#### VIRTUAL ARCHAEOLOGY

# ROMAN DACIA IN THE DIGITAL ERA

**Abstract:** The study of Roman Dacia in the last two centuries produced thousands of articles, studies, monographs and proceedings and revealed at least 3800 archaeological sites from the short period of existence of the province between 106-270 AD. The large quantity of material evidence – epigraphic, figurative, ceramic, architectural and numismatic – is constantly growing due to the numerous rescue excavations in the last two decades. The emergence of digital humanities and the possibilities of digital era created new perspectives in cataloguing, collecting and presenting archaeological big data. The article presents some of the major results of digital humanities focusing on the digitization of the materiality of Roman Dacia.

**Keywords:** digital humanities, Roman Dacia, Roman religion, sanctuaries, Danubian provinces.

he province of Roman Dacia is one of the last territories conquered by the Roman Empire and one of the earliest abandoned, left already in the late 3rd century AD. Still, in less than 170 years, Romans changed radically the natural environment<sup>1</sup>, built at least 10 urban centers, 100 legionary or auxiliary forts and more than 300 other military buildings<sup>2</sup>, more than 4000 inscriptions and thousands of other figurative monuments, small finds, ceramic material and other sources of Roman materiality<sup>3</sup>.

The long lasting materiality of Roman presence will mark deeply the history of this area of Europe even after the collapse of the Empire. The Roman heritage marked not only the history of the people from the Balkans especially the neo-Latin speaking Romanians - but also the cultural, economic and political events in early Medieval and also, during the Renaissance period. The Roman heritage was always known in ethnographic traditions, folklore, and since the 15th century built in and used in the political and cultural narratives on identities, especially in the 19th and 20th centuries<sup>4</sup>.

Cataloguing Roman materiality began with the first epigraphic corpora from the 19<sup>th</sup> century, united by the monumental work of Theodor Mommsen and his local disciples and colleagues after 1857 in Transylvania and later, in Oltenia too<sup>5</sup>. The first systematic bibliography on Roman studies was compiled by Károly Torma in 1881, followed by numerous Romanian scholars in the 20<sup>th</sup> century<sup>6</sup>. The first half of the 20<sup>th</sup> century marks also the publication of the first major syntheses on Roman Dacia, which used especially the epigraphic, literary and figurative sources, marginalizing the

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<sup>&</sup>lt;sup>1</sup> SZABÓ 2020.

<sup>&</sup>lt;sup>2</sup> A recent list of forts see: MARCU 2009. See also: www.limesromania.ro.

<sup>&</sup>lt;sup>3</sup> VAN OYEN/PITTS 2017, 3-20.

<sup>&</sup>lt;sup>4</sup> POPA 2016; SZABÓ 2019, 13-77.

 $<sup>^{\</sup>scriptscriptstyle 5}\,$  BODOR 1995. See also the introduction of CIL III.

 $<sup>^{\</sup>rm 6}\,$  TORMA 1881. See also: COCIŞ/ŢENTEA/MARCU 2003.

## **Studies**

archaeological small finds, pottery and even the numismatic material<sup>7</sup>. In the second half of the 20<sup>th</sup> century, numerous corpora focusing on the epigraphic and figurative material of Roman religion were published<sup>8</sup>. The first major works on Roman pottery in Dacia were also published; however most of the works were focusing on a single building or settlement<sup>9</sup>. A very important step for systematic research on Roman pottery of Dacia was the publishing of an atlas of the pottery workshops of the province<sup>10</sup>. Several volumes focusing on the numismatic material of the Roman settlements and collections of Romania were published in the last two decades coordinated by Cristian Găzdac and many others<sup>11</sup>. Few systematic works focusing on Roman small finds were published, the major work were focusing on brooches, bronze objects, medical finds and militaria<sup>12</sup>.

The last three decades produced numerous specific case studies, exhibitions and conferences focusing on the large amount of unpublished Roman material in Romanian museums<sup>13</sup> and due to the globalization of Roman studies and easier mobility of Romanian scholars, several digital projects were initiated in Romania or included in international research projects.

