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The Places of Inscriptions: from Epigraphy to Digital Epigraphy

Epigraphy, spatial turn and digital turn

In this article, I am dealing with a specific aspect of the study of inscriptions, that is with the place-related information contained in epigraphic texts and editions. In this regard, I will particularly focus on how the “digital turn” has affected the collection and representation of spatial data into the epigraphic *corpora* and research projects as a result of the introduction of ITC in Geography and Ancient Topography¹. Indeed, the purpose of this article is to describe the premises and the state-of-the-art of the ‘digital intersection’ of Epigraphy and Geography/Topography, providing the reader with a reasoned overview of its main themes and most illustrative projects.

The expansion of the Digital Epigraphy and the ever-spreading efforts by epigraphists to publish online *corpora* of inscriptions can be seen primarily in parallel with the development of Digital Scholarly Editing and, more generally, the encoding of machine-readable texts for digital representation, archiving, and analysis of documents in the Humanities². However, the extent and quality of geographic and spatial data nowadays included by online *corpora* as well as other

¹ In other words: how the digital turn has decisively fostered the spatial turn in Classical Studies (and Epigraphy). For the “spatial turn” and GIS technologies in the Humanities, see Presner - Shepard 2016, 201-212.

² On these general aspects, see Fiorimonte - Numerico *et al.* 2015, 129-167 and part. 136-144 on the mark-up and annotation of texts. On the Digital Scholarly Editing, see the essays in Driscoll - Pierazzo 2016, and part. Sahle 2016, 19-39.

Digital Epigraphy projects can easily be related to the dramatic growth of importance of “places” in the analysis of the ancient sources as a consequence of the intersection of GIS and computer cartography with Web technologies (Web GIS, Web Mapping, but also Neogeography practices)³.

We are dealing with innovations that have evolved during a relatively long period of time, following the development and improvement of GIS technologies during the 1990s, on the one hand, and those of the Semantic Web and the Semantic Geospatial Web since the 2000s, on the other⁴. However, it is only in very recent times – now that the entire surface of our planet has been transformed into an immense browser through *Google Earth*⁵ – that individual users have the opportunity not only to access a before unexperienced amount of cartographic resources and location-based information, but also to generate, handle and share spatial and geographic data (this is referred to as Volunteered Geographic Information), creating customized maps or gazetteers or, more often, providing any kind of georeferenced contents (to do so, it is sufficient to publish a vacation photo-album or to rate a restaurant using location-based services)⁶. If such

³ The term Web GIS (also known as Distributed GIS or Internet GIS) is often used interchangeably with Web Mapping (or Online Mapping). The latter, nonetheless, refers generally to the design, implementation, deliver and consumption of maps in the Web, while in Web GIS a particular focus is devoted on the publication and analysis of specific geospatial data on the Web. For basic information on Web GIS and Web Mapping, see Peterson 2008, 511-513. The so-called “Neogeography”, on which see Turner 2006, «consists of a set of tools and techniques that fall outside the realm of traditional GIS. ... Essentially, Neogeography is about people using and creating their own maps, on their own terms and by combining elements of an existing toolset» (quotation on pages 2-3). For a thorough reflection on these innovations in the field of Ancient Studies, see Elliot - Gilles 2009.

⁴ In the Semantic Web, knowledge representation is encoded to be machine-readable. Two basic technologies lay at the core of the syntax of the Semantic Web, i.e., XML (eXtensible Markup Languages) and RDF (Resource Description Framework). For basic information on the Semantic Web, after the classical article by Berners-Lee - Hendler - Lassila 2001, 34-43, see Shadbolt - Hall - Berners-Lee 2006, 96-101. The definition Semantic Geospatial Web refers to a vision of the Semantic Web that considers geospatial information as the fundamental pivot in the organization and retrieval of data in the Web; see Nishambaev - Champion - McMakeen 2019, 1471-1498, with further references.

⁵ See Brotton 2012, 394-422 (quotation on page 396): «In less than a decade [*scil.* after its launch in 2005, A/N], *Google Earth* has not just set the standard for these applications, but has led to a complete re-evaluation of the status of maps and the future of mapmaking, allowing maps to appear more democratic and participatory than ever before. It seems that anywhere on the earth can potentially now be seen and mapped by anyone online, without the inevitable subjective bias and prejudice of the cartographer. And as the cartographic limits of what it is possible to create online are expanded, so are the definitions of a map and its maker».

⁶ The so-called Volunteered Geographic Information, abbreviated as VGI, pertains to the domain of the User-Generated Content. It refers to the creation and dissemination of geographic data

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innovations have pervasively entered the everyday life of ordinary Web users, a fortiori they have done the same in very many fields of academic research.

