

‘...SOME OF THEM CRUSHED AND PERISHING UNDER THE WEIGHT OF THE BUILDINGS PRESSING UPON THEM’.¹ THE EARTHQUAKE IN CARNUNTUM - COIN FINDS IN ARCHAEOLOGICAL CONTEXT²

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Abstract: The present study presents the connection between the earthquakes and the Roman coinage from iconography to relief funds from the state. The main part is dedicated to the case of the ‘civilian’ settlement of Carnuntum in Pannonia Superior (nowadays, Petronell-Carnuntum, Austria). The archaeological excavations and the coin finds related to the pre- and post-earthquake phases reveal the way the Romans have reconstruct/repair the edifices after this event at the mid-4th century AD.

Keywords: earthquake, Roman coinage, Carnuntum, archaeological context

‘Whenever an earthquake... takes thousands of innocent lives, a shocked world talks of little else.’

Ann M. Mulcahy

Due to their tragic consequences and the radical changes on the environment, natural disasters had always a strong impact on the contemporary society but also for next generations. From historically and archaeologically points of view the natural disasters were markers for the tragic end of communities or the reborn of life and civilization as well as indices for dating different phases of construction at the sites affected by such calamities.

Concerning the last aspect, among these natural disasters, the earthquakes have a dominant position as was the most frequent one noticed during history and had a very strong impact within contemporary societies.

In this paper, the earthquake is framed in connection with another marker of ancient societies – the coinage, mainly the Roman one.³

In connection to the earthquake, the coinage can be regarded as evidence for the implication/absence of the authorities in re-supplying the areas with coins; the issuing of coins connected to an earthquake; archaeologically, the dating of construction phases before and after the earthquake.

¹ Dio Cassius, 68,25,2.

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³ For the bibliography on the study of earthquakes in Antiquity see SILVA et al. 2005, 1

In AD 114, Asia had to face another earthquake shook right at the moment when the Emperor Trajan happened to be there spending the winter during his Eastern campaign: "While the emperor was tarrying in Antioch a terrible earthquake occurred; many cities suffered injury, but Antioch was the most unfortunate of all..."⁴. Dio Cassius describes in detail what happened with the city during the earthquake.⁵ The emperor, himself, escaped death only because he rushed through a window.⁶ The last escaped was used/seen as a divine sign that the emperor was under gods' protection or at least that is believed to be the message on a reverse of a silver denarius issued in the fall of AD 114.⁷ The reverse depicts Jupiter standing left, holding thunderbolt and sceptre, protecting Trajan holding branch.⁸ (fig. 1)



Fig. 1. Denarius of Trajan depicting Jupiter protecting the emperor. ©acsearch.info

On the other, hand the literary and numismatic evidence indicates that, in fact, the authorities came with relief fund in helping the devastated areas to recover, when possible, after the earthquake.⁹

In AD 22-23, Tiberius issued a sestertius – with the inscription, 'CIVITATIBVS ASIAE RESTITVTIS' (fig.2) that was related to the revival of the cities in Asia that were affected by a powerful earthquake in AD 17¹⁰, as Tacitus recorded: "Twelve famous cities of Asia were shaken by an earthquake at night ... Sardis suffered most severely and attracted most sympathy accordingly. The Emperor promised 10 million



Fig. 2. Sestertius of Tiberius with the inscription 'CIVITATIBVS ASIAE RESTITVTIS'. ©acsearch.info

sestertii and remitted all their liabilities to the senatorial and imperial treasuries for five years".¹¹

The same situation applies in the case of Rhodes in the aftermath of the earthquake that struck the island in somewhere between 229 and 226 BC. Coin supply was increased, among other aids, as it has been demonstrated.¹²

From the numismatic point of view, A.T. Tek proved that the Roman state, actually, did provide a relief fund in the area of the city of *Arykanda* (nowadays, Aykiriçay, Antalya Province, Turkey) shook by the earthquake in AD 240. The scholar demonstrates by the frequency of coin finds, coin denominations, and by the comparison with other cities from Asia Minor, that a relief fund was sent to *Arykanda*, and, thus, the city was rebuilt.¹³ (figs. 3-5)

The connections between coin finds and earthquake are more numerous when the numismatic documentation serves for dating of pre- or post-earthquake phases.

