The Renewal of Ancient Numismatics in the Digital Era
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The renewal of ancient numismatics in the digital era

Caroline Carrier et Ludovic Trommenschlager
The web portals and websites include coins struck throughout Antiquity, between the 7th century BC when the first ones were struck in Lydia (Turkey), to the 5th century AD. This includes territories located all around the Mediterranean from Spain to India.
Today, there are around 20 open access portals allowing researchers to gather thousands of coins held in museums around the world.

Coins are a very important archaeological and historical source:
- they are a testimony of the representation of states
- they are a source about the economy and about politics
- for the Greek world at least, it’s also often the only source we have covering the entire political history of a state
- It’s a precious archaeological artefact to date contexts
=> The study of ancient coins matters for all historians and archaeologists
The renewal of ancient numismatics in the digital era

I. The main websites in Greek, Roman and Celtic numismatics
   II. Their contributions to the discipline and beyond
   III. The main obstacles to this kind of project
Nomisma.org is an international, collaborative project to provide stable digital representations of numismatic concepts according to the principles of Linked Open Data. The website has been created in 2010 with the open source software Numishare created by Ethan Gruber. The project was led by Andrew Meadows and Sebastian Heath from the American Numismatic Society in New York.
Browse Nomisma IDs

Keyword

Concept Type

Field of Numismatics

Sort

Asculum

Definition
The mint at the
Type
Mint, Concept

Umar ibn Yahya

Definition
Umar ibn Yahya
Type
Person, Concept

Clay

Definition
Clay is a fine-grained natural rock or soil material that combines one or more clay minerals with traces of metal oxides and organic matter.
Type
Material, Concept

Anaxidikos (II)

Definition
<table>
<thead>
<tr>
<th>Field of Numismatics</th>
<th>Definition</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asculum</td>
<td>The mint at the official in Egypt.</td>
<td>Mint, Concept</td>
</tr>
<tr>
<td>Umar ibn Yahya</td>
<td>Umar ibn Yahya</td>
<td>Person, Concept</td>
</tr>
<tr>
<td>Clay</td>
<td>Clay is a fine-grained natural rock or soil material that combines one or more clay minerals with traces of metal oxides and organic matter.</td>
<td>Material, Concept</td>
</tr>
</tbody>
</table>
Athens (Mint, Concept)

Canonical URI: http://nomisma.org/id/athens

Labels
- Preferred Label: Athens (en), Athen (de), Athènes (fr), Atene (it), Aθηνα (el), Atanas (es)
- Alternate Label: Athenal (en)

Definitions
- en: The mint at the ancient site of Athens in Attica.

Geospatial Data
- URI: http://nomisma.org/id/athens#this
  - Latitude: 37.974722
  - Longitude: 23.7225
  - Part Of: http://nomisma.org/id/attica#this

Relations
- Broader Concept: http://nomisma.org/id/attica
- Close Match: http://catalogue.bnf.fr/ark:/12148/cb11936474k
- Close Match: http://collection.britishmuseum.org/id/place/x22744
- Close Match: http://d-nb.info/gnd/4003366-1
- Close Match: http://dbpedia.org/resource/Athens
- Close Match: http://geonames.org/264371
- Close Match: http://sws.geonames.org/264371/
- Close Match: http://sws.geonames.org/6947693/
- Close Match: http://viaf.org/viaf/312916042
- Close Match: http://vocab.getty.edu/tgn/7001393
- Close Match: http://www.wikidata.org/entity/Q1524
- Close Match: https://ikmk.smb.museum/ndp/ort/436
- Close Match: https://pleiades.stoa.org/places/579885
- Close Match: https://www.freebase.com/m/fj92z
The main network of Greek numismatics portals
To fill in the portal, museums worked together to establish a common description protocol in several languages for the coin types, they took pictures of their coins, and they hired people to catalogue their collections. Then the notices were linked to PELLA. Today around 21 000 coins from 23 museums are classified in PELLA and the website is available in 18 languages.
Description typologique

Type d'objet: Monnaie
Intervalle chronologique: 336 BCE - 323 BCE
Dénomination: Tétradrachme
Technique d'émission: Frappé
Matériaux: Argent