As far as the Humanities are concerned, billions of digitized cultural objects – books, documents, photos, audio recordings, and so on – are provided with geospatial metadata⁷. In the field of Classical Studies, we can mention here as an example of an advanced project the *Arachne* database of the Deutsches Archäologisches Institut (DAI) and the Archäologisches Institut of the Universität zu Köln, that provides an open search tool for millions of digitized objects in the field of Archaeology and gives access to a huge amount of digital data on their context. All objects are georeferenced according to the places recorded in *iDAI.gazetteer* (these last are also linked with other gazetteer systems like *GeoNames* and *Pleiades Gazetteer of the Ancient World*) and are searchable on the basis of multiple location categories, as well as visualized and browsable on a general map. Conversely, each place in *iDAI.gazetteer* leads to clusters of georeferenced records in it, from *iDAI* collections (i.e. *iDAI.objects-Arachne* and *iDai.bibliography-Zenon*) but also from worldwide databases and collections indexed by the *Peripleo* search engine, belonging to the *Pelagios Network* infrastructure.

In addition, a vast quantity of geographic coordinates and geospatial information is nowadays available to everyone as Open Geodata⁸, while specialized gazetteers devoted to individual regions, research fields and historical periods provide authoritative topographic datasets that can be used to annotate geographic references in texts or images according to a Linked Open Data approach⁹.

and georeferenced information, that are individually and voluntarily provided by non-geographers through specific Web mapping tools or location-based services; on the definition of VGI and the development of this concept, since its first formulation in 2007, as an essential topic of GIS science, see Yan - Feng *et al.* 2020, 1765-1791.

⁷ *Arachne*: <https://arachne.dainst.org>; *iDAI.gazetteer*: <https://gazetteer.dainst.org/app/#!/home>; *GeoNames*: <https://www.geonames.org>; *Pleiades Gazetteer of the Ancient World*: <https://pleiades.stoa.org>; *Peripleo*, <https://peripleo.pelagios.org/>. On *Peripleo*, see also further below, n. 9; on *Pleiades*, see below, ***.***. For an updated and rich list of the electronic resources for the Geography of Antiquity (both in the Classical and in the Middle-East World), see Jones 2020.

⁸ Open Geodata pertain to the larger domain of Open Data, that is «data that can be freely used, re-used and redistributed by anyone (subject only, at most, to the requirement to attribute and share-alike)» according to the *Open Definition* (<https://opendefinition.org>) by the *Open Knowledge Foundation*; for further details, read *The Open Data Guide* (<http://opendatahandbook.org/guide/en/>) online. A basic requirement for “openness” in relation to all kinds of data meant to be freely shared is represented by their semantic interoperability, guaranteed by the definition and adoption of common standards and vocabularies. Among the many standards bodies working in this field, see the *Open Geospatial Consortium*, <https://www.ogc.org>, or *OGC* (formerly, *Open GIS Consortium*), on which see Reed 2008, 329-330, supporting the development of open and extensible standards for the interchange of geospatial data.

⁹ *Recogito*: <https://recogito.pelagios.org/>.

As a very relevant example in this respect we have to mention the *Recogito* platform, another open Web-based resource (besides the already mentioned *Peripleo*), which was developed in the framework of *Pelagios Commons* in order to foster the creation and exploitation of LOD in the field of Classical Studies and Humanities in general. Through a friendly interface, suitable also for non-expert users, *Recogito* provides a tool for collaborative annotation of historical documents. Registered users can upload their documents (texts or images) in a personal workspace. By means of the annotation editor, references to places contained therein can be identified and put in relation to unambiguous locations derived from associated gazetteers¹⁰. Finally, the whole set of identified places can be visualized on a map and different categories of data collected in individual projects (i.e. annotations, lists of geo-parsed locations, annotated documents etc.) can be exported to other related formats (e.g. CSV, GeoJSON, XML-TEI) and saved locally to be used outside *Recogito*.

All the above points to the fact that today more and more documents in the Humanities can be searched, analysed and represented from a location-based perspective¹¹. This has increased our awareness of the geographical dimension of our sources, also influencing the formulation of new research perspectives that put spatial information at the core of their investigation. Exploring geographical or topographical aspects of our sources or visualising data on a map in a digital context has become much easier even for scholars/users without special expertise in GIS or Semantic Web languages.

The places of inscriptions: different approaches through some illustrative cases

As far as Classical Epigraphy is concerned, the above approach is particularly effective with regard to specific categories of inscriptions. For instance, public documents dealing with interstate relations – i.e. institutions such as *asylia*, *proxenia*, *theorodokia*, *symmachia*, *isopoliteia*, etc., just to limit ourselves to the Greek world – are particularly suitable to be analysed and studied through geographical

¹⁰ E.g. *Pleiades* (see above, n. 7), the *Digital Atlas of Roman Empire-DARE*: <https://dh.gu.se/dare/>; *HistoGIS*: <https://www.oeaw.ac.at/acdh/projects/histogis/>, *GeoNames* (see above, n. 7), and so on.

¹¹ See Nishanbaev - Champion - McMeekin 2019, 1471-1472: «This generated CH [i.e. Cultural Heritage, A/N] is often geographically referenced, thereby incorporating geographical location and time references, the resulting geospatial data often appears in a wide range of geospatial file formats. In turn, geospatial data, and location and time references can be used to discover interesting connections and relationships among cultural heritage resources. Hence, geospatial data is a major component of the CH field».

