

BRONZE, SILVER OR GOLD? COIN FINDS AND THE PAY OF THE ROMAN ARMY

¿Bronce, plata u oro? Hallazgos de monedas y la paga del ejército romano

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RESUMEN: A finales de la república y en el alto imperio romano el *stipendium* del ejército romano no se pagaba en monedas de bronce sino en monedas de plata y probablemente también de oro. Los hallazgos aislados de monedas en contextos militares no son representativos de la circulación monetaria.

Para la datación numismática de centros militares es asimismo relevante el hecho de que los soldados no recibieran siempre monedas recién acuñadas. Las monedas locales autónomas no tienen nada que ver con la paga del ejército romano. Su existencia en contextos militares requiere otra interpretación.

Palabras clave: Monedas romanas. Monedas locales y autónomas. *Stipendium*. Datación de yacimientos arqueológicos.

ABSTRACT: Also at the end of the Republic and in the Early Roman Empire the *stipendium* of the Roman army was paid in silver and probably in gold, not in bronze coins. In so far, stray finds of coins in military contexts are not really representative for coin supply and for coin circulation.

Another fact important for the numismatic dating of military places is, that the Roman soldiers didn't received always newly minted coins. Thirdly, autonomous local coins have nothing to do with the pay of the Roman army; their existence in military contexts needs a different interpretation.

Key words: Roman coins. Autonomous local coins. *Stipendium*. Dating of archaeological sites.

Very recently, the thesis has been argued repeatedly that the Roman troops in the Augustan time were given their military pay in bronze coins –possibly in contrast to an earlier practice of paying them in silver¹. Such a view is

supported by the spectrum of coin finds in Roman military camps, especially in those on the Rhine. Here, indeed, bronze coins, mostly asses, dominate and likewise are the more recent coins whereas silver coins only play a subordinate role in terms of numbers. Generally, the silver coins also show the earlier date of minting.

This thesis is of fundamental significance not only for monetary economy but also for the

¹ D. G. Wigg (1997): "Coin Supply and the Roman Army". In W. Groenmann-van Waateringe *et al.* (eds.): *Roman Frontier Studies 1995. Proceedings of the XVIth International Congress of Roman Frontier Studies*. Oxford, pp. 281-288; id. (1999): "Die Rolle des Militärs bei der Münzversorgung und Münzwirtschaft am Rhein in der frühen Kaiserzeit". In W. Schlüter & R. Wiegels, (eds.): *Rom, Germanien und die Ausgrabungen von Kalkriese*. Osnabrück, pp. 327-346; id., (1999): "The development of the monetary economy in North Gaul in the late La Tène and early Roman periods". In J. D. Creighton, & R. J. A. Wilson (eds.): *Roman Germany*.

Studies in Cultural Interaction. Portsmouth, pp. 99-124, 110 ff.; J. van der Vijn (2001): "Monetarisierung und Handel am Niederrhein in augusteischer Zeit". In M. Grünwald (ed.): *Germania Inferior. Besiedlung, Gesellschaft und Wirtschaft an der Grenze der römisch-germanischen Welt*. Berlin/New York, pp. 397-408, 399.

numismatic dating of Roman military places. Lacking a developed banking system the Roman state practically could bring newly minted coins into circulation only by means of state expenditures. The expenditures for the army in the Roman imperial age have been estimated to have comprised 2/3 of all state expenditures². Thus, newly minted coins had to be brought into circulation mostly by means of military pays. However, if the *stipendium* was paid in bronze coins then these must have constituted a particularly large share of the output of the mint. Likewise, these were the coins that probably were transported straight from the mint to the legions and auxiliary units and thus came into circulation faster. Correspondingly, the presence or non-existence of certain kinds of bronze coins at one location would gain a singular importance for establishing a *terminus post quem* or a *terminus ante quem*. There are also consequences, however, for the interpretation of the pictures of the coins: insofar one intended to use coins to spread certain news or to address particular groups –and again this was feasible most accurately by means of military pay– for soldiers as recipients of certain messages one has to take into consideration mainly bronze coins and not denarii any longer.

The far-reaching consequences of this thesis³, which has also been accepted in other fields than numismatics, seem to make it advisable to evaluate it critically on the basis of the available literary and archaeological evidence. Since in written sources there are no explicit statements on the topic of this problem, the likelihood of military pay in bronze coins shall be assessed from various considerations, and similarly the basic structures of monetary supply and circulation in the early Empire shall be developed.