The coin evidence was used to date – with a 10-15 years range of accuracy – the earthquakes that shook Sicily in Antiquity between 400 BC and AD 600.¹⁴ Where it was possible, the coins served to date *ante quem* and *post quem* building phases.¹⁵

In the case of the city of *Antioch ad Hippum* (nowadays, Hippos - near the Sea of Galilee, Israel), the coins were used

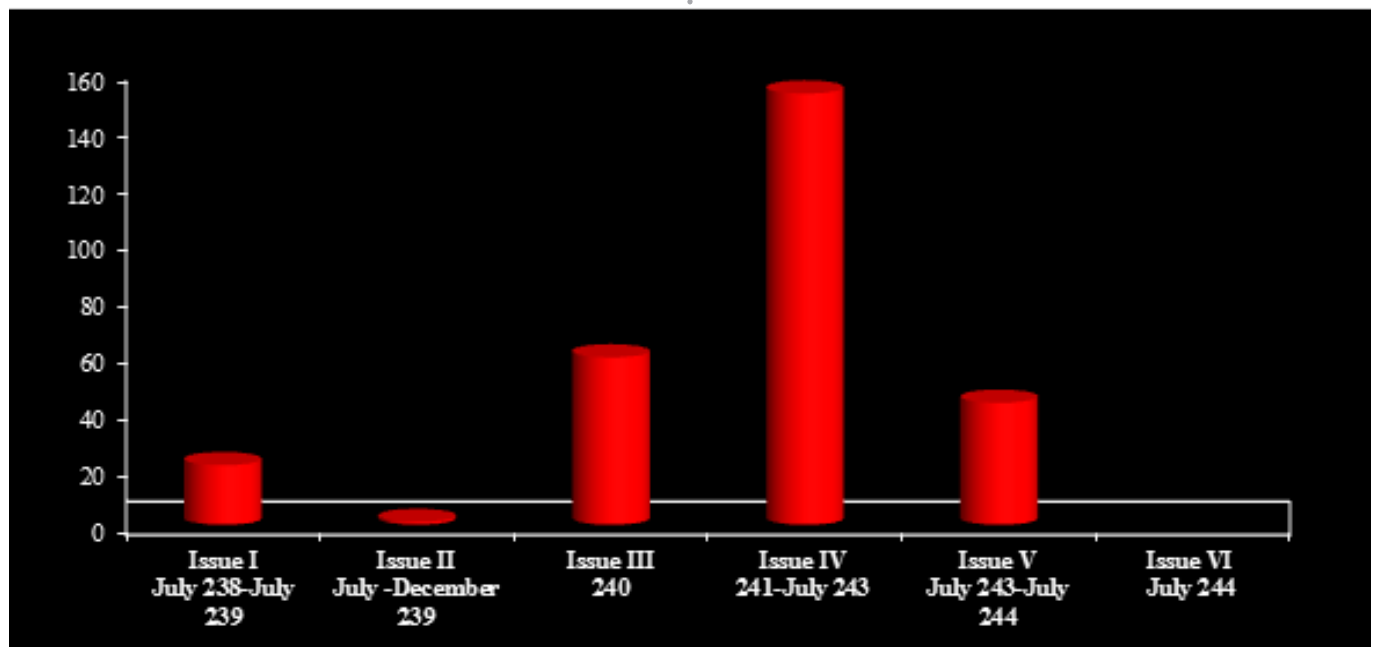


Fig. 3. Arykanda. Coin supply from Rome under Gordian III (based on TEK 2005, 957, tab. 4)

⁴ Dio Cassius, 68,24,1.
⁵ Dio Cassius, 68,24-25.
⁶ Dio Cassius, 68,25,5.
⁷ http://www.forumancientcoins.com/moonmoth/reverse_quake.html.
⁸ RIC II, no. 298; MIR 14, 491.
⁹ HIGGINS 2009, 103-107.
¹⁰ SEAR - http://www.davidrsear.com/academy/natural_disasters.html.

¹¹ Tacitus, *Annales*, 24,7.
¹² ASHTON 1986.
¹³ TEK 2005, 951-953.
¹⁴ BOTTARI et al. 2009.
¹⁵ BOTTARI et al. 2009, 161.