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digital tools. The intrinsic capacity of such documents to highlight networks of political or social interrelationships between ancient states can be enhanced by displaying on a map the communities involved and their geographical distribution throughout time. This method is not only valuable in itself, as it allows a better understanding of such phenomena, giving them a concrete spatial dimension. It can also facilitate a wide-ranging investigation of specific interstate institutions in the Classical world by examining their overlap with other regional networks equally representable on a geographical map (e.g. economic transactions, individual mobility between communities, land or sea trade routes, colonization or ethnicity linkages, hegemonic powers etc.).

A good example of a digital map-based project on interstate relations attested in inscriptions is provided by the *Proxeny Networks in the Ancient World* database (PNAW), hosted by the *Centre for the Study of the Ancient Documents* at Oxford University and directed by William Mack, author of *Proxeny and Polis. Institutional Networks in the Ancient Greek World* (Oxford 2015)¹². The database has in fact been conceived as a companion to the volume. On the one hand, it collects and makes available the datasets on which the author based his analysis of the proxeny networks – the latter, based mainly on epigraphic documents (decrees and lists) and, to a lesser extent, on literary *testimonia*. On the other hand, the database was created to improve and keep up-to-date the existing evidence on Greek proxenies, in view of the possible publication of new documents. As it is clear from the book's subtitle, Mack has devoted particular emphasis on the theme of social networking between *poleis*, making use of some analytical approaches derived from the Social Network Theory to describe how the Greek *poleis* created dynamic systems of cultural and political interactions, conveyed by ties of proxeny. The institution of proxeny – thoroughly documented all over the Greek world – is here investigated as a privileged object of observation to trace such interrelationships in their historical trajectory from the Classical to the Roman age.

With respect to this standpoint, Geography plays a pivotal role, as far as «individual *poleis* viewed their *proxenoi en masse* as geographically distributed networks»¹³. In particular, in order to assess the different ways in which the *poleis* shaped their networks, Mack invokes the notion of “local region of primary interaction”, i.e. the area to which each polis targeted most of its grants of proxeny. A spatial analysis of the phenomenon shows different types of proxeny networks: while most of the *poleis* seem to have been strongly focused on such local regions, other ones extended the scale of their interactions far beyond them, thus being less influenced by the geographical framework in which they were embedded¹⁴. In

¹² *Proxeny Networks in the Ancient World* (PNAW): <http://proxenies.csad.ox.ac.uk>.

¹³ Mack 2015, 148.

¹⁴ Mack 2015, 148-189, part. 151-152 on the category of “local region of primary interaction”.

this frame, the PNAW database plays an important role, as it allows users to verify the validity of this interpretative pattern in relation to many more case studies than those examined in the book, as well as in presence of further variants, for instance by applying filters related to special roles of the *proxenoi* (e.g. as *theoroi*, ambassadors, royal friends, athletes, etc.) or to the awarding of additional honours, such as *politeia*.

Figs. 1 and 2 show two maps I generated by applying “granting community” as the sole search filter. The data retrieved from such an unrefined query are already capable to highlight visible differences in the shapes of the two respective “proxeny networks”. The map in Fig. 1, related to Kallion/Kallipolis, seems to correspond more sharply to the “local region of primary interaction” of this *polis*, largely defined by the area of maximum extension of the Aitolian territorial domain in the 3rd cent. BCE¹⁵. The second map, with the *polis* of Kerkyra in the role of granting community, shows relationships of a larger scale and over a wider span of time than those of Kallion, and thus suggests a different kind of network, whereby a marked core of local interactions is not discernible. Preliminary observations such as these, although based on a very simple query, are nevertheless able to suggest avenues of research in relation to specific contexts, thus providing a starting point for further investigations.

In the analysis of epigraphic documents entailing interstate relations, the geographical visualization of the communities involved and the networks in which they were embedded can make a difference. And, of course, this kind of approach is facilitated and encouraged by the easy access to Web mapping tools, location URIs and Linked Open GeoData focused on the Ancient World, such as those provided by *Pleiades*. In the PNAW database, search results (see Figs. 1-2) are first displayed in the form of location markers precisely because the project explicitly recognize the heuristic worth of “visualization” with respect to the topic of ancient (proxeny) networks¹⁶.

¹⁵ All the recorded proxenies granted by Kallipolis pertain to the 2nd cent. BCE, some of them to the middle or the end of the same. Even if the territory of the Aitolian state had been severely reduced after the battle of Pydna (168 BCE), one cannot ignore that also later proxeny grants continued to be targeted to the area previously embedded in the Greater Aetolia; on Kallion/Kallipolis, see Hansen - Nielsen 2004 no. 147 and Lasagni 2018, 178-189 with further references; on the territorial expansion of the Aitolia federal state, see Scholten 2000.

¹⁶ «PNAW is a database of evidence for a particular kind of social networking between Greek city-states in the Ancient Greek world, known as proxeny (Greek: *proxenia*). It enables this material to be used to visualise the highly-fragmented political geography of the ancient world during the Archaic, Classical, and Hellenistic periods, and to get a sense of how densely and intensely interconnected were the states which made it up», from the *About* page of the website (<http://proxenies.csad.ox.ac.uk/about>, accessed 01/10/2020).