² R. Wolters (1999): *Nummi Signati. Untersuchungen zur römischen Münzprägung und Geldwirtschaft* (= *Vestigia* 49). München, 222 ff.

³ H.-J. Schalles: "Die Wirtschaftskraft städtischer Siedlungen am Niederrhein: Zur Frage der wirtschaftlichen Beziehungen des römischen Xanten mit seinem Umland". In Grünewald: *Germania Inferior* (n. 1), pp. 431-463, 438, n. 29.

1. Soldiers' pay, weights and transport

With the establishment of a professional standing army under Augustus military pay had been standardized firmly at the latest⁴. The pay of a common legionary was 225 denarii a year, which was given to him on three days of the year with 75 denarii on each of these days. Under Domitian a *quartum stipendium* was introduced which increased the basic military pay to 300 denarii a year. The payment levels for higher ranks of a legion were impressive –they increased from one and a half, double or five times the amount of the basic military pay up 15, 30, 60 times the amount for centurions up to the *primipilus*. The basic pay for members of the auxiliary units is still being discussed controversially, but most likely was 5/6 of the basic pay of a legionary.

25 denarii were one aureus and thus the amounts of money to be paid in the various payment levels could always exactly be calculated in gold coins, too. Neither did the situation change with the further augmentations of the pay in the 2nd and 3rd centuries A.D. The same applies for unscheduled monetary presents to Roman soldiers, the donatives, which normally amounted to 75 or 100 denarii⁵. Thus, a *stipendium* of 75 denarii could theoretically be paid in form of either 3 gold pieces, 75 silver pieces, 300 large bronze pieces (sesterces) or 1200 normal bronze pieces (asses) respectively. Since sesterces only played a very minor role in the Augustan age, one would have to assume for the bronze coins payment in form of asses.

Three aurei together weighed approximately 24 grams whereas a pay of 75 denarii in silver pieces amounted to a weight of nearly 300 grams. Paid in form of asses the amount to be paid to each soldier on payday added up to about 13 kilograms. The yearly payment of a legion considering the various levels of payment was calculated by Lothar Wierschowski to be

⁴ Cf. M. A. Speidel (1992): "Roman Army Pay Scales", *JRS*, 82, pp. 87-106; R. Alston (1994) "Roman Military Pay from Caesar to Diocletian", *JRS*, 84, pp. 113-123; Wolters, *Nummi Signati* (n. 2), 211 ff.

⁵ G. R. Watson (1994): *The Roman Soldier*². New York, 108 ff.; R. Duncan-Jones (1994): *Money and Government in the Roman Empire*. Cambridge, 39 ff.

1,642,000 denarii. Expressed in terms of weight this would correspond to over 6,200 kilograms of silver or nearly 300,000 kilograms of asses a year, or 2,000 kilograms of silver or 100,000 kilograms of bronze per payday respectively⁶. These figures could be projected to the whole empire with an average of 28 active legions.

These thoughts get restricted by the fact that military pay was not paid to its full extent. The army high command organized provisions, clothing, equipment and other things centrally; they had to be paid for, however, by the individual soldiers. For this purpose the troops had a well-developed accountancy system which registered the amounts the soldiers had to pay with bookkeeping methods. This did not require any actual flow of money. Detailed figures on Egyptian papyri suggest that only about a third of the regular pay was actually paid on individual paydays⁷. Despite the existence of deposits for soldiers and the possibility of saving deposits this remaining pay seems to have been actually paid in cash in the course of a great parade⁸. Payment of troops was conducted in the field, too, a fact shown by numerous sources on the carrying along and forwarding of military pay. These sources exist from the 2nd century B.C. onwards. An impressive example is Flavius Josephus' account of the siege of Jerusalem, where Titus conducted payment of his army over several days within sight of the enemy: "For the appointed day having arrived for the distribution of the soldiers' pay, he ordered his officers to parade the forces and count out the money to each man in full view of the enemy. So the troops, as was their custom, drew forth their arms from the cases in which till now they had been covered and advanced clad in mail, the cavalry leading the horses which were richly caparisoned. The area in front of the city gleamed far and wide with

silver and gold, and nothing was more gratifying to the Romans, or more awe-inspiring to the enemy, than that spectacle"⁹.

