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CONTROL MARKS AND MINT ADMINISTRATION IN THE FOURTH CENTURY AD

Abstract – Control marks are omnipresent on 4th century billon coins. The purpose of this contribution is to examine if these marks enable us to gain insight in the administration of mints and if marking and administration were controlled centrally or not. From the emergence of the system of marking at the end of the 3rd century, it seems clear that mintmarks and the speed of their change were managed by a central authority. This also implies that detailed records were kept and that impressive archives once existed. Together with the uniformity of the coinage and the homogeneous metal content of the billon coinage over the whole empire, it illustrates the importance attached to a stable coinage and the awareness of the economic consequences of an untrustworthy system. Though much was ordered from above, the actual elaboration of the marks was determined at the level of the mints.

The empire-wide reduction of the number of workshops under Julian (c. 363) seems to suggest that these were not indispensable, but rather inefficient and costly. It is suggested that the minters belonged to a class or guild characterized by privileges that were considered inappropriate at that time.

IN ANCIENT GREECE AND ROME COMMUNICATION WAS, BY MODERN STANDARDS, primitive. How else can one describe a society where most of the public announcements were chiseled out in marble letter by letter in order to inform its subjects about prices or tax regulations? However does this imply that administration, government and the economy were equally basic? ^[1] In this paper I will argue that during the Later Roman Empire the administration of coinage was as sophisticated and well managed as was the administration of the empire as a whole. That the rhythm of coinage production and its control, as reflected in the system of successive mint marks and the number of *officinae* in action, were sometimes (if not always) regulated on an empire-wide level. Monetary decisions, though often unsuccessful, were carefully planned and were rational though limited in effectiveness, as it was impossible to have knowledge of all data.

The administration of coinage has almost always been a matter of the State and it is obvious that its organisation evolved over time. Two stories separated by

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[1] ANDREAU 2010.

about 700 years, not about coinage but on administration, illustrate in a certain way different attitudes towards 'management'. The Roman historian Plutarch tells us the story of Demetrius Poliorcetes, king of Macedon between 294-287 BC, who, presented with written petitions, courteously received them while the poor people were overjoyed, but once leaving the village and riding over the first bridge, threw all into the river. Some 700 years later, the Byzantine official John Lydus was highly irritated because Greek superseded Latin as the language of administration. From now on, he complains, ordinary people didn't need the services of the highly qualified officials who until then were the only ones who could unravel the 'secrets' of administrative documents and ... received a fee to do so. [2] The 4th century coinage, the subject of this paper, fits in with this Byzantine world and reflects in an interesting way a sophisticated system of administration.

From the end of the 3rd century onwards and especially in the 4th century complex systems of mintmarks were used in the mints all over the Roman Empire. They are more common on billon coins than on gold. Though the general meaning of most of these marks seems certain, we know little about the exact meaning of the secondary marks or who controlled them. Were changes in mintmarks decided about locally, regionally or empire-wide? How frequently did these marks change and why? Is it possible to obtain information about the running of a late Roman mint and the keeping of the archives from these marks? These are some of the questions that will be treated in this contribution that will focus on billon or bronze coins only. [3]

Coinage and Archives

No archives of Roman mints have survived. We have no such document as those we know of for the Middle Ages where types, weights, alloys and values are specified. No documents either, that reflect the control and the counting mechanisms are known. That of course does not mean that they did not exist. For fiscal reasons most empires kept sophisticated records and most of the earliest written documents of Mesopotamia (*e.g.*) are precisely inventories, tax registers, census-lists and so on. [4] Roman papyri of Egypt or the wooden writing tablets of Vindolanda from Northern England testify an extensive use of written documents even in remote villages or military posts. [5] The growing complexity of the Roman Empire, that was larger than any western empire before, made governing it an enormous challenge. Joint-reigns were becoming

[2] PLUTARCH, Demetrius, 42. 2 (Loeb). John Lydus: KELLY 2004, p. 32-33, Lydus writes *ca* 552 he refers to measures taken around AD 440.

[3] No attempt to present a full bibliography has been made. Of major importance on the administration of coinage in the Later Roman Empire are: JONES 1964, HENDY 1972, HENDY 1985 and DELMAIRE 1989.

[4] *E.g.* SCHARLAG 2004.

