PART III

Users, epigraphy and the social web

16. Free Reproduction of Cultural Heritage for Research Purposes: Regulatory Aspects and New Prospects for Project EAGLE

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Abstract
This paper traces the genesis and activity of the "Fotografie libere per i Beni Culturali" movement promoting free remote reproduction, and reuse for scientific purposes, of manuscripts and antique volumes conserved in Italian archives and libraries. Simultaneously, evidence highlights the advantages of deregulating cultural heritage images for historical research, in particular for the study of antique epigraphy developed by the EAGLE project.

Keywords: Archives, Libraries, Manuscripts, Reproductions, Creative Commons

16.1. Free reproduction of cultural heritage outlined in the "Art Bonus" decree

On the first of June 2014, the 'Art Bonus' decree came into effect, sanctioning the free reproduction of all cultural heritage for scientific purposes (even reproduction carried out at a distance). It represented a new first for historical research:[1] numerous archives and libraries opened and made free of charge the reproduction of manuscripts and historical volumes with a user's camera. This provided a clear advantage for historical research, particularly epigraphy, which considers antique manuscripts from the 15th and 19th centuries an important source for the study of Latin and Greek inscriptions.

As a direct consequence of the Art Bonus decree, some institutions, including the State Archives of Florence (Archivio di Stato di Firenze), allowed users to make digital copies of records in consultation.

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1 Decreto-legge 31 maggio 2014 n. 83, art. 12.

Unfortunately, just one month later, a restrictive amendment modified the original text of the law, explicitly excluding printed books, manuscripts and archival documents from the liberalisation.[2] Many scholars' surprise was overtaken by irritation, driven by an apparent paradox: museum photography remained free for the tourist, yet the scholar engaged in research activity in archives and libraries would not reap the benefits of liberalisation.[3]

16.2. Current state of the problem

Excluding bibliographic and archival records from liberalisation has effectively restored the previous regime, still in force today: taxing images taken with a personal digital device (in the institutions still allowing this freedom), or an outright ban on use of a personal device – requiring the paid use of a photographic service. Rates for using a personal device are the most varied (on average 3 Euro per unit), while some archives require a rental fee for making reproductions on a personal device in a specialised room. Thus an extreme variety of tariffs emerges, commoditising research to the detriment of those who contribute to enhancing documentary heritage through their own study. Furthermore this is in direct contrast with the Italian Constitution which, according to articles 33 and 9, requires the Republic not only to guarantee free research, but also to actively promote it. An effective "tax" on reproduction with a personal device becomes a research obstacle; it is absurd to expect a fee for a service provided autonomously by the researcher himself.

Regarding 'reuse' of the image, publication for scientific purposes remains subject to a precise and formal request to have 'publication authorised' granted on stamped paper, hugely time consuming for administrator as well as applicant. The payment of fees for use ('canoni di utilizzo' or royalties) is excluded instead for the publication of images of cultural heritage (such as archival documents, ancient printed books or ancient inscriptions) in scholarly books or papers with a cover price of less than 77 Euro and up to 2000 printed copies (as per circular 21/2005 of the 'Ministero dei Beni e delle Attività Culturali e del Turismo').

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[2] Legge 29 luglio 2014, n. 106.

[3] Modolo, *Sogno infranto*; Brugnoli, *Ancora sulla riproduzione*; Ciociola, *Libere riproduzioni*; Gallo, I*l decreto Art Bonus*; Stella, *Le costose riproduzioni*; Stella, *La gabella*; Stella, *Biblioteche*.

16.3. Traditional objections to liberalisation of reproductions

The principal objections opposing the liberalisation of reproductions of bibliographic and archival records, and which must be addressed here, regard both 'conservationist' as well as derivational 'improper use' risks for the images.

The protection of archival material is one of the principal arguments against free reproduction. Indeed archivists at the State Archives of Florence (Archivio di Stato di Firenze) directly noted the advantages of free reproduction in the month "Art Bonus" came into force (prior to the approval of the restrictive amendment): one could observe not only that the images did not damage the archival material, but rather, being subject to less movement, actually contributed to its conservation.

If the remainder of the problem is indeed conservation, it is difficult to understand why this might be considered a problem only in Italy: the policies of the National Archives of the United Kingdom and the French Archives Nationales already foresee free reproduction with a user's personal device. In recent months the British Library has spread across the web a short video demonstration in order to instruct the users in the proper handling of the codex manuscript. Specifically, the video prompts the user to employ simple lead cordons to hold open the pages of a codex without compressing the back of the volume and risking damaging the binding.[4]

In addition, digital replaces contact photocopy (which still exists in some archives), primarily by reducing the wear and tear in handling a manuscript over the course of extended periods. As such, reproduction at a distance not only does not damage media more than normal handling during consultation, but rather may be a powerful ally to its conservation. For this reason it should be incentivised and not limited or in fact denied as happens today.

To those fearing 'abuse' relating to improper use of images (different from those permitted by authorisation) it is easy to respond that prior authorisation had already been eliminated from "Art Bonus" for photographs of all cultural heritage other than bibliographical or archival records. In other words, 'ex post' control instead of 'ex ante' control, characterised as the only genuinely effective measure.

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[4] Modolo, *Il dibattito sulla liberalizzazione*. http://www.bl.uk/reshelp/inrrooms/stp/copy/selfsrvcopy/book_photography_video.mp4.

It is hard to imagine now, in the digital era, strict ironclad control over all who request daily permission to reproduce mass of images which are each day authorised only for "educational purposes"! This is a problem which doesn't exist in France: the Archives Nationales does not in fact provide any specific request for autonomous reproduction, while the Bibliothéque National de France allows anyone to freely download PDF documents or antique volumes in good resolution without the need to include distinctive watermarks.