If one considers only the third paid in cash for one legion on one payday, one still had to transport almost 700 kilograms of silver assuming payment in form of denarii, or over 30,000 kilograms of copper assuming payment in asses. The transport capacity of an oxcart can be estimated to be about 250 kilograms¹⁰, requiring about 3 carts to fetch the denarii and approximately 120 carts for the asses. Certainly these numbers may be further differentiated taking into account the discrepancies between supposed and actual troop sizes, other reconstructions of payment levels, variations in the amount of money actually paid, etc. For now, however, they give us an impression of the basic dimensions that we have to deal with.

2. The beginning of silver-paying in the Republic

Independently of the overall transport capacity, even the amount of more than 4 kilograms of copper that had to be handed out per soldier each payday –and which had to be safely kept by him– hints at the problems surrounding exclusive or even predominant pay in bronze coins. For the Republic, whose early principal coin and basic nominal from the 4th century B.C. onwards had been copper asses, one can actually reconstruct the transition to a military pay in silver coins rather exactly: both emissions and coin hoards suggest a continuously increasing share of silver coins and their growing significance for payments by the state since 157 B.C.¹¹. The fact that from this date onwards the *stipendium* was also paid in form of silver can be reconstructed from records on the alteration of the exchange

⁶ L. Wierschowski (1984): *Heer und Wirtschaft. Das römische Heer der Prinzipatszeit als Wirtschaftsfaktor*. Bonn, p. 213; cf. H. W. Doppler & M. Peter (1998): "Vindonissa aus numismatischer Sicht", *JberGPV*, 47-54, p. 48.

⁷ R. Fink (1971): *Roman Military Records on Papyrus*. Cleveland; Wierschowski, *Heer* (n. 6), 203.

⁸ Cf. Arrian, *Periplus* 6,2 f.; 10,2 f.

⁹ *Ios. Iud.* 5, 9,1 (translation by H. St. J. Thackeray, Loeb Classical Library).

¹⁰ Cf. S. Lauffer (1971): *Diokletians Preisedikt*. München, 148 f.

¹¹ M. H. Crawford (1985): *Coinage and Money under the Roman Republic. Italy and the Mediterranean Economy*. London, pp. 72; 96; 143 ff.; with the altogether more recent literature Wolters, *Nummi Signati* (n. 2), 14 ff.

rate –carried out around 141 B.C.– between denarii and asses from the earlier 1:10 to the later 1:16 ratio. This alteration changed the value of coined metals to match that of un-coined ones in order to keep the bimetallic coin system in function.

With this reform at the latest, the as stopped being base value and calculation value of the currency. Now, the smallest silver coin, the sesterce, became the predominant clearing unit¹². Apparently, this, too, reflects that the Roman state had moved to generally calculating and conducting its monetary transactions in form of silver. At the same time this was a central precondition for the unproblematic alteration of the silver-bronze relation.

Explanations of military pays given by the older Plinius illustrate that. He completes his description of the altered exchange rates with the addition: “*in militari tamen stipendio semper denarius pro X assibus datus est*”¹³. Plinius’ view assumes payment of the *stipendium* in the form of asses, which reminds of the traditional pay in bronze. However, when exchanging their money into silver coins, soldiers would have got considerably less denarii for their bronze coins subsequent to the reform: this would have meant a severe cutting of the pay. No problem occurred in the context of the reform, though, if the soldiers were paid exclusively in silver before and after the reform. The amount actually paid did not change this way and if the soldiers re-calculated the amount into asses they had the impression of an astonishing increase of their pay. Last but not least, the sentence by Plinius makes it very clear that soldiers received their pay in form of denarii.

The calculation of the pay in asses which can still be seen in Plinius suggests that the soldiers calculated their daily pay like day-labourers. One encounters this way of calculation once again after Augustus’ death, when the mutinying legions on the Rhine and the Danube complained that their lives were valued at 10 asses a day and

therefore demanded an increase of their pay to 1 denarius (= 16 asses)¹⁴. Johan van Heesch considers whether this did not express the soldiers’ desire to be paid in silver (again)¹⁵. Such an interpretation, however, shifts the meaning of the soldiers’ request: central demand was the drastic increase of the pay from 225 denarii (= 3,600 asses) to more than 360 denarii per year. Thereby, the legionaries also wanted to see restored the ratio of 1 to 2 between their pay and that of the praetorians¹⁶.