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Giving special focus on the location data conveyed by digital technologies also holds particular relevance in the study and Web representation of those categories of inscriptions that are ‘naturally’ preserved *in situ*, such as *graffiti* or rupestral *horoi*. The same applies to inscribed stones that are usually found mostly in their original position, such as the funerary inscriptions in catacombs; or whose position in specific ancient monuments is definitely known or can be reconstructed with a high degree of confidence, such as the architectural inscriptions. Here we are dealing with spatial data of a different nature, if compared to those considered above. They pertain to the archaeological description of epigraphic documents, rather than their historical context, and focus on specific and limited areas – mostly on a single archaeological site. Consequently, place definitions express a finer granularity of location, so that the retrieval of data related to individual inscriptions does not take place on the basis of georeferenced ancient settlements, but according to individual monuments, urban areas or excavation sectors.

A good example of this approach is provided by the *Ancient Graffiti Project*, directed by Rebecca R. Benefiel (Washington & Lee University) and partner contributor of *Epigraphic Database Roma* and *Europeana EAGLE Project*¹⁷. The AGP database collects both figural and textual graffiti from the ancient cities of Herculaneum and Pompeii, to which the recently discovered graffiti from Smyrna are being added¹⁸. The project presentation describes the AGP as «a digital resource and search engine for *locating* (my italics, N/A) and studying graffiti of the early Roman empire». Indeed, the topographical dimension of these documents appears to be the primary concern of the project. The most relevant browsing function of AGP, in particular, works through two interactive maps of Herculaneum and Pompeii, the latter designed by deriving geospatial data from the map of Pompeii created by the *Pompeii Bibliography and Mapping Project*¹⁹. Each city block (i.e. “properties” and “streets”), identified by a single URI and provided with metadata, is related to the group of graffiti that is preserved or recorded on its walls. Consequently, picking one or more of such blocks in the city plan is the easiest way – even for less skilled users – to access inscriptions and drawings. The

¹⁷ Ancient Graffiti Project (AGP): <http://ancientgraffiti.org/Graffiti/>; *Epigraphic Database Roma* (EDR): <http://www.edr-edr.it/default/index.php>; *Europeana EAGLE Project*: <https://www.eagle-network.eu/> For a description of the major features of the AGP database, see in part. Benefiel - Sprenkle *et al.* 2017, 163-168.

¹⁸ As far as the handwritten inscriptions from Herculaneum and Pompeii, AGP improves and updates the corpus of graffiti published in *CIL IV*, providing its own editions; the digital edition of the graffiti from the Basilica in the Agora of Smyrna is based on Bagnall - Casagrande-Kim *et al.* 2016.

¹⁹ The PBMP (<https://digitalhumanities.umass.edu/pbmp/>) aims at providing a “bibliocartography” of Pompeii, integrating all the relevant citations and bibliography on Pompeii into the GIS of the ancient city.

so-called “properties” sectors are also classified into categories (e.g. “commercial space”, “public space”, and so on) and sub-categories (e.g. “brothel”, “inn”, “tavern” or “amphitheatre”, “bath”, and so on). On the other hand, it is possible to select multiple city blocks on the interactive map, thus allowing simultaneous parallel searches on several areas of the city or comparative analyses of graffiti preserved in buildings and areas that were characterized by the same functions.

It is worth noting that, in organizing the AGP digital corpus according to a pronounced spatial perspective, the identification of function-related urban sections (“property type”) and, consequently, their valorisation as both physical and semantic areas prevailed over achieving a much greater granularity of locations and more accurate localization of the collected graffiti. This methodological choice appears to be closely linked to the nature of the epigraphic and iconographic documents examined. Publishing the exact coordinates of each graffiti would have been not only of little relevance in the digital representation and analysis of this kind of ancient sources but even risky, due to their intrinsic vulnerability, since many of them still lay *in situ* without protection²⁰.

Another case worth mentioning in this regard is the one provided by the *Epigraphic Database Bari* (EDB) and, more specifically, by the *Domitilla Project*, the fruit of a collaboration between EDB (A.E. Felle, Università di Bari) and the *Domitilla Projekt* of the Österreichische Akademie der Wissenschaften (N. Zimmermann, DAI Rom)²¹. Once again, this is a digital corpus in which detailed spatial information deriving from archaeological research data plays a key role in the description of epigraphic resources. In general, EDB publishes epigraphic sources coming exclusively from Rome. Moreover, as it focuses on early Christian inscriptions from the 2nd to the 8th cent. CE, EDB deals with categories of objects that are mostly preserved in their original context or whose original location can be reconstructed with sufficient confidence²². As A.E. Felle has pointed out, a marked interest in accompanying the published inscriptions with itemized spatial information was already present as a distinctive feature in the *Inscriptiones Christianae Urbis Romae, nova series* (1922-1992)²³. The ten volumes contain detailed plans of all the underground cemetery complexes of Rome, in which each inner

²⁰ See Benefiel - Sprengle *et al.* 2017, 165.

²¹ *Domitilla Projekt*: <https://www.oeaw.ac.at/oeai/forschung/altertumswissenschaften/projekte-in-publikationsvorbereitung/die-domitilla-katakombe-in-rom>; *Epigraphic Database Bari* (EDB): <http://www.edb.uniba.it>.

²² See Felle 2014, 304-307 and Felle - Zimmermann 2014, 95-96.