[5] By way of example BOWMAN 1994 (general introduction).

the norm from the 3rd century and were institutionalized by Diocletian when he introduced the Tetrarchy. To cope with the vastness and complexities of ruling an empire, Diocletian institutionalized several tendencies that had already emerged in the late 3rd century. He divided the empire into entities that were manageable: 4 prefectures each ruled by an emperor, 12/13 dioceses and almost 100 provinces.^[6] These measures were taken also to guarantee the collection of tribute and to secure tax income. It is also in the 4th century that Roman legal texts were collected in codices to systemize the bewildering quantity of imperial rescripts and laws.^[7] The Gregorian and Hermogean Codes were edited in the reign of Diocletian though the later codes of Theodosius and Justinian are better known, as these survived almost complete.^[8]

It is not surprising then that within this large framework of administrative reforms to assure law, order and income, coinage was also involved. The late Roman *Notitia Dignitatum* is a primary source for the understanding of imperial government.^[9] It is composed of lengthy lists of administrative departments and their divisions. The finances of the Empire were apparently managed by three departments: the praetorian prefecture, the *res privata* and the *res summae* (*sacra largitiones*). The praetorian prefecture was the most important of the three administrations and the dioceses were its main fiscal units. The prefect was expected to draw up the state's budget to estimate the annual needs of the empire.^[10] The actual minting of coins and the distribution of the soldier's pay were managed by the *res summae* under the supervision of the *rationalis* or the *comes sacrarum largitionum*. He was also responsible for the collection of the rare taxes that had to be paid in coin. This department also had a large network of sub-departments managed by lower officials, known as the *comites largitionum*. Only few documents survive and we do not know if the actual administration of the mints was organized on an empire-wide basis or if important decisions (volume of production) were also taken at a lower level.

Michael Hendy established that in the early 4th century there was some correlation between mints and dioceses or 'equivalent fiscal units'.^[11] In the Eastern half of the empire, each diocese had at least one mint; in the West the situation was different. Of the seven dioceses only three (initially) possessed a mint.^[12] Though the case for the East seems interesting, the ratio of three mints for seven dioceses in the West is curious. Only one legal text seems to imply – the

[6] Lactantius, *De mortibus persecutorum*, 7,4; BARNES 1982, p. 201-225.

[7] Rescript : the answer of an emperor when formally consulted.

[8] CORCORAN 2000, pp. 25-42 and 293-294.

[9] *N. Dig.* = *Notitia Dignitatum* (ed. O. SEECK, Berlin 1876).

[10] Fully discussed with quotations of the original texts in the footnotes by JONES 1964, p. 449 and HENDY 1985, p. 371-386.

[11] HENDY 1985, p. 378-380; GRIERSON & MAYS 1992, p. 48-69.

[12] Pannonia = East, HENDY 1985, p. 379; BARNES 1982.

obvious perhaps – that accounts should be kept by each mint. A law proclaimed by the emperors Valens, Gratianus and Valentinian I, dated March 29, 377 and addressed to the *comes sacrarum largitionum* Eucherius, specifies:

“When any person, acting as a civil servant in whatsoever name and service in our department of largesses, has acquired an administration *which obligates him to render an account*, he shall first give most competent sureties, and then he shall undertaken the service which he has sought. Then ...within fifty days, [..., in the case of those of the larger accounts,] he shall deliver the documents and all the records (*charta et ratiocinia*) of his accounts. ... *The same condition shall apply to the procurators* who are provost of the weaving establishment, of the mints, and of the taxes (*procuratores textrinatorum et monetariorum et vectigalium*)”.^[13]

We do not know exactly where the accounts had to be presented, but the *thesauri* or treasuries of the *Comes Sacrarum Largitionum* are a possibility.^[14] These treasuries are listed in the *Notitia Dignitatum* and nine are known for the Western part of the Empire. In Gallia these were: Trier, Reims and Lyons; in Viennensis: Arles; in Italy: Augusta Vindelicorum (now in Germany), Milan, Aquileia and Rome.^[15]

One aspect of the functioning of these *thesauri* is also transmitted by the historian Ammianus Marcellinus telling how the finance minister Ursulus orders a Gallic *thesaurus* to provide the emperor Julian with money so that he could make a donative to his soldiers.^[16] Particularly interesting about this text is the fact that Ammianus explicitly mentions the fact that Julian, though he was a Caesar, had no power of making a donative to his soldiers and that the actual written order to draw money from the treasury came from the *comes sacrarum largitionum* Ursulus.

Written sources are rare and more information on the organisation of the mints has to come from the coins. After the last civic or regional coinages disappeared in the final quarter of the 3rd century, Roman coinage became the only currency in use. From Diocletian’s monetary reform onwards (293/4), some 14 mints were active, coining the same denominations of the same weight, fineness, type and value all over the empire. We can be certain that these measures were ordered centrally by the Financial Department of the *rationalis*. These empire-wide changes in value, weight and fineness are not only documented by the currency edict of 301, known from an inscription found in 1970 in Aphrodisias (Turkey), but are mainly documented through the coinage itself.^[17]

^[13] *C. Th.* I.32.3.

^[14] JONES 1964, p. 428-429.

^[15] *N. Dig. Occ.* XI.23-37; HENDY 1985, p. 383-384.

^[16] Ammianus Marcellinus, *Res Gestae*, XXII, 3, 7 (Loeb).

^[17] Aphrodisias: full bibliography in CORCORAN 2000; coinage: SUTHERLAND 1967 and ABDY 2012.