The application of tariffs for reproduction and reuse of cultural heritage images appears, even more than a means of generating profits, a pretext designed to discourage reproduction of manuscripts and ancient volumes and to minimise the risk of abuse associated with using the images for profit-making activity, in a way which might 'damage' the public treasury.[5]

16.4. The proposal of "Fotografie libere per i Beni Culturali"

To meet scholars' demands, in September 2014 researchers spontaneously formed a movement of ideas, "Fotografie libere per i Beni Culturali". The group launched a petition asking Minister of Culture on. Dario Franceschini for free reproduction in archives and libraries, renewing the original spirit of the "Art Bonus" decree.[6] It was an unprecedented initiative given not only the number of signatures (more than 4200), but also the quality of subscribers: a chorus comprising the highest representatives from each of the historical-humanitarian disciplines from around Europe: associations, university docents, researchers, students, and simple fans of local history, along with directors of state archives and functionaries of the ministry itself.[7]

Moreover, the movement produced a proposal to amend article 108 of the Codice dei Beni Culturali regulating the reproduction of cultural heritage,[8] to eliminate the exclusion of printed books and documents

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5 http://www.bianchibandinelli.it/2015/05/25/fotografie-libere-un-comunicato-dellassociazione-bianchi-bandinelli/.

6 Lupoli, *Libere foto*; Pigliaru, *Un selfie*. https://fotoliberebbcc.wordpress.com/category/adesioni-e-contatti/.

7 Pigliaru, *Un selfie*; Manacorda, *Fotografare*; Manacorda, *Petrolio*, 122; Modolo, *Ricerca storica*.

8 https://fotoliberebbcc.wordpress.com/category/la-nostra-proposta/.

from the liberalisation archive, hence complying with copyright and personal privacy for archival documents. Free photography is therefore a fundamental tool which, without contradicting the demands of conservation, greatly facilitates the task of transcribing documents and historical research – allowing significant time and money savings for the scholar, especially those forced to move to archives distant from their own place of residence.

Free photography means the ability to use one's own smartphone or camera in archives and libraries during consultation, without the need to request prior written approval (for purposes other than profit). A 'cultural' exception should be provided for a particular form of profit, scientific publishing, given the belief that research is meaningful only if it can be disseminated in the broadest way. "Fotografie libere per i Beni Culturali" in fact proposes to make free the publication of images of cultural heritage in scientific texts in circulation and of a limited cover price (below 77 Euro and 2000 copies)[9] with the sole duty to always specify the name of the library/archive of provenance, and to provide a copy of the publication. In such cases the official request for authorisation by ordinary post may be substituted by a simple communication online at the institute with the intent to publish. For the "greater" publications, other than the usual indicated above, and in general for moneymaking activities, the concession regime will remain in force, requiring both a formal authorisation request as well as a payment for the canon of use (royalties).

16.5. The free reuse cultural heritage images

The reuse of cultural heritage images, briefly mentioned in the proposal scope for "Fotografie libere per i Beni Culturali", intersects closely with EAGLE's need to publish Latin and Greek inscriptions online for cultural purposes. To this end, EAGLE established an agreement with the Italian Ministry of Culture on the 21st November 2005, to publish on the web low-resolution reproductions of previously published Latin and Greek inscriptions dated before the 7th century.

Cfr. anche Modolo e Tumicelli, *Una possibile riforma sulla riproduzione*; Modolo, *Il dibattito sulla liberalizzazione*.

[9] According to circolare n. 21 Direzione Generale per gli Archivi (Mibact).

A second agreement, signed in 2012 with the Archivio di Stato di Roma (State Archives of Rome), authorizes EAGLE to web-publish images of archival documents, including dates and information of interest for the study of antique epigraphy. Despite these formal agreements, those working for EAGLE in Italy and across Europe, understand how difficult it is to publish images of inscription – mostly due to the mistrust of those who still view diffusion of digital images as a form of "expropriation" and not an occasion of cultural enrichment.

The added-value of digital resides in its ability to disseminate knowledge, and not in static storage, as clearly demonstrated in numerous international examples which head in the direction of an ever-greater open majority toward free-reuse: the British Library for instance, which incidentally in the past months has liberalised reproductions to satisfy the demands of users, explicitly promotes the sharing of images and manuscripts on social networks, recognising the 'great benefit in sharing images'. An interesting case is the Metropolitan Museum of New York, which has made available hundreds of thousands of high-resolution photographs of their own works, even allowing their reuse in scientific publications, in free format but also free from prior authorisation; the Walters Art Museum in Baltimore proposes an even more extreme model in giving anyone the possibility to reuse excellent resolution images for any purpose, including commercial (!) with a "CC0" license.

Free reuse of the images, at least for cultural purposes, has obvious positive effects on the liberal circulation of scientific content, and also represents an important way to improve the visibility of institutions and their collections. Museums, archives and libraries should therefore be seen as active and dynamic centres of cultural promotion, more so than bureaucratic offices for the static conservation of cultural heritage.[10]

16.6. Encouraging first results and European perspectives for project EAGLE

The effort underlying the collection of thousands of signatures has already led to encouraging openings. A recent law proposal aims to restore the original sprit of the "Art Bonus" decree,[11] and the comparable

[10] Cfr. on the Creative Commons licences in archaeology: Brugnoli and Gardini, *Fotografia digitale*.; Gualandi, *L'archeologia italiana*.

[11] http://www.senato.it/japp/bgt/showdoc/showText?tipodoc=Sindisp\&leg=17\&id=914146.

availability shown by the Ministry of Culture, are in fact events which inspire optimism – primarily because they mark a return to this topic in parliament after one year. It will begin a course that will hopefully soon arrive at the modification of article 108 of the "Codice dei Beni Culturali" regulating reproduction and the release of an appropriate circular which should affirm, without ambiguity:

1. the free reproduction in archives and libraries for research purposes and in accordance with complete respect for privacy and copyright law;
2. the free reuse of images of cultural heritage for purposes outside of financial gain, or free publication online and in print within the limits mentioned above.[12]

It is important that these principles remain valid in archives and libraries which pertain not only to the State, but also to the local administrations and – why not – to the private owners of cultural heritage which, although private, constitute the patrimony of public interest. If in Italy one might achieve a similar result, as is hoped, the immediate next objective would be to export this model to other countries in the EU to encourage the widest possible circulation of information in the field of historical research at the community level.

Photography, as noted here, is an indispensable method for studying not only epigraphic text but also the supportive material which contains it. The advantage for EAGLE will then be two-fold: the liberalisation of photography in archives and libraries can facilitate the study of numerous epigraphic repertoires which can be found in manuscripts and antiquarian sources, while the free reuse of cultural images in museums across Europe may allow the broadest sharing of inscription reproductions on the web.