3. The structure of coinage in late Republic and early Empire

Since the middle of the 2nd century B.C. silver coinage increased continuously¹⁷. A further acceleration of minting output was brought about by the civil wars of the late Republic. Striking of gold coins, which set in under Caesar, –with an exceptionally high value per coined piece– effected once more a drastic increase of the amount of circulating money. Apart from booty and the special taxes forced out of private individuals, cities, provinces and kingdoms, all stocks of gold and silver that were accumulated in the *aerarium* during the expansionist wars had been coined under Caesar. The main duty of this money was to buy the soldiers’ faith and support. The rewards –paid and promised in that time– of 500 and 1,000, even 5,000 denarii for each man (which must have been paid exclusively in gold and silver considering all the coins minted in that time), impressively illustrate the close connection between minting, quantity of coinage and military pay¹⁸.

¹⁴ Tac. ann. 1,17, 4 f.; 21,1.

¹⁵ J. Van Heesch (2000): “Some considerations on the circulation of Augustan and Tiberian bronze coins in Gaul”. In R. Wiegels (ed.): *Die Fundmünzen von Kalkriebe und die frühkaiserzeitliche Münzprägung*. Mönchsee, pp. 153-170, 165.

¹⁶ Tac. ann. 1,17,6; cf. Dio 53,11,5.

¹⁷ Cf. K. Hopkins (1980): “Taxes and Trade in the Roman Empire 200 B.C.-A.D. 400”, *JRS*, 70, 101-125, 109; for critics and further discussions: Wolters: *Nummi Signati* (n. 2), 37 ff.

¹⁸ H. Botermann (1968): *Die Soldaten und die römische Politik in der Zeit von Caesars Tod bis zur Begründung*

¹² Crawford: *Coinage and Money* (n. 11), 147 ff. The sesterce only became an aes-nominal in the course of Augustus’ coin reform.

¹³ Plin. n.h. 33,46.

The mints that had been opened by leaders in the civil war in order to pay their troops in the various places of war were closed one after another subsequent to Octavian's victory¹⁹. In Rome itself, coinage of precious metals started again from 19 B.C. onwards after several years intermission. In 15 B.C., gold and silver coinage started in Lugdunum, i.e. in a province, that was solely controlled by the princeps. The coinage in Lugdunum soon displaced the production of gold and silver coins in Rome completely.

In the years of a consolidated organisation of coinage, one can observe longer intervals without any gold and silver coinage again and again: i.e. coinage of precious metals in Lugdunum stopped around 8/7 B.C.; than in 2/1 B.C. the well-known Gaius/Lucius-aurei and denarii were coined; after these it is only at the very end of Augustus' reign that a few gold and silver coins are minted. There is hardly difference to be seen under Tiberius: due to only coarsely dating information on the aurei and denarii a detailed chronology can hardly be produced; it seems, however, that minting took place sporadically at best after abundant coinage in the first years of his reign. Intermissions in coining activity can still be observed under Claudius. Only the reign of Nero brought about the transition to a rather steady annual coinage²⁰.

Bronze coinage looks even more heterogeneous. In this case there was a gap in coining activity of about 60 years (!) after Sulla, during which the mint in Rome produced no aes nominals at all²¹. The reason for the state's complete withdrawal from small coin supply was most likely the fact that production of bronze coins had become

too expensive for the Roman state, especially since the coins that first had been released at a reduced standard could not gain general acceptance in circulation. The interval in coinage and the accompanying shortage of small change show more than clearly that military pay can hardly have been conducted in bronze coins in these years.

Only in 23 B.C. bronze coinage was taken up again in Rome in a reformed way. But this so-called Augustan moneyers-coinage came to an end as early as 4 B.C., after it had already been limited to smaller nominals in the years before. According to the areas of circulation, the moneyers' coinage principally supplied the city of Rome and Italy. Only after a notable delay of about 20 to 30 years they can be encountered in larger numbers in Northwest-Europe²²: they cannot have been used for paying the troops stationed there immediately after minting.