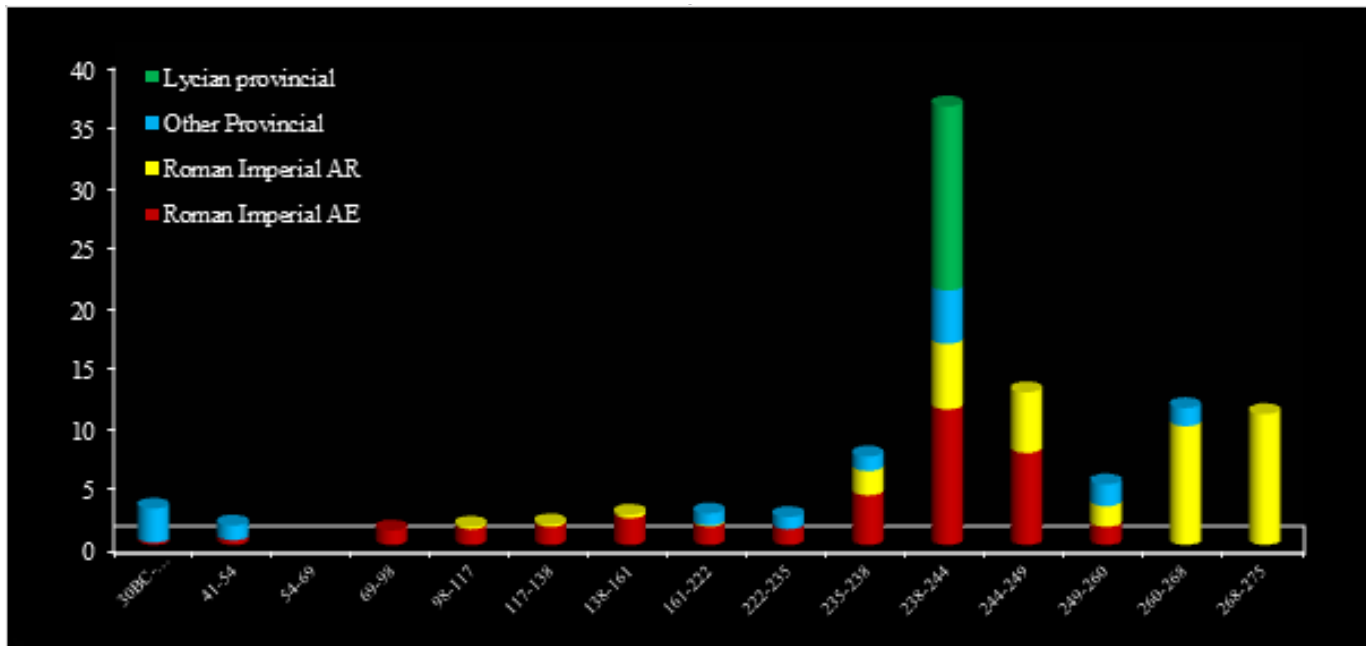


Fig. 4. Arykanda. Coin-finds by denomination (based on TEK 2005, 956, tab. 2)

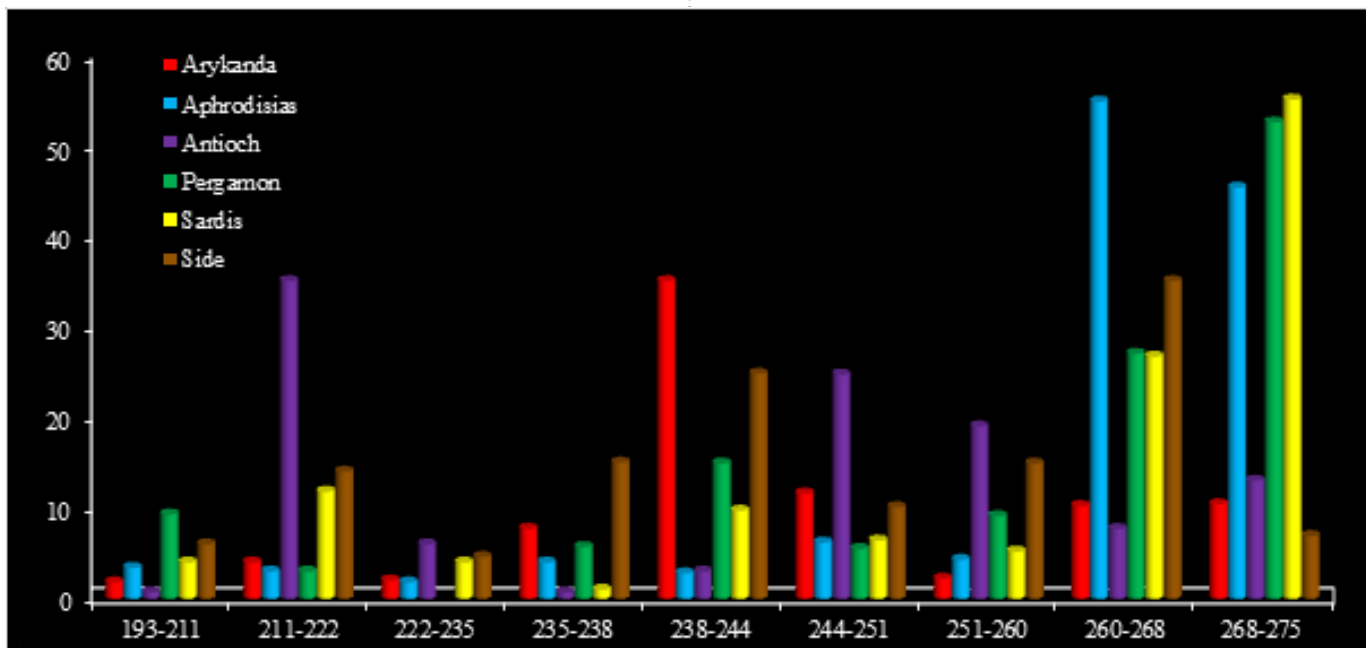


Fig. 5. Comparative graph of coin supply in Asia Minor (based on TEK 2005, 956, tab. 3)

by the archaeologists to Date the powerful earthquake from AD 363. The latest coins has been considered as dated in AD 362.¹⁶ The coin evidence also emphasized the consequences of the same earthquake upon a Roman mansion from the Jerusalem's City of David.¹⁷