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[12] Modolo e Tumicelli, *Una possibile riforma sulla riproduzione*; Modolo, *Il dibattito sulla liberalizzazione*. See also: http://www.senato.it/japp/bgt/showdoc/frame.jsp?tipodoc=Emendc&leg=17&id=956757&idoggetto=959154.

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17. Digital enhancement of the "Paolo Orsi" museum: a Google Street View 360° pilot project tour

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Abstract
The aim of this paper is to present the pilot project in progress at the "Paolo Orsi" Archaeological Museum (Syracuse, Italy). Thanks to a free partnership with Google Business Photos, we have managed to map the entire museum for a online 360° tour on Google Street View. A dozen archaeological finds have been selected for 360° virtual tours, provided with descriptive sheets. Among them the beautiful 'inscription of Nassiane', from the Catacombs of San Giovanni in Syracuse, has been selected.

Keywords: Google, Sicily, Sicilian Cultural Heritage, Virtual Museum, Virtual tour, Digital Heritage

17.1. The "Paolo Orsi" Archaeological Museum

The "Paolo Orsi" Regional Archaeological Museum of Syracuse, together with the "Antonino Salinas" Regional Archaeological Museum in Palermo, is the most important Sicilian archaeological museum and it is one of the most important and richest archaeological museums in Italy.

The National Archaeological Museum of Syracuse was born by a royal decree in 1878, known as "national" for its collections' importance and size. Well-placed inside the historical palace in the Cathedral Square on Ortigia island, it was directed by Paolo Orsi from 1895 to 1934.

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The archaeological collection has been enlarged by over 70 years of archaeological research making it necessary to move the collection to a new museum space. Designed by the architect Franco Minissi, the new museum was built in the Villa Landolina garden between 1967 and 1986 and inaugurated in January 1988. The collection consists of artefacts from the prehistoric, Greek, Roman and Christian periods found in archaeological excavations in Syracuse and in other Sicilian sites. The museum space is divided in three levels (floor 1, 2 and basement), distributed around a central space which is dedicated to the history of the museum and temporary exhibitions. First level is divided in three sectors (A – C) and testifies the history of central-eastern Sicily from prehistoric ages to the Greek one. On the upper floor, sectors D and F were inaugurated in 2006 and contain finds from the Hellenistic-Roman and Christian periods. Section E will open next year with findings from sites in central-eastern Sicily (as Centuripe, Morgantina, Tindari and so on). Moreover, a precious and unique collection of coins and medals from archaic to the medieval age is located in the basement, opened in 2010.

17.2. The project: reasons and birth

This project born from the desire to fill the deep gap in the promotion and enhancement of Sicilian cultural heritage.

Sicily has the highest number of UNESCO heritage sites (7/51 in total)[1] and of UNESCO intangible cultural heritage (3/6)[2] in Italy and in the world. Infact, Sicily has some of the largest and most important archaeological sites in the world: the temple of Concordia in Agrigento, for its exceptional state of preservation has become the symbol of UNESCO itself.

Despite of this, Sicilian cultural heritage struggles to be present on Google's platforms such as Google Art Project and others, as it should, compared to other Italian cultural sites (Bonacini 2013; 2014).

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1 1997: Valley of Temples in Agrigento; 1997: Villa del Casale; 2000: Eolian Islands; 2002: Late Baroque Towns of the Val di Noto (South-Eastern Sicily); 2005: Syracuse and the rock necropolisof Pantalica; 2013: Mount Etna; 2015: Arab-Norman sites, Palermo and the Cathedral Churches of Cefalù and Monreale.

2 2008: Opera dei Pupi, Sicilian puppet theatre; 2013: Mediterranean diet (transnational); 2014: Traditional agricultural practice of cultivating the 'vite ad alberello' (head-trained bush vines) of the community of Pantelleria.

It is not so difficult to explain where the difference between the island and its mother country comes from. Sicily has the status of independent region, therefore it has an exclusive competence in the field of regional cultural heritage. Sicilian heritage is released from any convention that the Italian Ministry of Cultural Heritage and Tourism has signed since 2009 with Google. The Regional Department of Culture and Sicilian Identity has never bothered to solve this really huge gap regarding its cultural heritage and landscapes.

In Street View Gallery,[3] which now has contributed a great number of users from all over the world, thousands are the spherical and geo located photos of Italian places. However, tightening the selection to "Landmarks of Italy", [4] Sicily has only 9 spherical photos, showing the beaches of the Aeolian Islands (7), the islands of Favignana (1) and Marettimo (1).

Among Art Project's 605 museum collections,[5] 47 are Italian, especially relevant to Rome, Turin, Venice and Milan. One of these, not the best artistic production, is a Sicilian contemporary collection, relevant to the International Festival of Street Artists in Giardini Naxos (Me). No other Sicilian museum, collection or archaeological site has been included in Art Project.

Browsing on the Street View Gallery, 21 sites are all over inscribed on the World Wonders Project:[6] for Italy, only Pompeii and the historic center of Florence are inscribed in this still restricted list. Many more sites can be visited virtually from the same project linked on Google Cultural Institute's website:[7] 172 sites in the world, 22 in Italy and, finally, 2 of them in Sicily. Until last year the Unesco site of the baroque town Val di Noto was the only one in Sicily; currently Mount Etna, has been added.

Google organized its Google Camp 2014 and 2015 editions by selecting as exceptional locations two of the most evocative archaeological

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3 "Google Street View Gallery," ultima modifica 10 gennaio 2017, https://www.google.com/maps/views/streetview?gl=us.

4 "Italy Highlights," sulla Google Street View Gallery, ultima modifica 10 gennaio 2017, https://www.google.com/streetview/#italy-highlights.

5 "Google Art Project" sul portale del Google Cultural Institute, ultima modifica 15 febbraio 2017, http://www.google.com/culturalinstitute/about/artproject/.

6 "World Wonders Project" sul portale del Google Cultural Institute, ultima modifica 24 maggio 2016, https://www.google.com/intl/it/culturalinstitute/about/wonders/.