In the last few years of Augustus' reign, between 10 and 12 A.D., in Rome one more series of asses was coined only some of which reached the North²³. Under Tiberius, minting of bronze coins remained irregular; apparently, more numerous minting only occurred at the beginning and again at the end of his rule²⁴. One more significant caesura took place under Claudius. After an extensive release of bronze coins at the beginning of his reign, any further coinage of bronze seems to have been discontinued by the mint in Rome from the beginning of 43 A.D.²⁵. Only in the middle of Nero's rule, from 61/62 A.D., and thus after an intermission of around 20 years, bronze coinage commences again in Rome.

des zweiten Triumvirats. München; R. Wolters (1988): "Keltische Münzen in römischen Militärstationen und die Besoldung römischer Hilfstruppen in spätrepublikanischer und frühaugusteischer Zeit", *Tyche*, 3, pp. 261-272, especially 267 ff.; for precise congruence between individual emissions and military pay cf. B. Woyteck (2000): *Untersuchungen zur römischen Finanzgeschichte und Münzprägung der Jahre 49 bis 42 v. Chr.* Diss. Univ. Wien.

¹⁹ Wolters: *Nummi Signati* (n. 2), 45 ff. and the outline S. 236 ff.

²⁰ Ibid. 240 ff.

²¹ Ibid. 132 ff. Already in the previous decades there were longer periods without any aes-coinage.

²² K. Kraft (1955/1956): "Das Enddatum des Legionslagers Haltern", *BJ*, 155/156, pp. 95-111, 107; F. Berger (1996): *Kalkriese 1. Die römischen Fundmünzen*. Mainz, p. 39.

²³ According to H.-M. von Kaenel: "Der Münzumlaufl im augusteischen Rom anhand der Funde aus dem Tiber mit einem Nachtrag zur geldgeschichtlichen Bedeutung der Münzfunde in Kalkriese". In Schlüter/Wiegels: *Kalkriese* (n. 1), pp. 363-379, 369, the share of these bronzes in the Tiber-finds seems to indicate a higher coinage output than shown by their rare occurrence in Northern Europe. Obviously, after minting these bronzes were not used for military pay, either.

²⁴ Wolters: *Nummi Signati* (n. 2), 241.

²⁵ Ibid. 80 f.; 161 f.

The –compared to precious metals– even more irregular rhythm of minting of bronze coins alone illustrates that the production of these nominals was no central interest of the Roman officials. Especially in the period that is of concern here –the late republican and early imperial period– the Roman state obviously was not in any particular need of these nominals.

4. Local bronze coins

The gap in the supply of small change that had arisen due to the lacking minting of bronze in the city of Rome was bridged –at least in the provinces– by local bronze coins. These are especially well-known from the Greek east. Even when direct rule was taken over, Rome did not usually stop local coinage, and in many regions of the Roman empire small change supply was provided for by the towns during the whole imperial period. Obviously, production of these coins was a strain for Rome rather than being economically rewarding. Even the designs of the pictures on these coins were generally not influenced by Rome.

Not all locations in the West of the Roman empire had a tradition of coinage comparable to that of the East. Some local coinages seem to have developed only under the influence of Rome and under the precondition of the monetary economy introduced by Rome²⁶. An even more singular position was taken by those local coinages of the Augustan age, which circulated not only regionally and thus dominated the spectrum of small change in military camps. Mostly these are the bronze coins of the colonies Nemausus and Lugdunum in Southern Gaul²⁷.

In modern catalogues the coins of these towns are registered both under the heading of

imperial and provincial coinage²⁸. The ambiguous position that is apparent here expresses the central problem –i.e. under whose authority these bronzes were produced: directly under that of Rome or under the leadership of a local town²⁹. The iconography of the coins is clearly connected with the towns: apart from the emperor's portrait in the avers³⁰ which had been adopted by the provinces, in the revers for Nemausus one can see a crocodile which hints at the Egyptian origins of the colony and for Lugdunum the local altar of Roma and Augustus. While there was only one mint for bronze coins in Nemausus, the situation presents itself more complicated in Lugdunum: were the altar-coins produced in the same mint as the precious metal coins from Lugdunum, which were undoubtedly minted under direct influence of the emperor? Johan van Heesch, who would like to deduct from a production alternating between precious metals and bronzes chronological indicators for the dating of several series of coins, presupposes just that³¹. But even if location and staff were identical, this does not allow any safe conclusions on the officials responsible for the orders. It is also noteworthy in this context, that –apart from minor updates of emperor's title in the avers– neither the bronzes from Nemausus nor those from Lugdunum show changing pictures –let alone any synchronism with the rich designs on

²⁸ C. H. V. Sutherland (1984): *The Roman Imperial Coinage I²: From 31 B.C. to A.D. 69*. London, p. 51 f.; 57 f.; A. M. Burnett, M. Amandry & P. P. Ripollès (1992): *Roman Provincial Coinage I: From the Death of Caesar to the Death of Vitellius (44 B.C.-A.D. 69)*. 2 vols., London/Paris, 152 ff.; cf. 150 f.

