The Mysterious Spheres on Greek and Roman Ancient Coins

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Cover: Photo of blue planet and starry sky by NASA/ESA and G. Bacon (STScI); 15 coins from CNG; others from DOC (*globus cruciger*; Phoenix), CoinArchives (Titus with Vespasian), and American Numismatic Society (Augustus's Victory seated on a sphere).

To Inga, my intelligent and lovely wife, who kindly helped me with my book for several years.

Cover Page: Fourteen of the Imperial Roman coins depict individuals most commonly associated with a sphere: Victory (primarily the small Victoriola), the Emperor, Sol, Jupiter, Providentia, Roma, Captives, Fortuna and Phoenix. The Roman coin of a solitary large celestial sphere with a Zodiac Belt was not commonly issued. The two Greek coin reverses on the bottom east side of the planet are among the earliest coins that show a sphere. Urania, the goddess of astronomy, sits on a celestial sphere (300 BC, Uranopolis, Macedonia), while the philosopher Anaxagoras sits on a globe (2nd-1st cent. BC, Clazomenai, Ionia). Even though the Greeks created the first astronomical sphere theories and images, they rarely showed them on their coins. It was the Romans who showed spheres on millions of their minted coins. Most of the coins shown here are slightly enlarged.

The three Imperial Roman coins on the blue planet each depict a terrestrial globe (the global Earth). Sol holds a globe, treads war captives and demonstrates Aurelian's recovery of the Roman world. Emperor Caracalla holds a globe model surmounted by a small Victoriola who offers him a crown and a captive sits below. Deceased Emperor Vespasian presents a terrestrial globe model to his son Titus, indicating that he is now in control of the Roman World.

The two Roman coins directly above the blue planet show Victory standing on a terrestrial globe (?). Although the Classic-Hellenistic Greeks were fond of showing Nike (Victory) on their coins, she was then never associated with a sphere. It was Octavian (31 BC) who was the first to issue these coins with Victory standing on a globe, most likely representing his recent victories in the Roman World. A small Victoriola on a model globe became extremely popular on later Roman coins.

Many of the twelve Roman coins set in the starry sky may portray a celestial sphere (the universe), if identified by a slanted Zodiac Belt, an Ecliptic, an equinoctial cross interspersed with stars, or a grid design. However, some of the designs are controversial and may represent the 'Roman World'. An example may be the Phoenix standing on a traditional celestial sphere with an X design filled with stars. But to the right may be the Sun, and would the Sun's location be 'beyond the universe'? As an alternative, could the four sections in the X design here represent the four seasons of the Earth? Also mysterious, the Jupiter coin near the center shows a Sun and Moon Crescent behind him, so perhaps he holds the global Earth?

The *BEATA TRANQVILLITAS* coin shown on the right side is perhaps the sphere reverse type issued most frequently (974 individual types?). Some numismatists interpret that the 3 stars above the sphere on the altar are meant to symbolize Emperor Constantine and his two sons. But another interpretation suggests Constantine is defending the Christian Trinity, symbolized by 3 stars, against the Arianism revolt that disputed the Christian Trinity concept.

The coin in the upper right side shows a *globus cruciger* (cross on globe) being held by Emperors Anthemius and Leo I (AD 467) and underneath is the Christian *chi-rho* symbol. The top half of the sphere may represent the universe controlled by the Christian God, and the bottom half held by the Emperors symbolizes their Roman World. This was the last new sphere design of the Western Roman Empire (first issued about AD 383). But the popularity of sphere images on Roman Imperial coins may have stimulated later sphere images to be extended far beyond coins: *globus crucigers* held by Christian figures and kings; armillary spheres for astronomers; Earth globe images in drawings and models obtained by average people; and sphere images in art paintings and sculptures portrayed in the major architectures of a city (see Epilogue).

Contents

Chapter 1

INTRODUCTION

Previous substantial research on Imperial Roman coin 'sphere images' was done in books or articles by D. Alten and C.F. Zschucke (2004, written in German), P. Arnaud (1984, in French), A. Schlachter (1927, in German), G. Tabarroni (1965, in Italian), E. Stevenson (1921, in English), as well as several short articles by other researchers (see Bibliography). However, the coin database used in this book is much larger than those of any of these previous researchers. My new methods, including statistical analyses (quantities and percentages), were applied intensively to research the sphere images on Roman coin reverses (and only a few early Greek coins with sphere reverses) and produced a variety of new findings. Why focus on both quantities and percentages? Quantity difference is quite clear when a long-term emperor (Hadrian) issues 132 different sphere reverse coin types, compared to a short-term emperor (Jovinus) who issues only 17. However, their percentages reflect the intensity of the Emperor's interest in depicting spheres on his coin reverses: Hadrian's is 6.8% (132 sphere types/1930 total coin types) and Jovinus' is 85% (17/20)!