The earthquake of AD 363 was also documented by the coin evidence at *Petra* (nowadays, Al-Batra, southern Jordan). The coins served here as a *terminus ante quem*, as the coins stopped with Constantius II (AD 348-361).¹⁸ The same situation was recorded for the coin evidence at El-Lejjûn

(nowadays, Kibbutz Meggido, Israel).¹⁹

In AD 395, the city of *Baelo Claudia* (nowadays, Bolonia – southern Spain) was shook by a powerful earthquake that led to the destruction and abandonment of the settlement. The evidence for this episode comes from the absence of coins after AD 395.²⁰

The present study brings to attention a case where the chance to find the coins in well-delimited stratigraphic layers led to the understanding of archaeological context at the time when the earthquake took place, as well as in the aftermath.

The site under study is the 'civilian' settlement of Carnuntum (nowadays, Petronell-Carnuntum, Austria)

¹⁶ <http://www.archaeology.org/news/2560-141001-israel-hippos-earthquake-pendant>. N.B.: quite interesting such a precise dating for a coin issued in that period.

¹⁷ <http://www.israelnationalnews.com/News/News.aspx/132944>.

¹⁸ <http://www.amnh.org/exhibitions/past-exhibitions/petra/the-great-earthquake>.

¹⁹ PARKER 2006, 443.

²⁰ SILVA et al. 2005, 8.

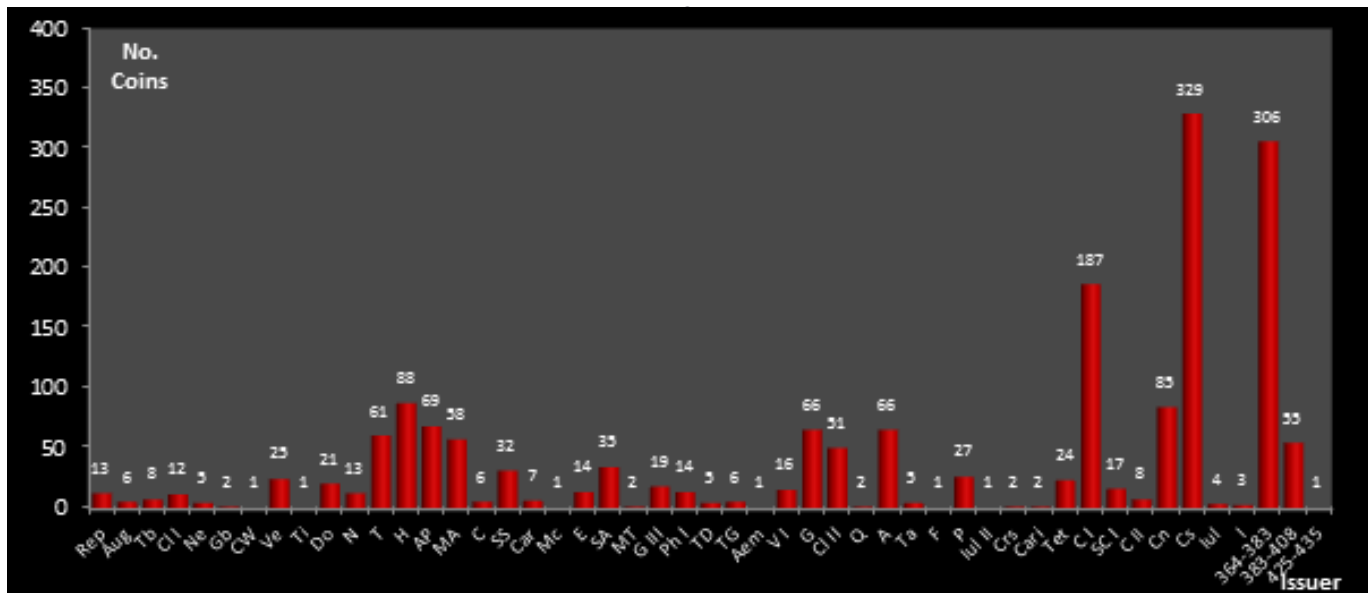


Fig. 6. Carnuntum. “Zivilstadt” – no. of coin finds the quarter of the “civilian” town Carnuntum (GÄZDAC/HUMER 2013, 150, fig. 22)