7 "Google Cultural institute" sul portale del Google Cultural Institute, ultima modifica 28 febbraio 2017, https://www.google.com/culturalinstitute/beta/?hl=it.

sites in the world, Selinunte and Agrigento. Nevertheless the beauty and heritage of Sicily, ironically, is not on Google's platforms.

This project was born in collaboration with Mr. Gianfranco Guccione, a certified Google Business Photo photographer, while he was working as a freelance consultant at the General Direction of the Regional Department for Cultural Heritage and Sicilian Identity in 2014. He proposed to realize the Street View mapping of a museum and an archaeological site in Sicily, considering the possibility of creating "augmented" virtual tours (3D virtual tours of objects displayed in museum's windows and virtual aerial tours, with the addition of text and audio descriptions).

The profound reason of this project consists in an effort to bridge this gap, "increasing" fruition and enhancement of Sicilian cultural heritage.

With the agreement between the General Direction of the Regional Department for Cultural Heritage and Sicilian Identity and the European Coordination of Google Business Photo, it was decided to choose as a sample of this project two cultural regional institutions, the "Paolo Orsi" Museum in Syracuse and the Valley of the Temples in Agrigento, both UNESCO sites since 2005 and 1997. The project was then structured as a research fellow project at the University of Catania and carried out by the present writer in close collaboration with Mr. Guccione.

The first part of the project at the "Paolo Orsi" Museum, which we will discuss here, is about to be completed. The second part at Valley of the Temples in Agrigento is going to start.

17.2.1. The 360° tour on Google Maps: some technical data

A large photographic survey began in August 2014, with the aim of mapping all areas of the first and second level open to visitors (only the collection of coins and medals, for security reason, has not yet been photographed).

A total of 3.924 shots to get about 327 360° virtual tours have been made using a mobile station made up by a reflex camera with fisheye type camera lens, tripods with panoramic head. Because of the peculiarity of the light in the different museum's sectors, it was necessary to adjust the brightness each time. The windows in the winding path often reflect one another and precautions were taken to avoid, as far as possible, those refractions.

Once loaded on Google's software Business Photos, the pack of images from the 327 virtual tours were geo located in Google Maps Street View, mounted avoiding defects of sight between the images.

The 360° virtual tour makes it possible browsing the entire museum and its collection, between levels connected by arrows, placed online at the link https://goo.gl/maps/oagnd8urP1H2 (for the first level) and https://goo.gl/maps/vrpDfuPPgwM2 (for the second level). As you can see in Fig. 1, by clicking on the first link, the remote user can enter the museum through the Street view panel: the 360° virtual tour begins at the entrance and the user can browse moving with the directional arrows, between sectors and levels.

The project provided the opportunity to carry out 360° virtual tours of some exposed archaeological finds, like an "augmented" virtual tour, certainly innovative compared to what Google's platforms provide.

Art Project, for example, allows you to view points of interest along the path in a museum, but captions are short and photos are static. A pilot initiative has been recently launched featuring the possibility to in-browse almost 300 3D photos of objects from the collections of six cultural institutions in the world. However 242 of these consist of scans of animal skulls (pieces of nature, not works of art) from the California Academy of Science collection; 22 objects of art come from Museo d'Arte Orientale (the only Italian cultural institution to join the project until now). These 3D objects, described by short captions, are available to users to be rotated and zoomed. The aim of this new Google's project is to begin building the most important and largest database of 3D scans of art works worldwide.

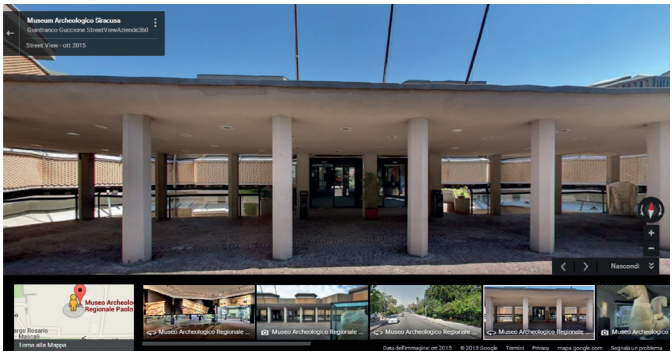

Fig. 17.1. The virtual entrance to Archaeological Museum "Paolo Orsi" on Google Street View.

As for the displaying on Google Maps of the 360° virtual tour of the objects, we must specify that Maps so far does not support the integration of menus, captions, photos, video, info inside the Street View virtual tour technology. Infact, it is only allowed navigation in 360°, i.e. a virtual walk.

We tried to find an answer in order to show on Maps all the information, captions, maps, levels and 360° virtual tour of objects. Thanks to customized i-frame we made these virtual tours possible with their captions and the maps with different levels and clickable points of interest, adding them to the existing virtual tour of the Museum, already on Maps, through a link containing the Google mapping of the Museum. In this way the virtual tour of the Museum – made with Google standards – is "augmented" by another virtual walk much more exhaustive, located via link on the Google Maps board of the Museum, where you can view all these additional items.

Both the virtual tour of the museum and the virtual tour of the objects will also be placed on the Museum's website, on the Regional Department for Cultural Heritage and Sicilian Identity portal (http://www.regione.sicilia.it/beniculturali/museopaoloorsi/). Because of the profound principle that this non-profit project would improve the visibility and promotion of Sicilia Cultural Heritage, the Museum's virtual tour and its reproductions belong to Google; Museum's objects virtual tours, instead, belong to Paolo Orsi Museum, which is free to reuse them.

17.2.2. The "Paolo Orsi" Museum 360° tour

Coming from Sector A, after turning around a couple of casts of dwarf elephants from Spinagallo cave (Syracuse), a remote user can see the displayed artifacts, starting with Neolithic phase of Stentinello (VI millennium B.C.) to reach the great exhibition space dedicated to Bronze age: Ancient Bronze age (facies of Castelluccio), Middle Bronze age (facies of Thapsos), Late Bronze age (facies of Pantalica) and Final Bronze age (facies of Finocchito), where the large containers from Thapsos and Pantalica necropolis.

Fig. 17.2. 360° tour of Sector A: a couple of casts of dwarf elephants from Spinagallo cave.