Autorité émettrice:
Autorité émettrice: Alexandre le Grand
Dynastie: Argobades
Statut: Royaume de Macédoine

Géographique
Atelier: Amphipolis (Valeur inconnue)
Région: Europe-Macedonie-Strymonian and Bottleneck District

Avers/Droit
Type: Tête d'Alexandre imbréée à dr. courbé de décapite de lion
Divinité: Héraclès

Revers
Légende: AIXANAMPOY
Type: Zeus assis à g. sur un trône, un aigle dans la main dr. tendue et un sceptre dans la main g.
Divinité: Zeus (Dans le champ gauche): jambour-head vase

Exemples de ce type

Silver Coin of Alexander II of Macedon, Amphipolis, 336 BCE - 323 BCE. 1944.100.26724
Collection: American Numismatic Society
Axe: 10
Poids: 17.05

Silver Coin of Alexander II of Macedon, Amphipolis, 336 BCE - 323 BCE. 1944.100.26729
Collection: American Numismatic Society
Axe: 10
Poids: 16.89

Silver Coin of Alexander II of Macedon, Amphipolis, 336 BCE - 323 BCE. 1944.100.26730
Collection: American Numismatic Society
Axe: 10
Poids: 16.96
Symbols

Click the buttons for letters below in order to select them in order to filter for only those monograms that contain the letters (click Refine Search after the selection is complete). Clicking a selected letter again will deselect it.

Grec
A B Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω

Price Monogram 1000 Q
- K, Y, and Ω

Price Monogram 1001 Q
- K, O, and E

Price Monogram 1004 Q
- O and A

Price Monogram 1005 Q
- O, A, and Y

Price Monogram 1006 Q
- A, Y, and Ω

Price Monogram 1007 Q
- A, Y, and O

Price Monogram 1008 Q
- A, O, and Γ

Price Monogram 1010 Q
- O and M

Price Monogram 1011 Q
- O and M

Price Monogram 1012 Q
- O, M, and E

Price Monogram 1013 Q
- O, M, and Y

Price Monogram 1014 Q
- O, M, and Y

Price Monogram 1015 Q
- O and M

Price Monogram 1016 Q
- O, M, and Υ

Price Monogram 1017 Q
- O, M, and Υ

Price Monogram 1018 Q
- O, Υ, and M

Price Monogram 1019 Q
- O, M, and Φ

Price Monogram 1020 Q
- O, M, and Φ
The portal is evolutionary: the new varieties discovered during the cataloguing process have been recorded and will be added to the next version.
The main network of Greek numismatics portals
The main network of Greek numismatics portals
The main network of Greek numismatics portals

Hellenistic Royal Coinage Online

IRIS

NATIONAL ENDOWMENT FOR THE HUMANITIES

CCH

PELLA

SCO

PCO

AGCO

Nomisma

As part of the national network for the humanities, Nomisma maintains a growing collection of images of major coins and coin hoards. The platform provides a unique resource for those interested in ancient coinage studies. It includes a growing collection of images of major coins and coin hoards. The Nomisma website features a growing collection of images of major coins and coin hoards. The Nomisma website includes a growing collection of images of major coins and coin hoards. The Nomisma website provides a unique resource for those interested in ancient coinage studies. It includes a growing collection of images of major coins and coin hoards. The Nomisma website features a growing collection of images of major coins and coin hoards. The Nomisma website includes a growing collection of images of major coins and coin hoards. The Nomisma website provides a unique resource for those interested in ancient coinage studies. It includes a growing collection of images of major coins and coin hoards. The Nomisma website features a growing collection of images of major coins and coin hoards. The Nomisma website includes a growing collection of images of major coins and coin hoards. The Nomisma website provides a unique resource for those interested in ancient coinage studies. It includes a growing collection of images of major coins and coin hoards. The Nomisma website features a growing collection of images of major coins and coin hoards. The Nomisma website includes a growing collection of images of major coins and coin hoards. The Nomisma website provides a unique resource for those interested in ancient coinage studies. It includes a growing collection of images of major coins and coin hoards. The Nomisma website features a growing collection of images of major coins and coin hoards. The Nomisma website includes a growing collection of images of major coins and coin hoards. The Nomisma website provides a unique resource for those interested in ancient coinage studies. It includes a growing collection of images of major coins and coin hoards. The Nomisma website features a growing collection of images of major coins and coin hoards. The Nomisma website includes a growing collection of images of major coins and coin hoards. The Nomisma website provides a unique resource for those interested in ancient coinage studies. It includes a growing collection of images of major coins and coin hoards.
The main network of Greek numismatics portals.
The 4 portals have been gathered in another portal named “Hellenistic Royal Coinage Online”
The main network of Greek numismatics portals
ARCH

