches (N=19) feature on heavily and extremely worn *denarii*. As these more commonly represented punches figure also more frequently on the heavily and extremely worn *denarii*, could we suggest that this category of punches were used as test marks?

Because of their relatively high presence on the heavily and extremely worn *denarii*, we could tentatively state that the R punch and the full rectangle punch could also be part of this test cut category. For completion's sake, the V, also used often as a punch, only features on two extremely worn *denarii*. Previously, scholars have already assumed that the letter-shaped punches referred to Latin terms such as: C for *conductio* (rent) or *conventus* (agreement); R for *recognitum* (recognised); V for *valet* as being authorised as legal tender. To be complete here, some have suggested that the X punch not stands for a word, but for the number 10, stating that the *denarius* is valued as 10 *asses* (Cruysheer forthcoming). This would be obvious as the X has been previously officially used as a symbol of value for 10 on *denarii*, produced in late second to mid-first century BC. Yet, somehow, therefore, it remains strange that the X figures not more frequently as the ultimate marker of value. As an alternative, based on quite conclusive evidence from the coins of the ford of Saint-Léonard, Besombes argues that the X could refer to legions (Besombes 2003: 59) It is highly possible that these letter-shaped symbols were actual letters and referred to these Latin terms or even to legions. Yet, we could also tentatively suggest that the shapes of these letter-shaped punches were most practical for test cutting, and that no actual letter, and subsequent word, was connected to them. This would also explain the high number of the symbol punches on the heavily and extremely worn *denarii*, such as the dot and the rectangle, whose shape lends itself easier to the detection of the copper core of the coin (Beliën 1994: 179). Here, as has been suggested before, it could be that the punch producers were *nummularii*, who guaranteed the quality of the coin and also offered the service of exchanging coins. They worked for bankers, money changers or even wealthy traders (Thirion 1972: 72; Beliën 1994: 179; Besombes 2003: 53, 58-59).

The less frequent letter-shaped punches could maybe be found in a non-testing sphere, as they also do not or only incidentally figure on the analysed heavily and extremely worn *denarii*; those are: A, D, E, F, F (inverted), H, J, K, M, N, T, Y, Y (inverted), X, Z, and Z (inverted). Yet, it should not be overlooked that this kind of category still had the aim, among others, to test coins. Another clue for this separate category comes from the punches which bear a combination of letters, some of them written in ligature. Here, there is no ambiguity about these letter-shaped figures being actual letters, and subsequently, they could even hint at actual phrases or even names. One could speculate on various options, again related to the value of the silver. One could think of AP: *argentum probatum* and VE: *valet exactum*, but both are highly speculative. Yet, it is also possible that the letters could also have referred to names of persons authorising the coins, or that they were used as trademarks. Cruysheer even categorises them as salary marks. It is, of course, possible that the same *nummularii* who could have been involved in the testing of the *denarii*, used these other kind of punches for other monetary services.



Graph 4. Percentages of specific punched figures and letter-shaped punches on the Republican and early imperial *denarii*.

Conclusions

In sum, this survey did not aim to be an exhaustive study on punched Republican and early imperial *denarii*. By using data from 27 selected coin hoards from the Netherlands including punched Republican and early imperial *denarii*, this study rather applied different research strategies to find patterns that revealed more information about the aim of these punches. Different arguments lead to the suggestion that there were at least three kinds of categories of punch marks, although it is not unlikely that all three kinds could have been applied by the same *nummularii*. Firstly, various arguments lead to the conclusion that punches were made to test the silver quality of the *denarii*:

1. This survey has demonstrated that the need to punch *denarii* seems to be performed intensively during two distinctive periods, suggesting their purpose was to test cut. The first period is 89-80 BC, during which, in Rome, Gratidianus' test law was passed. This law could have been the incentive to start punching, which would have been done after the *denarii* were put into circulation. Another, and even more intense period of punching, is seen between 49-40 BC. Most likely, the influx of Roman *denarii* in the northern regions after the conquests of Julius Caesar stimulated another wave of punching. Yet, here, both test cutting as well as other administrative monetary reasons could have been behind this second wave of punches.
2. The random placed punches, often even multiple times, on the portrait side of the *denarii* suggests that the process of administering punches was done in a quasi-continuous process to test a series of *denarii* quickly by individual punchers.
3. Of the *denarii* where the condition status could be determined by this study, it appears that more heavily and extremely worn coins bore punches in the shape of various figures, such as the dot and the full rectangle punch, and the letter-shaped punches: C, I, L, and S (inverted). Although the overall data set remains small here, it again suggests that these punches could have acted as test cuts. In addition, the figure-shaped punches and the specific letter-shaped punches all have suitable shapes to make test cutting easy. Although it is also possible that the letter-shaped symbols acted as abbreviations for words stating these *denarii* were still legal tender.

Secondly, there are some meaningful arguments to posit the idea that punches, or at least some of them, had another purpose than being used as test cuts:

1. The need to punch *denarii* more than once hints at the existence of other reasons to punch, beside testing the silver value of the *denarii*.
2. In our data set, one plated coin bore a punch mark, but was still hoarded as part of someone's savings.
3. Of the *denarii* where the condition status could be determined by this study, only one-third of the heavily and extremely worn coins bore a punch. One would expect here a much higher number, if the punches were solely aimed to test the silver of these *denarii*. More likely, punch marks here indicated that these heavily and extremely worn coins remained valid tender, as they had potential low weight because of the wear.
4. Punches also appear on serrated *denarii* at the relatively high percentage of 38%. Although one must have been aware that plated copies of these serrated *denarii* circulated around from time to time, it remains strange to punch these serrated *denarii* as they already had a means of showing their silver core. Here, Sharpless (pers. comm.) suggested that there was perhaps a fear that someone could clip some of the silver from the serrations without it being particularly obvious and thereby diminish the coins value. Then again punches could have acted as marks to state the validation of these coins.

Finally, some observations hint that the punch marks could be also either a mark of authorisation or an administrative mark, or both:

1. An intense presence of punches is seen on the Republican *denarii* of the period 49-40 BC, which probably suggested the start of a second wave of administering punches. This second wave could have been related to administrative concerns when introducing the newly conquered northern regions to Roman (silver) money and the monetary mechanics behind it.
2. The letter-shaped symbols on the heavily and extremely worn coins could have referred to Latin terms, such as *consensus* and *valet*, and maybe even to the Roman legions, confirming their status as legal tender and subsequent, stating that they still had to be accepted although quite worn.
3. The following punches: A, D, E, F, F (inverted), H, J, K, M, N, T, Y, Y (inverted), X, Z, and Z (inverted) do never or only marginally occur on heavily and extremely worn *denarii*, suggesting another aim for these punch marks besides at the testing or authorising purpose. The presence of two and three letter combination punches hints that these letter-shaped punches were actually referring to words, and maybe even to names, related to the punch producers, or even functioned as trademarks.

Unfortunately, we cannot delve more into the conclusions and suggestions that have been made by this study, because a lot of data regarding these punches on Republican and early imperial *denarii* have not or not sufficiently been registered in the past for the Roman hoards of the Netherlands. In addition, not many photographs of these *denarii* have been made, and subsequently, preserved. Furthermore, it would be interesting to see whether there was a correlation between the habit to punch or to countermark coins, as at this time no hoard is known from the Netherlands which includes both coins with punches and coins bearing countermarks. We do know hoards from the Netherlands with coins bearing only countermarks, and no punches; these are: Nijmegen 1989 2; Nijmegen 1990; Nijmegen 1991 2. Beside the hoards, many Republican and early imperial *denarii* have survived as stray finds, which offer an extra data set to analyse in the future. Here, the more structural research project of Alice Sharpless and Liv Yarrow, based on individual stray finds and museum coin specimens, will offer future opportunities to further analyse these punch marks. This research, performed under the auspices of the American Numismatic Society, will certainly bring forward many new insights regarding the authority behind these punches as well as their purposes. I can only hope that this article can be one of the sources of inspiration for this project.

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MONEY, IT'S A HIT

Mélanges sonnants et trébuchants offerts à Jean-Marc Doyen

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