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Documenting Ancient Graffiti: Text, Image, Support and Access

Abstract: This chapter discusses how the method for documenting ancient graffiti, including both what to document and how, has changed over the centuries. With a focus on the inscriptions of first century Pompeii, we stress that graffiti are epigraphic artefacts, thus requiring both epigraphic and archaeological consideration. We present a historical overview explaining how graffiti have been documented, from early publications in the nineteenth century to technological innovations in the twenty-first. We then discuss the aims, methods and results of the Ancient Graffiti Project, a current project to document graffiti and a public-facing scholarly resource. Based on a decade of epigraphic research and archaeological fieldwork, AGP offers a digital platform and tools to support a richer understanding of ancient graffiti from the early Roman Empire in their archaeological context.

1 Introduction

In 2018, new excavations conducted by the Archaeological Park of Pompeii yielded a treasure trove of discoveries: a remarkable fresco of the mythological subject of Leda and the swan, a *thermopolium*, or snack bar, still containing food residue and animal bones, and a handwritten inscription, or graffito (Fig. 1).[1] It was the announcement about the graffito that generated headlines in major news outlets, such as CNN and The Guardian.[2] The graffito, written in charcoal, an easily perishable material, contained a date in October and so was brought into the active debate about whether the eruption of Mt. Vesuvius occurred in late summer or later fall of 79 CE. The graffito reached such a wide audience and so

1 The press releases for each have been archived on the website of the Archaeological Park of Pompeii (http://pompeiisites.org/).

2 Mezzofiore 2018 ('Pompeii's Charcoal Graffiti May Rewrite History'); AFP in Rome 2018 ('Archaeological Find Changes Date of Pompeii's Destruction'). Other headlines included 'Graffiti in Pompeii Set to Rewrite History Books" (*The Week UK*) and 'A Newly Discovered Piece of Graffiti Has Changed the History of Pompeii as We Know It' (*Lonely Planet*).

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quickly because it was shared by Massimo Osanna, Director of the Archaeological Park – on Instagram. This was a very twenty-first century mode for sharing an epigraphic discovery.

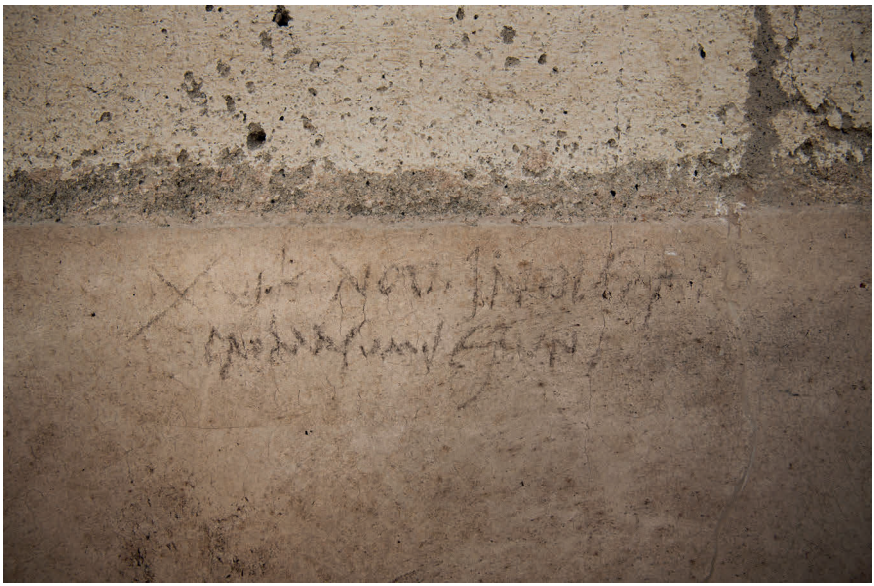


Fig. 1: Graffito in charcoal from Regio V, Pompeii; photograph kindly provided by the Parco Archeologico di Pompei, Archivio fotografico. Su concessione del Ministero della Cultura - Parco Archeologico di Pompei. Reproduction expressly prohibited.

The global attention that this charcoal graffito generated can be compared with another discovery in Pompeii that similarly exploded in international news outlets nearly one hundred years earlier: the SATOR square (Fig. 2). Written in five lines, with a single word of five letters on each line, and arranged into a 5×5 grid, the graffito was called a magic square since it can be read from left to right, right to left, vertically up or down and the text will be the same:[3]

3 *CIL* IV 8623. See the entry EDR073638 in the Epigraphic Database Roma (www.edr-edr.it), by Holly Sypniewski, for full text and copious bibliography on the inscription. The standard reference for Latin inscriptions is the *Corpus Inscriptionum Latinarum*, (abbreviated *CIL*, followed by the appropriate volume number) an immense, international project begun in the mid-nineteenth century, and which continues today, to edit and publish all Latin inscriptions from antiquity. It continues under the auspices of the Berlin-Brandenburgische Akademie der Wissenschaften (cil.bbaw.de).

ROTAS
OPERA
TENET
AREPO
SATOR

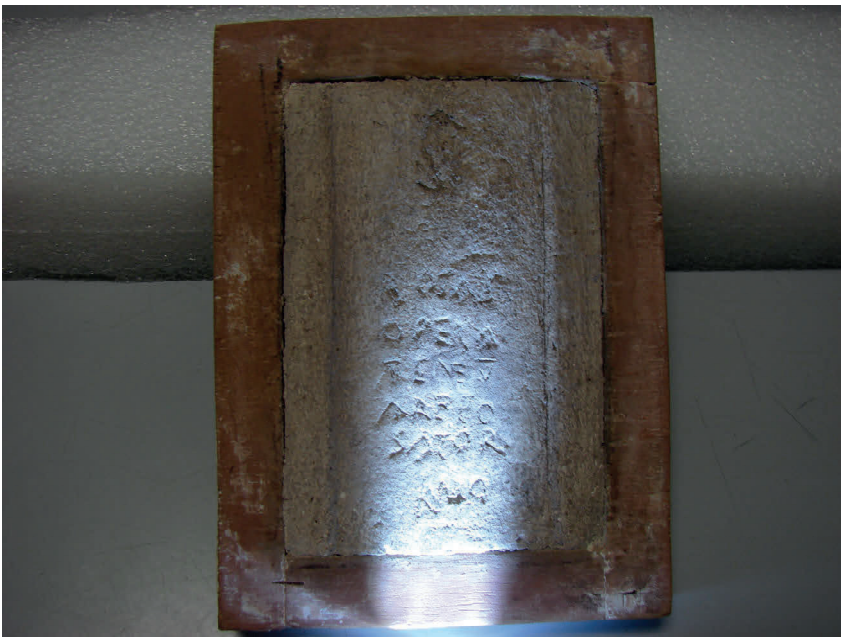


Fig. 2: Plaster cast of the SATOR square graffito (CIL IV 8623), storerooms of the Parco Archeologico di Pompei, inv. 20565. Su concessione del Ministero della Cultura - Parco Archeologico di Pompei. Reproduction expressly prohibited.

The inscription is an intriguing example of wordplay, but its fame resulted from the fact that two early twentieth century scholars independently rearranged the letters to spell out *Pater Noster* (mostly, only a few extra letters had to be explained) and it was thence connected with early (encoded or hidden) Christianity. Pompeii is not the only place this word square was found, and, in fact, this was not the only example inscribed in Pompeii.[4] The SATOR square pattern has also

4 *CIL* IV 8123 (inscribed in the House of Paquius Proculus at Pompeii). The text is also represented in the fresco depicting the riot in Pompeii as painted on the facade of the Praedia of Julia Felix. See Benefiel 2012, 68 and O'Donald 2018, 87–89.

been found in Dura Europos and in medieval contexts. The first century destruction of Pompeii, however, creates doubts that this inscription derived from a Christian context. It is more likely one of a number of word squares that were popular in antiquity across the Mediterranean. Another example of this trend, also found at Pompeii, presented a 4×4 word square:[5]

ROMA
OLIM
MILO
AMOR

In this instance, the writer frames the square with the palindrome ROMA / AMOR (Rome / Love), a favorite bit of wordplay also found in literary texts.

The potential mystery behind the SATOR square, however, created sustained interest in the graffito.[6] When it became clear that the first-century plaster on which the graffito had been inscribed was suffering damage and wear and tear, that portion of the column was excised and removed to the storerooms of Pompeii for safekeeping. Recognizing the value of the inscription, a modern plaster cast was also created. The original plaster that held the graffito has now crumbled into small pieces, but the plaster cast provides a facsimile of the original.[7] Fortunately, the inscription was also photographed in 1964, and the resulting image reveals that the SATOR square was one among a handful of inscribed messages on this column.[8]

These two examples demonstrate the ability Pompeian graffiti have to captivate the public despite their brief nature. Their stories also hint at the challenges involved in documenting, preserving and publishing ancient graffiti as they have been discovered over the past two centuries. The charcoal graffito revealed in the most recent excavations has so far been left in situ in the atrium in Regio V where

5 *CIL* IV 8297.

6 The 2020 science fiction film, *Tenet*, directed by Christopher Nolan, took inspiration from this pattern. *Sator* and *Arepo* are names of characters in the film, while *Rotas* is the name of the security company. In an article in *Digital Spy*, Ian Sandwell, explains that even *opera* made it into the movie as the setting for the opening scene (Ian Sandwell, 'Tenet Has a Link to an Ancient Unsolved Puzzle (Because of Course It Does). Oh Nolan…', <https://www.digitalspy.com/movies/a33885154/tenet-sator-square-link-explained/>, posted on 2 September 2020 (accessed on 21 September 2022). Articles and websites are still being created to explain this mysterious graffito. A google search for 'SATOR square' in June 2022 returns 855,000 results.