²⁹ Wigg: *Coin Supply*, (n. 1), 284, sees Nemausus and Lugdunum as mints of Augustus; J. Heinrichs (1999): "Augusteische Truppen und Bildung eines Geldumlaufs im niedergermanischen Bereich". In H. von Hesberg (ed.): *Das Militär als Kulturträger in römischer Zeit*. Köln, pp. 147-187, 156 ff., on the other hand emphasizes the local urban character of Nemausus.

³⁰ The avers-motiv from Nemausus with Augustus and Agrippa still goes back to the Ianus-motiv of the republican bronzes.

³¹ J. van Heesch (1993): "Propositions d'une nouvelle datation des monnaies en bronze à l'autel de Lyon frappées sous Auguste", *Bulletin de la Société française de numismatique*, 48, pp. 535-538; in the same way: Heinrichs: *Versorgung* (n. 26), p. 191.

²⁶ J. Heinrichs (2000): "Überlegungen zur Versorgung augusteischer Truppen mit Münzgeld". In L. Mooren (ed.): *Politics, Administration and Society in the Hellenistic and Roman World*. Leuven, pp. 155-214, 168 ff.

²⁷ Especially in the military places on the lower Rhine the so-called Aduatuker-coinages are numerous, which –in contrast to the coin types dealt with here– have not been connected with Roman military pay.

coins of precious metal. The revers pictures from the towns remained static and were neither influenced by the emperor himself nor Rome. Only when a part of the bronze coinage that had been in the city of Rome was moved to Lugdunum under Nero, the alteration of pictures that was common in Rome started here³².

For our problem, coinage authority is connected with the question, how coinage quantities and equally the dominating role of these bronzes in the distant military camps on the Rhine can be explained. According to the contexts of the finds, these coins seem to spread only from the military camps into the surrounding areas³³. Furthermore, an apparent domination of some of these coinage series can be noticed in certain places; especially in the change from the Nemausus pieces in the early military places like Oberaden to their almost entire replacement by the Lugdunum pieces in the later places such as Haltern. Both facts suggest that apparently the local coins were brought to the camps in large numbers at a time³⁴.

The thesis that Roman troops were paid with these bronzes would be able to offer an utterly satisfactory explanation at first glance. But even if one does not put it such a radical way that the troops were exclusively –or predominantly– paid in bronzes, this assumption poses another problem: how did the bronzes from the towns –their coinage authority was shown by the iconography after all– get into the hands of the Roman central authority enabling it to pay the troops with that money? According to their legal status the towns were free from tax payment. Were these special requests? Did Rome “buy” this small change from the towns? Or did the transport of the bronzes to the military places pose a profitable income source for the towns or some private individuals?³⁵.

Presently, Johannes Heinrichs connects in an appealing way the inflow of certain groups of

bronze coins with the countermarks and considers, whether this does not express a certain *liberalitas* on the part of army leaders, namely getting of larger amounts of small change which would then be exchanged by them without exchange fee³⁶. In any case, however, these coin groups present a special phenomenon which requires an individual answer. Civic coinages of the quantity of the Nemausus and Lugdunum-bronzes do not reoccur in post-Augustan times. On the contrary, local mints in the Western part of the Roman empire soon successively discontinue their coinage activities and the supply with small change was conducted by the mint in the city of Rome alone.

5. Coin pictures and propaganda

As in the Greek world the first Roman coins were of heraldic character. Purpose of the embossed pictures was to guarantee weight and quality of the coins by indicating the authority responsible for coinage. When the Roman coins had lost nearly all competition in a growing empire, the previously fixed motives became more and more unrestricted; in quickly changing motives, which hinted at the history of Rome or topical events, the coins gained a character which was not an extroverted heraldic one but rather one of information and propaganda directed at the inhabitants of the empire itself. This development, however, was restricted to silver coins only, whereas the bronzes kept repeating the firmly fixed motives.

The civil wars further intensified and accelerated the language of pictures, too. The connection between coinage activity and military pay has already been mentioned, making soldiers the prime target for the slogans of the civil war leaders. Remarkable for instance are the legionary denarii of Marcus Antonius, on which the names of the legions were stated in order to strengthen their corporate identity. In these years too –due to the lack of bronze minting– further development of coin propaganda was supported solely by silver and eventually gold coins.