²³ See Felle 2014, 304. It is worth comparing these observations about *ICUR NS*, with Benefiel - Sprengle *et al.* 2017, 165-166, describing the difficulties encountered by the research team of the *Ancient Graffiti Project* in determining the precise position of the graffiti published in *CIL IV*, and in its supplement and addenda.

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zone (*regio*) and sub-zone (*cubiculum* or similar) is described by a univocal alphanumeric code. This focus on a high-detailed spatial definition of the published inscriptions has been naturally followed in the *EDB* digital corpus, which, indeed, is characterized from its inception and design by being particularly focused on inscriptions as monuments and as archaeological objects, rather than predominantly as texts²⁴.

The vocation of the *EDB* was further enhanced through the *Domitilla Project*, which marked the transition – in relation to the analysed context, viz. to the catacomb of Domitilla on the Via Ardeatina – from the use of a high level of spatial granularity to that of georeferenced data in the description of epigraphic documents. Within the framework of the *Domitilla-Projekt* by the ÖAW – created with the aim of documenting all the painted areas in the Domitilla Catacomb – the underground cemetery was laser-scanned, resulting in a 3D model of the entire complex containing all the relevant spatial data. Further systematic fieldwork was conducted to identify all the inscriptions preserved *in situ* and to pinpoint their precise location within the new georeferenced plan of the catacomb. This work provided the basis for linking the epigraphic resources in the *EDB* and the data recorded in the *Domitilla-Projekt* through an interactive map. In particular, all inscriptions preserved *in situ* are displayed on the 2D planimetric reliefs of the Domitilla Catacomb in their exact location²⁵. In additions, the inscriptions are signposted by an interactive hyperlink marker pointing to the relevant records in the *EDB*, so that the map provides both a highly accurate visualization of all the inscriptions preserved in the different levels of the cemetery complex and, at the same time, an additional navigation function (from the map to the text) for the *EDB* resources.

“GIS model” vs. “LOD gazetteer model”

The juxtaposition of archaeological GIS and digital gazetteers, as two different and complementary approaches to the study of ancient topography in a digital environment, clearly emerges on the analysis of the places associated with the types of inscriptions considered here²⁶. Indeed, the “LOD gazetteer model” is

²⁴ See Felle 2012, 119-120; 2017, 188-189.

²⁵ The whole set of the interactive maps is available for download in .pdf format: <https://www.oeaw.ac.at/oeai/forschung/altertumswissenschaften/projekte-in-publikationsvorbereitung/die-domitilla-katakomben-in-rom/2013-14>.

²⁶ In regard to this theme, see Elliot 2019 (and also Gilles 2010 about Pleiades as an “Un-GIS”) and Horne 2020, 37-50. The latter, in particular, reflects on the relationship between so-called “Historical GIS” and digital gazetteers (based on Uniform Resources Identifier, URIs, and Linked Open

particularly effective for mapping historical data in epigraphic texts pertaining to large spatial frameworks, and for analysing them according to a geographical and visual dimension, as in the case of the public inscriptions attesting to networks of interstate relations. On the contrary, the “GIS model” is essential for those categories of epigraphic texts that are characterized by being closely embedded in an archaeological context – where they very often continue to be preserved in their original position – and that, consequently, can be profitably studied with respect to their monumental presence or public fruition by way of their spatial framing.

What I have observed above seems to be but one of the many variations on the time-honoured theme – so dear to epigraphical studies – of the double nature of inscriptions as texts and monuments, or, said otherwise, as historical documents and archaeological objects. But returning now to the issue of the digital representation of the places of inscriptions according to the “GIS model” or, alternatively, to the “LOD gazetteer model”, I would like briefly focus on what are two key elements to understand the core of this opposition: on the one hand, the degree of certainty about locations, on the other hand, the granularity of the location descriptions. From a methodological point of view and leaving aside technical aspects, the two models differ mainly on these two aspects.

The geographical or topographical representation of historical place or community names necessarily has to deal with the question of uncertainty or, better said, with different degrees of certainty of the information collected.

Inscription texts, like other ancient written sources, may contain references to unlocated political communities or otherwise unknown toponyms. Not infrequently, the geographical location of a place or community name may be a matter of debate among scholars, so that its association with specific coordinates on a map has to remain hypothetical at best. In some other cases, we have to deal with the presence of non-univocal names in ancient texts, for which there is no evidence for a definite disambiguation.

Further aspects in this same respect concern the epigraphic sources in particular. The low degree of certainty regarding place or community names is primarily due to the fragmentary state of preservation of the inscriptions: some references, partially or completely supplied *in lacuna*, can be considered conjectural

Data, LOD) in the frame of the “spatial turn” of the historical sciences; differently from the (Histo)GIS, digital gazetteers can better respond to the challenges of Historical Geography, due to their peculiar capacity of «modeling conceptual places» (quotation on page 37); despite this – as it is pointed out by the author – in the face of a great emphasis given by scholars to the entry of GIS into the field of historical research, a thorough reflection on the role of digital gazetteers seems still little developed; in this regard, the article frames the theoretical and methodological context at the base of the two most advanced projects in the field of historical studies, i.e. Pleiades and of the World Historical Gazetteer (WHG): <http://whgazetteer.org>.