#### **DIGITAL HUMANITIES AND ROMAN DACIA**

Roman studies faced a change of paradigm in the last few years, following the major trends of digital humanities  $^{14}$ . Several international databases, digital projects and digitized corpora are focusing now on the virtualization and digitization of Roman materiality. A part of these projects are digitizing the previously published corpora from the late  $19^{th}$  and  $20^{th}$  century.

The epigraphic material of Roman Dacia – previously collected in the third volume and its supplement of the Corpus Inscriptionum Latinarum and in the volumes of L'Année épigraphique are available now in four major digital databases. The EDH - Epigraphic Database from Heidelberg has now 3543 inscriptions of the province<sup>15</sup>, the EDCS - Clauss-Slaby Database has 7395 inscriptions online for the province<sup>16</sup>. A complex and interactive population database is available for Dacia on the Romans1by1 project<sup>17</sup>.

More than 2220 figurative and epigraphic monuments were photographed by Ortolf Harl from Roman Dacia and included in the <u>Ubi Erat Lupa Database (lupa)</u><sup>18</sup>. Without the <u>Corpus Signorum Imperii Romani</u> volumes of Romania - which are still not done - the work of Harl is indispensable

for students of Roman art and iconography. In the recent years, numerous museums began the 3D digitization of the Roman figurative and epigraphic material, the <u>Pantheon 3D</u><sup>19</sup>, <u>Lapidarium Musei Zilahensis-Pars Epigraphica</u>, <u>Lapidarium 3D</u> and <u>Pixels for Heritage</u> projects being the most noteworthy from the numerous recent initiatives.

Few objects from Dacia are digitized also in the online database of the Lexicon Iconographicum Mythologie Classicae and the Arachne projects. A part of the Roman bronze statuettes of Roman Dacia were published online, although the photographic material is not comparable with similar digital projects in this field<sup>20</sup>. Numerous books and articles on Roman Dacia are digitized by the National Institute of Heritage on their main page (CIMEC) and on the Biblioteca Digitala webpage. 3468 archaeological sites from Roman period are included in the National Archeological Repertory from Romania, a large part of these are from Moesia Inferior-Skythia Minor<sup>21</sup>. 11.800 archaeological objects are introduced in the National Heritage Database of Romania, however many of them are without photographic documentation and only a small part of them are from Roman Dacia.

The archaeological sites of the Roman Limes of Dacia are under documentation by the <u>National Limes Commission</u>, responsible for the preparation of the UNESCO Heritage nomination<sup>22</sup>. A very useful digital map of the Roman Empire based on the Wikicommons and Peutinger Map online projects was formed on <u>vici.org</u> page. Till 2015 over 140 contributors have added nearly 20,000 locations, approximately 1,000 line tracings and over 3,000 images. Numerous other cartographic representations of the Roman World - the <u>ORBIS</u><sup>23</sup>, <u>Digital Atlas of the Roman Empire</u><sup>24</sup>, <u>Barrington Atlas of the Ancient World</u><sup>25</sup> – has valuable data on the ancient topography of Roman Dacia, however none of them introduced the recent topographic studies from the Romanian scholarship<sup>26</sup>.

The <u>coin hoards</u> of the province were systematically published by C. Găzdac<sup>27</sup>. Cities, mines and other economic unites from Dacia were also included in the <u>databases of the Oxford Economic Project<sup>28</sup>.</u> The RGZM from Mainz has also numerous databases on <u>terra sigillata</u>, or <u>Roman provincial archaeology</u>, each with few mentions on Dacia too.

#### SANCTUARIES OF ROMAN DACIA: A DIGITAL ATLAS

The material evidence of Roman religion of Dacia was intensively researched in the last two centuries, producing

<sup>&</sup>lt;sup>7</sup> KIRÁLY 1896; PÂRVAN 1928; DAICOVICIU 1945.