³² Cf. RIC I² p. 173 ff.

³³ Wigg: *Coin Supply*, (n. 1), 282; id., *Münzversorgung* (n. 1), 335 f.; 340 ff.

³⁴ Heinrichs: *Geldumlauf* (n. 29), 155.

³⁵ Doppler/Peter: *Vindonisa* (n. 6), 49, suggest small change supply of military camps by money changers.

³⁶ Heinrichs: *Versorgung* (n. 26), 160, n.º 6.

Compared to the old typology the resume of bronze coinage in Rome brought new pictorial motives, but then those were generally maintained and rarely varied³⁷. Together with the static local bronzes which solely indicated the identities of the towns, one cannot recognize any concept of “propaganda” for the small nominals comparable to that of precious metal coinage. The argument that silver coins in military camps were older and thus their pictures less topical than those on the bronzes –which implies that soldiers as the most important recipients had to be paid in bronzes–³⁸ fails to acknowledge the complete “lack of expressiveness” of bronze coins up to and including the Augustan age. Only after Augustus the pictures of bronze coins became more distinct and more varied. It cannot go unnoticed, however, that these bronzes were chiefly directed at an audience in the city of Rome.

6. The archaeological context

The general spectrum of stray-finds in Augustan and early imperial military camps and civilian settlements is continuously dominated by bronze coins while silver coins occur only in small numbers and gold is missing almost entirely³⁹. In a methodically correct way, possibly existing hoards are taken into account separately since they represent intentional deposits as opposed to finds of lost coins. The question is, however, whether the stray-finds are also representative for the circulation of the various nominals in this places.

Fortunately –to us–, the possibility of assessing the actual circulation of money in a cross-sectional way is available in the form of two catastrophes: in the form of the complex of finds at Kalkriese as battle field and perhaps location of the catastrophe of Varus, additionally –half a century later– in form of the coin finds from Pompeii.

³⁷ Cf. RIC I² p. 65 ff.

³⁸ So Wigg: *Monetary Economy* (n. 1), 111 ff.; id., *Münzversorgung* (n. 1), 335 f.

³⁹ Cf. P. Ilisch: “Die Münzen aus den römischen Militäranlagen in Westfalen”. In Schlüter/Wiegels: *Kalkriese* (n. 1), pp. 279-291, 286; H. Chantraine: “Novesium und die Fundmünzen vom Niederrhein”. *O. cit.*, pp. 293-303, 294 f.

Already Hans-Markus von Kaenel drew attention to these two places⁴⁰: in both locations gold, silver and bronze coins were mixed; and even if the bronzes still constitute the largest group in terms of numbers, the higher share of gold and silver coins vastly influences the monetary value expressed in the respective nominals: for 49 % of the “total fortune” found so far in Kalkriese exist in form of gold coins, a further 49 % in silver coins and only 2 % in bronzes. A very similar ratio is shown by the coin line-up in Pompeii with 69 % in gold, 28 % in silver and only 3 % in bronze. The somewhat larger share of gold coins can apparently be explained by the strongly intensified gold coinage from the second half of Nero’s rule onwards. On the whole, however, this comparison makes clear that the found spectrum of nominals from camp and settlement finds is not representative for the actual circulation of money⁴¹. Rather, the dominance of small change in these contexts should be explicable by the fact that generally loss of a coin of precious metal occurred less often –apparently also due to a slower circulation speed compared with the bronzes–, that such a loss would be noticed more frequently and that, after a gold or silver coin had fallen down, one would be looking for it more meticulously in sand or even under floor-boards.

If half of the value of the soldiers’ cash in Kalkriese is present in gold coins, the assumption is at hand that the soldiers were also paid a share of gold –especially the higher ranks. In the form of aurei great values could be transported both in the easiest and safest manner. In addition, the large share of gold coins in the emissions of Julian-Claudian times in connection with the voluminous share that military expenses had of the state’s expenses suggests that at least part of the pay and the donatives respectively was given in gold⁴².

⁴⁰ Von Kaenel: *Münzumschlag* (n. 23), 372 f.

⁴¹ In this context also the calculations by Doppler/Peter, *Vindonissa* (n. 6), 48.