A typology of Ancient Greek Coinage

The ARCH project uses Linked Open Data technology and the standards of the nomisma.org project to establish an overarching portal for the study, curation, archiving and preservation of the monetary heritage of the ancient world – the Greek okoumen. It aims to present a high-level overview of all the coin types traditionally subsumed within the discipline of ‘Greek numismatics’, from the 7th to the 1st century BC. These are made available partly through a new typology (IRIS) created as part of the ARCH project based on existing bibliography, and partly through links to other online portals that cover specific regions or types of coinage. The constituent parts can be found at:

IRIS
Moneda Iberica (MB)
Hellenistic Royal Coinage
Corpus Nummorum Online

Geographically, the project thus encompasses the ancient Mediterranean world and all of its cultures (with the exception of Rome and its provinces), as well as eastern regions as far as Arabia and the eastern limits of the empire of Alexander the Great. The following regions and coinages are not included and may be consulted elsewhere:

Parthia: parthia.com
Bactria and the Indo-Greeks: The OXUS-INDUS Project
Iron-Age Britain: Iron Age Coins in Britain

For further information on the principles behind the creation of the typology and the people involved please see the about page.

The ARCH project has been supported by a grant under the Joint Programming Initiative on Cultural Heritage. Funding was provided by the Arts and Humanities Research Council in the United Kingdom, the Agence Nationale de la Recherche in France and the Ministerio de Asuntos Económicos y Transformación Digital in Spain.
IRIS (De Recorded In Skeleton form) is a high-level typology of Greek coinage created on the principles of Linked Open Data and according to the standards of the nomisma.org project. It provides a typological overview of all ancient coinages not included in existing online typological projects, with a view to establishing a basic coverage of the entire field of Greek numismatics. Broadly speaking, this covers the ancient world from Spain, around the Mediterranean and Black Sea as far as North Africa, as well as the areas of Asia conquered by Alexander the Great. At its first release it thus serves to fill the gaps between the following projects.

It does not cover the regions of Parthia, Bactria or Iron Age 'Celtic' coinages, much of which can be found in other resources:

Parthia: parthia.com
Bactria and the Indo-Greeks: The OXUS-INDUS Project
Iron Age Britain: Iron Age Coins in Britain

For further information on the principles behind the creation of the typology and the people involved please see the about page.

The creation of the IRIS typology has been supported as part of the ARCH project by a grant under the Joint Programming Initiative on Cultural Heritage. Funding was provided by the Arts and Humanities Research Council in the United Kingdom, the Agence Nationale de la Recherche in France and the Ministerio de Asuntos Económicos y Transformación Digital in Spain.
The main network of Greek numismatics portals

Nomisma

Museums coin catalogues

PELLA

BiGR

CCH

ARCH

IRIS

The main network of Greek numismatics portals
The main network of Greek numismatics portals

- Nomisma
- Museums coin catalogues
  - PELLA
  - AGCO
  - SCO
  - Hellenistic Royal Coinage Online

- CCH
There are other thematic web sites:
- for overstrikes: coins struck with new types to make new coins (often we can see the previous types)
- for die studies to identify the dies (ie. the matrix) used to print the pictures on the coins (for studying the process of striking and to know the number of coins that were struck)
- For automatic die recognition
Roman and Celtic numismatics

- Old reference works have been used as a basis for online numismatic typology (Roman Republican Coinage)
The Roman Republican Die Project (RRDP) aims to provide URIs for each reverse and reverse die connected to Michael Crawford’s Roman Republican Coinage (RRC, 1974) types published in Coinage of the Roman Republic. Online. RRDP is based on Richard Schaefer’s archive of Roman Republican Dies, comprising more than 300,000 specimen images. The digitized version of Schaefer’s archive is available on ARCHER, the digital archives of the American Numismatic Society (see here).