7 It is difficult to cast in plaster the small, thin incisions of ancient graffiti; the replica offers the size and scale and a rough image of the original graffito.

8 Varone (2012, vol. I, 144) reproduces the photograph.

it was found. Charcoal, however, is an incredibly delicate medium: it can be easily erased with a brush of the hand. It *can* survive, but only if it is protected from the elements and from any accidental contact. The SATOR square graffito, on the other hand, demonstrates that even when thoughtful steps are taken to protect and preserve an ancient graffito, such as removal from a public space to a protected context, the two-thousand-year-old plaster that holds these writings is only so strong. At some point, its lifespan is finite.

We might guess that documenting ancient graffiti would be a simple matter of photography. However, photography was not broadly available when ancient graffiti were first recognized and collected. Secondly, once photography was employed more widely, it was not applied to graffiti.[9] Thirdly, even when the value of obtaining illustration of graffiti is clear, graffiti are not easy to photograph. They are small, often discreet, and there is little contrast to render marks visible or clear in a photograph. Add to this the massive corpus of graffiti from the region affected by the eruption of Mt. Vesuvius, the long span of nearly two centuries that Pompeian graffiti have been known, and the concomitant changes in method during the many generations of this span. There has, therefore, been no clearly evident route forward to document ancient graffiti.

This chapter on documenting ancient graffiti is grounded in our experience in long-standing projects, the Herculaneum Graffiti Project and the Ancient Graffiti Project. It is also informed by Rebecca Benefiel's work as contributing scholar in charge of publishing the graffiti from the imperial villa at Oplontis and as a supervisor for the Epigraphic Database Roma. Studying and publishing ancient graffiti for various projects has shown us that the process of documenting ancient graffiti does not have a standard set of guidelines. Each site will hold its own challenges. This chapter offers both a retrospective for how graffiti have been documented over the centuries and as a model of how our nearly decade-long project has sought to overcome the obstacles our material involves.

In this chapter, we will discuss the need, potential methods and the process of documenting ancient graffiti, especially within the context of what we have learned over the past decade in building The Ancient Graffiti Project. Our work focuses on ancient graffiti in the sites destroyed by the volcanic eruption of Mt. Vesuvius in 79 CE. The immediate and overwhelming destruction of the eruption preserved the plaster and wall coverings of entire cities to an extent that is unparalleled elsewhere. The Vesuvian area has yielded thousands of ancient graffiti. In addition to documenting many of these inscriptions, we have built an

9 The earliest publication that provides more than a few photographs of Pompeian graffiti is that of Varone 2012.

open-access digital platform that presents ancient graffiti to the public and that provides critical editions and a suite of digital tools for scholars to study ancient graffiti in context.[10]

2 Ancient graffiti as epigraphic artefacts

Silvio Panciera, esteemed professor of Latin epigraphy at La Sapienza University of Rome, would instruct his students: In order to be a good epigrapher, one must be a philologist, an ancient historian, an archaeologist, a palaeographer, in sum, a Classicist conversant in the many sub-disciplines of Classics.[11] The same is true for studying ancient graffiti. There was a time when these handwritten inscriptions were treated simply as texts – and limited texts at that; but graffiti have physical characteristics in addition to textual content. To neglect or ignore their physicality is to miss all the other ways ancient graffiti communicate to their reader. How large was an inscription? How deeply incised was it? What style of lettering? Where on the wall was it inscribed? Did the writer take into account aspects of the physical environment, for example, decoration, lighting sources, or the presence of other writings? What was the visual impact upon the reader or the passerby? In order to understand the message, the author's intent and the audience for an ancient graffito, a scholar must engage with its content, as well as its historical background, topographical and archaeological context, handwriting, physical appearance and more. Graffiti represent both text and object. A graffito is manually created in a physical environment and becomes part of that environment, at least for some period of time. Ancient graffiti are therefore best considered epigraphic artefacts, an approach that acknowledges and addresses both their epigraphic and archaeological nature.

Furthermore, it is crucial to note that, as artefacts, ancient graffiti often exist under precarious circumstances: they are inscribed on fragile, perishable material; they are routinely exposed to atmospheric elements and the general public; and, because of their integration into building surfaces, they are seldom removed

10 www.ancientgraffiti.org.

11 Benefiel had the good fortune to study at La Sapienza under both Professor Silvio Panciera and Professor Silvia Orlandi thanks to a Rotary Foundation Scholarship. The leadership and impact of both scholars on the field of Latin epigraphy cannot be stressed enough. Panciera's publications reflect his approach, cf. Panciera et al. 2006. The massive three-volume compilation of his writings (Panciera 2006) demonstrates his productive and broad approach to the field. Panciera 2012 is also fundamental.

to climate-controlled environments. Given these vulnerabilities, it is fundamentally important to document ancient graffiti as thoroughly as possible.

First, a word about the term *graffiti*. It was coined in the mid-nineteenth century to describe small scratched writings that were being found in excavations of Roman ruins in Pompeii and Rome. The word began as an adjective used to describe scratched drawings and inscriptions, then by the end of the nineteenth century had evolved to become a noun for these scratched inscriptions in anglophone scholarship.[12] During the course of the second half of the twentieth century, the term *graffiti*, at least for English speakers, expanded to mean any informal writing on a wall.

Pompeii is the site most closely associated with ancient graffiti. Destroyed by the eruption of Mt. Vesuvius in 79 CE, the city of Pompeii was buried to a depth of up to 6m, covered by light lapilli and volcanic debris, which preserved the wall-plaster of virtually every building in the town. That wall-plaster held painted wall-inscriptions (*dipinti*) advertising gladiatorial games and candidates for local elections; it also held thousands of individual, casual messages written by members of the general population.

Most of these handwritten inscriptions were created by means of a sharp implement, such as a stylus or fibula, which was used to lightly scratch marks, words or images, into the wall-plaster. Other material could be used to create handwritten inscriptions too. Chalk, charcoal, rocks and gypsum are among the materials noted sporadically by excavators.[13] Those materials are easily erased when brushed against or exposed to rain, and so it is difficult to estimate how frequently these might have appeared on the city's walls. Thousands of scratched graffiti of Pompeii, however, reveal that the practice of writing on the city walls was popular indeed.[14]

Significant quantities of ancient graffiti have been recovered from other sites also destroyed by Mt. Vesuvius. Herculaneum, Stabiae, Oplontis and the

12 Avellino 1841 ('Osservazioni sopra alcune iscrizioni e disegni graffiti sulle mura di Pompei'); Mau (1899, 481) had to explain the term to his readers: 'The graffiti… compris[e] about three thousand examples, or one half the entire number [of wall-inscriptions uncovered at that time]; the name is Italian, being derived from a verb meaning "to scratch."' Italian scholarship still observes the difference between graffiti (scratched wall-inscriptions) and dipinti (painted wall-inscriptions) while English speakers use the word 'graffiti' now to refer to essentially any writing on a wall.

13 Cf. Benefiel 2021, esp. 5–6, and DiBiasie-Sammons 2022.

14 Benefiel and her team have edited more than 1800 scratched wall-inscriptions from Pompeii thus far for the Epigraphic Database Roma (www.edr-edr.it), and more than 2500 ancient graffiti altogether from Pompeii and other sites around Mt. Vesuvius.

suburban, maritime and rustic villas of the *ager Pompeianus* have all yielded ancient graffiti.[15] The practice was likely common elsewhere in the ancient world as well. The sites of Dura Europos, Ephesus and Delos have yielded large numbers of ancient graffiti.[16] Elsewhere, chance finds suggest that ancient graffiti tend to turn up anywhere wall-plaster from the Roman Empire was somehow preserved.[17]

3 Documenting ancient graffiti: Historical overview

As we discuss the topic of documenting ancient graffiti, we will be writing from the perspective of the early Roman Empire, and in particular central Italy of the first century CE, for several reasons. That area has yielded the largest corpus of graffiti from the ancient world; Pompeian material has had a significant impact on ancient graffiti studies as a result of the abundance of material belonging to a clearly defined time and place; and, finally, that area has been the center of our work for the past decade. To provide an overview that encompasses the past two centuries, we will highlight four moments that have been fundamental to the process of documenting ancient graffiti:

- the mid-nineteenth century and discovery of Pompeian graffiti
- the late-nineteenth century and publication of Pompeian graffiti
- the end of the twentieth century and expanded views on ancient graffiti
- the early twenty-first century and technological innovations for ancient graffiti

3.1 The mid-nineteenth century and discovery of ancient graffiti

The site of Pompeii was explored already in the eighteenth century, while systematic excavations began in the nineteenth century. Excavations moved swiftly and uncovered massive amounts of material (architecture, mosaics, frescoes,

15 E.g. Herculaneum: Benefiel and Sypniewski 2018; Stabiae: Varone 2020; Oplontis: Benefiel and DiBiasie-Sammons 2019.

16 Cf. Dura Europos: Stern 2012; Baird 2016; Ephesus: Taeuber 2014 and 2016; Delos: Zarmakoupi 2016.

17 E.g. Stern 2018; Buonopane 2012; Molle 2012; Gregori and Massaro 2005; Solin and Itkonen-Kaila 1966. Rock-cut inscriptions are receiving more attention too, cf. Macdonald and Al-Manaser 2019.

artefacts). It was toward the middle of the century that ancient graffiti were recognized and received scholarly attention. At this point, documentation took the form of essays incorporating examples of graffiti.