⁴² In the same lines C. J. Howgego (1992): “The Supply and Use of Money in the Roman World 200 B.C.-A.D. 300”, *JRS* 82, pp. 1-31, 11; Heinrichs: *Geldumschlag* (n. 29), 154; id., *Versorgung* (n. 26), 163.; cf. in the context of Domitian’s pay increase: “addidit et quartum stipendium militi aureos ternos” (Suet. Domit. 7,3).

7. Financial administration and circulation of coins

The analysis up to this point has shown that again and again there were long periods without any new coinage in the later republic and the early imperial time. Undoubtedly, however, the troops were still regularly paid in these times. This can only mean that the soldiers were paid –not only to a large extent but obviously predominantly– with old coins that had already circulated.

Considering the basic structures of financial administration one has to assume regional money cycles, as a rule on the level of the provinces: the income gained through various taxes first went into a provincial treasury, out of which any expenses that arose in the province, i.e. especially military pay, were paid. Ideally, the money of the soldiers reached merchants, markets, inn-keepers, etc. from which they returned to the provincial treasury in form of taxes. The money cycles that developed at the same time seem to have been relatively stable considering the intermissions in coinage activity. Any provincial surplus had to be transported to the *aerarium* in Rome, which had to settle any deficits in other provinces by sending them money. In that context it was certainly routine to get money from a neighbouring province that had earned a surplus in order to save transportation costs. This transaction would then be cashed up with the *aerarium* on a bookkeeping level. However, in such a case it could not have been newly coined pieces which completed the money circulation of a province but only older stocks of coins which had already been mixed.

At present, such flows of money can be approximately reconstructed only for bronzes: the sending of Republican and Augustan moneys' coins under Tiberius in the north probably was such a centrally coordinated shifting of coins which had already circulated; possibly, one can also connect countermarks with such actions⁴³. But considering the low value –especially taking into account transport weight– of bronze coins,

it can hardly have been their purpose to compensate for any provincial deficit. As the halved coins and numerous imitations –especially of the Lugdunum pieces– indicate, the aim of their sending seems to have been to remedy a local lack of small change. Without being able to reconstruct the exact circumstances, we can assume similar procedures for the abundant presence of the Nemausus and Lugdunum pieces⁴⁴. As singular phenomena they have to be distinguished sharply from any other presence of local coinages in distant military camps or civilian places, which can be rewardingly assessed to determine mobility of people, dislocations of troops and to reconstruct traffic flow⁴⁵.

8. Conclusion

Since the middle of the 2nd century B.C. Roman soldiers were paid in silver, since the end of the Republic they seem to have received part of their pay and the donatives in gold. The structure of the coin finds in Roman military camps with a dominance of bronze coins is neither representative for the actual flow of money nor for soldiers' payment procedures.

Larger gaps in coinage activity show that soldiers as chief recipient of state payments could not possibly always have received newly minted coins. As a rule, payment was done with old coins, that had already been circulating, which the state had regained through tax payments. The regional fiscal departments on the level of the provinces controlled money cycles and assured that monetary circulation remained regionally limited; even

⁴⁴ In a similar way for the bronze coins of the third century: Th. V. Buttrey (1972): "A Hoard of Sestertii from Bordeaux and the Problem of Bronze Circulation in the Third Century A. D.", *ANSMN* 18, pp. 33-58, 55. I do not think that Heinrichs: *Versorgung* (n. 26), 192 considers to the necessary extent the practical needs and weight, when he assumes a partly pay in asses for the years after 7 B.C.-in order to intentionally speed up monetarisation of the surrounding areas using the soldiers; for the purposes of the market one would not have needed larger nominals.

⁴⁵ M. Paz García-Bellido: "The historical relevance of secondary material. The case of Augustan Spanish coins in German castra". In Wiegels, *Fundmünzen* 15, pp. 121-136; cf. Heinrichs: *Versorgung* 26, 184 ff.

⁴³ Cf. Heinrichs: *Versorgung* (n. 26), 160.

coins of precious metal thus remained relatively immobile.

The state hardly paid any attention to the supply with small change. To meet their requirements of small change, soldiers made use of local coinages in the vicinity of their camp. A special role is played by those groups of bronze coins in

Southern Gaul which in Augustan times occur in extremely large numbers in the camps of the troops stationed on the Rhine: we have to assume dedicated actions to supply areas that had hardly or even not been monetarized without being able to find out an official or private initiator of these measures.