In the Sector B1 remote users can admire findings from the first colonies founded by the Greeks in eastern Sicily (Naxos, Zancle, Leontinoi, Katane, Megara Hyblaea) with some of the most important Greek masterpieces, as the naked sculptures of young men from Leontinoi and Megara Hyblaea.

The B2 Sector introduces the visitor to the archaeological finds from the city of Syracuse, from its foundation to classical age. Here the most important spaces are those dedicated to the architecture of archaic and classical temples (Athenaion, Ionic temple, Olympeion and Apollonion), to the statuary and the terracotta findings from urban excavations during the last decades (Piazza Duomo, Ortigia, Piazza della Vittoria) and to the urban and extraurban necropolis (Fusco, Giardino Spagna) with rich funerary kits.

Fig. 17.3. 360° tour of Sector B2: the findings from Athenaion and Ionic temple in Syracuse.

Sector C is dedicated to the colonies founded by Syracuse – Eloro (670 B.C.), Akrai (664 B.C.), Kasmenai (644 B.C.) and Camarina (598 B.C.) -, to Gela (689 B.C.) and Agrigento (580 B.C.), the largest colonies of south-eastern Sicily with their ceramics, architectural remains of temples, findings from sanctuaries and necropolis, as well as finds from other indigenous hellenized centres.

Sector D on the second level contains finds from the Hellenistic age to the Roman period, including statuary, beautiful portraits from the Roman age, architectural pieces, ceramics, mosaics, cinerary urns and various handcrafts.

Fig. 17.4. 360° tour of Sector D: the Venus Landolina.

They document the multiple aspects of life in Syracuse and come from urban necropolis from III-II century B.C. Here are masterpieces like the wonderful statue of the Venus Anadiomene, called Venus Landolina, here in Fig. 4.

In Sector F finds from the various catacombs in the city are on show, documenting life in the Christian era. Here is the Sarcophagus of Adelphia, a Christian marble sarcophagus found in the Rotunda of Adelphia inside the Catacombs of San Giovanni, just near the museum.

17.2.2.1. 360° virtual tours of archaeological selected objects

The Museum staff has selected 12 objects along the path between the two levels, which can be linked as points of interest placed on the Museum map – where the remote user can identify sectors, plans and POI – with virtual 360° tours equipped with labels with captions and descriptive texts.

Here are the selected objects:

From Sector A:

1. A foot-cup dated to the 15th century B.C., relevant to the facies of Rodì-Tindari and coming from Vallelunga, in the province of Caltanissetta.

From Sector B1:

2. A red-figured wedding lebes, attributed to Painter of Siracusa 47099, dated to 360-340 B.C. from Lentinoi.

From Sector B2:

3. A proto-corinthyan oinochoe, dated to 670 B.C., coming from the excavations in Piazza Duomo;
4. A plastic Corinthian vase in the form of a lion, dated 610-590 B.C., from the Garden Spain Necropolis;
5. An Attic black-figured calix-crater, by the Antimene Painter in 520 B.C., coming from the Garden Spain Necropolis;
6. An Attic black-figured Panathenaic amphora, dated to the middle of the 6th century B.C., coming from excavations in Viale Paolo Orsi;
7. A terracotta bidder statuette, dated to the 4th century B.C., coming from the sacred votive deposit in Piazza della Vittoria.

From Sector C:

8. A red-figured bell-shaped krater, coming from Camarina, produced in the workshop of the Athenian painter Polignoto, around 440-430 B.C., decorated on the principal side with the Delphic triad (Apollo, Artemis and Latona);
9. An Attic red-figured lekythos, coming from the necropolis of Capo Soprano near Gela, dated to 470 B.C. and realized according to the manner of the London painter E342;
10. The Ephebus of Adrano, a small bronze athlete, dated to the first half of the 5th century B.C., generally thought to be a scaled-down copy of a large bronze original by the famous Greek sculptor Pythagoras.

From Sectors D:

11. A small Hellenistic terracotta boat in the shape of a pistrix (sea monster), from the Fusco necropolis in Syracuse.

From Sector F:

12. The Nassiane inscription Fig. 4, a curious marble disk, from the Catacombs of San Giovanni.

Fixed on tripods the reflex camera with a quadrangolar lens, the objects have been photographed flipping them on a graduated portable rolling disk. Each 360° object virtual tour took a number of about 88 shots, for a total of 1.062 shots, mounted with specific software. In this way the remote user, clicking on the preview pictures, can admire the selected object in all its sides, by moving the mouse on the right and left and zoom in-out.

17.2.2.2. 360° virtual tours of Nassiane inscription

The last selected object we present here is a disk from Sector F: it is a marble disk, discovered by Paolo Orsi in the Catacombs of San Giovanni in 1894 (Orsi 1895), decorated by a wreath of laurel leaves on one side; the other side was reused in the 4th century A.D. for the funerary inscription of Nassiane, woman who died at age 32 in God faith.

This object, which the remote user can observe with a 360° virtual tour, has been selected both for the peculiar reuse and because it documents the religious syncretism of the early centuries of Christianity. Re-using of architectural is well documented in the catacombs of Syracuse (Sgarlata 2013). It was found shattered in front of a burial, distinct from others, known as "the Saint's Tomb" (Sgarlata 2004, 40-44).

Fig. 17.5. 360° tour of the Nassiane inscription.

This is the Greek text:

chrismon ς χριστ< ι>ανῆς σεμνῆς ἀγανόφρονος [ἠδ]ὲ φιλάνδρου Νασσιανῆς τύμβον εἰσορᾷς, φίλε, κίμενον [ὧδε ἥ]τις σεμνοσύνῃσιν [ἐριζε]το Πηνελοπίῃ palma chrismon ἐνθάδε κῖτε [Νασσ]ιανή, ζήσασα [ἐν Θ(ε)ῷ] καλῶς καὶ ἀμέμπτως ἔτη λβ΄, μῆνας ι΄.