Christopher Wordsworth, nephew of the poet William Wordsworth and eventual bishop of the Anglican church, visited the excavations and in 1837 published a small, 33-page book that took the form of a letter to a friend (addressed only as P.).[18] In it, he highlighted the graffiti that charmed him most, from quotations of the poets Vergil, Ovid and Propertius, to a graffito that gave a consular date. Only a few years later, F. M. Avellino, a leading Italian archaeologist of the period,[19] published his remarks to the Reale Accademia Ercolanese about ancient graffiti, a short essay in which he discussed drawings of gladiators, inscriptions on building facades applauding decisions of the emperor and others.[20] In 1841, the same year in which he published his essay, Avellino was responsible for the decision to excise nineteen very large panels of plaster from the walls of Pompeii's basilica, mount them on large wooden frames for support and transfer them for safekeeping to the National Archaeological Museum in Naples, where numerous panels of Pompeian painting had also been transferred for storage or to be put on display.[21]

The earliest organized documentation was Raffaele Garrucci's *Graffiti de Pompéi: Inscriptions et gravures tracées au stylet recueillies et interprétées*, which was already in its second edition in 1856. Rather than a continuous essay, Garrucci organized his 46-page narrative into six chapters, one of which focused on letter forms where he provided examples of the various formats each letter might have. His further innovation was to present graffiti as groups in thirty-two 'planches' (or plates) and to provide (limited) discussion.[22] The graffiti themselves were not numbered, nor was their location or provenance recorded. Systematic

18 Wordsworth 1837.

19 García y García 1998, 140: 'Dal 1839 al 1850 [Avellino] occupa anche la carica di massima responsibilità nel campo dell'Archeologia e Belle Arti, cioè la direzione del Real Museo Borbonico e la Soprintendenza dei R. Scavi di Antichità del Regno'.

20 Avellino 1841. This was 36 pages long.

21 Cf. *CIL* IV, p. 113: *[inscriptiones] quae in undeviginti tectorii tabulis... e basilica... excisae, ligneisque formis inclusae in museum Neapolitanum translatae sunt*. ('...[the inscriptions] were excised from the basilica in nineteen panels of plaster, transferred onto wooden backings and moved to the museum in Naples').

22 There was some categorization to the arrangement into plates. Planche I presented examples of the alphabet, while planche VII presented inscriptions using primarily vertical strokes. The explanatory chapters and commentary explaining each inscription made this a volume of 102 pages. The plates presented line-drawings of the graffiti at the end of the volume.

documentation of that kind would eventually come later with the *Corpus Inscriptionum Latinarum*.

3.2 The late-nineteenth century and publication of Pompeian graffiti

Later in the nineteenth century, the value of Pompeian wall-inscriptions had come into focus and Pompeii came to be incorporated into the *Corpus Inscriptionum Latinarum*. The *Corpus Inscriptionum Latinarum* began under the direction of Theodor Mommsen in the mid-nineteenth century – and work on it continues to this day – as a large-scale, international, collaborative venture to document and record Latin inscriptions from across the ancient world.[23] The project was divided into volumes that were each dedicated to a different geographical area (e.g. vol. II: *Inscriptiones Hispaniae*, vol. III: *Inscriptiones Asiae*, vol V: *Inscriptiones Galliae Cisalpinae*, vol. VI: *Inscriptiones Urbis Romae*).[24] Volume IV of the *Corpus Inscriptionum Latinarum* (*CIL*) was distinctive in that, rather than documenting inscriptions on stone or marble, it was devoted to wall-inscriptions that were being found in large numbers in Pompeii and surrounding areas. The initial publication of *CIL* IV appeared in 1871 and contained over 3200 inscriptions, both painted wall-inscriptions (*tituli picti*) and scratched wall-inscriptions or graffiti (*graphio inscripta*).[25] The overwhelming majority of these inscriptions came from the site of Pompeii, where a far greater area had been excavated. The title of *CIL* vol. IV was, in fact, *Inscriptiones Parietariae Pompeianae* (*'Pompeian Wall-Inscriptions'*). A subtitle followed in a smaller font: *Herculanenses, Stabianae*. In reality, the subtitle was forward-looking rather than representative at similar levels; a small number of wall-inscriptions had been recorded at

23 As the *CIL* continues to grow and additional supplements to its volumes appear in print, it also now has a website that includes a digital database. For more information, see: https://cil.bbaw.de/. From the sub-page 'History of the CIL': 'Today, the *CIL* counts 17 volumes in folio format in about 80 parts, containing almost 200,000 inscriptions' (accessed on 21 September 2022).

24 *CIL* vol. I is the only volume dedicated to a particular time period: *Inscriptiones Latinae antiquissimae ad C. Caesaris mortem*.

25 *CIL* (vol. IV, p. 76) explains this second category (graffiti) as follows: *Posterior huius voluminis pars inscriptiones parietarias continet eas, quae graphii sive stili aut alius cuiuslibet rei cuspide incisae vel potius scariphatae sunt*... ('The latter part of this volume contains those wall-inscriptions which were inscribed or rather scratched with the point of a writing instrument, stylus, or some other thing').

Herculaneum, but difficult excavation conditions there had resulted in activity shifting to Pompeii.

As excavations have proceeded over the past 150 years, so has publication of new inscriptions. *CIL* IV now includes four weighty supplements. (The graffiti of Herculaneum appear in Supplement III.)[26] The most recent supplement contains new inscriptions, updated readings of previously published texts and bibliography of recent scholarship. Publication in *CIL* remains the standard reference for Pompeian graffiti. When using it, a scholar must be aware that early entries might be substantially improved in later *addenda et corrigenda* sections and that the system of addresses was changed after the publication of the first section (*CIL* IV 1–3255). Nonetheless, the *CIL* framework provides a solid base for documentation with sequential entries arranged topographically, each providing text, editor, apparatus and occasionally a line-drawing. The value of *CIL* IV endures.

3.3 The end of the twentieth century and expanded views on ancient graffiti

Documentation of ancient graffiti underwent a significant expansion at the turn of the millennium with the publication of two important studies of graffiti that have become reference works and have influenced much subsequent work: Antonio Varone's publication of the ancient graffiti within the Villa S. Marco in Castellamare di Stabia (ancient Stabiae) and Martin Langner's catalogue and analysis of figural graffiti from across the ancient world.[27]

Antonio Varone made fundamental decisions that expanded the way we think about and study ancient graffiti. The most significant documentation decision was to organize the graffiti he cataloged into three categories: verbal, figural and numerical. This decision made explicit that he was documenting all purposefully scratched inscriptions in the large, opulent suburban villa in the elite area of Stabiae. The earlier focus of documentation that had highlighted text first and foremost was diffused in Varone's study, as he represented text (verbal), along with everything else that had been inscribed on the wall (figural, numerical). His catalogue, for example, includes a number of tally marks, a series of Roman numerals that may have been used to keep track of quantities. Such non-textual, yet clearly functional writing tends not to appear in the early sections of *CIL* IV.

26 Supplementum III appeared in fascicles (published 1952–1971) and Supplementum IV, pars I and pars II have appeared recently (2011 and 2020), with pars III forthcoming.

27 Varone 1999 (within Alix Barbet's comprehensive study of the villa); Langner 2001.

Varone's full documentation and publication of the totality of ancient graffiti in the villa validated the inclusion of non-textual graffiti and offered the first comprehensive look at the classification types of ancient graffiti.[28]

Varone also included three appendices at the end of his publication, one of which listed the presence of graffiti by room, highlighting the importance of location.[29] He further provided details about the precise location of graffiti, e.g. distance from the corner of the room or a doorway, so that the graffiti could be found and checked by others. With each of these decisions, Varone's work stressed the importance of documenting all graffiti and underscored the benefits of subsequent verification.

Martin Langner has had a similarly large influence on ancient graffiti studies, particularly for the acknowledgment and value he gave to figural graffiti or hand-sketched graffiti drawings (*antike Graffitizeichnungen*).[30] His mission was to comb previous publications to collect all graffiti drawings and build a corpus of figural graffiti from ancient sites across the Mediterranean. He also documented the previously unpublished figural graffiti that he discovered. The breadth of his catalogue illustrated that figural graffiti were not just a sporadic occurrence, as one might have guessed from the manner in which they tended to be documented in *CIL* IV, i.e. when they appeared in conjunction with or close to text. Rather, figural graffiti were significant and worth documenting in their own right. He arranged the figural graffiti by subject matter, so a scholar could compare the format of gladiators drawn in Pompeii with those in Aphrodisias or Lyon, or the style of birds sketched in Dura Europos with those found at Rome.[31] His other major contribution was to include a CD-Rom with a FileMakerPro database program along with the monograph. The CD held sets of information for each graffito that would have been too unwieldy to include in a print publication. This was the first

28 This inclusive strategy was subsequently applied to the elite House of Maius Castricius in Pompeii. The *editio princeps* had documented thirty textual inscriptions (Giordano 1966, nos 18–47). Heikki Solin's subsequent evaluation of the residence documented additional graffiti that had either not been identified or had been ignored by Giordano, for a new total of 45 ancient graffiti (Solin 1975, nos 18–50 and 57–70, now numerical graffiti included). Reassessment of the residence a generation later revealed still additional graffiti for a total of 74 handwritten inscriptions (Benefiel 2010a, nos 1–74). It is clear, then, that focusing on only textual graffiti presents only a portion of the full epigraphic record. Graffiti in the small building to the north were also documented by Solin (1975, nos 51–56) and Benefiel (2010a, nos 75–85).

