



Some insight into “bronze quadrigati”: a multi-analytical approach

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Abstract

One of the more obscure areas of Roman Republican early coinage are debased quadrigati, which traditionally are deemed to represent the last stage of this coin type. Starting from a pre-screening, based on low specific gravity samples, we first performed neutron diffraction analyses on a larger sample, which allowed us to single out the more debased series. Subsequently, we focused on those series and applied various additional physical investigations on 18 specimens. The focus of this paper is 17 samples displaying very low silver content. They all belong to a very particular group, refereed as “Apulian” quadrigati in previous literature. They are selected for their numismatic differences and to put in evidence the relevant details of their silver quality, which ranges from “apparently good” to “plain bronze.” In this work, we combine rigorous analytical investigations like X-ray fluorescence (both ordinary and micro-), scanning electron microscope, and neutron diffraction to our accurate numismatic classification of the specimens, leading to a clear correlation between series and debasement. This work aims in particular to gain better insights into these mysterious “silver” emissions, bringing new results that can disclose unknown financial and political facts pertaining to the Second Punic War.

Keywords Ancient coins · Debased quadrigati · Silver surface enrichment · Neutron diffraction · X-ray fluorescence · Scanning electron microscope

Numismatic framework

In this paper, we focus on quadrigati, a pre-denarius silver denomination that was worth two drachms (ca. 6.5 g), produced by Rome at the very beginning of the II Punic War to pay War costs. They were produced at first in Sicily, and in Campania in a later stage; a very small quantity was also produced in Spain, probably in Tarraco, that was the main Roman base for the military operations in Iberia. The production of this denomination ended after the watershed battle of Cannae, in favor of the denarius (Debernardi and Legrand 2014, Walthall 2017, Debernardi and Lippi in

preparation). Indeed, current scholarship identifies the root for the denarius birth (Thomsen 1961) in the highly debased quadrigati investigated in this paper. Despite the importance of such a belief, no detailed and systematic study is available so far.

It is relevant to this work to introduce the kinds of adulteration in silver coins of the Roman Republic. There is little doubt that plating is the most important one. A never-ending debate about private or “official” origin of plated coins proves the difficulties of reaching a final statement about this phenomenon (Crawford 1968; Debernardi 2010), and a similar one might arise for the quadrigati considered here. The name of Apulian quadrigati originates from the fact they are almost exclusively found in Apulia, and are at present mostly located in Taranto and Bari museums. Michael Crawford himself defined one of the three hoards (RRCH65) of quadrigati in Taranto Museum as “75 plated quadrigati with legend in relief in linear frame. The hoard is presumably a forger’s stock” (Crawford 1969), while the other two are presented in Debernardi (2016).

Therefore, we need to distinguish clearly between plated and debased coins, which in some circumstances appear very

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