Each of the successive reforms in the 4th century was characterized by a complete modification of the reverse types. Iconic examples are the series with the Genius of the Roman People on the reverse, struck in 14 mints from 294 onwards, the abdication coinage for Diocletian and Maximian struck in 13 mints in 305, *gloria exercitus*, *felix temporum reparatio* and so many others.^[18]

There can be no doubt that these modifications were registered in documents not only for the sake of transmission, but also to be kept in archives. How else could an empire that large, cope with the changing values of a fiduciary coinage?^[19] Sometimes the centre from where the orders were dispatched can be identified with some certainty and John Kent suggested Trier for the abdication coinage of the tetrarchs and Rome for the *fel. temp. reparatio*-series.^[20] Though orders for the new types were issued empire-wide, the news reached the mints often through secondary centres. That is probably why in the early 330 the mints of Constantinople, Nicomedia, Cyzicus and Heraclea all situated near the sea of Marmara used the legend *Constantopoli* without the usual final letter S.^[21] That the mint of Rome in the 320s styled Constantius II for some six years Valerius instead of Julius, an obvious error, shows on the other hand that mints could make mistakes not noticed by any superior control mechanism.^[22]

Mintmarks and Interpretation

Most late Roman coins bear often complicated marks and symbols on the reverse of the coins. This system of marking coins was introduced in the mid 3rd century when numbers, corresponding to different *officinae* or workshops appear on some coin series, exceptionally completed with a letter referring to the town where the coins were struck. From Diocletian onwards most billon coins often bear complicated mintmarks (*fig. 4*). The identification of the mints poses hardly any problem. *Procuratores monetae* are known from the *Notitia Dignitatum* mentioning Siscia, Aquileia, Rome, Lyons, Arles and Trier and mintmarks of the time of the emperor Julian on coins dated 360–363 show the names almost in full as LVGD(unum), ROMA, AQVIL(eia), HERACL(ea), NIK(omedia) and CVZIC(us).^[23] These marks are often followed or preceded by letters (*fig. 7–8*). In the Western empire mostly Latin letters as P(rima), S(ecunda), T(ertia), Q(uarta); in the east the Greek numbers as Α, Β, Γ, Δ, etc. These letters correspond with the numbers of the workshops or *officinae*

[18] SUTHERLAND 1967 and CARSON, HILL & KENT 1960 (excellent overview of 4th century billon and bronze coinage in tables).

[19] That silver and the billon coins were essentially fiduciary can be shown by the changing values of the coins expressed in money of account only (weights and alloy remaining the same!) as shown by the edict of Aphrodisias, CORCORAN 2000.

[20] KENT 1987, p. v.

[21] RIC VII, p. 31–32; KENT 1987, p. VII.

[22] KENT 1987, p. VIII.

[23] *N. Dig. Occ.*, XI.39–44; HENDY 1985, p. 383.

that were responsible for the actual coining of these coins as is shown by mintmarks from the reign of Julian (360-363) and Valentinian I (367-375): LVGD. OFF (icina) P(rima) / S(ecunda) or R(oma) PRIMA, SECVNDA, etc. (fig. 9) ^[24]

Most of these marks are placed in the exergue of the coins and are frequently complemented by symbols and letters sometimes preceding or following the mark in the exergue and often also in the field of the coin. These are what I would call supplementary marks. As we will see their exact meaning is rarely clear. Sometimes letters and symbols in the field follow a scheme well planned in advance, but most of these are impossible to unravel today. A few spectacular ones were already known by numismatists in the 19th century:

- An issue of billon radiates of Probus from Rome and Ticinum (*ca* 282) has letters in the field that when the marks of all six or seven *officina* are brought together form the word EQVITI or AEQVITI possible a nickname or *signum* (*Aequitius*, for Probus) ^[25]
- Pre-reform radiates of Diocletian and Maximian Herculus issued in Siscia in 287 are known from three *officina* (A, B, Γ) each characterized by several sets of grouped letters in Greek that together form the words I.O.BI and HP.KOY.ΛI referring to the deities, Jupiter and Hercules, that protected the tetrarchs (fig. 1-3) ^[26]
- *Nummi* of Rome minted in 299-300 are minted in four *officinae* each marked R(*omae*) (*officina*) P(*rima*), S(*ecunda*), T(*ertia*), Q(*uarta*). P and T are followed by a small thunderbolt and S and Q by a club (fig. 5). Both symbols refer again to the gods that protected the tetrarchs and we find the thunderbolt on coins of Diocletian and Galerius Maximian, both Jovians, and the club on these of Maximian Herculus and Constantius I, both Herculiens. ^[27]

The discovery of these ‘secret marks’ made it clear that groups of symbols and letters could have a meaning and numismatists looked for parallel cases. Most of these restitutions are improbable as these examples show:

- *Nummi* of Diocletian of Siscia have in addition to the mintmark XXI SIS / A to Γ also the letters ΛCS or I in the field. These have been interpreted as ‘*locus siggilli sacri*’. ^[28]
- Robert Mowat in *Revue numismatique* 1897 lists several others for Con-

^[24] KENT 1981, p. 195, nos 236-237 and PEARCE 1951, p. 115. Other example: Arles under Valentinian I signing OF I, II, III, etc.