29 Varone 1999, 361. The graffiti of the villa also belonged to different time periods (Roman, Bourbon and uncertain) and this criterion was articulated in the charts as well.

30 Langner 2001. Articles by Chaniotis (2011) and Benefiel and Sypniewski (2016), e.g., demonstrate the impact of Varone and Langner's works.

31 Cf. Langner 2001, nos 769–916 (gladiators), nos 1634–1747 (birds).

large dataset of ancient graffiti where information was available in a format beyond the print publication.

3.4 The early twenty-first century and technological innovations

The early twenty-first century has brought technological innovations in the fields of photography, web-based publication and computational and digital processes. For the field of ancient graffiti, digital photography has become vitally important, and the expansive framework of digital publication has meant that more can be shared with scholars and the public than ever before. To give one example for archaeology at the site of Pompeii, an immense photographic campaign that lasted more than a decade resulted in the 11-volume work, *Pompei: Pitture e Mosaici*, published by the Istituto della Enciclopedia Italiana (1990–2003). This beautifully illustrated work documented all wall-painting and mosaics that remained extant, with excellent floorplans and essays to introduce each building, followed by essential bibliography. This series remains a fundamental reference work. A decade later, an online resource took photographic publication even further with the creation of Pompeii in Pictures (pompeiiinpictures.com). This site presents a spatially-organized photographic collection that has grown to be very comprehensive. Smaller buildings and those without painting or mosaics that were not included in *PPM* can now be found among the pages of photographs on Pompeii in Pictures. The number of images the website holds is extensive and the collection grows every year. Every building in Pompeii has been the subject of photographic documentation, and the website now includes photographs as well for the nearby major sites of Herculaneum, Stabiae and Oplontis; the villas of Gragnano, Boscoreale, Boscotrecase; the site of S. Maria Capua Vetere and more.

Greater access to photographic documentation for ancient inscriptions has also been a huge benefit that came about as a result of Antonio Varone's tenure as Director of the Scavi di Pompeii. In conjunction with the director of Pompeii's photographic archive, Greta Stefani, Varone published the archives' historical photographs of Pompeii's painted wall-inscriptions.[32] He also oversaw a decade-long,

32 Varone and Stefani 2009 (painted inscriptions from Pompeii). The photographic archive contained images of large-scale painted inscriptions that were visible in photographs of building facades.

large-scale photographic campaign to document Pompeian graffiti – the first of its kind.[33]

The spatial turn also reached ancient graffiti studies with new approaches that sought to reintegrate ancient graffiti into their archaeological or geographical context, and publications also began to highlight graffiti in dialogue with each other and with their surroundings.[34]

3.5 New technologies, new approaches

Within the last decade, technology has also driven new innovation for the documentation and study of graffiti.[35] Laser scanning, photogrammetry and reflectance transformation imaging (RTI) represent three major technological advances applied to ancient graffiti.[36] Laser scanning, or 3D scanning, represented a huge step forward in documenting large spaces. While capturing the architecture and decoration of an entire room or area, laser scanning can also reveal markings that may not be immediately visible to the naked eye.[37] As early as 2003, a feasibility study was conducted in Pompeii wherein 3D scanning was used to document the graffiti of the Lupanar, or purpose-built brothel.[38] Technology changes rapidly, however, and now photogrammetry and RTI have eclipsed laser scanning as the technology of preference. These documentation techniques are also being used for conservation.[39] While photogrammetry has been used in archaeology for a generation, the development of Structure from Motion, increasingly powerful computational algorithms, and more open source options has led to photogrammetry

33 The two volumes published as the result of this campaign (Varone 2012, 2 vols) are the first systematic photographic documentation for Pompeian graffiti.

34 Benefiel 2010b (GIS and Pompeian graffiti); Benefiel 2010a and 2011 (Graffiti in dialogue); Baird and Taylor 2011 (Graffiti in context); Lohmann 2017 (Graffiti als Interaktionsform).

35 For an excellent summary regarding the application of new technologies for the documentation of ancient graffiti, see Valente and Barazzetti 2020. Cf. also Valente et al. 2019. Parker and Rollston 2019 have recently discussed the incorporation of digital drawing tools for the field of Northwest Semitic epigraphy.

36 The study of papyri in recent years has involved still others, including multi-spectral imaging, CT scanning, x-ray fluorescence for ink analysis and x-ray phase contrast tomography. For an overview, see Marchant 2018. Cf. also Mocella et al. 2015; Parker et al. 2019 and Stabile et al. 2021.

37 Cf. Tenschert et al. 2020; Valente and Oreni 2017.

38 Balzani et al. 2004. See also Varone 2008.

39 Cf. the work at El-Kurru in Sudan (Davis et al. 2018).

being increasingly adopted over the past decade.[40] Photogrammetry is now used at archaeological sites across the globe.[41] Likewise, RTI has become a common strategy for documenting ancient inscriptions, especially since it can be conducted in the field with little specialized equipment (digital camera, spheres and computer).[42] The computational photography of RTI then allows a user to manipulate the image by rotating the light source and changing color saturation to highlight surface texture and thereby illuminate markings from different angles. Our project chose several locations in the site of Herculaneum where we employed RTI to document and evaluate ancient graffiti (Fig. 3).[43] Technology is driving innovation in the study of ancient graffiti and the field is expanding rapidly. Numerous publications have appeared in just the past few years and there are no signs of slowing down. Many can be found in specialized conference proceedings as well as in the *Journal of Archaeological Science: Reports*.[44]

Scholars recognize that this is a time of innovation and explosive growth. In this regard, Andreau and Serrano have declared, 'These are new times for epigraphic research', and Helmke and collaborators underscore that 'Continued collaboration between researchers and digital humanities facilities will enhance dialogue and serve as the basis for the implementation of new methods in the study of more extensive material, inevitably yielding additional research synergies and discoveries in the future'.[45] Exploring new technologies for documenting graffiti will remain an important facet of epigraphic projects for the foreseeable future.

40 See Valente and Barazzetti 2020 for a thorough overview and case studies of what photogrammetry can offer. Their article also presents a retrospective regarding previous contact-based methods of documentation of graffiti (tracing, rubbings, etc.). As early as 1982, the journal *World Archaeology* was already highlighting the technique of photogrammetry in multiple articles (vol. 14, issue 2).

41 E.g. the basilica of San Marco in Venice (Abate and Trentin 2019); graffiti at Mayan sites in modern Belize (Helmke et al. 2022) and Elkab in upper Egypt (Prada and Wordsworth 2018). This last article tackles the challenges of changes in epigraphic standards for Greco-Roman graffiti in Egypt, another area with a long history of documentation for ancient graffiti.

42 Cf. Kleinitz 2012; Gill 2018, Bosco and Minucci 2020, Solem and Nau 2020.

43 DiBiasie-Sammons 2018 (RTI process) and Frampton 2019 (analysis of graffiti in the so-called College of Augustales).

44 Recent publications in this journal about the documentation of ancient graffiti include Palomar-Vazquez et al. 2017; DiBiasie-Sammons 2018; Valente and Barrazzatti 2020; Lech et al. 2021. This journal also contains numerous articles devoted to the study of rock art.

45 Andreau and Serrano 2019; Helmke et al. 2022.

Fig. 3: Part of the AGP team setting up for RTI in Herculaneum with our RTI specialist, Jacqueline DiBiasie-Sammons (left) and undergraduate assistants.

4 The Ancient Graffiti Project

This historical overview of documentation brings us to The Ancient Graffiti Project (AGP), which we began nearly a decade ago. The Ancient Graffiti Project provides direct access to ancient graffiti as well as digital resources that support a richer understanding of handwritten inscriptions from the early Roman Empire in their archaeological context at our open-access website: http://ancientgraffiti.org. AGP has been developed: 1) to provide a scholarly resource for the study of graffiti by providing accurate, comprehensive and up-to-date critical editions of each inscription; 2) to lower the barriers to the study of ancient graffiti for scholars, teachers and the interested public; and 3) to facilitate new avenues of research through the provision of digital tools, a user-friendly interface and a digital resource that is interoperable and integrated within leading digital humanities initiatives. It is the result of a decade of epigraphic research, archaeological fieldwork and development of a digital platform to make graffiti publicly available, and it continues to grow.

Epigraphy has been at the forefront of digital humanities for the past generation, with large-scale international, collaborative projects to create digital databases of inscriptions in place and underway already in the 1990s.[46] The sheer volume of Latin epigraphy – hundreds of thousands of ancient inscriptions – led to the decision to divide responsibility for the ancient world among four large projects: inscriptions of the Italian peninsula to the Epigraphic Database Roma (www.edr-edr.it), the Roman provinces to the Epigraphic Database Heidelberg (www.uni-heidelberg.de/institute/sonst/adw/edh/indexe.html), the Iberian peninsula to Hispania Epigraphica (eda-bea.es) and the Christian inscriptions of Rome (third to eighth centuries) to the Epigraphic Database Bari (www.edb.uniba.it).

