

Grasping the Invisible. An Approach to Frontier Dynamics between Thrace and Macedonia through Digital Numismatics and Archaeology

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Abstract: Digital numismatics is a rapidly developing field that lays a promising foundation for combined material cross-studies. In the course of research of the project *Measuring Ancient Thrace* in this field, a new approach towards frontier studies between Thrace and Macedonia and generally any region with abundant enough coin circulation has emerged. It is a methodology that is yet to be applied in two comparative case studies and thus a theoretical proposal. The main aspect of it is that the digital numismatic perspective is the fundamental complementary factor to enhancing already existing methods

Keywords: frontier studies, digital numismatics, Heraclea Sintica, Deultum

Ключови думи: изследвания върху границите, дигитална нумизматика, Хераклея Синтика, Деултум



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INTRODUCTION TO THE FRONTIER STUDIES APPROACHES

Our knowledge of frontiers generally of the Roman Empire is built first and most of all on literary sources, such as Tacitus, Suetonius, Livius, etc¹. In archaeology, we depend on the material markers that we understand as direct remains of demarcation. When it comes to the Roman period, these are usually concentrated in the timespan after establishing the main barrier of the Romans towards the barbarians – the *limes*². While having structures connected to a borderline, like walls, fortifications, ditches, and camps, these are mainly architectural

¹ Moschek 2011: 45–65.

² Schallmayer 2011; Isaac 1988: 130; Wells 2005: 65. There have been many approaches towards frontiers, having in mind all the research on the *limes*, see Sommer 2021; Fassbinder 2009, Chyla 2022; Utrecht University 2023; Universität Wien n. d.a; n. d.b. This monument's profound significance on both European and global scales has led to continuous scholarly investigations and the initiation of numerous research projects, including a dedicated publication series (*Deutsche Limeskommission* 2007).

measures. Such clear indicators are also *cippi*, like those from the pomerium³.

The non-material, delimitation measures are not the main focus of the studies. But as often brought up, the concepts of demarcation and delimitation define two aspects: The expression of the first is in physical markers designating borderlines. They are visible and indicate a clear space division⁴. The second concerns strategies to introduce cultural or other practices, such as religious ones. Besides many other aspects, they would determine territory and thus supremacy and power⁵. The remains of those intentional interferences are often elusive. But they can be secondarily observed in iconographic transformations in numerous material objects, from votive plaques to relief pottery and even proven actions such as the dedication of sanctuaries. But most of all in coinage⁶.

Another important issue is the one that a frontier does not usually persist, and the territory underlies expansion and reduction, which is a relatively constant paradigm of Roman imperial politics⁷. Because of this dynamic evolution, frontiers are not always expressed in fortification measures and can be traced only by smaller archaeological finds. This is a methodology that needs to be applied to the periods before the *limes*, when temporary boundaries existed. Republican demarcation frontiers have only been investigated in historical research in the western part of the empire, and a particular emphasis is placed on the Principate period and the northwestern periphery⁸.

It is important what kind of information the two frontier terms give us. Demarcation always expresses intentional separation (as

Hadrian's wall) and can bear, if it's a *cippus* for instance, direct content, that is the existence of the cippus shows clearly what its function is. A cippus can also be seen as a delimitation object through its inscription expressing direct content. But a delimitation object can bear indirect content. For example, a silver vessel, that is not per se a border object, can show a certain iconographic scene, which is spread randomly and defines a certain area. This is theoretically the implication of third-party frontier measures. Delimitation can also be a natural process expressed in material distribution like pottery, which occurs again as a consequence and non-intentionally (Fig. 1).

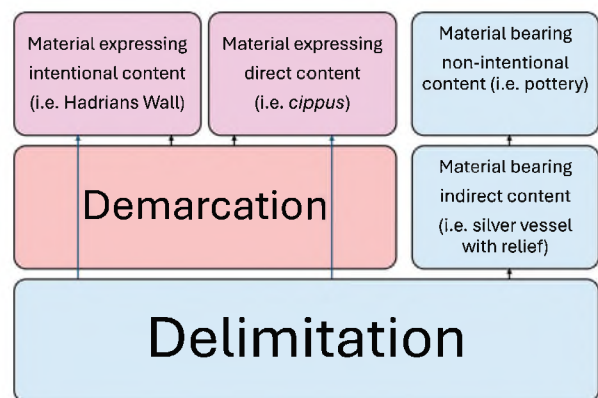


Figure 1. Reflection of the processes of delimitation and demarcation through various characteristics on artifacts or monuments.

