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in Digital Humanities' era

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E LA CULTURA DIGITALE



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Digital Humanities and “Niche” Research Fields: The Case of Ancient Arabian Epigraphy

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ABSTRACT

The paper aims to contribute to the discussion of the challenges, impact and prospects of digital initiatives engaged with “young” and “niche” sectors of research, through the experience of DASI – *Digital Archive for the Study of pre-Islamic Arabian Inscriptions*. Formerly an ERC-funded project at the University of Pisa in partnership with Scuola Normale Superiore di Pisa, DASI is now maintained thanks to the cooperation between the University of Pisa and the CNR. The objective of DASI is to foster the study of the enormous epigraphic heritage of pre-Islamic Arabia, which spans from the beginning of the I mill. BCE to VI cent. CE. Attesting different Semitic languages and scripts, epigraphs are the only textual sources for the study of Ancient Arabia. Relevant Digital Humanities theoretical and methodological challenges encountered during the course of the project (e.g. issues of choices in data modelling in relation to the complex nature of the epigraphic source, of harmonization of definitions for “marginal epigraphies”, of applying language technologies to under-resourced languages’ corpora, of using the electronic resources for didactic aims) are discussed, in relation to the description of DASI’s digital tools for archiving, curated edition, online fruition, and cultural and linguistic research. Finally, the research prospects of the project, in terms of widening contents, updating technologies and disseminating results, are considered against issues such as the sustainability of short-term funded projects, and of the evaluation of digital, “non-traditional” outputs and publications in academic careers.

KEYWORDS

Digital Epigraphy, Ancient Near East, pre-Islamic Arabia, curated digital edition, harmonization, digital lexicography, teaching, sustainability.

(DIGITAL) EPIGRAPHY OF PRE-ISLAMIC ARABIA

The Arabian peninsula in ancient times was inhabited by different civilizations that produced, from the early 1st millennium BCE until the advent of Islam, a written documentation consisting of tens of thousands of inscriptions in different Semitic languages (Ancient South Arabian and Ancient North Arabian languages, Old Arabic, and Aramaic varieties – mainly Nabataean) and alphabetic scripts (varieties of both the South Semitic and the Phoenico-Aramaic script families; see Macdonald 2000) (fig. 1). The history of the studies on Ancient Arabian epigraphy is quite recent, as it began towards the end of the 19th century (Avanzini 2016), and has been the interest of few research centres, remaining a niche sector even in Ancient Near Eastern studies and Semitic linguistics. The exclusively epigraphic nature of the textual sources, and the complexity of reconstructing the historical, linguistic and cultural scenario on the basis of a fragmentary evidence, have solicited – and at the same time posed challenges to – the digital approach to such an *in fieri* discipline.

Although the first initiatives of digitization of the pre-Islamic Arabian inscriptions were launched already in the 1990s, it was not until the 2010s that they gained consideration by funding institutions. On the basis of the experience of the project *Corpus of South Arabian inscriptions* - CSAI, recently expanded into the *Digital Archive for the Study of pre-Islamic*

Arabian Inscriptions - DASI (www.dasi.cnr.it) – funded from 2011 to 2016 through an ERC Grant awarded to Prof. A. Avanzini of the University of Pisa, in partnership with Scuola Normale Superiore di Pisa – this paper aims at contributing to the discussion on the challenges, impact and prospects of digital initiatives engaged with “young” and “niche” sectors of the humanities research.



Figure 1 – Ancient South Arabian inscription (Şan ‘ā’, Military Museum, 3630)

DESIGNING DIGITAL TOOLS FOR UNDER-RESOURCED EPIGRAPHIES: CHALLENGES AND SOLUTIONS

Modelling – When defining good practices in the digitization process of the epigraphic documents, the double nature (both textual and material) of the (re)source “inscription” must be acknowledged (Eck 2017). However, the stronger emphasis traditionally put on the textual aspect of an inscription led the majority of epigraphic digital corpora to concentrate annotation efforts on the text of the inscription and to treat the contextual information as accessory information. This kind of approach found in the XML a suitable technology; accordingly, the CSAI, as many other epigraphic projects of the 20th century, was conceived as an XML-based edition of inscriptions (Avanzini et al. 2000). However, the study of under-resourced corpora, which is typical of “niche” and *in fieri* disciplines, has especially highlighted the limitations of this approach, as the thorough understanding of an epigraphic source implies the integration of contextual information (*in primis* geographical, archaeological, historic-artistic), which is better reached via a database approach. This was then preferred while designing the new archiving system of the project DASI: its conceptual model is centred on the two entities containing information on metadata and text of the inscription and on its physical carrier respectively, completed by entities for: their translations; their sites of origin or provenance; images; bibliographical references; editorial responsibilities (fig. 2). The capability of the web-based database to manage a distributed workflow also allows a collaborative and specialized approach to the epigraphic work.