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in the face of the presence of alternative and equally acceptable textual restorations. In some cases, uncertainty in localization arises from fragmentary (or elliptical) inscriptions that were discovered far from their original context (the so-called *pierres errantes*, moved to be reused as building material or taken away for collecting purposes), and for which there is no way to determine with sufficient confidence an established provenance or even the issuing community.

In conclusion, the digital representation of historical references to places and communities in epigraphical sources inevitably requires to consider and unambiguously express several types of uncertainty in our knowledge, namely 1. related to location (inscriptions containing references to places or communities whose location is today unknown or disputed); 2. related to attribution (ancient places or communities whose location is known or taken for certain, but whose link with the inscription is hypothetical); 3. related to both location and attribution. The gazetteer model allows handling uncertainty related to “locations”, while its combination with mark-up annotation of epigraphic texts through XML-TEI (EpiDoc) is also able to express the different degrees of certainty related to “attribution” of places or communities.

As far as the first aspect is concerned, particularly noteworthy is the conceptual approach adopted by *Pleiades* in classifying and organizing the collected data, which probably makes *Pleiades* the digital project most capable today of representing a «complex, partial, and changing understanding of ancient geography»²⁷. Information is arranged into four main categories: 1. places, 2. locations, 3. names, 4. connections (these last describing different kinds of relationships between places). The *Pleiades* gazetteer is basically composed of “places”, i.e. any kind of spatial entity – settlements, geographical features, administrative structures, monumental areas and buildings, and so on – for which some kind of relationship with the ancient world is recognizable or documented. Unlocated toponyms attested in ancient sources or unnamed archaeological sites are equally regarded as “places”, the former being provided by a “name”, the latter by a “location”, that is, by geographical coordinates. Individual places may also be associated with multiple coordinates (when their geographical position is discussed in the literature, or in the case of settlements or structures that were relocated in antiquity); on the other hand, multiple names can be associated to a single place, following historical changes in toponymy.

Regarding the second aspect, it is worth mentioning that uncertainty (i.e. a low degree of certainty or precision) is also encoded as a specific “attribute” in the semantic mark-up of epigraphic documents according to XML for EpiDoc²⁸.

²⁷ The text is quoted from *Pleiades*' website, on the page *Ancient Places* in *Pleiades*: <https://pleiades.stoa.org/places> (accessed 01/10/2020).

²⁸ See Elliot - Bodard et. al 2007-; for a general overview, see Babeu 2011, 96-110.

The attribute `@cert="low"`, in particular, can be used in case of uncertain restorations of words totally or partially lost in lacuna (for instance, `<supplied reason="lost" cert="low"> ἐν Ἀθήναις </supplied>`, i.e. [ἐν Ἀθήναις?]). On the other hand, any place name mentioned in an epigraphic text (in the same way as any spatial reference relevant to the history of the inscribed object) can be linked not only to its corresponding standardized reference in a local XML place authority list (attribute `@nymRef`) but also to external digital gazetteers, such as *Pleiades* or *TM Places* database (attribute `@ref`). This means that, through semantic annotation, a single place reference in an epigraphic document (`<placeName>` or `<geogName>`) can also be related to different kinds of uncertainty, in the case in which, for instance, an ancient toponym supplied in lacuna provides geographic information that is not fully reliable, both because its restoration in the text is hypothetical and because it relates to an unknown or discussed location²⁹.

It goes without saying – but it is nevertheless worth pointing out – that the kind of information referred to here is not essentially different in its content from that which could be provided by an ‘analogical’ epigraphic edition. Indeed, a hypothetical restoration of an uncertain place can be equally expressed, on the one hand, through squared brackets and question marks according to the Leiden conventions and, on the other hand, by attaching a historical-geographical commentary. But the point at issue is rather that, through semantic encoding and the association with a digital gazetteer, the same information is now made vibrant: the translation into a machine-readable form allows the data to be retrieved, analysed, implemented, revised and visualized again and again.

The methodological approaches labelled here as “GIS model” and “LOD gazetteer model” also differ from each other on the issue of place granularity. Specific needs for high detailed spatial information may be an obstacle to the use of LOD gazetteers for some epigraphic databases (especially for those focused on a single ancient site and for those in which the archaeological and monumental dimension of the collected inscriptions is essential for the purposes of the

²⁹ For example, the reference to Semachidai in the bouletic list Agora XV 55 (l. 21: [Σημαχίδαι?]) could be encoded with EpiDoc as follows: `<placeName ref="https://pleiades.stoa.org/places/580104"><supplied reason="lost" cert="low">Σημαχίδαι</supplied></placeName>`. Here, the attribute `@cert="low"` indicates that the restoration of the name Σημαχίδαι is hypothetical. At the same time, the attribute `@ref` points to the *Pleiades* gazetteer, where the place resource “Semachidai?” (see Traill - Becker et al. 2020), an Attic deme whose centre has been only tentatively identified in the area near Vredou, is related to two discrete locations (and thus pinpointed in their centroid or “representative point”) and, on the other hand, to the name resource “Semachidai”, whose association with the above place is labelled as «less than certain». About certainty/uncertainty in the relationship between name and place resources, see the page *Uncertainty* (by T. Elliot) in the help documentation of *Pleiades* website: <https://pleiades.stoa.org/help/uncertainty> (accessed 01/10/2020).