^[25] GUILLEMAIN 2009, p. 87-88.

^[26] GRICOURT 2000, p. 95-96 and plate 59.

^[27] SUTHERLAND 1967 (*RIC*), Rome nos 98-99.

^[28] SUTHERLAND 1967 (*RIC*), p. 445-446.

stantius II and Gallus: SEF for *senior felicissimus* or *senior fortissimus*; †, S, D, ☉ as *Crucis signo divino victoria*; ✠, S, ☉ as *Christi signo corona*.^[29]

- Pierre Magain proposed to read the secondary letters in the field of the ‘Two Victories’-coinage of the years 341–348 from the Gallic mints (fig. 6): *Con.st.an.tino[?].pol.is decem*, commemorating the 10th anniversary of the foundation of Constantinople.^[30]

What these examples illustrate is the fact that those who managed the mint often designed a complex system of control marks reflecting a sophisticated administration that was understandable only to those who managed the records of the mint, as only they would have been aware of the meaning of these signs and words fragmented over so many coin series.^[31]

Mintmarks and Administration

The actual purpose of these marks is clear. They are meant to identify the minters who made the coins and offer some guarantee against fraud. Fraud is a recurrent phenomenon and light weight specimens, coins of a bad alloy or those struck privately by the unauthorized use of official dies are not uncommon. It should not be forgotten that when coins were of good quality (gold and silver) proofing the alloy with a touchstone (*e.g.*) is fairly easy. This is not so for billon coins that contained very little silver (3% and less). The introduction of these marks was not an *ad hoc* measure, but was part of the administrative regulations. Was all this orchestrated centrally by the finance minister or *rationalis* or was it done at a lower level? Did dioceses follow a specific system or not?

Levels of Decision: Empire-Wide

When Diocletian and his 3 co-rulers introduced their empire-wide monetary reform in 293/4 the finance department not only ordered an absolute uniformity of coinage denominations, types and legends, but also that all issues should be marked in the same way.^[32] Early issues as the ones of the mint of Lyons continued for a short time the use of pre-reform lettering indicating *officinae* only, but soon all mints without exception, indicated the name of the town in the exergue using an abbreviation of one (L for Lyons *e.g.*), two (AQ Aquilieia) or three (ANT Antioch) letters. The official instructions to sign the coins with letters identifying the mint, was probably issued together with the introduction

^[29] MOWAT 1897.

^[30] MAGAIN 1966.

^[31] For a spectacular abbreviation on a medallion of Carausius referring to Vergil (INP-CDA in the exergue on the reverse *i.e. Iam Nova Progenies Caelo Demittitur Alto*) see DE LA BÉDOYÈRE 1998.

^[32] *E.g.* SUTHERLAND 1967; BRUUN 1979.

of the *Genio populi romani nummi* in 293/4.^[33] As the measure was empire-wide, it is at the level of the *rationalis* that this decision was taken.^[34] A similar and clearly recognizable change took place during the reign of the emperor Julian, who introduced a new billon (and bronze) coinage in 363, ordering soon thereafter that all mintmarks had to be modified and be unambiguous. So from now on no confusion was possible: Arles signed CONST (for Constantia) and Constantinople CONSP, Rome VRB ROM, and others LVGD, AQVIL, NIK, HERACL, CVZICEN, etc.^[35] Julian also intervened in the actual organization of the mints as from the 13 mints that were active all over the Empire, 10 reduced the number of workshops. Mints with few *officinae* were spared, but large mints as Rome, Constantinople and Antioch saw a drastic cut back: Rome went from 7 to 4 *officinae*, Constantinople from 11 to 4 and Antioch from 14 to 4.^[36] What could have been Julian's motivation to act in this way? We know – thanks to Ammianus Marcellinus^[37] and the *codex Theodosianus* – that the emperor also economized on the number of civil servants in his palace and fought against vices and corruption in the administration. It is tempting to connect the reduction of *officinae* and the revision of mint signatures with empire-wide actions to eliminate abuses.^[38] A well-known text, written by Sozomen and referring to the reign of Julian, informs us about the fact that the *monetarii* of Cyzicus were bound to produce a fixed quantity of coins per year.^[39] This was a fiscal duty and should warn us not to compare these workshops with modern factories or semi-industrial units. The minters appear to be a prosperous hereditary class.^[40] Their status is e.g. reflected by the comments of Julian himself in his work *Misopogon* where he writes: “I therefore gave you (*i.e.* the people of Antioch) the opportunity to elect and to have in your council the richest men among those who administer my own treasury and those who make the coins. [362]”.^[41] It is not unlikely then, that they received benefits linked to their status, which might explain why in this context Julian thought it appropriate to reduce the number of workshops. In other words: the fact that the emperor and his entourage could cut down the number of *officinae* from 73 to 38, suggests to me that their high number had nothing to do with efficiency, and that it was a measure aiming at reducing a privileged class.