The concept and design for the Ancient Graffiti Project arose from our team's work with the Epigraphic Database Roma (EDR). EDR was organized around a collaborative framework, with teams responsible for inscriptions from different geographical areas in Italy (http://www.edr-edr.it/it/strutt_it.php). Rebecca Benefiel was appointed the EDR supervisor responsible for the handwritten wall-inscriptions of Campania. She began editing the ancient graffiti of Pompeii and contributing inscriptions to EDR in 2012. As Benefiel and her team moved forward, it became clear that these ancient graffiti along with their well-preserved archaeological context offered further information that was not generally applicable for most inscriptions on stone. Benefiel began to consider how the unique characteristics of ancient graffiti could be documented and highlighted. With the addition of Sara Sprenkle as Technical Director in 2013 and Holly Sypniewski as Assistant Director in 2015, we designed and began to build a project that would work in conjunction with EDR and that would also provide direct access to the corpus of handwritten inscriptions.[47]

The documentation method of the Ancient Graffiti Project has been shaped to meet two primary goals: preparing the digital editions and updates to publish ancient graffiti for the Epigraphic Database Roma (EDR)[48] and producing our own geo-referenced database of graffiti enhanced by additional, graffiti-specific contextual data on AGP. We present here discussions of our methods for editing, fieldwork and platform design.

46 For a summary to that point and a look to the future, see Cayless et al. 2009. Cf. also Bodel 2012 and Orlandi 2016.

47 Benefiel and Sprenkle 2014 (for prototype and initial steps of the project).

48 Publication of the work of EDR teams is presented in the series *Italia Epigrafica Digitale*. For the work of our team, see Benefiel et al. 2017b and Benefiel and Sypniewski 2020.

4.1 Our method, part I: Documentation and editing

As described above, more than a hundred years of discussion and editions of Pompeian graffiti exist. It is our responsibility to bring this collective body of data up to date by applying current conventions, assembling bibliography and reevaluating the readings and presentation of inscriptions in earlier publications.[49] Updating is only part of the process, though, since we recognize the value of, and therefore document, additional characteristics of ancient graffiti that were not recorded previously. We also integrate graffiti that did not appear in *CIL* because they were published subsequently or were not initially valued as part of the epigraphic record. In part I, we discuss our work documenting ancient graffiti on the basis of previously published information; in part II, we explain how we conduct fieldwork to document graffiti when they survive.

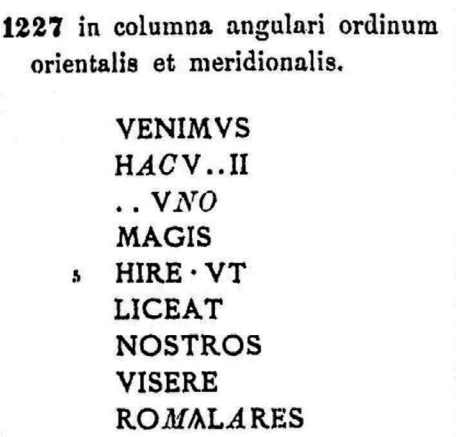
The first step is to reconcile previous editions and apply current epigraphic conventions to edit each graffito. In contrast to inscriptions on stone or marble, ancient graffiti regularly require the employ of multiple conventions, punctuation that is used to indicate information about the support (if, for example, an inscription is broken or abraded), the legibility of an inscription, or where the text requires editorial explanation (e.g. in the case of abbreviation or non-standard spelling). An inscription on stone might require one or two of these editorial explanations every so often, while ancient graffiti might need three or more types of intervention for a single inscription.

The early volumes of *CIL* IV were published before adoption of the Leiden system, the first standard set of epigraphic conventions to be adopted for papyri and inscriptions.[50] Epigraphic conventions have shifted more than once over the past century and the varied nature of the publication of Campanian graffiti has meant that very different conventions are used across the corpus of over 7,000 inscriptions. For example, the lacunae in inscriptions where letters are lost have been treated differently—with an ellipsis, slashes, or even just spaces in the text—as have non-standard spellings and abbreviations, all of which are frequently found among ancient graffiti. The following examples demonstrate how ancient graffiti were presented in the first volume of *CIL* IV.

49 This includes revised readings that were published subsequent to *CIL* IV.

50 The Leiden system was updated in the later twentieth century and current conventions are often called Leiden+ or termed the Krummery-Panciera system. See Krummery and Panciera 1980. The Krummery-Panciera system provides a basis for EpiDoc, see https://epidoc.stoa.org/gl/latest/app-epi-krummreypanciera.html.

In this example (Fig. 4), low dots were used to show damage and inclined letters denoted uncertain readings. It is unclear if the dots denote a specific number of missing letters or just that some text has been lost. No comment is supplied to explain the form HIRE, written for *ire* (the standard form of the verb). Elsewhere in *CIL*, low dots and slashes (/////) are used to denote damage or loss of text, sometimes both within a single inscription. A reader is left to guess what the difference between the two notations might be. The editors of *CIL* were trying to represent the inscription as faithfully as possible when a reading or meaning was not immediately understood. However, the meaning behind the conventions used are not transparent to the reader.


1227 in columna angulari ordinum orientalis et meridionalis.

VENIMVS
HACV..II
..VNO
MAGIS
HIRE · VT
LICEAT
NOSTROS
VISERE
ROMALARES

Fig. 4: *CIL* IV 1227.

For our edition of this inscription on AGP (Fig. 5), we bring together the improvements to the reading that have been made since its publication as *CIL* IV 1227, we apply current standards and we offer explanation for all the epigraphic conventions that are applied to the inscription. We present the text as follows:[51]

51 EDR151415 (Sypniewski). The text was improved in *CIL* IV at three separate points: cf. Addenda p. 205, p. 463 and p. 704. Further bibliography is also provided at our entry in EDR.

Venimus
huc [c]u[pi]di
[m]ulto
magis
hire (:ire) ⟨:cupimus⟩ · ut
liceat
nostros
visere,
Roma, Lares.

Hide Epigraphic Convention Key

Epigraphic Convention Key

Symbol	Meaning
[abc]	Letters once present, now missing due to damage to the surface or support
ạḅ	Characters damaged or unclear that would be unintelligible without context
(:abc)	Gives standard spelling to explain non-standard text in an inscription (used by EDR and AGP)
⟨:abc⟩	Explanation of editor, either subaudible word or regarding the layout of the text, e.g. ⟨:col. I⟩ (used by EDR and AGP)

Full List of Conventions ➜

Fig. 5: AGP editorial conventions.

Previous readings are preserved in the critical apparatus of the inscription. Our transcription reveals the poetic nature of the message, as we include modern punctuation for the vocative case of *Roma*, while also clarifying with underdots and brackets how much damage the inscription has suffered. Our transcription also makes clear what the ancient writer wrote, particularly if he or she used non-standard forms. Epigraphic conventions often 'correct' ancient 'errors' or misspellings.[52] We instead present – without intervention – what was written by

52 A superfluous letter would be bracketed off with braces, e.g. {h}ire, while an omitted letter could be included within angle brackets, e.g. Cresce<n>s, the aim being to forefront the 'corrected'

the ancient writer, and then subsequently explain the standard form, e.g. *hire (:ire)*, above. The epigraphic key that explains the significance of the brackets, underdots and other punctuation can be displayed or hidden by the user. Including such a key along with the inscription was a design decision to make our work accessible to a wider audience of professionals and interested non-experts.

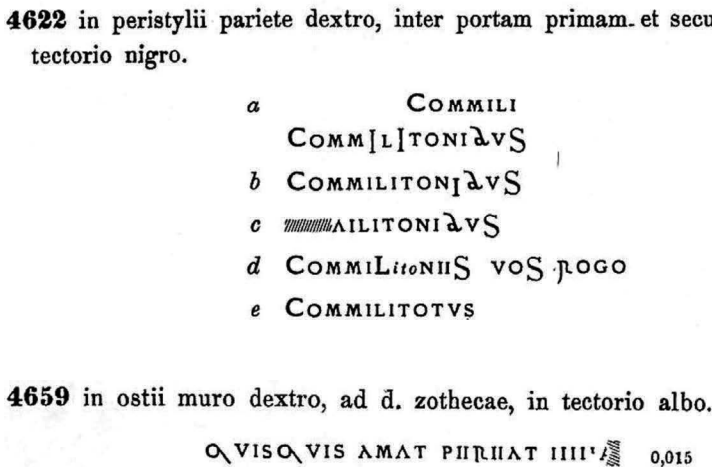


Fig. 6: Examples of epigraphic conventions in CIL vol. IV, supp. 2.

In *CIL* IV, Supplementum II (published 1909), the editors continued their aim to represent graffiti as they appeared, as best as they could without the benefit of images. To do this, they utilized a mix of different fonts, with conventional letter shapes and some custom letter shapes designed to reflect the appearance of Roman handwriting. In the examples above (Fig. 6), the form of the letter B in the word *commilitionibus* is represented as it was written on the wall-plaster.[53] Scratches still denote damage to the plaster, and the loss of letters that can be restored are inserted in lower case lettering. In *CIL* IV 4659 (Fig. 6), the letter A

form or what was intended. Graffiti, however, are far less consistent than inscriptions on stone, and so would require significantly more of these interventions. We chose to simplify and forefront what was actually written.