Each die in RRDP is linked to specimens in STIAM, a standalone specimen database for private materials or museum collections that have not already been published to the Nomisma.org Linked Open Data ecosystem. Additionally, dies are linked when applicable, to coins already published to CIRCO from collections such as the American Numismatic Society, Bibliothèque nationale de France, and the Berlin Münzkabinett, as to avoid duplication of materials between Schaefer’s archival records and canonical URIs published by holding institutions.

In an initial phase (January 2021–2022), RRDP will focus on the die transcription of Crawford types 336-332 (95-75 B.C.E.). This chronological range has been chosen for its historical and numismatic relevance. This project has been undertaken under the scientific supervision of Lucia F. Carbone (ANS) and Liv M. Yarrow (Brooklyn College - CUNY – Graduate Center).

For more information on how to use these materials, see How to Use RRDP.

RRDP is made possible by stable numismatic identifiers and linked open data methodologies established by the Nomisma.org project. Die data are made available with an Open Database License.
Online Coins of the Roman Empire (OCR), a joint project of the American Numismatic Society and the Institute for the Study of the Ancient World at New York University, is a revolutionary new tool designed to help in the identification, cataloging, and research of the rich and varied coinage of the Roman Empire. The project records every published type of Roman Imperial Coinage from Augustus in 31 BC, until the death of Zeno in AD 491. This is an easy to use digital corpus, with downloadable catalog entries, incorporating over 45,000 types of coins.
Iron Age Coins in Britain (UK)

Iron Age Coins in Britain (IACB) is now available as a digital research tool that provides access to an edited ABC online. IACB is made possible by stable numismatic identifiers and linked open data methodologies established by the Nomisma.org project. IACB is built on the numbering system created by the Ancient British Coins (ABC) series published in 2010 (available to purchase here). On this website, some aspects of this typology have been changed (e.g., descriptions, spellings), therefore this website is not the responsibility of the publishers of ABC.

Details about the fields and their data are given on the Info page.
Details about the digitisation project are given on the About page.
Welcome to Online Celtic Coinage

Online Celtic Coinage is the website of the Celtic Working Group of Nomisma.org. OCC develops Linked Open Data concepts for pre-Roman Iron Age coinages.

Recent news

CELTIC COIN INDEX DIGITAL (CCID) goes live!
Ancient British Coinage goes online!
ClaReNet – A new project on Classification and Machine Learning for Celtic coinages

Forthcoming events

Keine bevorstehenden Ereignisse
Coins Hoard of the Roman Empire (uses ontology of Nomisma but no uri link)
The Roman Provincial Coinage project embodies a new conception of Roman coinage. It presents for the first time an authoritative account of the coins minted in the provinces of the empire and shows how they can be regarded as an integral part of the coinage minted under the Roman emperors.

The aim of this major research project is to produce a standard typology of the provincial coinage of the Roman Empire. This represents the first systematic treatment of the civic coinage at the height of the Roman empire. The material presented is an invaluable source of information for imperial portraiture and titulature, the response of the cities to the establishment of a new political order under the Roman empire, the way the government controlled the provinces, the internal history of the cities, and the role of the provincial coinage in the economy of the Roman empire as a whole. It will thus not only meet the needs of numismatists but will also be an essential reference book for historians, epigraphists, archaeologists and other students of the Roman empire.

The publication of Roman Provincial Coinage volume 1 (44 BC–AD 69) in 1992 marked the start of this international initiative, which will comprise ten volumes in all. Roman Provincial Coinage is published by British Museum Press and the Bibliothèque Nationale de France, and the online publication is based in the Ashmolean Museum, University of Oxford.