In 2011, Costa proposed a methodology for researching the establishment of provincial boundaries through pottery patterns, which includes the consideration of milestones or boundary stones as paramount markers in the context of ancient historical inquiries into territorial dominance⁹. Moreover, attention must be

³ This Claudian finding has been called one of the top ten discoveries of that year (Urbanus 2022). It is however one of hundreds (Chausson et al. 2019: 104 n. 49).

⁴ Moschek 2011: 105.

⁵ In pre-Roman studies there have been developments in the theoretical framework, which distinguishes between a demarcation – that is the physical existence of markers, and the delimitation, which would express itself in different physical or non-physical ways (Fachard 2016: 195).

⁶ One illustrative example of a visible feature, which may not immediately appear relevant to demarcation but can indeed be pivotal, pertains to the religious attributes that characterize the occupied territory (Belfiori 2020: 16-17). These attributes manifest through the establishment of sanctuaries, as exemplified by the region of Sintike featuring sanctuaries dedicated to the Roman god Pluto and Zeus Hypsistos (Chatziniakolaou 2010: 196-197. 208). Additionally, certain Roman deities featured on early civic coins, such as the Janus types found in Thessalonike and Amphipolis, offer valuable insights into this context (Betsiou 2016: 139 note 78, with references).

⁷ Lepore, Silani 2021; Stek 2017: 270-278.

⁸ Wells 1996: 440-441; Dyson 2014; Mann 1974.

⁹ Costa 2011.

given to other epigraphic elements, particularly imperial interprovincial inscriptions, as they can provide indications of earlier boundaries by referencing the divinities associated with territorial demarcation, such as *terminus* and *fines*¹⁰.

ENHANCEMENT OF THE METHODS THROUGH DIGITAL NUMISMATICS

There are other aspects or characteristics than the physical that need to be attested. Next to identifying intentional and non-intentional results of delimitation, we need a multi-faceted object that is also a medium and can help distinguish delimitations of administrative/military or cultural type. For instance, one of a religious type or one of an economic type. Coins bear all that information with designs, legends, technical data, etc. However, they were usually studied and interpreted as (circumstantial) connectors between cultures. The aspect of them as occupation signs has rarely been considered¹¹. The analysis of coins as a general source of delimitation traces has yet to evolve. Although coins have been incorporated in some studies, they have never been the fundamental source.

A second research gap is that the frontiers before the *limes* have mostly been discussed for the Western empire and the East had been left out. Coin messages have been considered worth an interpretation but only after the *limes* existed¹². No in-depth analysis in an exact case has been done, but only theoretically the function of the coin has been examined. That is the case because they could express next to political messages also local litigation and are seen as media with acculturation and integration functions¹³. Considering this and the studies

on the Western part of the empire, only coin finds in the East can show us how the Romans tampered with their province territories, since there were the most changes throughout the centuries¹⁴. The importance of media-based messages needs further interpretation, for it shaped identities, in terms of who and where is allowed to use a certain currency. This was a very legitimate question, especially before AD 212 when the emperor Caracalla made citizenship for everyone in the Empire possible¹⁵.

Foremost the change in the approach should be through the initial research question, which should not inquire where the frontier is, but what intentions and measurements of delimitation can we detect. Then the right material with several characteristics and subsequently the cross points or parameters for other types of material should be chosen¹⁶. After analyzing the coincidences then those can be compared to circulation patterns that in Roman times should be first seen as territory marking and not a bordering or a connecting factor.

To achieve this, specific objectives must be defined. The first is to document and identify the necessary numismatic material (1). After fulfilling this basic requirement, one must define the role of coinages (2). When the primary information is gathered via iconography, metrology, etc., it can be sorted and grouped after dating and function (fiscal, exchange, introduction of new imagery, etc.). While following their development throughout the Roman period (3) any tangible change in the monetary supply should be accurately pointed out and added as a highlight. This is the most efficient way to test the rate of systematic coincidence when comparing data punctually from before and after the border shifted towards the later

¹⁰ Kolb 2017: 12-13.