[33] For a very handy overview of all mintmarks see SUTHERLAND 1967, p. 73-87.

[34] On the *rationalis* see SUTHERLAND 1967, p. 88-89; DELMAIRE 1989, p. 25-38.

[35] This is clear from the change in mintmarking that occurred in almost all mints: see the data in KENT 1981, p. 47 and *passim*.

[36] See the table in KENT 1981, p. 48.

[37] Ammianus Marcellinus, *Roman History*, 22.4.1-10 [esp. 9-10].

[38] C.Th. VI, 24.1; JONES 1964, p. 128-130; KELLY 2004, p. 194, 207 and 220-221.

[39] Sozomen v.15; CALLU 1972, p. 271; JONES 1964, p. 436 and note 65.

[40] JONES 1964, p. 435; GRIERSON & MAYS 1992, p. 64-65; KENT 1994, p. 23; MOORHEAD 2012, p. 603.

[41] Julian, *Misopogon*, 367d (translation Wilmer Cave Wright for the Loeb Classical Library); JONES 1964, p. 435 note 62.

The examples of Diocletian and Julian are important and demonstrate that also the marking of the coins could be organized centrally.

There is another field where central planning can be clearly demonstrated and that is in the frequency mintmarks changed.

Periods (reform to reform) [length of period]	Mintmarks							
	TRIER	LYONS	ARLES	TICINUM	AQUILEIA	ROME	SISCIA	ANTIOCH
293/4-305 [c. 12 years]	9	9	–	8	9	9	16	9
293/4-313 [c. 20 years]	15	19	–	16	11	20	24	c.21

Table 1 – Total number of mintmarks used on billon coins (nummi) between 293/4 and 313^[42]

In Table 1 all the known marks are listed for mints that were active during the tetrarchy. Mints active for a few years only or those interrupted by usurpations as Alexandria, were excluded. The first period covers the post-reform coinage down to the abdication of Diocletian and Maximian in 305. The second row includes the entire period till the death of Daza (313). It is amazing to see how regular the figures from 294 to 305 are. This uniformity clearly suggests that the change of mintmarks was coordinated centrally at the offices of the finance minister (the *a rationibus/rationalis*). With the exception of Siscia, where the marks changed apparently twice as quickly as anywhere else, it looks as if each mark changed every 16 months or so. Taken over the whole period the regularity is less clear but we do simply not know how active the mints in reality were. It is clear however that the marks did not change very often. This brings to mind the passage of Sozomen mentioning the delivery of freshly

^[42] These data are mainly based on *RIC* (SUTHERLAND 1967). The reader should be aware of the fact that counting the actual coin issues and the number of marks is not always easy. New marks are found, others are too rare to consider them as belonging to a coin issue, etc. Unmarked coin issues are not included as most are special issues for donatives, cf. BASTIEN 1988. *Lyons*: 2 varieties (issue viB and viiB in *RIC* VI, Lyons, nos 42 ff. and nos 68 ff.) are not counted separately. See also BASTIEN 1980 and DROST 2007/2008, pp. 43 (Trier) and 44 (Lyons), with very clear tables of the marks and their presence in hoards! Drost lists 10 mintmarks for Lyons for the 1st tetrarchy but only 8 are documented in his table of hoards and 9 marks for Trier. *Ticinum*: 8th mintmark, see JELOČNIK 1965. *Rome*: *RIC* issues VI & VII are very similar but there are changes in *officina* and reverse types, see SUTHERLAND 1967, p. 361. If we do not use these criteria the number of mintmarks is lower (*i.e.* 8). *Siscia*: I have not counted *RIC* issue V, as these are laureate fractions with the same mark as the preceding issue of radiates (SUTHERLAND 1967, p. 465).

minted coins on an *annual* basis by the guild of moneyers of Cyzicus.^[43] An equal number of mintmarks (and thus coin issues) did not mean that all mints produced exactly the same amount of coins. Trier, nearer to the frontier and the actual residence of the emperor seems to have had a larger production than Lyons, if the following numbers from 5 different hoards from Gaul are representative (Table 2).