53 The letter B written in this inscription did not resemble our capital letter B, which is also found on the walls of Pompeii, but something closer to a lowercase 'd'. Latin at this time did not have strictly delineated capital and lowercase versions.

is represented without a crossbar to indicate that it was written thus.[54] The letter E is represented as it was sometimes handwritten in graffiti and on wax tablets, as two parallel vertical lines, or II.[55] This letter form is notoriously problematic for those who have not worked extensively with *CIL* IV, and often leads to confused readings.[56]

Our documentation also includes integration of all graffiti into the record, as we follow the examples of Antonio Varone and Martin Langner, discussed above. We create individual entries for figural or numerical graffiti that were not included in *CIL* or whose presence was mentioned briefly in a headnote or apparatus for another inscription. We have described elsewhere our decision-making process for publishing hand-sketched images individually or as groupings.[57] Sometimes figural graffiti are related to nearby text, and the figural and textual inscription should be treated together in one epigraphic entry. Spatial proximity, however, does not always (and, in fact, does not often) mean association, and when messages and images are unrelated, we publish them separately and then create the association by means of hyperlinks in the critical apparatus.

Figural graffiti, furthermore, had been described by a variety of terms that were not consistent across editors. A drawing of a head might be called any of the following Latin terms: *caput*, *facies*, *protome*, or *herma*.[58] We therefore created controlled vocabularies aligned with the Getty vocabularies for art and architecture and standardized our descriptions, so that a drawing of a human head is described as *caput hominis*.[59] Figural graffiti are described within the text field, via verbal notation set within punctuation that denotes them as sketches ((:*caput hominis*)). We also provide an English translation of the Latin description for each figural graffito, so that searching is possible in either language.[60] Finally, we illustrate figural graffiti whenever possible with accompanying photos or line-drawings.

54 This letter form should not be confused with a Greek lambda.

55 This letter is also written as a capital E, and both letter forms can appear in the same inscription and even in the same word.

56 The word *pereat*, for example, as written in 4659, should never be presented as *piiriiat*, but mistakes like this understandably occur in transcriptions when scholars have little experience with ancient graffiti.

57 Benefiel and Sypniewski 2016.

58 Some editors such as Matteo Della Corte seem to have developed their own guidelines for the features they used to identify the subject matter of graffiti drawings, but the practices across various editors ranged widely.

59 Previous descriptions are preserved in the apparatus.

60 We further make our data available for download, with results returned in EpiDoc format including descriptions of figural graffiti in Latin and English.

Our critical edition also includes a detailed bibliography and a critical apparatus that we write for each inscription. The bibliography summarizes the publication history for each graffito, including published editions that preceded the publication of *CIL*, as well as interpretive scholarship that discusses the graffito. In the apparatus, we include variant readings, editorial explanations, and we add the following information when applicable:[61]

- detailed measurements for the size of a graffito. The *CIL* will sometimes include length and letter height.
- notes on the appearance of a graffito, including discussion of palaeography.
- explanations of non-standard spellings. Rather than 'correcting' a text, we present the text as it was written by the ancient individual; then we provide what a reader would expect as the standard form, e.g. *Cresces (:Crescens)* or *cinedus (:cinaedus)*.
- brief discussion of status of preservation, including which, if any, letters have been lost since the initial publication.
- the condition of the wall plaster upon which it was written, if there is deterioration or abrasion that affect the visibility and legibility of the text.
- references to other inscriptions through hyperlinks, relevant for graffiti that are in close proximity or that share common elements such as themes, names, quotations from literature, or drawing subject.
- discussion of any elements of the inscription that are illegible. Due to deterioration and the fragility of plaster, it is not uncommon for parts of a graffito to be illegible.

Just as we reconcile previous and divergent conventions for editing, we also reconcile multiple systems for addresses of buildings and locations in Pompeii, so that each graffito we edit can be found using the current system of Pompeian addresses.[62] By reconciling and standardizing the locations of graffiti, we can then incorporate every inscription into a geo-referenced map of the site that is interactive and searchable. A scholar can begin research with the map and search for the graffiti in a particular location. Even if a scholar is searching for just a particular phrase, we always provide location information, so the archaeological context in which the inscription appeared is clear. The results page of any search includes a map of the site (of Herculaneum or Pompeii) highlighting the location of the graffito retrieved. Since the sites of Herculaneum and Pompeii are so well preserved that we can determine the type of space for each building, we also categorize each location into a building type that is a searchable category in the AGP database (e.g. house, sacred space, shop, workshop). These features were

61 Just as ancient graffiti themselves vary significantly in length and content, the same level of detail is not possible for every inscription. The apparatus for an inscription that remains extant will often have considerably more information than the apparatus for an inscription that is lost.
62 For more on the shifts in describing locations in Pompeii, see Benefiel et al. 2017b.

designed to facilitate research on graffiti: scholars can search for graffiti through their location by clicking on the interactive map, or they can use the filters to explore all the inscriptions in a particular type of building, such as taverns.

Ancient graffiti, brief and idiosyncratic, frequently are not immediately understandable. Since a primary goal of AGP is to bring ancient graffiti to a wider audience and make them more accessible, we offer a number of aids, which include translations into English and captions or brief summaries to inform a reader about the subject matter. In contributing entries to the Epigraphic Database Roma, we write in Latin to reach a global scholarly audience primarily of epigraphers. AGP is designed to be accessible for a more general academic audience, or the general public, to understand these inscriptions and their value.

4.2 Our method, part II: Documentation and fieldwork

We began with the task of editing inscriptions, updating and applying current epigraphic standards. When it became clear that it was time to commence fieldwork, a set of decisions had to be made about where to begin and what to prioritize. With several thousand graffiti to study, spread across the entire city of Pompeii and beyond, the many possibilities for where to start made strategic decision-making necessary.

We chose to begin not at Pompeii but with a survey of Herculaneum, a smaller site whose graffiti were barely known when compared to its larger, flashier neighbor of Pompeii. The site of Herculaneum consists of roughly five city-blocks, a fraction of the more than 100 city-blocks that have been excavated at Pompeii, but certainly not an insignificant area to assess and document. Each city-block of Herculaneum contains between 10 and 30 buildings, and more than 300 ancient graffiti had been documented across the entire city.

The goal of our first field season was a broad survey of ancient graffiti at Herculaneum.[63] Benefiel designed a two-week epigraphy summer school to be held on-site, since training is crucial for successful data collection. There was a huge response to the call for participants, and from the applicants we selected to participate thirty Classics faculty, postdocs, graduate and undergraduate students from six countries. We divided the group into five teams, with each team responsible for surveying an entire city-block over the course of the two weeks. We spent the morning surveying and documenting; the afternoons were devoted to instruction, guest lecturers and writing up notes from the morning. In the second week,

63 Benefiel et al. 2016.

we began site visits where each team would present their observations, finds and questions to the whole group. Our survey revealed greater numbers of ancient graffiti than we had expected still extant in Herculaneum and thus set the stage for further fieldwork at Herculaneum and eventually Pompeii.

Any project at its inception will face foundational questions: What should be documented, what not and why? How best to deal with contemporary graffiti – should they be documented in their entirety, or only selectively – and if so, based on which criteria? Each generation may adopt different ideas on what to document and what to leave aside. Our project has chosen not to document the modern graffiti that occur in certain areas of the archaeological site, unless these appear in direct contact with ancient graffiti. In that case, they will appear only in our photographic documentation (see Fig. 7); our line drawings (more on this, below), will display the ancient inscription alone to render it more clearly. The issue of contemporary graffiti does raise the importance of training.

Fig. 7: Using raking light to illuminate *CIL* IV 8666b, the incised name *Virilio*, which has been obscured by modern graffiti, seen here in larger white lettering roughly gouged across the surface of a column in the Campus of Pompeii (II.7.1–10, column 74). Su concessione del Ministero della Cultura - Parco Archeologico di Pompei. Reproduction expressly prohibited.

Since our participants come from different universities and locations, we begin training our team before we arrive in the field by holding a series of virtual meetings. We provide introductions to the nature and format of ancient graffiti and to the main reference tools we use in the field. All team members study Roman handwriting, the variety of letter shapes used and the published inscriptions for each area where we will work. Because the script of ancient graffiti differs so dramatically from contemporary letter shapes of the Roman alphabet, this training is crucial for setting expectations and helping team members find graffiti in situ, where there are noticeable differences between physical graffiti and their published editions. During our training sessions, we also introduce a series of maps for the areas where we will work and we plan for documentation that is precise enough for a subsequent team to be able to locate our finds easily. That requires focused training on how to document precisely.

On day one in the field, we teach our team members how to distinguish ancient from modern graffiti. In the sites of Pompeii and Herculaneum, this is something easily taught with just a few examples. Ancient graffiti are generally small and discreet, rarely more than 1cm tall. Writers in the first century used very sharp implements, e.g. a metal stylus that made a thin incision into the plaster. Thus, ancient graffiti are usually very lightly incised into wall plaster with a slender *ductus*. As a result, they are often inconspicuous and difficult to notice. In contrast, visitors to the site today regretfully intent on leaving their own mark tend to use implements that are thicker and duller, such as pens or keys, and therefore often leave rough, jagged marks where the plaster breaks away in pieces. Modern visitors are also used to writing on a smooth horizontal surface, and their inexperience on a vertical surface results in a much larger size of letters. Finally, when a modern writer scratches into ancient plaster, the incision reveals a fresh white color below (Fig. 7). Ancient graffiti have a patina from years of exposure to the elements, and so the contrast seen with modern graffiti is often markedly different.