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research). This is particularly true in the case in which the creation of an original “place authority list”, specifically tailored to the context and contents of the *corpus*, represents an essential part of the research process. For instance, in the case that the digital publication of epigraphic documents is conceived within the broader context of an excavation programme, such as, for instance, the *Inscriptions of Aphrodisias* (InsAph) and *Aphrodisias in Late Antiquity* (ALA)³⁰. However, it must be stressed that these limitations are not due to how digital gazetteers structure the information – as opposed to the ineffectiveness of GIS in representing uncertainty in Historical Geography. Actually, they are simply related to the current state-of-the-art in the expansion and implementation of data.

Virtually any kind of spatial entity (or any *place*, *geographic name* or *location*, following *Pleiades*’ settings) of any order of magnitude (including urban sectors, monuments, spaces inside buildings and so on) can be provided with its own URI and included in a digital gazetteer. The entire dataset of *Pleiades* – looking to the field of ancient studies and its most popular digital gazetteer – has grown enormously from its initial structure, which was originally intended to provide a revised digital version of the *Barrington Atlas Map by Map Directory*³¹. In this respect, many more places have been added that were not considered in the *Barrington Atlas* because of their too small scale, including buildings or monumental areas pertaining to some ancient cities³². Indeed, achieving a greater granularity of places for more ancient cities through the elaboration of “urban gazetteers” is currently a major challenge for *Pleiades* community, where an *Urban Gazetteers Working Group*, led by Susanna de Beer (Leiden University) and Valeria Vitale (University of London), has been created with the task of defining common guidelines and best practices in this field³³.

Even if this is a long and complex story yet to be written, we can already foresee that such innovative activities – to the extent that they are performed in the sphere of the LOD community – will be capable to further enhance the “spatial turn” of the epigraphical studies in a digital environment, with great advantages both for research projects and the teaching/learning of Epigraphy.

³⁰ *Inscriptions of Aphrodisias* (InsAph): <http://insaph.kcl.ac.uk>; *Aphrodisias in Late Antiquity* (ALA): <http://www.insaph.kcl.ac.uk/ala2004/>.

³¹ See Elliott - Talbert 2019, 188-192; Horne 2020, 39-43.

³² At present, Pompeii (*Pleiades* ID: 433032) is the ancient city provided with the richest set of connections from place resources relevant to internal monumental areas and buildings, see Purcel - Kiesling *et al.* 2020.

³³ See Vitale - de Beer 2019.

Conclusion

The study and publication of ancient inscriptions confront us with different kinds of spatial information related to their provenance, original location, place of discovery, current place of preservation, or, else, deriving from the names of places, communities or geographical features mentioned in epigraphic texts. Among the “places of inscriptions”, some require to be defined through geographical coordinates, others, on the contrary, require to be critically described through complexity and uncertainty. Some belong strictly to the sphere of archaeological research, others have to do with history and with literary sources. Compared to the traditional epigraphic editions, the analysis and representation of information related to places in digital epigraphy projects are considerably more challenging. Indeed, a more refined planning of the theoretical and methodological framework for such data is always necessary before embracing specific models and tools. Although the ‘digital intersection’ of Epigraphy and Geography sees the steady consolidation of shared practices and standards and implies an increasingly crucial role of the LOD community, there is not unique way to encode and represent spatial and geographical information related to inscriptions just as there is no single category of tools to be adopted for such purposes. Much depends on the categories and the contexts of provenance of the inscriptions analysed, as can be seen from the examples provided above on the relationship between “GIS model” and “LOD gazetteer model”. Above all, it depends on whether we need to focus on their features as monuments and as archaeological objects, or, on the contrary, on their documentary value as textual and historical sources, in order to respond more effectively to objectives of the project. What is unquestionable, however, is that (digital) epigraphists are now much more engaged with “places” – with Geography, Topography and spatial data – than they used to be. And, if all this may seem to be a further step towards the hyper-specialization in our discipline, its actual outcome may rather be to make the study of inscriptions more integrated into the history of places, and thus more accessible and ‘democratic’.

I like to think, without fear of sounding rhetorical, that especially the innovations and challenges I have presented in this article may be capable to refresh the vivid interest, among scholars, students or simple lovers of Epigraphy, towards an *épigraphie militante et voyageuse, préface nécessaire de l’épigraphie de cabinet*, and to revive in our Digital Age that heroic figure of the *épigraphiste voyageur*, so vividly evoked by Salomon Reinach in the introduction of his *Traité d’Épigraphie Grecque*³⁴.

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³⁴ Reinach 1885, xiv-xvii.