The inscription says: "Oh friend, you see here the tomb of Nassiane, Christian, ripe, sweet, fond of her husband, who competed for virtue with Penelope. Here lies Nassiane, she lived well and blamelessly in God (?), 32 years and 10 months". This inscription documents such as epigraphic formulas affected by religious syncretism (syncretism generally means that a complex of phenomena and concepts derive from the meeting and fusion of different religious forms) between Pagans and Christians, for which a Christian like Nassiane could have competed in life with Penelope, the hero Odysseus' wife and symbol of marital devotion. Its circular shape suggested that it was a table for the ritual of refrigerium, the funeral feast that symbolically was consumed with the dead, even this syncretic practice dates back to the pagan world (Sgarlata 2013; Scandurra 2014).

Fig. 17.6. The Nassiane inscription, recto (courtesy by the "Paolo Orsi" Museum).

17.3. Conclusions

As discussed elsewhere (Bonacini 2013; 2014), Google is undoubtedly the most active entity in the world committed to preservation, dissemination and promotion of cultural heritage, well above any public institution, through an unparalleled campaign of digitization open to users' collaboration. This could happen because Google itself has an incomparable capacity of economic investment. Even large international projects of digitization (such as Europeana itself) are not able to compete with Google.

Therefore, after initial hesitation towards these Google's initiatives, now most of museums and cultural institutes in the world have seen in Google a partner that enables them to progress in the online visibility and in the process of heritage digitization.

Regarding the project here presented, which concerns one of the two selected sites, we can rightfully say that it is the first archaeological museum in the world – needless to say, the first museum in Sicily – entirely browsable on Google Maps platforms with a virtual tour in all exhibition halls and 360° virtual tours with integration of captions and full description of artworks.

In the near future we hope to allow 360° visualization of a greater number of objects, with their accompanying captions translated at least in English and in audio version.

Thanks to this project we hope that Google itself could realize how the time has come to "rejuvenate" the Google Maps Street View system, allowing enabled users to apply additional content on the maps.

However, the wide interoperability between Google software the development of new solutions and the integration of geo-referenced results in the page results on the search engine continues unabated: the "Paolo Orsi" Museum – and with the museum, the city of Syracuse and the whole of Sicily – will surely take advantage of this new tool for its visibility.

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18. Latin epigraphy for the visually impaired. New technologies to favour universal accessibility

*Francesca Licordari**

Abstract
The problem of accessibility to works of art for the visually impaired can be extended to a system such as Latin epigraphy, which presents great difficulties since the engraved letters are not clear to the touch. The technology of 3D printing allows the creation of materials that make it easier to read epigraphic texts in following the "design for all" principle demonstrating an economic, rapid technique that is easy to implement and reasonably robust.

Keywords: accessibility, visually impaired, 3D printing, design for all, Braille, epigraphy

18.1. Introduction

The Declaration of the Rights of Deaf-Blind Persons, adopted by the UN in 1979, provides that every blind or deaf person has the right to enjoy the same privileges, guaranteed to all people and to have their aspirations and abilities recognized and respected. These principles are reaffirmed by the UN Convention on the Rights of Persons with Disabilities of 2006, which states (Art. 30) that the Member States must recognize

> the right of persons with disabilities to take part on an equal basis with others in cultural life and should take all appropriate measures to ensure to persons with disabilities:

a) enjoy access to cultural materials in accessible formats;

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b) enjoy access to television programs, films, theater and other cultural activities, in accessible formats;
c) enjoy access to places of cultural activities, such as theaters, museums, cinemas, libraries and tourism services, and, as far as possible, to monuments and sites of national cultural importance.

The problem of accessibility and enjoyment of works of art by the visually impaired has long existed. Sculptures, which are sometimes designed to be touched, and sometimes are permitted to be touched, provide the possibility for blind viewers to benefit directly from the experience of the original artwork. For two-dimensional paintings this is of course not possible. It is necessary to create three-dimensional resin reliefs. This same issue has recently been understood to exist also in other artistic disciplines, including that of archaeology. This of course includes epigraphy, which is the study of all those materials which have written inscriptions. Most relevant to this is Latin Epigraphy, simply because it is the one closest to our language and which uses the same graphic signs of our own writing.

The bibliography in this area of study is unfortunately not very comprehensive, especially as regards the epigraphic field; but advances are even now being made. In Italy, the most important studies are conducted by the "Museo Tattile Statale Omero" in Ancona, which, being a museum of statuary, is mainly engaged with reproductions and the accessibility of tactile sculptures. The same work, involving the reproduction of paintings, is being carried out by the "Museo Tattile Anteros" in Bologna. It is no coincidence that Italian studies in this field are the most important done at the international level. This is mainly due to the fact of Italy's great artistic and epigraphic heritage, which makes it the country where the problem is most profoundly felt.

The results of this paper are derived primarily from field studies, and also through various assistance and support provided in partnership with people of both limited vision and complete visual impairment who tested the strengths and weaknesses of the materials which will be referenced in this paper.

Fig. 18.1. Sculptures are permitted to be touched in the National Etruscan Museum of Villa Giulia in Rome.

Fig. 18.2. Resin relief of the Anteros Museum: Mona Lisa.

18.2. Problems in understanding epigraphy

The field of epigraphy, always considered highly specialized, can be of great fascination to people with visual impairment. Some may have studied ancient languages at school, especially Latin, and so feel the need to have practical examples for the understanding of the subject; and some may be attracted out of curiosity. It is obvious that accessibility to the inscriptions for such people involves a number of difficulties, and not just that of understanding the texts, which are often full of abbreviations. There is, as well, a certain percentage of the blind who never learned to read and write. Not infrequently, they may only know capitals, but not cursive characters. The inscriptions, which appear so sharp to us that we are often tempted to touch them with

our hands to follow the course of the incisions, actually create complicated problems for the blind.

In this regard it should be noted that the sense of touch is neurologically and physiologically more suited to perceive what is protruding from a surface, rather than to what is engraved upon it. This is a fundamental difference from the sense of sight, which is suited to perceive contrasts in color and between light and shadow, regardless of the technique used to create them (reliefs or incisions). The groove of a letter, even if deeply incised, is not always easily distinguishable to the touch, while a written relief almost always is. Therefore, to allow for the visually impaired the proper accessibility to an inscription, the original needs to be touched while, however, exploiting resources to make transliterations in relief and Braille.