More difficult and exceedingly important is teaching our team members how to distinguish ancient graffiti from damage to the ancient wall surface. When the wall plaster is in good condition, finding graffiti can be challenging. When plaster has deteriorated, its top polished layers have worn away, or it has suffered damage in the form of chips, cracks, *lacunae* and breaks, finding and reading ancient graffiti requires immense patience and persistence. For all these reasons, we start by training participants to locate and identify ancient graffiti.

We then commence the documentation process by using decidedly low-tech methods: pencil, paper, measuring tapes and documentation forms which require team members to observe and record each inscription closely. We always

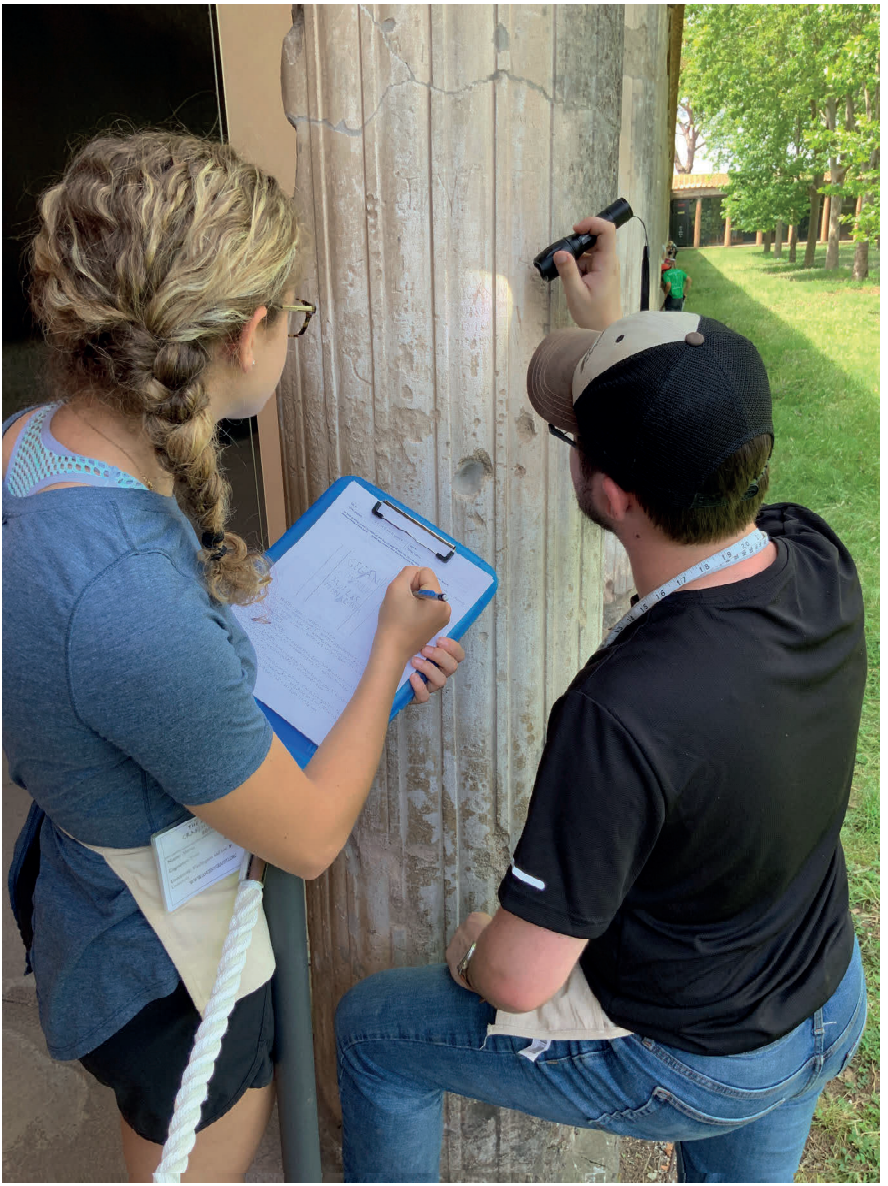


Fig. 8: AGP team members illuminate, document and discuss a graffito. Su concessione del Ministero della Cultura - Parco Archeologico di Pompei. Reproduction expressly prohibited.

work in small teams so that there are multiple eyes on each graffito and a team discussion of letter strokes, measurements and other contextual information. Because ancient graffiti are small and shallowly incised, we use LED panels and flashlights to provide raking light across the surface of each inscription. This method of lighting increases the surface contrast and illuminates small marks with greater visibility. We never document an inscription once: our team makes repeated visits at different times of day and during different natural lighting scenarios. An inscription that cannot be found in the bright Italian midday sunlight will often be more easily legible in the slanting light of the afternoon. Team members then discuss, record observations and sketch what they see (Fig. 8).

We next take a comprehensive set of measurements for each inscription, including height, length and letter-heights. The small size of ancient graffiti makes this challenging since we are often measuring to the nearest millimeter. The handwriting of ancient graffiti also means that each line, and often each letter, will vary in size. Many graffiti also include flourishes where an initial or final letter is inscribed with a longer down- or upstroke for aesthetic purposes. We therefore take a series of measurements that go beyond those that fit neatly into basic measurement fields. These additional measurements can help with research questions such as the height of each inscription from the ground, the distance from other graffiti on the same wall or some architectural feature or decorative elements of frescoes. As part of the documentation process, we have all team members note their observations about the location and environment of the graffito.

The major research products of our fieldwork are readings of inscriptions, measurements and images. Digital photography allows us to leave the field with thousands and even tens of thousands of images to then work with back at our home institutions. For our photography, we document each graffito at different times of the day and under different lighting scenarios. And just as we take a series of measurements, we take a series of photographs for broader measures: photographs with scale, without scale, and at different distances to record both text (or image) and context.

Even the best photographs, however, may not capture all of an ancient graffito or may not render it easily legible. All of our field documentation is combined to create a series of images that we incorporate into a photo gallery on the Ancient Graffiti Project (Fig. 9). Creating an image gallery for each inscription is time-intensive as each step requires several iterations to ensure that we are representing the graffito as accurately as possible. We begin by reviewing all the photographs taken since it is very difficult to capture all the letters equally well in a single photograph, particularly for a longer message or one inscribed on a curved column. We frequently reference our field notes as well as the sketches made in the field.

Fig. 9: The gallery of images for *CIL* IV 8666b: photograph (top left), enhanced photo (top right), line drawing (bottom left), line drawing with damage (bottom right). These line drawings were created by Gracie Singleton, a student research assistant at Millsaps College.

The final task in our documentation process is creating line-drawings that are integral to the full series of illustrations for ancient graffiti that still survive. These illustrations are displayed as a series of thumbnails on the AGP results page and then in a larger format on the individual graffito page. We use Archisketch, an architectural sketching app, with an iPad and Apple pencil to create our series of images. Archisketch allows us to add layers and draw over photographs and features a scale, which we set based on our measurements and which we can export with each image layer to provide a visual reference for understanding the size of the inscription. We begin by selecting the photograph whose lighting best illuminates the whole inscription and use that photo as the base for the series, keeping the zoom level consistent so that the size and appearance of the inscription remains the same throughout the series of images. The image series begins with the photograph of the inscription. Next we present the same photograph overlaid with a line-drawing of the graffito in black to render the ancient markings more legible. Third, we remove the photograph and present just the line-drawing of the graffito. In the fourth image, we display the line drawing and damage to the wall surface. The damage is drawn in a different color, so that the viewer can better distinguish between the intentional marks of the ancient graffito and other marks on the wall, such as surface abrasions, loss of plaster and modern graffiti, which can impede

understanding. The individual graffito page displays the first image at a larger size, with the image gallery below. A user can click among the series of images in the gallery, which then makes that image the largest on display. With the series of images set at the same scale, a user can then toggle between images in order to compare the photograph, photograph with overlay and line-drawings. The ancient markings become easier to identify in the base photograph once a viewer knows where to look and what to look for. The full series then displays the objective (photograph) and the subjective (line-drawing) so that a viewer may make his or her own judgment.

All images are stored on the server of the Epigraphic Database Roma, which has a Memorandum of Understanding with the Italian Ministry of Culture for displaying images of cultural heritage. The images on AGP each point to the originals stored in EDR. A user may click the largest image on the photo gallery to go to the original photo at EDR and view it at high resolution.

Our practices have evolved over the field seasons. An initial field season will require flexibility and adapting to find the best methodology and process. For our first season, for example, we linked the iPad of each team to sync to each other and quickly realized that plan resulted in overwriting uploaded images. In subsequent seasons, we elevated one person to manage documentation and gave stronger roles to team leaders. We started a check in and out system not only for cameras and iPads so that photos were downloaded on a daily basis, but also for our paper forms, so that they could be reviewed each evening by team leaders and project supervisors. Our documentation forms were also enhanced with new fields to capture more contextual data about each inscription.