(Map 2). The site was the most important Roman settlement of the province of Pannonia Superior (Map 1).²¹ Based on previous archaeological investigations – legionary camp, the *canabae legionis*, and the surrounding civilian settlement – it was stated that an earthquake struck Carnuntum.²² Similar archaeological layers consisting of toppled walls were also discovered at two of the *villae rusticate* in the vicinity of Carnuntum - Bruckneudorf (10 km south of Carnuntum)²³ and Stupava (15 km north-east of Carnuntum, Slovakia).²⁴ Combining some coin finds with epigraphic, archaeological evidence, and logic-deducting reasoning (e.g. the erecting of the triumphal monument of ‘Heidentor’ in Carnuntum by the end of the 350s, the imperial visit of Valentinianus I in Carnuntum in AD 375) it established that the earthquake shook Carnuntum at the middle of the 4th century AD.²⁵ The archaeological evidence and the dating of the event were also confirmed by the seismologic measurements and scenario.²⁶

As it has been previously demonstrated, in the case of the city of *Arykanda*, the overall graph of the coin evidence proved a strong increase for the coins in the reign of Gordian III, when the earthquake struck the city in AD 240.

At the first sight, one can interpret the similar graph of numismatic evidence for the site of ‘civilian’ town of Carnuntum – no. of coins and the finds/period (figs. 6-7) – as a similar pattern for Carnuntum after the earthquake at the mid-4th century AD. However, it is difficult to consider the high index for the period of AD 337-363 as a marker for a possible implication of the state in sending a relief fund in the earthquake aftermath or it is a consequence of the abundant quantity of a debased coinage produced after the reform of AD 348.²⁷

Therefore, in order to find out what was the story of

²¹ GÄZDAC/HUMER/POLLHAMER 2014, 15-23
²² KANDLER 1989, 313-336; DECKER/GANGL/KANDLER 2006, 479-487; KANDKER/DECKLER/GANGL 2007, 116-132.
²³ HEILING 1995, 686.
²⁴ STANIĆ/TURČAN 2001, 209-213, fig. 9.
²⁵ DECKER/GANGL/KANDLER 2006, 487.
²⁶ DECKER/GANGL/KANDLER 2006, 487-494.
²⁷ HARL 1996, 167-169.

Carnuntum in the aftermath of the earthquake we turned to the coin finds and their archaeological context in a residential district of the civilian settlement. (Map 2)

The excavations from the 1940s-1950s had a strongly negative impact on the site and the future research by destroying many layers in order to simply unveil the walls. However, the systematic excavations which restarted in the 1990s managed – where possible – to identify undisturbed archaeological contexts. This aspect has allowed some interesting observations regarding the spectrum of coin finds and the documentation of the earthquake in this part of the site of Carnuntum.²⁸

In the conventionally named dwelling ‘House I’ (Map 3), the interpretation of archaeological contexts indicate that the layer connected with the destruction caused by earthquake contains three coins all issued in the period 260-293. The layers dated in the aftermath of the earthquake revealed 12 coins: 2 pieces issued in the period 348-361; 7 – AD 348-363; 3 – AD 364-378.

In the case of ‘House II’ (Map 3), the excavations from 1940s-1950s have strongly affected the stratigraphy of this spot. Therefore, the archaeologists could identify only few datable layers and artefacts. In the post-earthquake layer used for levelling the place and rebuilding of the house were found three coins issued in the 2nd century AD while one coin issued in the period of AD 306-348 was found in an upper layer.

At ‘House V’ (Map 3), the pre-earthquake layers documented a series of 9 coins: 1 from 2nd century, 7 from the 3rd century, and 1 minted in the period of AD 348-363. The layers attributed to the post-earthquake phase present 3 coins issued in the period of AD 260-293 and 1 from the period of AD 348-363.

At the so-called ‘*Valetudinarium*’/*tabernae*’ (Map 3), in the filling use to rearrange the place after the earthquake, one denarius of Septimius Severus was discovered.

At the spots where either the old excavations did not

²⁸ The entire numismatic database is provided from GÄZDAC/HUMER 2013.