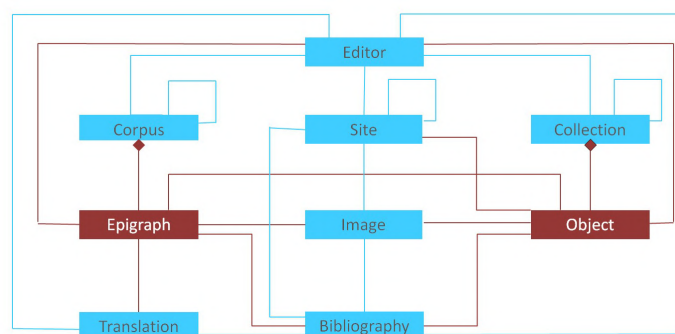


Figure 2 – DASI conceptual model

Indeed, the advantages in flexibility and interoperability allowed by an XML annotation of the text have been preserved by the integration of a module for the Latin transliteration of the text, the encoding of various philological and linguistic phenomena in XML-EpiDoc, and the critical apparatus' annotation (fig. 3).

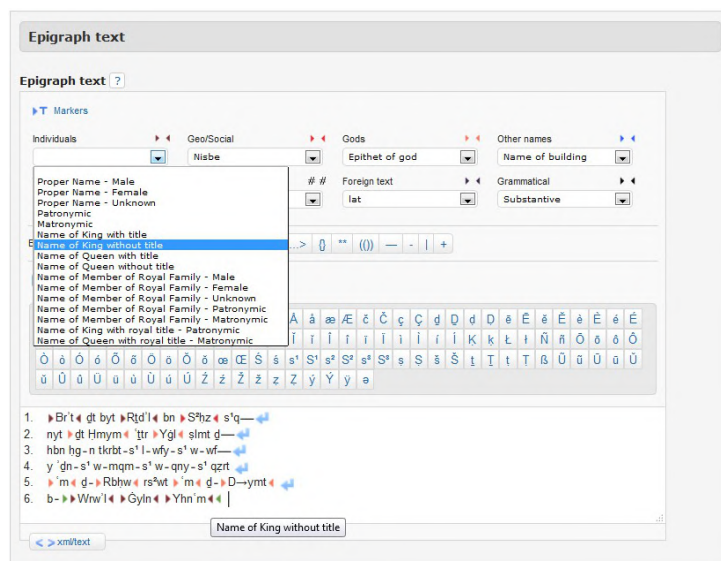


Figure 3 – DASI module for textual annotation

Interoperability and harmonization – CSAI had developed its own schema and vocabularies, as many other projects did when standards and thesauri were not yet widespread. At a later stage, in the need for interoperability, marginal epigraphies have found ready-to-use standards and guidelines that had been defined for Classical cultures. This has entailed a considerable effort of harmonization of definitions and phenomena that could only partially be applied to describe sectorial specificities. For instance, adhering to the EpiDoc guidelines (Elliott et al. 2007-2016) was not a straightforward operation. This effort of alignment was a heuristic process and allowed to rethink and refine the CSAI schema, but at the same time highlighted the constraints imposed by legacy data, forcing to compromise solutions, and the need for preserving the cultural peculiarities and the specific tradition of studies (e.g. in the choice and representation of phenomena to annotate) (Avanzini et al. 2016). While technical interoperability is possible (a repository allows service providers to harvest DASI records through the OAI-PMH protocol), reaching interoperability at the content level is more complicated for *in fieri* subjects. This has been apparent in the effort of harmonization of the vocabularies related to metadata – such as the definition of the text genre, or of the typology of support – to thesauri such as the EAGLE Vocabularies (<https://www.eagle-network.eu/resources/vocabularies/>) or the Getty AAT (<https://www.getty.edu/research/tools/vocabularies/aat/index.html>) (Avanzini et al. 2014).

Lexicography – Interoperability at a linguistic level across different corpora remains a desideratum, at least until they are extensively “lemmatized”, and translations of single “lemmas” and of entire texts are provided, as well as indications of their semantic categories. To this aim, a tool for creating lexica of the under-resourced languages considered within DASI has been implemented (fig. 4), facing the challenges posed by the ambiguous morphology of the Semitic languages, by the fragmentary nature of the epigraphic sources, and by the current paucity of established linguistic reference tools for the languages of Ancient Arabia (Avanzini et al. 2015). Waiting for the completion of the digital lexica, complex linguistic queries on the texts of the inscriptions can be already performed in the openly accessible DASI front end site, also in combination with metadata, in order to better

appreciate the message of the epigraphic texts against their context. Because of the frequent uncertainties in the reading of the texts, as well as in the interpretation of lexical and onomastic features, search on textual variants has been enabled, thanks to their encoding in the inline apparatus of the inscriptional text.