Technology also requires adjustments from one field season to the next. For example, photographs taken with new devices are now stored in HEIC formats, which are not as widely accepted as the JPEGs that were produced previously. The software and applications a project uses may also change over time or be superseded by a better resource. We have used two different architectural drawing applications over the past eight years. In certain years, one was more advantageous than the other; more recently, Archisketch issued updates that made it our application of preference. Other changes will come with new versions of computer equipment, such as the newest version of Apple's pencil, which is now pressure-sensitive and creates a thicker line the harder one presses on the iPad. We wished to avoid such output when creating our line-drawings and so to ensure consistency we disabled this feature. For our project, RTI was used for our fieldwork in Herculaneum. In Pompeii, however, our RTI specialist, Jackie DiBiasie-Sammons, chose to use neutral density filters for photographing the graffiti in the

theater corridor. These worked well for a location that was often in sunny conditions, and provided results as useful as RTI but created in a fraction of the time.

4.3 Making ancient graffiti accessible

The final step to documenting ancient graffiti consists of sharing the results and making one's documentation public. Traditionally, results were shared in print publications and large folio publications were the primary research product.[64] Now that born-digital projects are proliferating, and many journals and volumes have adopted digital formats, a much wider variety of venues exists for publishing data related to documentation. Earlier projects were sometimes closed or subscription based, but open access has been widely adopted as part of the growth of digital humanities. Since our primary mission has been to make ancient graffiti more accessible, we have built a digital platform and have designed AGP to be fully open access; in addition, user search results can be downloaded in EpiDoc, JSON, or CSV formats.[65]

Since we are based at smaller institutions, we do not have the support of a department or center of digital humanities within our university. The architecture of AGP is therefore built on well-supported, freely available tools. Our technical director of AGP is a professor of computer science and our tools are developed and tested by students in advanced software engineering courses and as summer research experiences. We store our data in a PostgreSQL database and leverage Elasticsearch for fast indexing and searching of the data. Information about the properties and streets in our maps (e.g., name and geographic location) are stored in CSV and GeoJSON files. The Web application's backend is built using JavaEE technology and Spring MVC. Bringing together the geographic location and graffiti data, the application generates interactive maps, which are implemented using Leaflet (https://leafletjs.com/), an open-source JavaScript library, and which are used to enable searching and to visualize results. By leveraging Leaflet as well as the open-source CSS framework Bootstrap (https://getbootstrap.com/), our user interface is responsive to a variety of devices and mobile-friendly. The front end provides users with access to the graffiti and location data in human-readable (HTML) and machine-readable (e.g., JSON,

64 For Pompeian graffiti, initial publication in a journal was customarily followed by publication in the *Corpus Inscriptionum Latinarum*, vol. IV.

65 For more about the design decisions behind AGP, see Benefiel et al. 2017a.

EpiDoc and CSV) forms. Finally, our source code is freely available on Github at: https://github.com/AncientGraffitiProject.

Maintaining AGP's responsiveness and ease of use requires recurring reflection on how a variety of users (e.g., scholars, teachers, students) use the application and then implementing solutions that will best satisfy all users. We have enhanced AGP with new features in response to user feedback. This has included creating the following tools: an epigraphic key which can be turned on and off depending on the user's needs, a collection of featured graffiti with accompanying teaching resources and a standardized reference list of property names and addresses for both Pompeii and Herculaneum. The featured graffiti are listed as a top level menu option since they provide an easy point of entry to the collection. Lesson plans and activities for teachers and the reference list of properties are available under the Resources tab at the top of the page (Fig. 10). Finally, a digital tool needs continuous monitoring and maintenance. Software patches to address security vulnerabilities need to be applied whenever they are identified.

Fig. 10: Homepage of the Ancient Graffiti Project (ancientgraffiti.org).

Digital publication requires standardization and shared standards. For epigraphy, EpiDoc is the mark-up system that provides a common digital language among projects, and is based on TEI XML encoding. A tireless group of scholars have publicized and promoted EpiDoc for Latin and Greek epigraphy over the past two decades, and have educated those in the field by hosting several workshops in different countries each year.[66] Our use of EpiDoc allows our project to be flexible and compatible with other publications and projects.

We designed AGP to be an extensible platform that allows the incorporation of handwritten inscriptions from other sites as well. The Ancient Graffiti Project began by hosting ancient graffiti of Pompeii and Herculaneum as its primary locations, but now features ancient graffiti of Smyrna (modern Izmir, Türkiye) as well. This expansion resulted from working in collaboration with Roger Bagnall and the Institute for the Study of the Ancient World (ISAW) at New York University. The graffiti discovered within the substructures of the basilica at Smyrna in 2003 had been documented and published in a traditional print publication.[67] Behind that print publication, however, the digital files and metadata created for each graffito existed in EpiDoc which allowed us to harmonize that data and bring the graffiti of Smyrna into AGP. Additionally, we will soon be incorporating the ancient graffiti of Stabiae. These graffiti were comprehensively published in 2020 by Antonio Varone, a scholar with deep knowledge of graffiti and using up-to-date methods.[68] It requires significantly fewer resources to collaborate and incorporate a newly published dataset that has shared standards and common vocabulary than it does to take legacy data and metadata and update it.

Digital projects do require staff and support to be sustained. Unlike print publications, whose products take a final, permanent form, digital projects can be further updated, edited, altered and expanded. They can also disappear. Funding schemes mean that certain projects will be supported for a specific duration, will create their research outcome and will conclude. Other projects will have a longer lifespan by finding additional means of support. The main requirements for an ongoing project are a commitment from staff and a host institution.[69]

66 EpiDoc guidelines are housed here: https://epidoc.stoa.org/gl/latest/. Workshops are announced at http://currentepigraphy.org and have resumed again after the pandemic, with a workshop in Cyprus held in May 2022. Training videos are also available on YouTube on the Sunoikisis Digital Classics channel.

67 Bagnall et al. 2016.

68 Varone 2020.

69 Washington & Lee University provides the server for the Ancient Graffiti Project. Institutions may set up projects differently. A digital project might be housed within a department, a center, or within the resources of a library.

In the field of Latin epigraphy, strong initiatives continue to support collaboration and growth of projects. The Digital Classicist wiki provides a clearinghouse listing digital projects and tools of relevance to classicists.[70] As a member partner, AGP contributed data, translations and controlled vocabularies to EAGLE (the Europeana network of Ancient Greek and Latin Epigraphy). EAGLE was a European Commission-funded best practice network, which created a single portal and search mechanism for more than thirty individual epigraphy projects.[71] AGP is also a partner member of Epigraphy.info, a collaborative environment for digital epigraphy. Epigraphy.info and IDEA, the International Digital Epigraphy Association, have assumed the mantle of digital epigraphy leadership and continue the push to create and refine advanced methodologies and refine vocabularies and ontologies.

5 Concluding remarks

Even with two centuries of study and documentation, ancient graffiti continue to hold great potential, with much still to be explored. Our process for documenting ancient graffiti has evolved through our efforts to establish an infrastructure for fieldwork and a framework for presenting our research to a wide audience with varying degrees of expertise. In order to build a team with the skill set to work with these complicated, idiosyncratic inscriptions, Benefiel first offered an epigraphic summer school, whose aim was a preliminary survey of which ancient graffiti were still extant in Herculaneum, as described above. We were fortunate to have the support of Harvard University's Center for Hellenic Studies in Washington DC subsequently where we hosted a week-long workshop instructing graduate students, postdoctoral scholars and faculty how to study, analyze and edit Greek graffiti from Herculaneum and Pompeii. Through these events and the field seasons following, we grew a team with experience and a base of knowledge about ancient graffiti. The publications that have grown out of our work together display a broad range of material still to be studied and analyzed. These include, among others, studies that explore the identity of a building in Herculaneum, the variety of women's names among graffiti, explanation of an idiom about vegetables and a cluster of Safaitic graffiti likely left by Roman soldiers originally from

70 https://wiki.digitalclassicist.org/Category:Projects (accessed on 12 January 2023). The Ancient Graffiti Project is one of many epigraphic projects listed here.

71 https://www.eagle-network.eu/ (accessed on 12 January 2023).

the East.[72] As our work has developed, scholars using it have discovered new lines of inquiry into graffiti. In this way, documentation of ancient graffiti can serve as the cornerstone for new epigraphic scholarship.

To conclude, we offer the following recommendations from the perspective of a team that has nearly a decade of experience creating, designing and growing a digital epigraphic project dedicated to ancient graffiti.

- Think about the uniqueness of your material. Graffiti can be much more than text, or even geo-located inscribed content. What should be documented? What can be documented?
- Adopt disciplinary standards, contribute to controlled vocabularies or ontologies if you can. That will allow you to create consistency within your project and to ensure easier integration of your data with other projects.
- Collaborate with larger projects, if possible, to be integrated into networks of knowledge. It is important to avoid silos of data. Link to other projects and resources when possible.
- Consider long term sustainability. Build infrastructure that will allow you to maintain a site and tools within it. A university may provide server space but consider how to ensure the resources will be maintained through administrative and institutional changes.
- User-friendly is best. Consider the range of users who may be interested in your material and develop, if possible, ways to present the material appropriate to different audiences.

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Abbreviations

CIL = Corpus Inscriptionum Latinarum

CIL IV: Inscriptiones parietariae Pompeianae Herculanenses Stabianae (1871), Carl Zangemeister and Richard Schöne (eds). Berlin.

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72 Frampton 2019: so-called College of the Augustales in Herculaneum; Zimmermann Damer 2021: women's names; Cheung 2021: the idiom 'born between a beet and a cabbage'; Helms 2021: Safaitic graffiti. Cf. also DiBiasie-Sammons and Sypniewski 2019: using archival material; Benefiel and Sypniewski 2018: Greek graffiti in Herculaneum.

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