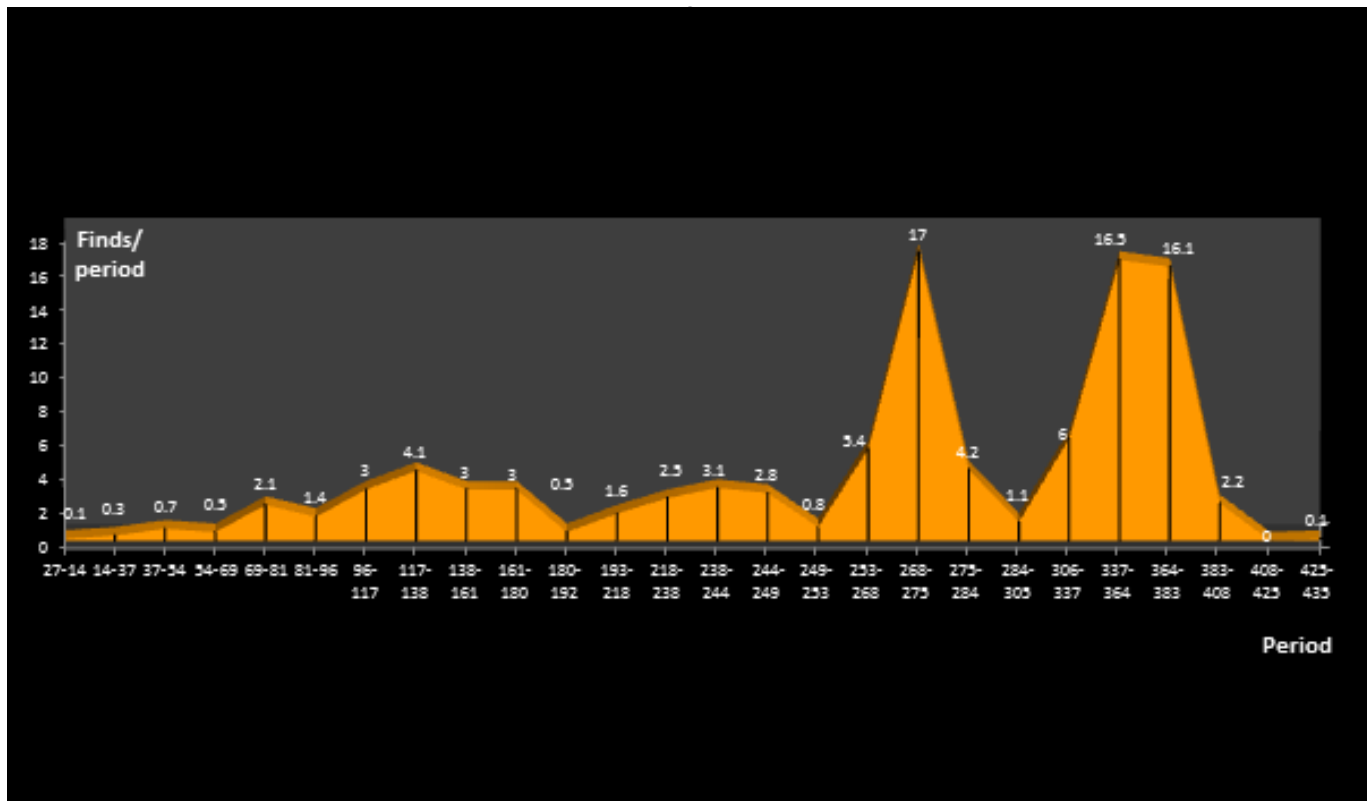


Fig. 7. Carnuntum. “Zivilstadt” – coin finds/period from the quarter of the “civilian” town Carnuntum (GÄZDAC/HUMER 2013, 151, fig. 23)

cause that much damage or the recent excavations unveiled untouched areas the numismatic evidence is from far more useful.

At the ‘villa urbana’²⁹ (Map 3), the pre-earthquake phases provide 36 coins (25 from the 2nd century, 9 of the 1st century AD, 2 from 1st century BC). The layers dated at the time of earthquake reveal 5 coins minted in the period of AD 306-363. The reconstruction of the building after the event is clearly marked by the highest number of coins for this spot. A sum of 137 coins were discovered in the post-earthquake layers. It must be mentioned here that 23 of them were minted from the 1st century AD up to AD 293 while 22 were minted between AD 293 and AD 348.

Another excavated spot from the place known as ‘Tiergarten – the animal garden’ (Map 2) provided 47 coins that was possible to be placed on datable archaeological contexts. The pre-earthquake phases come with 19 coins from which 5 were minted in the period of AD 306-348. Twenty-eight coins were associated with post-earthquake layers. Eight of them were minted in the 2nd and 3rd centuries AD.

Based on these observations, it can be concluded that the new excavations in the residential quarter of the civilian settlement of Carnuntum reveal the same pattern. After the earthquake at the mid-4th century AD, it was a common feature to use the debris from older places to level the spot the places in order to rebuild/repair the edifices. Thus, if an archaeologist excavates a 4th century archaeological context in Carnuntum, beneath the first floor of a post-earthquake construction he can easily expect to discover layers containing artefacts from the 2nd and 3rd centuries AD.

²⁹ HUMER/MASCHEK 2007, 45-55.

An excellent argument on this line is the case of the recent discovered silver hoard from Carnuntum at the findspot ‘Fischteisch = Fishpond’. One hundred and four Roman coins were retrieved from the south-west corner tower of the city wall that was affected by the earthquake (Map 2) (fig. 8). The hoard consist of coins from Mark



Fig. 8. Carnuntum ;Zivilstadt’. The SW tower with the traces of the 4th c. earthquake.