¹¹ Duncan 1981. See for instance Bursche 2002: 126; Katsari 2008: 242-250; Munteanu 2020: 95; Munteanu et al. 2021: 159; Munteanu, Vornicu 2022: 258. But rarely in connection with demarcation markers see Bursche 2008: 407; Găzdac 2002: 737; Moisil 2002: 15; Munteanu 2017: 926.

¹² Moschek 2011: 92-95.

¹³ Gambash 2015: 3.

¹⁴ del Hoyo et al. 2011: 291-304.

¹⁵ Keresztes 1970: pp. 446-459. The importance of this issue becomes very clear with similar issues nowadays, mirrored also in research for instance by the European Project B-Shapes that shows the effects of border infliction on cultures. "Borders shaping perceptions of European societies", see University of Southern Denmark 2024.

¹⁶ For the premises needed to conduct a cross-study see Hofmann et al. 2019: 6-8; Peter 2019: 394.

limes on the Danube¹⁷. Intermediate situations will be detected (4) and local chronological groups that connect to historical events can be isolated (5). When distinguishing local, regional, and pan-Roman currency, those can be connected to historical events, first of local importance and then to other larger contexts. After this is completed, it should be verified if coinage information coincides with other artifacts and literary sources (6). Combining this data, the borders after other resources shall be defined (7) and the spatial positioning of a set of finds and their processing through GIS analyses (8) performed. Building a GIS-relevant data collection is the most relevant section for the main objective. It can be analyzed to which extent the coverage of coins and direct markers coincides. Following this, the strategy changes in Roman administration can be detected (9). This will be possible through a chronologically layered approach and be the last step to follow the dynamics of strategies in monetary means.

PARAMETERS

For the data comparison in different material groups to work some parameters need to be set to detect the mentioned processes. Their determination will create fields for common queries. Any coinciding parameter with confirming media must be included to assess the results of the numismatic evaluation. Important ones are hidden in the characteristics of coin features. For instance, the designs of coins include iconography (1), which describes the imagery, bearing an indication of authority (i.e., Roman administration, local elite, traditional cultural or historical aspects), portraiture

is essential for the influence of Roman standards¹⁸. Style (2) reflects the central or local tendencies and can be spotted in different details (for instance Roman hairstyle)¹⁹. The legend (3) defines the inscription which can confirm the authority, the mint, the depicted figure, the date of production, and the occasion (i.e. neocory) and connects to epigraphy²⁰. Metal (4) indicates not only value but, also the purpose of use, and origin. It is an essential crossing point for metal object exchange²¹. Weight (5) gives information about the standard system and its connection to other regions²². Similarly, the diameter (6) usually defines the denomination, related to the value, rarity, and the context of use²³. Thickness (7) is relevant for analyses of the flan when the description can't provide enough information for the identification. Flan thickness and diameter can indicate the standard for flans and combined with patina color the period when the object was produced or buried. Additionally, traces of overstrikes (8) show the re-usage or substitution via deliberate coverage of old images²⁴. Similar is the validation through countermarks (9), which may refer to a new authority²⁵. Other technical data (center hole, piercing) gives information about the production or history of the coin, which makes it eligible for evaluation or excludes it from the batch. The find spot (10) indicates in what period the coin was circulating and in what circumstances (trade, religious, or another context). Context is the meeting point with other materials. Available information about the circulation of types etc. is substantial data that can be extracted from numismatic portals via Linked Open Data.

¹⁷ Before the later Augustan age, see *Karavas, Hanscam* 2023: 2.

¹⁸ *Pavlek et al.* 2022: 95-96.

¹⁹ *Sanz, Fiore* 2014: 7104-7111.

²⁰ See as an example *Meadows* 2021: 187-222.

²¹ *Martorelli et al.* 2019. Thanks to the project DigiDeultum there will be XRF-Metal analyses of metal objects including coins. Those will be compared in the same types of Imperial coinage to see if the supply in the test studies below was centralized or if both provinces were treated differently. A large number of publications is available to compare results on a large scale. Also, a comparison of the same mint in different periods, as well as synchronic-produced coins and other metal objects will be compared (statuettes, ornaments, etc.).