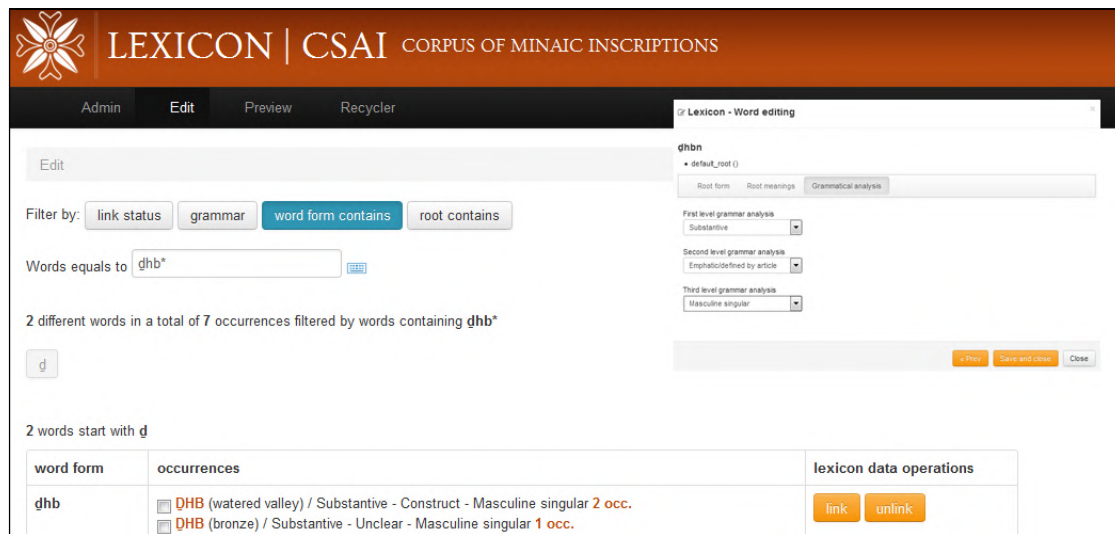


Figure 4 – DASI Lexicon

Teaching – Working on ancient Semitic epigraphic languages can be slow and discouraging. In the attempt to get early stage researchers and students closer to the discipline, and to make young generations appreciate the importance of the first-hand approach to ancient primary sources, the validity of DASI system as a didactic tool was tested in the frame of three DASI international training courses and in the teaching of Ancient South Arabian epigraphy at the University of Pisa, with positive results. Stimulated by the interactive method, and thanks to the user-friendly data entry interface, the students were able to easily complete the whole process of curation and edition of an inscription. The pre-defined fields to be compiled guide the analysis of the relevant textual and contextual features; the lists of controlled terms suggest coherent definitions to get used to. The textual encoding gets users familiar with methods and tools of philological analysis and enables linguistic practice through grammatical and onomastic annotations. Eventually, the results of the editorial work are published in the openly accessible online archive, providing immediate and concrete feedback.

Based on our experience, we believe that a more structured programming of teaching the fundamentals of Digital Humanities in the Italian graduate courses would improve the usability, in didactic activities, of the many digital tools specifically designed for research aims, leading to a wider and earlier involvement of students in research projects (on teaching digital epigraphy, see also Bodard and Stoyanova 2016).

PROSPECTS

DASI project's primary aim was to enhance the study of ancient Arabia through the publication of its curated epigraphic corpora, with a main historical and linguistic concern. The open accessibility of DASI's contents (reaching nearly 8,200 epigraphic and 600 more anepigraphic objects) has contributed to the dissemination of the knowledge on Ancient Arabia beyond the specialists' circuit.

The implementation of DASI archive, both in terms of content and technologies, in the last three years has faced the difficulties that every project – especially if concerned with niche

studies – encounters when its economic support comes to an end. The problem of sustainability is particularly sensitive in Digital Humanities research, to the extent of being one of the reasons of the still poor value attributed to digital products, and specifically to online archives' curated editions, in the academic evaluation process. However, the very recent migration of DASI's IT system to the CNR's infrastructures opens a new phase in the life of the archive, allowing further Digital Epigraphy developments.

In fact, in the meantime, new prospects have opened from the reflection on best practice in the digital approach to the epigraphic sources, thanks to the theoretical and methodological confrontation among Digital Epigraphy projects (e.g. Orlandi et al. 2014, 2017). Some recent editorial initiatives dealing with “marginal” epigraphies (cf. Felle and Rocco 2016) and with the Ancient Near Eastern textual heritage (cf. Bigot Juloux et al. 2018; Cotticelli-Kurras and Giusfredi 2018; De Santis and Rossi 2018) are opening perspectives for a renovation of the discipline, because of the peculiarities of the sources and the different research questions at the basis (with respect to digital Classical epigraphy). Research on methodologies and technologies for cataloguing, fruition and data mining is pushed further by *in fieri* studies, where uncertainty, ambiguity and variation have to be assumed.

As a first step, DASI will explore the application of semantic technologies to its data, starting from the geographic information of its archive contained both in the Site records and in the inscriptional texts. The creation of a gazetteer is envisaged in the frame of the partnership with the recently funded French project MAPARABIA, based at the CNRS, which will use DASI data for the building of a historical atlas and an online encyclopaedia of Ancient Arabia. Integration of other existing digital resources, especially in a Linked Open Data perspective, will be explored in view of the dissemination of the results achieved and the re-use of contents, as well as the application of machine learning techniques to the pre-Islamic Arabian epigraphic material.

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