On the historiography of Roman religious studies in Romania see: MARCU/ NEMETI 2014; SZABÓ 2014.

<sup>9</sup> BOLINDEŢ 2007 as an example of a detalied documentation of pottery material.

<sup>10</sup> BOLINDEŢ et alii 2018, 30-192.

<sup>11</sup> See also: GĂZDAC 2010.

 $<sup>^{12}</sup>$ GUDEA/BAJUSZ 1992; PETCULESCU 1995; COCIŞ 2004; MUSTAŢĂ 2017

<sup>&</sup>lt;sup>13</sup> ŢENTEA/MUSTAŢĂ/COCIŞ 2015.

<sup>&</sup>lt;sup>14</sup> BAGNALL/HEATH 2018; HAGENAUER 2020. See also: <a href="https://wiki.digitalclassicist.org/Category:Projects">https://wiki.digitalclassicist.org/Category:Projects</a>. Last accessed: 5.04.2020.

<sup>&</sup>lt;sup>15</sup> See the official webpage of the project: <a href="https://edh-www.adw.uni-heidelberg.de/">https://edh-www.adw.uni-heidelberg.de/</a>. Last accessed: 5.04.2020.

 $<sup>^{\</sup>rm 16}\,$  The significant difference between the EDH and EDCS is that the last one contains also the CBM inscriptions and is trumenta inscriptions.

<sup>17</sup> VARGA et alii 2018.

<sup>&</sup>lt;sup>18</sup> See also: VARGA 2014, 236.

<sup>&</sup>lt;sup>19</sup> TIMOFAN 2019.

 $<sup>^{20}\,</sup>$  The printed version of the catalogue of Roman bronzes was published two decades ago: TEPOSU-MARINESCU/POP 2000.

<sup>&</sup>lt;sup>21</sup> See also: BĂRBULESCU 2005.

<sup>&</sup>lt;sup>22</sup> See also: GUDEA 1997; MARCU 2009.

 $<sup>^{\</sup>rm 23}$  ORBIS: The Stanford Geospatial Network Model of the Roman World. Project leaders: W. Scheidel and E. Meeks.

<sup>&</sup>lt;sup>24</sup> Digital Atlas of the Roman Empire (DARE) is hosted and managed by the Centre for Digital Humanities, University of Gothenburg, Sweden and directed by J. Ahlfeldt.

<sup>&</sup>lt;sup>25</sup> The Atlas is a project of the Ancient World Mapping Center, an interdisciplinary research center at the University of North Carolina at Chapel Hill directed by R. Talbert.

<sup>&</sup>lt;sup>26</sup> NEMETI 2014; FODOREAN 2016.

<sup>&</sup>lt;sup>27</sup> GĂZDAC/LUMEZEANU 2014.

 $<sup>^{\</sup>rm 28}$  The international project is coordinated by profs. Andrew Wilson and Alan Bowman.

more than 1500 titles<sup>29</sup>. Despite of the abundance of the literature and the votive material discovered – which consists 27% of the total epigraphic material and almost 50% of the figurative material of Dacia<sup>30</sup> – there are few studies and only three monographs focusing on sanctuaries of the province<sup>31</sup>. After the important work of A.R. Pescaru and D. Alicu which presented the sanctuaries mostly as architectural entities<sup>32</sup>, my work presented the temples and sanctuaries of Roman Dacia as sacralised places in public and secondary spaces, which are created and maintained as tools in Roman religious communication<sup>33</sup>.

While the work of Pescaru-Alicu was a strictly technical one on the edge of Roman provincial archaeology and architectural history, mine was more a theoretical one, combining methodological approaches of Roman religious studies and provincial archaeology<sup>34</sup>. Both works are missing the space, networking and connectivity as analytic factors from their methodological approaches. This can be completed only through an interactive map, where space and mobile connectivity is combined with the digital visualization of big data.