²² *Cope* 1980: 178-184.

²³ *Taş et al.* 2022: 37.

²⁴ *de Callataj* 2018, 26-28.

²⁵ *Draganov* 1991, 495-509; *Howgego* 1985.

TECHNICAL REQUIREMENTS

The interaction of the reflected occurrences needs to be assessed through a digital process of the data via an instrument, able to document and connect different materials. It is a technical requirement to achieve the implementation of this approach. It should be able to connect different factors prevailing through the active strategy and identify its proneness to the genesis of other aspects of the ancient status quo like preexisting economic relations. So the cross-points should be detected by automated database filters and used as starting points to visualize the data²⁶. Overlapping would suggest confirmation.

Such a tool has been developed in the project Measuring Ancient Thrace after Corpus Nummorum²⁷, even with standardized design descriptions. It is implemented in the cooperating project DigiDeultum²⁸. Using that tool to calibrate the analysis of the separate sites is the ultimate method of approaching the question of how Romans guarded their territory before the physical *limes* existed and will fill a vast methodological desideratum. The results from both provinces Macedonia and Thrace will be compared in tables or diagrams. These visualizations will be the basis for the interpretation of the introduction of coinage in certain areas.

TEST CASE STUDIES

This method will be applied in two Roman sites, Heraclea Sintica and Deultum, and will test this proposal. It will trace not only the frontier course but also how the idea of it was imposed and how these establishments

changed as a flexible and dynamic setting throughout the Roman Imperial Period. They either emerged or came under Roman control during the early stages of the empire²⁹. In contrast to the studies mentioned above, they are in the eastern part of the Empire. The numismatic perspective is crucial as they are positioned in two rich in monetary means provinces³⁰. A major archaeological discovery was made in the province of Macedonia in 2002 when the site of Heraclea was identified³¹. It was thus positioned northern than suspected and gave enough evidence to suspect a further reach of the Macedonians and consequently after the battle of Pydna in 168 BC³² of the Romans. Deultum on the other hand is a well-known Roman site but the transition from the dominance of local dynast control towards Roman integration, especially from an economic perspective, is yet to be studied³³. The availability of publications on Deultum³⁴, based on traditional methodology, will allow for measuring the benefits and restrictions of digital methods.

*Heraclea Sintica*³⁵

The region of Sintike was always a border region and was the northmost part of the Roman province of Macedonia. Researchers have had difficulties in distinguishing the territories of the thraco-macedonian tribes that occupied these areas. Where pottery and other artifacts allow the attribution to certain cultural groups, those cannot be associated with any of the tribes known from literary sources³⁶. Heraclea Sintica is the largest archaeological site in the area and as a Macedonian foundation first

²⁶ As an example, a GIS layered map with data about the frontier indicators and circulation of coinages, and a comparison map showing the mints that are indicated on the sites.

²⁷ It follows the data model of Corpus Nummorum see, CN n.d.

²⁸ Grozdanova forthcoming.

²⁹ Vagalinski 2022, 20.

³⁰ The definition of borders in Thrace is in the pre-provincial state of affairs very difficult and always questionable. It has been labelled the "land without borders" (Peter, Stolba 2022: 3-7). While other cultural markers as pottery, are not able to, coinage usually indicates the producer and can help in identification of the territorial claim.

³¹ Mitrev 2003: 263-271.

³² Delev 2015; Gruen 1976.

³³ Balabanov, Petrova 2002.

³⁴ Kostova, Sharankov 2023; Boteva 2020; Milčeva 2020; Vagalinski 2018; Sharankov 2017; Preshlenov 2015; Nollé 2014 et. al.

³⁵ The research is supported by Project no. КП-06-H50/3 from 30.11.2020, "Measuring Ancient Thrace: Re-evaluating Antiquity in Digital Age", funded by the Bulgarian National Science Fund.