Anthony to Caracalla (AD 211-217).³⁰ The layers in which the coins were discovered consist all of sand, pebble stones and numerous residual material, including a large variety of pottery shards. According to archaeologists, these layers were brought in to serve as a substructure for the walking level in the south-west tower in the post-earthquake phase.³¹ (fig. 9).

Indirectly, another argument on this direction can be considered the construction of the triumphal arch from

³⁰ GÄZDAC 2014, 81-96.

³¹ GÄZDAC 2014, 87.



Fig. 9. The hoard in a virtual location of the level where it was found.

Carnuntum – ‘Heidentor – Heathens’ Gate’. Architectural pieces were reused from other buildings that were permanently damaged by the earthquake and never rebuilt.³²

Apart from this aspect other conclusions can be pointed out.

The large number of coin finds issued in the period of earthquake and immediately after, AD 348-363, cannot be precisely attributed, at the moment, to a certain imperial policy as a relief fund.

The archaeological context is the most important aspect that brings more information on what actually happened before and after the earthquake using the coin evidence: the removing of the earthquake debris and levelling the ground by bringing earth from other places containing earlier coins.

Unfortunately, the spots affected by the early excavations of the 1950s are permanently compromised concerning the collection of any reliable information on the stratigraphy before and after the earthquake in “Zivilstadt” Carnuntum.