Mint	Mintmarks	Number of <i>nummi</i> from 294-305
Trier	9	1,040
Lyons	9	628

Table 2 – Actual number of coins of the period 292-305 in 5 coin deposits from Gaul (Data: Drost 2007/2008, p. 43-44)

Periods (reform to reform) [length of period]	Mintmarks							
	TRIER	LYONS	ARLES	TICINUM	AQUILEIA	ROME	SISCIA	ANTIOCH
330-341 [c. 12 years]	16	15	20	–	–	15	9	6

Table 3 – Total number of mintmarks used on billon coins (*nummi*) between 330 and 341^[44]

Period	TRIER	LYONS	ARLES	AQUILEIA	ROME	SISCIA	CONSTAN- TINOPOLIS	ANTIOCH	ALEXANDRIA
341-348 [c. 8 years]	9	9	7	8	14	8	4 Nicomedia: 4 Cyzicus: 4	2	4

Table 4 – Total number of mintmarks used on billon coins (*nummi*) between 341 and 348^[45]

[43] Sozomen V. 15; CALLU 1972, p. 271 (translation into French): “The emperor prohibited some foreign Christians, who had accompanied him, from entering the city of Cyzicus, from the apprehension, it appears, that they would, in conjunction with the Christians within the city, excite a sedition on account of religion. There were many persons gathered with them who also held like religious views with the Christians of the city, and who were engaged in woollen manufactures for the state, and were coiners of money. They were numerous, and were divided into two populous classes; they had received permission from preceding emperors to dwell, with their wives and possessions, in Cyzicus, provided that they annually handed over to the public treasury a supply of clothes for the soldiery and of newly coined money.” (translation Ch. Hartranft).

[44] Only mints active during the entire period are included. Basis of data are the mintmarks listed in CARSON, HILL & KENT 1960.

The same exercise can be done for the well-known *Gloria exercitus-nummi* from the period 330-341 (Table 3) and some pattern and regularity (at least in the western mints) is also recognisable. Marks seem to change in periods shorter than one year. We get almost the same images for the years 341-348 (Table 4) but here the eastern mints seem to switch mintmarks at half the speed of their western counterparts. This is probably due to an interruption in the minting limited to the years 346-347 for Antioch *e.g.* [46] If we turn to the reigns of Valentinian I and Valens (Table 5) the pattern is less clear. This was a period of major monetary reforms. From 366 on, gold and silver were struck in a mint that travelled with the court (*comitatus*) of the emperor. Bronze was coined in *monetae publicae*, situated all over the Empire, just as in the preceding decades. [47] Arles and Trier seem to change mint signatures almost on a yearly basis, Lyons almost three times a year and Siscia four times. [48] Callu however believes that these marks of Siscia changed three times a year. [49] In his proposal the end of each period of 4 months is connected to the pay days of the soldiers in January, May and September. This is very well possible but the details on the exact number of marks and the exact length of each period are not certain and it would lead us too far to discuss this in detail here.

Period	TRIER	LYONS	ARLES	AQUILEIA	ROME	SISCIA	'EAST'					ANTIOCH	ALEXANDRA
							CONSTANTIN.	THESSALONICA	HERACLEA	NICOMEDIA	CYZICUS		
364-375 [c. 12 y.]	13	32	14	20	5	45	14	38	c.9	c.6	3	2	1

Table 5 – Total number of mintmarks used on billon coins (nummi) between 364 and 375 [50]

That the rhythm of marking could change more often is also easy to demonstrate when looking at coin issues of a short reign as the one of Magnentius.

[45] Only mints active during the entire period are included. Basis of data are the mintmarks listed in CARSON, HILL & KENT 1960. Some authors (KENT 1981) limit the coining of the so called *Victoriae dd avggq n*-series to the years 347-348 only. This is improbable seen large number of mintmarks;

[46] KENT 1981, pp. 34 and 505 (Antioch).

[47] On the mint administration see HENDY 1985.

[48] On the mint of Siscia see also LÁNYI 1969.

[49] CALLU 1986.

[50] Basis of data are the mintmarks listed in CARSON, HILL & KENT 1960 (period ending before the elevation of Valentinian II).

This Gallic usurper coined *e.g.* in Trier and Lyons between early 350 and July 353, *i.e.* three years and seven months.^[51] For this period 14 different marks of Trier and 29 of Lyons are known. This means that marks changed four times a year in Trier and eight times in Lyons. Why these changed so often remains unknown, but it was a period of civil war, probably needing more frequent coin deliveries with possibly a stricter control of the production.

In some cases then the change of mintmarks was certainly centrally determined. Was this also the case for the volume of production? The example of Trier and Lyons, shown above (Table 2), seems to indicate that an equal number of mint signatures did not imply that the produced quantities were of the same level everywhere.

Though it is dangerous to generalize from examples that were taken at random, two other examples seem to confirm that volume and change of mint marks are not necessarily correlated. The hoard of Bikič Do in Serbia contained 3,887 *nummi* of the *caesarum nostrorum-vota* type of the years 320 (end?)-324 and struck in Siscia (Pannonia).^[52] For these five years six different mintmarks in five workshops were used, so each mark could have been used for ten months (Table 6). Though each *officina* produced an almost equal amount of coins per issue, the quantity of coins produced per mintmark varies considerably. This might indicate that coin production amounts were not fixed a long time in advance and were adapted to the needs of the moment.