News

RPC volume X is online!
RPC volume X covers all Roman provincial coinage issues from the joint reign of Valerian and Gallienus through the year 12 of Diocletian (AD 253–295/6). It includes over 5,800 type descriptions and 48,000 coins from 153 cities. The geography extends ... more

RPC VII.2: printed volume published

RPC VII.2. From Gordian I to Gordian III (AD 238–244): all provinces except Asia
Jerome Malrait & Marguerite Sporn... more

Supporting RPC online

Since its humble beginnings in 2006, the RPC Online project has grown into one of the most important research projects in numismatics. The website now includes more than 400,000 coins from 50,000 types and welcomes over 40,000 visitors annually. ... more
Bienvenue sur le site web du système d'antiquités portables
- Two projects underway in France (Nummus Université de Caen and Base Trouvailles Monétaires BnF)
MIB, acrónimo de moneda ibérica, es una base de conocimiento para el estudio, conservación, catalogación, archivo y difusión del patrimonio numismático antiguo de la Península Ibérica y del sur de Francia que incluye producciones monetarias de cecas griegas, púnicas, ibéricas, cetíbéricas, vasconas, lusitanas y latinas. El centro del proyecto lo ocupa el catálogo formado por más de 4.000 tipos monetarios acuñados entre los siglos VI y I a.C., respaldados por un archivo documental de 100.000 monedas. Se incluyen piezas de museos, de colecciones privadas y de las subastas nacionales e internacionales de las últimas décadas. Los contenidos y las funcionalidades de esta web se actualizan y mejoran de forma progresiva.
The contributions of the websites and web portal to the discipline and beyond

All these open access websites and portals reflect a collaboration between researchers from several institutional horizons (museums, laboratories, universities) with the same will to reuse old sources (monetiform objects, archives, unpublished and published studies); with them, we can complete new studies that were impossible before, since digital tools are the only ones allowing for the management of big data or linking documents from throughout the world.
These different portals and websites changed numismatists’ working methods:

- it’s now possible to quickly identify coins and to cite the best references even if the articles or books are only available in specialized libraries

- It’s possible to quickly gather a coin corpus including the main collections. Until a few years ago, it was necessary to spend months going to different countries to record data and take pictures

    - we can work on big data

- we have efficient tools to correct mistakes made in the past

    - it’s possible now to link data for thousands of coins
## The PIM (Police des inscriptions monétaires) project

<table>
<thead>
<tr>
<th>Coinages</th>
<th>Writing systems</th>
<th>Unicode</th>
<th>Ontographs</th>
<th>Allographs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greek</td>
<td>Greek</td>
<td>U+0370–03FF</td>
<td>28</td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>Etruscan</td>
<td>U+10300–1032F</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Umbrian</td>
<td>U+10300–1032F</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Oscan</td>
<td>U+10300–1032F</td>
<td>21</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Cypriot</td>
<td>U+10800–1083F</td>
<td>55</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>Lycian</td>
<td>U+10280–1029F</td>
<td>29</td>
<td>185</td>
</tr>
<tr>
<td></td>
<td>Brahmi</td>
<td>U+11000–1017F</td>
<td>65</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Kharoshti</td>
<td>U+1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iberian and punic</td>
<td>Palaeohispanic</td>
<td>Not</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phoenician-punic</td>
<td>U+1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phoenician, levantine, judean, et nabatean</td>
<td>Phoenician</td>
<td>U+1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paleo-hebrew</td>
<td>U+1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nabataean</td>
<td>U+1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Fig 5** Tableau récapitulatif des caractères PIM

**Fig 15** Variantes phéniciennes de la lettre mem
The open science studies done in numismatics are also a methodological model for others archaeological and historical fields that wish to make their own data freely accessible. For example, “Pondera online » about ancient weights.
The main obstacles to this type of project

- Access to material (authorization to study or publish coins)
- Access to funding (computer specialist, online, update)
- Work habits (unpublished studies, project abandoned)
- Lack of legislation (in France, Open Science policy is encouraged by the Law. In archaeology, there are administrative reports but few publications)
Thanks for listening!

We wish this digital age another twenty years.