The major coin catalogues used here to search for ancient coin sphere images were David Sear's *Greek Coins and Their Values* vols. 1, 2 (7779 numbered coin types examined) and Sear's *Greek Imperial Coins And Their Values* vols. 1, 2 (6034 coin types); Michael Crawford's *Roman Republican Coinage* (abbreviated as *RRC*, vols. 1, 2 with 641 coin types); the University of Oxford's *Roman Provincial Coinage Online* vols. III-IV (with 21,011 coin types), and *Roman Imperial Coinage* (abbreviated as RIC, 10 vols. with 40,538 coin types). Several other catalogues were used, see Bibliography. A total of 6689 ancient Roman and Greek coin sphere types were identified and used for many quantitative analyses in this book.

The catalogues often describe most of the identified ancient spheres as 'globes'. Cataloguers may intentionally apply this neutral description allowing the reader to interpret it as either a terrestrial globe (Earth) or a celestial globe (the starry universe). But in today's 'globalisation culture' many readers automatically interpret the word *globe* to mean the global Earth and this may prevent their recognition of celestial spheres (see p. 37). It may be informative, therefore, to identify the sphere images as celestial or terrestrial spheres, or the Earth globe, or an armillary sphere.

Why is it important to study spheres on ancient Roman coins? Although the coin designs are relatively small, most coins are dated by a year (or two) and show a large variety of reverse sphere designs, and their associations. So they provide much historical information about Roman culture. Consider that the majority of ancient Roman books (Roman 'books' were not paper, but papyrus scrolls, codices, and wooden wax tablets), sculptures and architecture are now gone. Although many Roman coins are also gone, it is important to understand that a single Roman coin-die may have been struck to create 10,000 to 20,000 coins per die.[1] Mike

[1] W.W. Esty (1986: 188-189) writes that modern experiments have been conducted in which ancient dies have been made and thousands of 'coins' struck from them; but it does not reveal the exact number of Roman coins that were struck.

Markowitz (COINWeek 2017) correctly comments that there is endless debate as to how many ancient coins were actually struck. But even if the majority of Roman coins struck by a single individual coin-die are gone, there still remain a few of these duplicate coins that preserve the individual coin-die design. In other words, we know a very large number of the individual Roman coin designs that were made. Therefore, it is interesting to see a small sphere image struck on many Roman coins that ancient coin users often interpreted as either a symbol of the Earth – the Centre of the Universe – or the gigantic celestial sphere that encircled the entire universe. And Imperial Roman coins circulated through most of its provinces, and even as far as India, China and Arabia, since Pliny tells us that luxuries from these areas cost the Roman Empire 100 million sestertii every year (Christopher Howgego 1992: 5).

Many ancient Roman coins portray spheres positioned in a complex variety of scenes: 1) A solitary Emperor (or Sol, Jupiter, Roma, Constantinople) holding a small sphere model (terrestrial, celestial, or armillary sphere), or symbolically receiving a globe from a god or deified previous Emperor; 2) A large Victory or small Victoriola standing, alighting or ascending over a globe; 3) Personifications such as Providentia pointing to a sphere with a wand, or Fortuna holding a rudder on a sphere (a complete list is on pp. 200-202). Less frequent images include individuals who are sitting on or 'laying near' a sphere, such as Victory, Italia, Tellus, Capricorn, Urania and Domitian's dead child. When the sphere is sometimes shown without an individual, it is set on an altar, a column or post and is sometimes flanked by cornucopia ('Horn of Plenty'). Most of these spheres represent either a celestial sphere (the starry universe) or a terrestrial sphere (the global Earth).[2] West Roman Emperors controlled the capital of Rome and the Roman Empire as both *pontifex maximus*, the chief priest, in ritual communication with the divine heavens, as well as the *imperator* in charge of the Roman legions responsible for dominating the Roman World. So the Emperor used the compelling power symbols of coin sphere images to send propaganda messages to soldiers, aristocrats, citizens, slaves, and residents of provinces.

Which Roman Emperors were most involved in depicting the sphere symbol? They can be identified through the list of Emperor's sphere reverses (Figure 84, pp. 189-195) that shows the prevalence of spheres on the reverses of separate coin types issued during an Emperor's reign.

But the mysterious coin images of many sphere designs and scenarios trigger many questions. Could the Roman public always differentiate the celestial sphere from the terrestrial one? Did all Emperors want to show they controlled the entire global Earth? Was the Emperor showing his divine contact with the heavenly celestial sphere and its deities? Could the Emperor have been emphasising the celestial sphere to imply the importance of Stoic rationalism or astrological prediction (by viewing the Zodiac belt for its horoscope-related constellations and planets)? Did the uneducated Roman public who received these coins understand most of the specific concepts associated with the Emperor's sphere symbols?