The creation of panels and captions in Braille can help in the understanding of a text, but it can not be the only solution, as only a percentage of the blind understand Braille. A prerequisite for this is the instruction be given at a young age, something that unfortunately does not always happen. With widespread computer usage, the majority of blind children learn to write on the computer, which supplies speech synthesizer without the need for Braille. In this way, the art work is losing its esthetic value.

A visually impaired person, however, has normally never learned Braille because with the right font size and adequate lighting he can read standard writing – albeit with difficulty. In many cases, their blindness occurs in advanced age, or as a result of illness or accident. In such situations, the writing that is understood had been taught in their school years.

As Braille graphically occupies comparatively more written space, there are distances and dimensions that must be met and therefore their characters cannot be made smaller as can be done with printing presses or computers. It follows, then, that the explanations in Braille accompanying museum art works need to be more concise, in large part because their reading needs to be done with both hands, making it uncomfortable to stand reading the texts for very long.

In the case, then, of writings on mosaics, of paintings and designs, it is not even possible to perceive the form and the depth of the ductus. The surface appears completely flat to the touch.

The best solution to make the epigraphic media available to the visually impaired turns out to be, therefore, one that involves more

visitors who can better understand the artwork. In this regard, understood that the chance of touching an original work wherever possible is a uniquely fascinating act, it becomes necessary to propose reproductions that can make the material accessible by following the concept of "design for all," which is adaptable to all types of art. As rightly noted by the scholar and educator Enzo Tioli (AA.VV. 2006), this principle can be defined as "identical, whenever possible, equivalent when that is not possible." All that can be touched and seen in the original work constitutes the "identical", the use of a copy constitutes the "equivalent".

18.3. The techniques of accessibility

In the world of epigraphy, casts of inscriptions are often used, both to facilitate their study by specialists, and also to replace those exhibits that had been located outside and brought indoors to protect them from weather conditions. These casts, if used by the visually impaired, present the same problems of accessibility as the original in terms of the difficulty of understanding the incision's grooves. It is necessary, therefore, to have a reproduction of a different type, upon which the letters can be transliterated in relief.

At this time of experimentation in this direction, there are not as yet many constructed, the reason being that works of touchable statuary without additional aids are given more importance; and masterpieces of painting in art history are made accessible by means of a process of conversion to relief.

A remarkable attempt, albeit with many limitations, is the one created in Rome's Capitoline Museums that, for their epigraphic collection, the Lapidary Gallery, created in 2007 a touch accessible project, in collaboration with the NGO Museum - Voluntary Association of Museums. Here, works with the most significant inscriptions of the largest sizes and preferably with reliefs were selected and availed in a way as to give the visually impaired a sense of the monument as a whole, rather than only of the text itself. The technique utilized led to a Braille book entitled Messages from Stone, published by Silvio Zamorani, who has specialized in Braille publications. The book was created with images in relief; but unfortunately this technique is not very perceptible to the touch and quickly becomes outdated.

The just mentioned reliefs, in fact, hardly stands out from the outline of the exhibit and we opted for the choice of reproducing the epigraphic texts only in print with overlapping respective Braille letters. For reasons of the problems of adequate space previously mentioned, the transliteration into Braille is not always complete nor accurate, as in the case of the relief dedicated to Silvanus and to the Genius of the Equites Singulares. In the latter instance, the missing transliteration of certain words was somewhat justified by the lack of space; but such a choice deprives the blind of the total understanding of the work.

The dedicatee, Marcus Ulpius Fructus, is shown in Braille without praenomen and nomen, thereby omitting an important element of dating and contextualization. In the caption, the text in Braille and in writing does not coincide, thereby losing the abbreviation's clarity and the translation's exactness.

The technical device for this publication and the panels presented in the museum gallery is that of graphic Braille print, a special printing technique of simple and rapid implementation, capable of reproducing text and drawings using closely spaced Braille dots. This means that sometimes the difference between the signs of writing and those of the drawings is imperceptible to the touch. Moreover, the device was also forced to work on only one level of relief. Having multiple levels available to distinguish the different elements of the object, is similar to that of using different tones of different colors. It is in this way possible to recognize the design of one level and the writing of another – the differences of only a few millimeters would be sufficient.

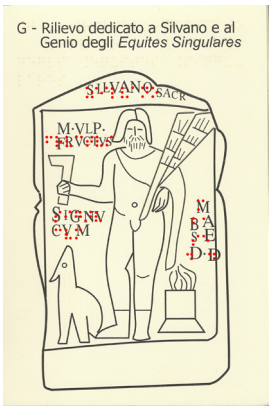

Fig. 18.3. The technical device of graphic Braille print for the panel of Marcus Ulpius Fructus.

A technique which solves this problem is that of the Thermoform, that is a relief obtained from a plastic material, formed in a metal matrix. This type of technique is the one most used for the creation of teaching aids in schools for the blind (in this regard see www.prociechi.it). But the technique proves to be very expensive in the creation of the original matrix, as well as for the reproductions of individual pieces. The costs come down significantly when multiple copies are derived. The ease of obtaining new copies compensates for the rapid deterioration of the material.

Fig. 18.4. The technique of the Thermoform with caption in Braille.

An additional system of reproduction, which is still in use but is gradually disappearing, is the Minolta Heater with printing granules. This enables the quick printing of designs and writing on a paper little thicker than that of normal stationary. It has never been used in reproduction of inscriptions for the blind and there would be nothing that could prevent that. But based on experiences and tests made by people with visual disabilities, it can be said that the resulting relief is not very pronounced to the touch, to this should be added the poor resistance of the characters, which often, after prolonged use, tend to become damaged or completely lost. The Minolta system is therefore a still utilizable technique useful in creating images for brief exposure, but it must be avoided for reproductions intended for permanent collections.

Fig. 18.5. Reproduction with printing granules (Minolta Heather) of the Cortona Triptych by Fra Angelico.

18.4. 3D Printing

The new frontier in the understanding of works of art for the sight impaired is provided by 3D printing, which proves to be both economical, fast, easy to implement, and durable. It is a single technique, which gathers together the advantages of the techniques already highlighted and overcomes the defects of poor durability. Moreover, as the name implies, it allows the introduction of the third dimension, which until now had never been possible, allowing the blind person to be able to better perceive objects in space. This problem maybe not obvious in the case of inscriptions on plates, but presents itself when we deal with sculptured monuments containing inscriptions.