³⁶ Delev 2014.

shows a clear definition of the Macedonian lands after their claim³⁷. This was a pre-existing condition allowing the Roman army and administration to develop a certain strategy to designate the territories after conquering them. That intentional tampering is manifested in this area in delimitation remains. The city provides abundant numismatic material revealing the development of the supply³⁸. Their context is the forum and represents an objective sample of the circulating monetary means. The notable restrictions imposed are visible through the distributed numismatic material, the appearance of Roman Republican *denarii*, and massively of bronze coins with the implementation of Roman designs like those with Janus from Thessaloniki (Fig. 2), Victoria with Standards³⁹ (Fig. 3), or the *sulcus primigenius*



Figure 2. Thessalonike, copper alloy coin with Janus and two centaurs. History Museum Petrich, Heraclea Sintica, found 2018, Field Inv. Forum 1515. Weight 3,92 g; Die axis 12 h; Diameter 17,3 mm; Hellenism, after Pydna.



Figure 3. Philippi, copper alloy coin with Victoria and Standards. Museum Petrich, Heraclea Sintica, found 2018, Field Inv. Forum 1518. Weight 3,60 g; Die axis 12 h; Diameter 17,7 mm. Claudian.

(Fig. 4). But a strong Macedonian identity was cultivated with the Macedonian koinon emissions (Fig. 5). These reflections of administrative strategies address the issue of delimitation



Figure 4. Philippi, copper alloy coin with portrait of Drusus or Augustus and *sulcus primigenius*. History Museum Petrich, Heraclea Sintica, found 2018, Field Inv. 1578. Weight 4,69 g; Die axis 5 h; Diameter 17,9 mm; Augustan or Tiberian.



Figure 5. Macedonian koinon, copper alloy coin with Macedonian shield and legend indicating the alliance. History Museum Petrich, Heraclea Sintica, found 2018, Field Inv. Forum 1565. Weight 2,77 g; Die axis 0 h; Diameter 14,5 mm; 1st century AD.

and prove coins to be most appropriate for this task. Their study will lay the groundwork for numismatics as the essential source for the extraction of information about the delimitation tactics and coins as a frontier marker. A find of a Republican military camp close to Heraclea shows that an active strategy was applied and any delimitation indications are significant and not collateral facts⁴⁰. This makes the flourishing Roman city⁴¹, a principal site that could be most illustrious for the uncovering of the significant material sources of delimitation, that can be perceived in other sites.

³⁷ Nankov 2015: 19.

³⁸ From the Hellenistic until the Late Roman period. Ivanova-Anaplioti forthcoming.

³⁹ Filipova, Ivanov 2015.

⁴⁰ Alexandrova 2020: 58.

⁴¹ Vagalinski 2017: 94.

*Deultum*⁴²

On the western coast of the Black Sea lies another promising site as a potential antipole for Heraclea. Deultum, founded in 70 AD was the only researched Roman colony in what was to become the province of Thracia⁴³. The similar situation with the Thracian tribes, the direct proximity to the Greek colonies on the Black Sea⁴⁴, and the natural frontiers allow a diachronic comparison through case studies opposing the processes needed for the so-called Romanization. Deultum has yielded mostly late antique coins and very few hundreds of the early period. However, the presence of a colony itself and the coinage⁴⁵ of the city is a prominent display of territory claim. Tracing back in time the supply with different types of coinage and enriching our knowledge of the development dynamics of the then society over the centuries, is decisive for a comparative case. So, coin finds like the Mesambrian (Fig. 6) or Rhoimetalkes ones (Fig. 7) are important as pre-colonial indicators.



Figure 6. Mesambria, copper alloy coin. Municipal History Museum-Sredets, Deultum, Inv. n.79. Weight 5,75 g; Die axis 12 h; Diameter 20,0 mm. c. 2nd century BC.



Figure 7. Rhoimetalkes I, copper alloy coin the king with Pythodoris and Augustus. Municipal History Museum-Sredets, Deultum, Field Inv. 260. Weight 7.77 g; Die axis 5 h; Diameter 23,2 mm; c. 11 BC – 12 AD.