These questions may be unanswerable to their full extent, as the symbolism of the spheres had multi-layered associations with philosophy, religion and astrology, and political or military propaganda that are profound, or even secretive. This makes many sphere scenarios puzzling, so the direction of this book is to 'de-mystify' as much as possible the complexity of sphere

[2] Roman coin iconography differentiates other astronomical objects, such as the Moon (a crescent) and the Sun or individual Star (each radiate), and they are usually not shown as a three-dimensional sphere, but as a disk.

symbolism and propaganda on Roman coinage. Several times I will state that a coin sphere design (or a statue with a sphere) is 'controversial' or disputed, and hopefully this will inspire further research by numismatists, historians and archaeoastronomers to find the correct answer. Although even as late as the 19th century, W. Newton in his book *The Use of the Globes* (1854: 99) states that it was customary to draw the ecliptic circle (the yearly Sun) around the terrestrial globe, but this was improper as the ecliptic line appertains exclusively to the heavens, not the Earth. But Harvard lecturer Sara Schechner (HASTRO-L Jan. 3, 2018) agrees that the ecliptic was a standard feature on both terrestrial and celestial globes, because it was useful for solving a number of astronomical problems with the globes.

But when did astronomical/astrological spheres start on Greek and Roman art? Most astronomers agree that some early astronomy began in Mesopotamia and Egypt in about the 3rd millennium BC. But the art of Mesopotamia and Egypt rarely showed three-dimensional astronomical/astrological sphere images. However, they did often show the Sun as a two-dimensional disc and it was used as a very important symbol or personification of the Sun-god. Chapter 2 therefore will briefly describe a few of these Sun disks on their art (and a few Greek Sun images).

It was the ancient Greeks who started astronomical sphere theories and their images. Chapter 3 provides background on the creation of Greek concepts of celestial and terrestrial spheres, and Chapter 6 describes how they were culturally diffused, along with ancient astrology, into much of the Late Republican Roman upper class. This helps explain when images of spheres began to be used on Roman coins.

Astonishingly, ancient Greeks in their late Archaic, Classical and Hellenistic periods very rarely used sphere images on their coins. The 'globes' that were most often shown on early Greek coins, or ancient Greek art, were actually balls or disks of athletes, stones, apples, pomegranates, Sun disks and Moons. This is shown and explained in Chapter 4. But when the Greeks continued to issue coins, as a Roman-controlled Greek Province, they did slightly increase their coin usage of astronomical spheres as described in Chapter 9.

Other objectives of this book are: 1) To describe several Latin terms for 'universe' and 'world' and their scarce appearance on legends of Roman coin reverses with sphere images; 2) To briefly summarise prior research on sphere symbolism on Roman coins; 3) To chronologically compare the frequency of the winged Victory versus Sphere images on Roman coin reverses in order to identify when they served as the prominent symbols of dominant power; 4) To identify and chart the major 'ages of spheres' that appear during the Imperial period, when spheres on Roman coin reverses became extremely popular and millions of such coins were struck; 5) To describe important sphere reverse types issued by many Emperors, and their relevant astrological/philosophical beliefs, prior to the 'ages of spheres'; and 6) To include a few Greco-Roman and Imperial Roman statues, mosaics, reliefs and other art that clearly display a 'mysterious sphere'. Some of the data and findings in this book may appeal to globe researchers, numismatists, coin collectors and to scholars of ancient Rome, astronomy, astrology, archaeology, geography, and cartography.

This monograph is not a standard numismatic catalogue of Roman coin sphere types. Rather, as a professional archaeologist, I used a 'counting' approach to quantify in Figure 84 the

number of separate types with spheres portrayed on the reverses of ancient Roman coins,[3] and then with histograms I searched for chronological, political and cultural trends associated with historical periods when sphere reverses were popular. For more information on this methodology, and why spheres on obverses are not included in this study, see Chapter 12.

The two volume Crawford catalogue for *RRC* (1974) and the ten-volume catalogue of *RIC* (1926-1994) provide the database for Figure 84. Each volume is traditionally considered to provide one of the largest and most comprehensive databases for their particular numismatic periods.[4] Consider the quantitative approach in this monograph as an experimental method, which could be used by future researchers, to separately identify the chronological trends of deities and individuals such as Sol, Jupiter, Providentia, Roma, Fortuna, Prince, Salus, Aeternitas, Soldier, Hercules, Mars, Securitas, etc. A later comparison of the quantity and percentages of all these images would reveal which were most important in Roman coin reverses during certain reigns and eras.

Most of the coin images shown in this book are from the excellent websites of the Classical Numismatic Group (abbreviated CNG), Wildwinds.com, American Numismatic Society, and Dirty Old Coins. Many of the coin images in this book are larger than their actual size and this is my attempt to provide a better view of the small spheres shown on the coins.

[3] Quantitative and empirical analysis of Roman coin data is currently being utilised by other scientists: P. Turchin and W. Scheidel (2009) statistically analysed Roman coin hoards to project population dynamics before and after 100 BC; Carlos F. Noreña (2011) quantitatively tested various ideas on coins in his book Imperial Ideals in the Roman West.

[4] A few of the volumes are now partially outdated, as indicated by more recent catalogues and hoard descriptions, e.g. R. Carson, P. Hill and J. Kent 1960; D. Sear 2000, 2002, 2005; C.E. King 2007; I. Carradice and T.V. Buttrey 2007. But with respect to the large database analysed in this book (a total of about 41,000 numbered-lettered separate coin types were reviewed, with each separate type representing thousands, or tens of thousands, of coins that were struck), I do not think that the principal trends described in this study would significantly change with updated data.