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Abstract

L'analisi e la pubblicazione delle iscrizioni comporta l'esame di molte diverse informazioni relative a "luoghi": dai dati sul ritrovamento archeologico, l'originaria collocazione, la sede di conservazione, sino a tutti i riferimenti geografici o topografici contenuti nel testo epigrafico o legati al suo inquadramento storico. La rappresentazione dei dati spaziali all'interno dei progetti di Epigrafia Digitale, e in particolare nei corpora online, riveste oggi un innegabile rilievo e ha determinata negli studi una sempre più ampia attenzione rivolta agli aspetti di contesto archeologico, di topografia urbana o di geografia storica presenti nelle iscrizioni. Ciò può essere interpretato nel quadro più generale della "svolta spaziale" che ha interessato gli studi classici come tutte le scienze umane e sociali, in parallelo con sviluppo delle tecnologie informatiche applicate alla Geografia, Cartografia, e Topografia Antica, dal GIS alle opportunità offerte dal Web semantico e dai Linked Open Data. Questo articolo si propone di offrire al lettore una panoramica ragionata dei maggiori temi e pratiche relativi all'incontro tra Epigrafia e Geografia/Topografia in ambiente digitale, attraverso l'esame di una serie di progetti digitali considerati particolarmente illustrativi a questo fine.

The study and publication of inscriptions involves the analysis of many different pieces of information related to "places": from data on the archaeological discovery, the original location, the place of preservation, up to all the geographical or topographical references contained in the epigraphic text or related to its historical context. The representation of spatial data in Digital Epigraphy projects, and in particular in online corpora, is nowadays of undeniable importance and has led to an increasing attention in research to the aspects of archaeological context, urban topography or historical geography present in the inscriptions. This can be interpreted in the more general framework of the "spatial turn" that has affected classical studies as well as all the human and social sciences, in parallel with the development of information technologies applied to Geography, Cartography, and Ancient Topography, from GIS to the opportunities offered by the Semantic Web and Linked Open Data. This article aims to offer the reader a reasoned overview of the major issues and practices related to the encounter between Epigraphy and Geography/Topography in the digital environment, through the examination of a series of digital projects considered particularly illustrative in this purpose.

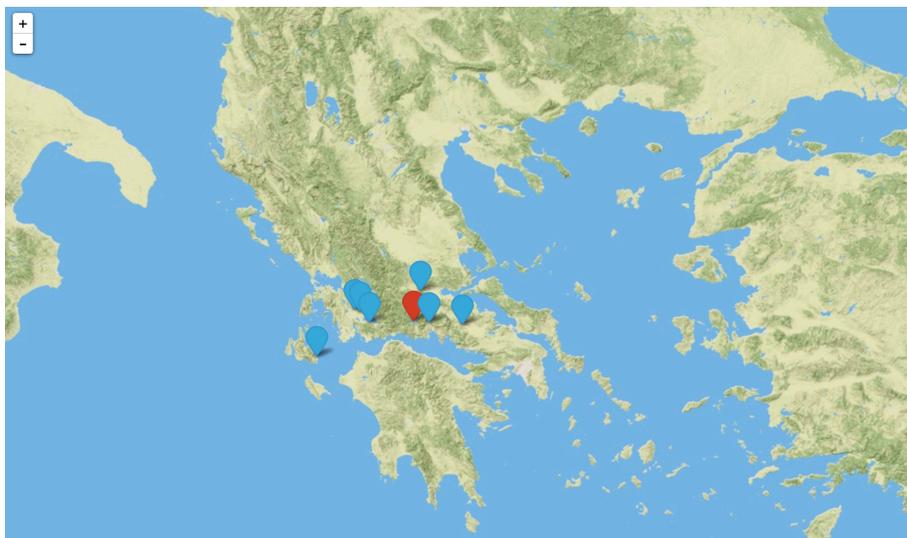


Fig. 1: The proxeny-network of Kallion/Kallipolis (screenshot from the website of the PNAW database)

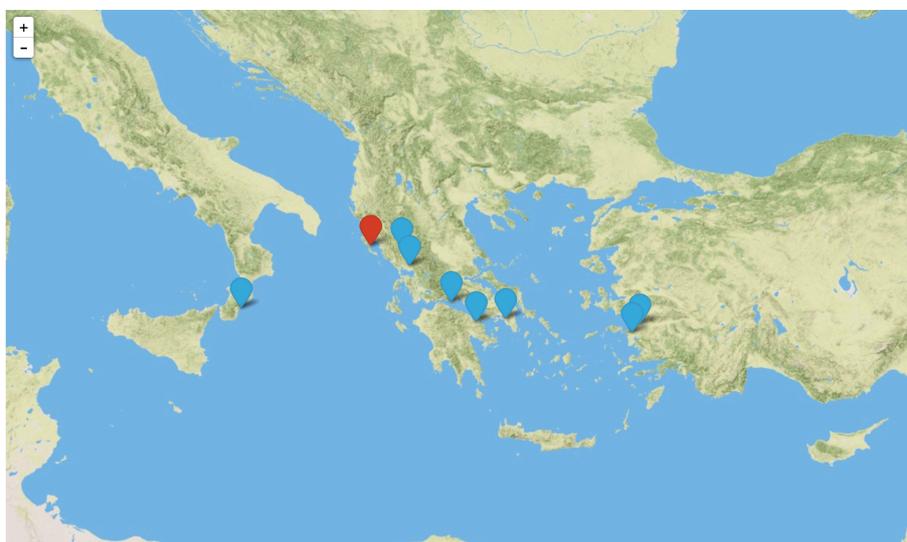


Fig. 2: The proxeny-network of Kerkyra (screenshot from the website of the PNAW database)