EXPECTED RESULTS AND CONCLUSIONS

To develop a method of cross-study and referencing, which involves automated detection of crosspoints, the sequence of steps will be tested in which way data should be gathered and entered so that the process is time efficient and leads to automated analyses. This cross-study should be conducted between numismatic as a base and other archaeological material because it has been proven to be effective when common patterns exist⁴⁶. As a major new input, digital numismatic⁴⁷ will be considered a methodological shift shedding light on intentional strategies reflected in various media and artifacts. There are several important conditions for the numismatic data to be useful. That includes a portal with standardized and Linked Open Data⁴⁸, but on a level above the material or monument groups. Features like persons or gods are stable and can be included in an image or a word, thus cross-referenced. The study environment must be steered by a digital tool or tools that can be adjusted for ar-

⁴² The research is supported by Project КП-06-H80/7 from 08.12.2023, "Upgrading the Historical Narrative: From Deultum to DigiDeultum", funded by the Bulgarian National Science Fund.

⁴³ Jurukova 1973.

⁴⁴ Ivanova-Anaplioti 2023: 70-84. The maritime area of Deultum was under the influence of the Greek *apoikia* Apollonia Pontica before the colony was founded Apollonia was the main coinage supplier in the area from 510 BC until around 300 BC and reduced its production during the turbulent Hellenistic age. In 71 BC, however, it was destroyed by the Roman army. Its mint stopped production until the end of the 1st century AD. A gap between 71 BC and the Roman emperor Antoninus Pius is visible in Apollonia and in other local civic mints such as Anchialos and Mesambria (Tachev 2018; Topalov 1995). Only Byzantion starts earlier its mint than the colony Deultum (Schönert-Geiß 1972). However, before that, the area was part of the Sapean kingdom which was clientele to Rome. Thus, the study of circulating coins is essential to understanding the complexity of territory control of the Roman empire after they clashed with the Thracians.

⁴⁵ Draganov 2007: 2005; Jurukova 1973.

⁴⁶ New approaches emerge exactly when applying digital technologies in different monument groups, but with common patterns, such as style, see Calomino et al. 2023: 12-18.

chaeological material, but strongly interconnect to the developing numismatic semantic web⁴⁹.

The general incorporation of numismatic research into a broader context is facilitated by existing studies that address various aspects. These encompass investigations into the local urban boundaries of Heraclea Sintica⁵⁰, examinations of urbanization processes within the middle Strymon region and the broader Strymon Valley⁵¹, field research conducted west of the Strymon⁵², and explorations north of Heraclea⁵³. Additionally, south of the Bulgarian border, collaborative efforts have taken place through a survey and mapping project under-

taken by Greek authorities⁵⁴. In the Deultum case, the constant excavations and studies also provide enough published material to collect data about demarcation processes comparable to the coinage⁵⁵. The extracted spatial and material data from publications will be entered as the coin data in the database and be cross-checked. The methodological approach to the examination in this research follows a structured sequence, commencing also with the primary demarcation sources. The gathering and careful selection of content about the subject matter hold significant importance for subsequent phases of the investigation.

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⁴⁷ For the benefits see *Grozdanova 2021*: 63–68.

⁴⁸ *Gruber et al. 2014*: 249–258.

⁴⁹ For the implementation and connecting of the different see *Grozdanova* forthcoming.

⁵⁰ *Mitrev 2015*.

⁵¹ *Mitrev 2012*.

⁵² *Vagalinski et al. 2017*.

⁵³ *Kolev 2020*.

⁵⁴ *Dadaki et al. 2014*.

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Улавяне на невидимото. Към анализа на граничната динамика между Тракия и Македония с методите на дигиталната нумизматика и археология

Христина Иванова-Анапличи

Статията представя нов подход за дефиниране на динамични гранични ситуации и стратегии за териториален контрол, действащи през началните години на съществуване на римските провинции Македония и Тракия. В основата му са заложили концепции от дигиталната нумизматика, но включва и регулиращи традиционни археологически ракурси. От решаващо значение е разглеждането на артефактите като демаркационни и делимитационни материали, като монетите са ултимативно средство за проследяването на тези процеси. Те са многопластов извор, своеобразна медия, която предоставя данни включително за административните промени. С имплементацията на дигитални ресурси нумизматичните данни могат да бъдат обвързани по специфични параметри с подобрени археологически паметници. Сравнителният анализ ще разкрие маркери указващи разграничителните процеси отразени в находките. За тестване на подобрените методи предмет на изследването са два археологически обекта с различни характеристики: Хераклея Синтика, като граничен град и Деултум, като колония, т.е. демаркационен елемент.