My recent project focusing on space sacralisation in the Danubian provinces during the Principate, I created a digital atlas of sanctuaries and their archaeological material in the Danubian provinces<sup>35</sup>. The digital map unites various, already established and successful methodologies of contemporary religious cartography, based on the seminal works of. Fauduet, L. Bricault and J. Åhlfeldt using a Google Mymap surface<sup>36</sup>. This collects not only the most important topographic, architectural and historical data about the archaeologically, epigraphically attested and presumed sanctuaries in public and secondary spaces, but will connect every individual site and sacralised space with several, already existing digital databases and open access sources (EDH, Lupa, DARE, Biblioteca Digitală, Academia.edu and many others).

Google Mymap gives the possibility to represent archaeological sites and even their particular compartments and subunits on an extremely precise scale (1:5 m), therefore we can locate all the archaeologically attested sanctuaries, even on the most remote places (mountains or non-habited areas too). Each settlement has a specific vignette on the digital map (Fig. 1): conurbations and legionary settlements; auxiliary forts and military vici; mining settlements; bathcomplexes; caves or spelaeum. Each settlement has a short historical description, presenting the major events, military units and dislocations, architectural and geographic features and a summary of its religious life and some of the relevant archaeological discoveries (inscriptions, statues, statuettes, small finds, instrumenta sacra). The description is followed by a list of references and online sources and hyperlinks to several digital databases.

- Auxiliary fort /military vicus
- presumed sanctuary
- municipia / colonia / legionary fort
- archaeologically attested sanctuary
- epigraphically attested sanctuary
- Cave / spelaeum
- Bath complex / springs
- Mining settlement

**Fig. 1.** Legend of the Atlas of Roman Sanctuaries in the Danubian Provinces (source: author. See also: danubianreligion.com)

The sacralised spaces are marked with 3 different vignettes, distinguishing the archaeologically (orange), epigraphically (purple) and presumably attested sanctuaries (blue). Each sacralised place will have the same informationsheet and will follow the same model:: name (conventional, modern denomination, divinity or divine agents, ancient denomination of the building - templum, aedes, fanum, spelaeum, etc.), location (topographic data, coordinates), dimensions, description (building history and stratigraphy, forms of religious communication), major finds, archaeological repertory (inscriptions, statues, small finds cited after abbreviations of the major corpora or bibliographic references) and bibliography (specific references only). Each sanctuary-sheet have few photos, illustrations on the major finds and in the case of the archaeologically attested sanctuaries, a schematic plan of the building too. In those cases, where the archaeological context of the finds is attested, the exact place of the objects within the sanctuary will be presented in their in situ context with GIS coordinates. Larger archaeological contexts (for example, the palace of the governor, urban fora, city walls), the so called complex-sanctuaries or sacred areas are marked with a transparent layer and a specific description too. In contrast with similar digital maps where are a limited amount of layers and searchable keywords, the searching engine of the Google Mymap gives the possibility for unlimited variety categorizing authomatically the similar of keywords, archaeological sites, which has the searched common features (common or similar divine agents, archaeological elements, topographic aspects, buildingtypes, etc.).

The digital cartograpic representation of the sacralised spaces shows the innovative aspects and technical advantages of a dynamic map. The 54 archaeologically attested, 19 epigraphically known and at least 67 presumed sacralised spaces of the province represents a large archaeological data (140 sanctuaries, 45 settlements, 1478 votive inscriptions and hundreds of figurative monuments) transformed in 190 vignettes on the digital atlas. From the 140 sanctuaries represented on the map, 47 are concentrated on the *territorium* of two of the largest cities of the province, Apulum and colonia Sarmizegetusa, which represents 33% of the total number of attested sancralised places. Together with the 8 other urban centers, we can observe, that more

<sup>&</sup>lt;sup>29</sup> BODA/SZABÓ 2014.

<sup>30</sup> SZABÓ 2018, 175.

<sup>&</sup>lt;sup>31</sup> For the detailed history of research of sanctuaries in Roman Dacia see: SZABÓ 2018, 5-7.

<sup>&</sup>lt;sup>32</sup> PESCARU/ALICU 2000. See also: ALICU 2002; DIACONESCU 2011.