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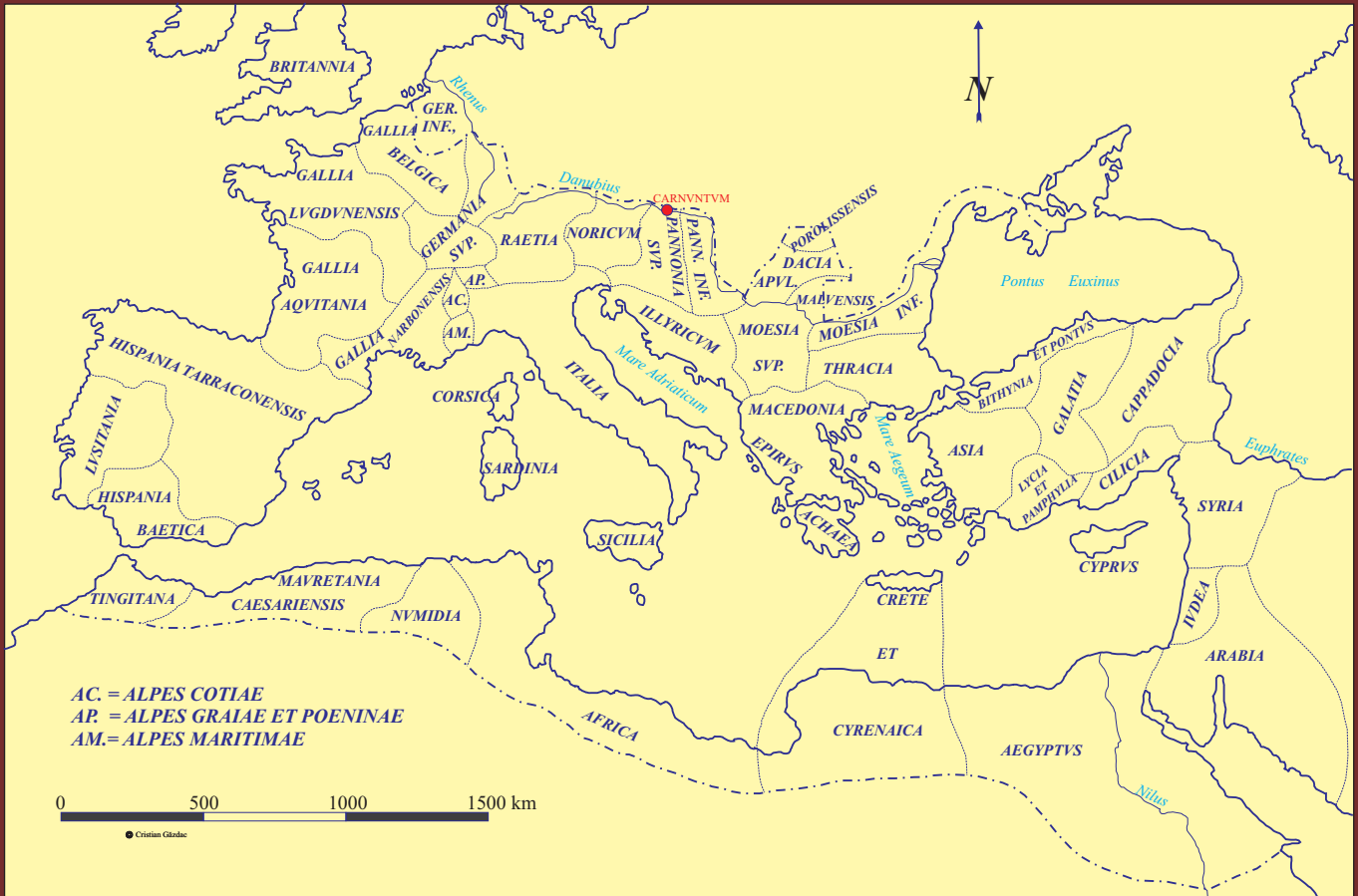
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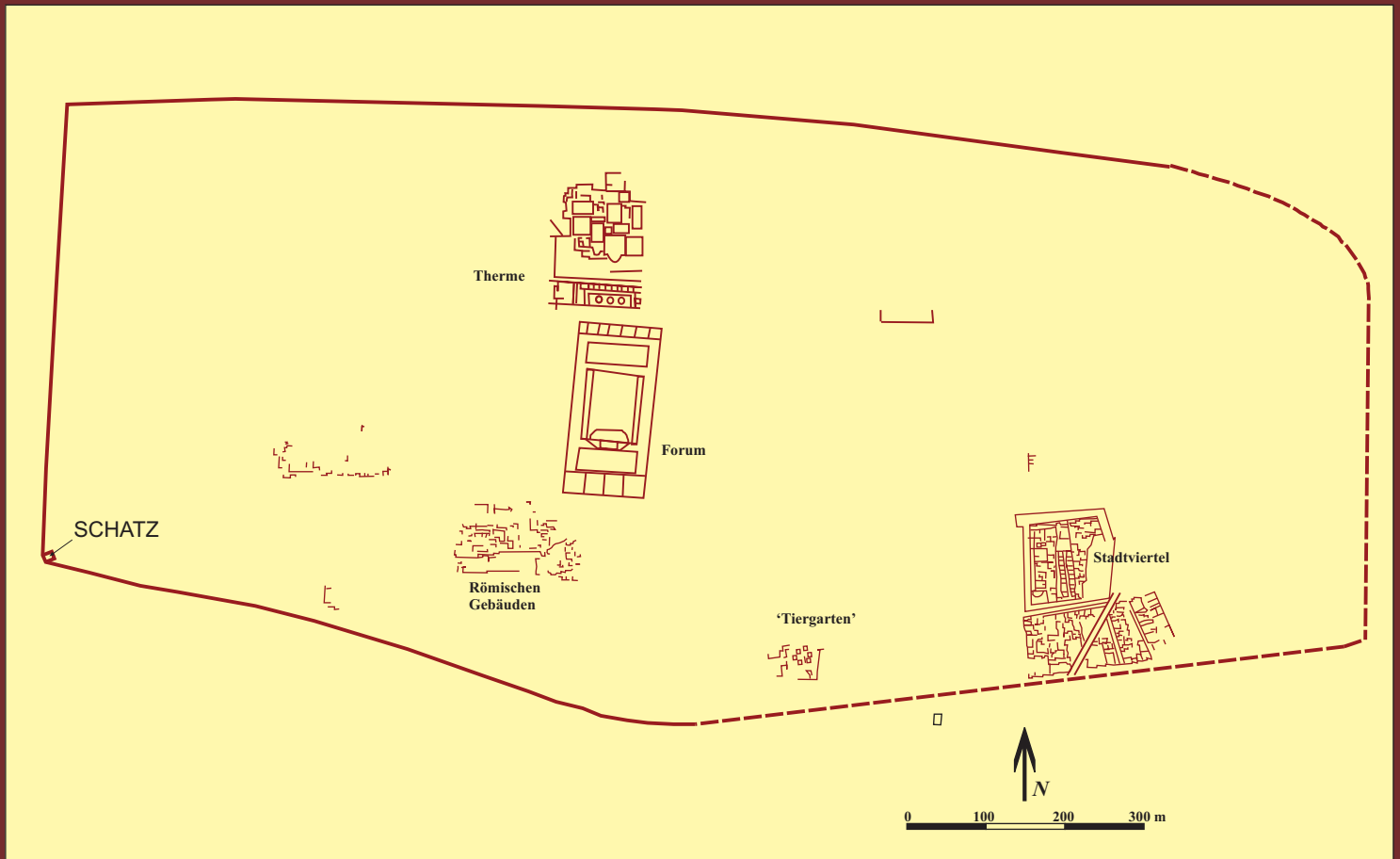
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³² DECKER/GANGL/KANDLER 2006, 483.



Map 1. The Roman Empire, mid-2nd century AD, pointing out the location of *Carnuntum*



Map 2. The plan of the 'civilian' town *Carnuntum*



Map 3. The plan of the residential quarter in the 'civilian' town *Carnuntum*