Mintmarks 320-324	<i>Officina</i>					Total*
	A	B	Γ	Δ	E	
ASIS 1**	21	17	18	19	24	99
ASIS 2	292	301	272	280	317	1,480
ASIS 3	37	25	25	31	35	153
ASIS 4	9	18	12	16	11	66
ASIS 5	86	68	68	55	72	350
ASIS 6	392	338	325	313	353	1,739

* Coins with unidentified *officinae* are included in the totals.

** All marks have ASIS and with exception of mark 1, all are followed by a symbol: mark 2 with * - 3: crescent with central dot - 4: thunderbolt - 5: palm branch - 6: frontal view of a radiate crown.

Table 6 – Siscia: *nummi* 320-324 from the hoard of Bikič Do (Serbia) minted in the name of different rulers (Constantine, Licinius and sons) (data: BRENOT 1978, p. 68)

In the next table (Table 7), mint signatures and production volume of three different mints are compared for the *Gloria exercitus*-coinage of Constantine.^[53] In Trier the amount of coinage per mark are fairly close to each other (es-

[51] BASTIEN 1983, p. 29-30.

[52] BRENOT 1978, pp. 24 and 68.

[53] D. GRICOURT 1999.

pecially if the number of coins of mintmark 2 and 3 are taken together). The pattern is different at the other western mints with Arles using twice as many marks as Trier and Lyons.

Mintmarks 330-335	ARLES	LYONS	TRIER
Mark 1	1	335	1,043
Mark 2	18	33	1,561
Mark 3	224	206	562
Mark 4	4	533	1,007
Mark 5	67	569	1,136
Mark 6	231	–	–
Mark 7	278	–	–
Mark 8	206	–	–
Mark 9	16	–	–
Mark 10	131	–	–

Table 7 – Gloria exercitus, Urbs Roma and Constantinopolis coins from the hoard of Chapelle-lès-Luxeuil (Haute-Saône, F) (Data: GRICOURT 1999, p. 52-56, 85-90 & 69-79)

These examples of course should be multiplied, to see if long term planning and regularity in production are frequent or rather exceptional as our example seem to suggest.

Levels of Decision: Regional or Local

So far most of the changes we discussed were apparently determined by a central authority. But is it possible to discover through these mintmarks and especially using the supplementary marks (all symbols that go with the name of the mint) decision making on a lower level than that of the *rationionalis* or the *comes sacrarum largitionum*?

Comparing hundreds of mint signatures is a difficult exercise. They are well published however and lists in *RIC* and *LRBC* can be used.^[54] Against all odds similarities between more than one mint are not that frequent at all. Combinations of letters as T-F, or symbols as palm branches, wreaths and e.g. christogram's are sometimes common to groups of mints. To pick out one example: the palm branch between the 'two victories'-coinage of the 340s (*Victoriae dd avggq n*) is found in Trier, Lyons, Arles, Rome, Aquileia, Siscia and Thessalonica^[55] but it is probable that that it formed part of the reverse type. Nine out of ten marks however, are 'singletons' and are used in one mint only.

[54] *RIC* = *Roman Imperial Coinage*; *LRBC* = CARSON, HILL & KENT 1960.

[55] CARSON, HILL & KENT 1960, p. 38-9.

Comparing the lists of mintmarks drawn by Sutherland and covering the coinage of the tetrarchy,^[56] it looks as if the detail of mint marking (the secondary marks) was different for each mint. Letters or symbols in the field (*e.g.*) are rarely present in more than one mint, though exceptions exist. Nonetheless all mints use similar symbols as stars, crescents and letters to differentiate the issues, no pattern can be discerned. This seems to indicate that the *procurator monetae* was responsible for the secondary marks. Though mints as Trier, Lyons, Aquileia and Ticinum were situated in the same prefecture no coordination in the detail of the marks can be detected.^[57] However if we look at the level of the dioceses some similarities become apparent. Lyons and Trier belong to the same diocese. Before Diocletian's reform two *officina* were already transferred from Lyons to Trier and both mints seem to share the same method of marking, though the system was not introduced at the same time. It consists of the letter P followed by the name of the town: PTR, PLG, perhaps for *percussa* (?) *Treveris* (coin struck in Trier etc.).^[58] Understanding the similarities between mints however remains an extremely delicate matter. Why *e.g.* do the numbers V and VI appear in fields of the *nummi* of 301-307 in Siscia in Pannonia and Aquileia in Italia? Both mints were at that time not at all part of the same prefecture or diocese and were even ruled by different tetrarchs.^[59] Parallels that do not seem to correspond with any known political or administrative area could be explained by the existence of superior officers with wider circumscriptions as suggested by Jones.^[60]

During the reign of Constantine I no clear similarities between mints can be discovered either. The years 330-348 are characterised by two major coinages: the *Gloria exercitus-nummi* and the two victories coinage (*Victoriae dd avggq n*) in the West. Judging from the detailed lists in *LRBC* and *RIC* most mints used a different marking system but the western mints seem to develop the use of letters, even monograms in the field.^[61] Only Trier and Arles and Lyons and Siscia on one occasion only, seem to share similar letters. The reasons or the administrative links are impossible to establish.^[62]

From the reign of Valentinian I and Valens, covering the years 364-375, an incredible variety of complicated mint marks is known. The Balkan mints as Siscia and Thessalonica used a bewildering variety of marks up to four a year

[56] SUTHERLAND 1967, p. 73-87.