<sup>&</sup>lt;sup>33</sup> SZABÓ 2018, 1-10.

<sup>34</sup> VAN HAEPEREN 2020.

 $<sup>^{\</sup>rm 35}\,$  SZABÓ forthcoming. See also: danubian religion.com.

<sup>&</sup>lt;sup>36</sup> See also: FAUDUET 1993; BRICAULT 2001.

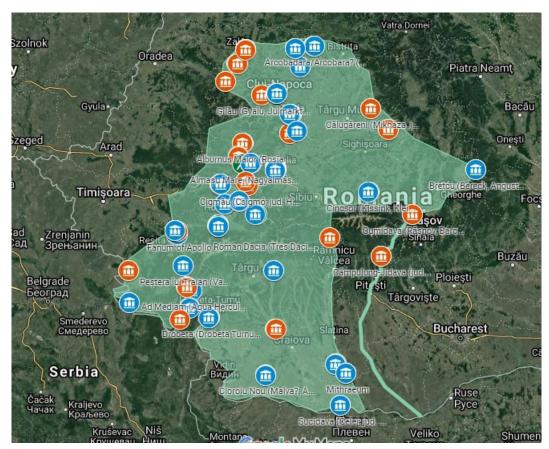


Fig. 2. Fragment of the digital atlas: sanctuaries of Roman Dacia (source: author. See also: danubianreligion.com)

than 60% of the sancralised spaces and the attested votive material comes from urban environment. This urban aspect of Roman religion is well documented also in the presence of the high number of sacralised secondary spaces of small group religions in Dacia. Although, the military aspect of the province was stressed in numerous studies especially by the Limesforschung, where Roman religion appears as a consequence of Romanisation, the archaeological material shows a much more balanced relationship between the urban, civilian and the military communities. The visualized data shows also, that the largest agglomeration of sacralised spaces were in the Mures valley and on the major commercial and communication routes (Via Traiana from Porolissum and Drobeta), which can be argued also by the intra-provincial mobility of the Dolichenian, Mithraic, Bacchic and Palmyrian groups, attested epigraphically between Porolissum, Ampelum, Apulum, Micia, Praetorium, Sarmizegetusa and Tibiscum<sup>37</sup>. The interactive, dynamic map gives not only a constantly changable and living visualization of a large archaeological database and big data, but also the first comprehensive bibliographic database on Roman religion of Dacia (Fig.2.)38.

The Digital Atlas of Sanctuaries in the Danubian Provinces (DAS) will be completed in the following years with the archaeologically and epigraphically attested sanctuaries from Raetia, Noricum, Pannonia Superior, Pannonia Inferior, Moesia Superior and Moesia Inferior, following the above presented methodology.

#### **CONCLUSIONS**

Almost two decades ago, in one of his paradigmatic studies, Greg Woolf discussed the present state and future scope of Roman archaeological studies, stressing the idea of interdisciplinarity and the emerging role of digital humanities too<sup>39</sup>. Today, it seems inevitable the interdisciplinary connection between IT, digital technologies and Roman archaeological studies<sup>40</sup>. The collaboration between these sciences and disciplines will change radically our view on material heritage, museology, archaeological field work and will open new perspectives in population studies, network studies, iconography, economy and almost every aspect of an ancient society. The rich materiality of Roman Dacia still, need to be digitized: large quantities of ceramic material, stone and bronze figurative monuments, archaeological sites discovered during rescue excavations need to be transformed and eternalized in a digital form for future generations of "digital" archaeologists and virtual tourists too.

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<sup>&</sup>lt;sup>37</sup> SZABÓ 2018, 78-110 and 128-141.

<sup>38</sup> SZABÓ forthcoming.

<sup>&</sup>lt;sup>39</sup> WOOLF 2004.

<sup>&</sup>lt;sup>40</sup> POLITOPOULOS *et alii* 2019; QUICK 2020; HOLTER/SCHWESSINGER 2020.

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