[57] Data: BARNES 1982 (administrative subdivisions); SUTHERLAND 1967, p. 73-87 (mintmarks AD 294-313).

[58] Transfert of *officinae*: *e.g.* BASTIEN 1980, p.36 (with older references); marking: SUTHERLAND 1967, p. 74-75.

[59] Marks: SUTHERLAND 1967, p. 77 and 80; administration: BARNES 1982, p. 199-200.

[60] JONES 1964, p. 428.

[61] CARSON, HILL & KENT 1960; KENT 1981, 593-594; also MAGAIN 1966.

[62] But see MAGAIN 1966.

(fig. 10). But no similarities in the ‘secondary marks’ can be seen.^[63] In Gaul, Lyons and Arles use the letters OF in the field for *officina*, but not much more about this can be said. Both mints are situated in the southern half of France, but each had its own treasury and they were located in a different diocese (*Galliciarum* and *Viennensis*).^[64] The extraordinary number of marks during the reign of Valentinian I and his colleagues reflects probably the increased production of coins, especially in the Danube region, where military expenditure must have been high due to the invasions of Alamanni, Goths, Sarmatians and Quadi.

Conclusions

It seems clear that mintmarks and the speed of their change were managed by a central authority. This also implies that detailed records were kept and that impressive archives once existed.

Together with the uniformity of the coinage and the homogeneous metal content of the billon coinage over the whole Empire, it illustrates the importance attached to a stable coinage and the awareness of the economic consequences of a system prone to abuse.^[65]

Though much was ordered from above, the actual elaboration of the marks was determined at the level of the mints.

Production quantities and the frequency of the mint signatures did apparently not always relate to each other. That does not mean that production levels were not determined centrally, but the coins do simply not offer a clue to this.

The empire wide reduction of the number of workshops under Julian, seems to suggest that they were not indispensable, but rather inefficient and costly. It is suggested that the minters belonged to a class or guild characterized by privileges that were considered as inappropriate at that time.

And finally: coinage was important and monetary decisions were taken after careful considerations and were generally well planned, although governed by what is generally called ‘bounded rationality’.

^[63] Overview : LÁNYI 1969 (Siscia); CARSON, HILL & KENT 1960 and PEARCE 1951.

^[64] See previous note and for the dioceses: BARNES 1982.

^[65] On the metal content from Diocletian’s reform onwards: COPE e.a. 1997, pp. 8-14 and 36-45 (esp. p. 13 for coins from AD 295-301). See also BOLLARD & BARRANDON 2006.

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PLATE



Fig. 1 – Maximian I, antoninianus, Siscia with HP(κουλι) in the exergue. © Münzen & Medaillen AG Basel, Auction 92, lot 279.



Fig. 2 – Idem but with (Hp)ΚΟΥ(λι). © ACSearch.info: <http://www.acsearch.info/record.html?id=209522>.



Fig. 3 – Idem but with (Hρκον)ΛΙ. © Auktionshaus H.D. Rauch GmbH, Summer Auction 2010, 13/09/2010, lot 1365.



Fig. 4 – Diocletianus, nummus, Alexandria, mintmark XXΓP/ALĒ; © Coin Cabinet of the Royal Library of Belgium.



Fig. 5 – Constantius I, nummus, Rome, mintmark T & club. © CNG, Mail Bid Sale 84, lot 1438 (www.cngcoins.com).



Fig. 6 – Constans, nummus, Lyons, mintmark ST in field, PLG in exergue. © Coin Cabinet of the Royal Library of Belgium.



Fig. 7 – Julianus II, aes 3, Rome, mintmark VRB.ROM.B. © Münzen & Medaillen GmbH (Germany) Auction 15, lot 1109.



Fig. 8 – Julian, aes 1, Lyons, mintmark LVGD OFF P. Private collection.



Fig. 9 – Valens, aes 3, Rome, mintmark R.PRIMA. © Münzen & Medaillen GmbH (Germany) Auction 15 (21/10/2004) lot 1110 (www.acsearch.info).



Fig. 10 – Valentinianus I, aes 3, Siscia, mintmark Q-K/P/BSISCV. © CNG, Electronic Auction 122, lot 391 (www.cngcoins.com).