Precisely from this technology in 2007, coordinated by Prof. Massimo Bergamasco and the Perceptual Robotics Laboratory (Percro), was developed the project PURE-FORM, which led to the creation of a virtual museum, which gives visitors the chance to see and "touch" objects, in particular digital sculptures, belonging to different historical periods and from different contexts. All of this is based on a digital scan of the artworks stored in a database, thus offering a wide choice, and reproduced on a touch screen display. In this project the focus was also placed exclusively on sculptures, which already possess the third dimension, while the epigraphic content has been completely omitted. The creation of a display, in practice a computer, allows on the one hand more accessibility to artworks, but on the other deprives the user

of the opportunity to travel to a place where they could personally experience the work's features. It must not be forgotten that a museum or an archaeological site are not just warehouses and storage sites.

The great advantage of 3D printing is that it materially allows more types of reproduction fundamental to human comprehension that can be joined together and be touched and perceived as if real:

- Original
- Original with fractures and abrasions and signs of aging
- Integrated original
- Reproduction with transliterated reliefs
- Reproduction of the original with Braille overlay.

A copy could be thought of in its original 1:1 scale, that can be regularly handled to give an idea of its dimensions; to another with letters in relief, rather than etched, for a better understanding of the texts; the realization of individual fragments of inscriptions that could then be put together like a puzzle, just as the epigraphist does. Very often, in fact, the inscription is the result of a recombination of the fragments. Moreover the inscription may be created, by modeling it in a different way to the touch where the integration between the fragments is clear. In this way the visually impaired would be able to approach epigraphy in almost the same way as any sighted person. This is notwithstanding the need for explanatory captions accompanied by transliteration and the noting of the abbreviations, which of course may not be clear to the layman.

Fig. 18.6. Small model in 3D printing of the Sarcophagus of the Spouses.

Fig. 18.7. The clone of the Sarcophagus of the Spouses (scale 1:1) starting from the digital tridimensional scan of the original Sarcophagus, Italdesign Giugiaro.

This technique would be very valid when used in the case of reproduction of mosaics and inscriptions in the mosaic. These reproductions make for the best situation where the user can differentiate between the various levels. The background can be made on one level, while the drawn design can be made on another upon which it is possible to write. The use of 3D would obtain a result similar to that by the Federazione Nazionale delle Istituzioni Pro Ciechi (National Federation of Institutions for the Blind) NPO in the Square of the Corporations of Ostia Antica. In this area, paved with many squares of mosaics, which bear witness to the intense commercial activity of ancient Ostia, the reproduction of Ostia's famous lighthouse was created with different levels of elevation of a mosaic in black and white, which allow the user not only to understand the image, but also to understand the technique of its realization. In this case, though, the reproduction does not contain writing, because the chosen image contained no inscriptions. But nothing prevents the use of the same technique using written entries, notwithstanding the need for an additional explanatory panel. The disadvantage of this technique is the high cost of implementation, given that it is a reproduction created exclusively from a specific work, and requiring a rather high level of craftsmanship since it is not merely modeled from a metal matrix.

Fig. 18.8. The reproduction of the mosaic of Ostia's lighthouse by the Federazione Nazionale delle Istituzioni Pro Ciechi NPO in the Square of the Corporations of Ostia Antica.

A thesis paper, of the Postgraduate School of Archaeological Heritage in Latin Epigraphy (Licordari 2015), which supports an exhibition project for the dissemination of Latin Epigraphy to the public, proposes 3D reproduction of two mosaics of the stationes of that square in Ostia, with images and writing – that of the Libyan boatmen of Sabratha and of the Carthaginian boatmen. The first, with the inscription STAT. SABRATENSIVM [CIL 14, 4549.14], is characterized by the image of an elephant, the symbol of the Sabratha ivory trade. The second contains the inscription NAVICVL. KARTHAG. DE SVO [CIL 14, 4549.18] along with two ships. The paper's original idea was based on the fact that not only should there be brief and easy to understand inscriptions, but that the understanding could be made easier by the presence of drawings presumably known to blind people. Certainly the case of Ostia Antica is a particularly simple one as it involves mosaics of only two colors. A more complicated case would be a polychrome mosaic which attempts to assimilate all the aspects of a colored painting. It is obvious that the sketched designs and writing can be configured and presented on different levels.

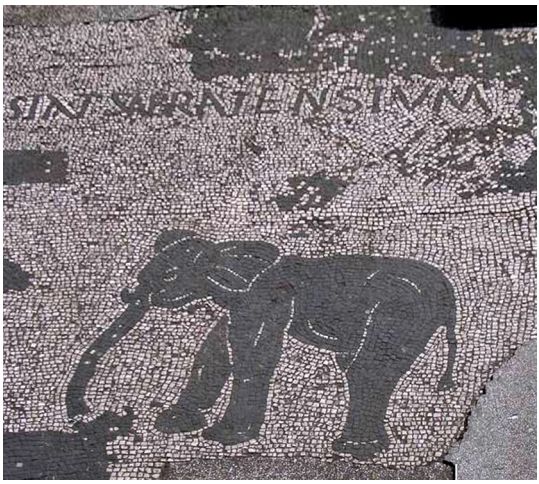

Fig. 18.9. The mosaic of the Libyan boatmen in Ostia Antica.

3D printing has the great advantage of allowing the reproduction of colors. But to be made adequately perceptible by the visually impaired, they should have a marked color contrast.

In the thesis mentioned above was proposed the use of 3D printing for the reproduction of other artifacts containing inscriptions. It presented the case of a portable timepiece and an Italic mirror, both objects containing images with a few written words. The inspiration to utilize the mirror came from the creation of a computer model by the former Superintendence of the Archaeological Heritage of Southern Etruria. Achieving the goal required the difficult extraction from the print of a mirror with correct reproductions of the images and the script. According to the officer in charge, it would have been enough only to deepen the furrows of the incisions in order to construct an object that could be accessed by the blind; but this obviously does not solve the problems already analyzed. The idea in principle is good, but modifications need to be made to the relief of the writing and the images. Given the small size of the object in this case, provisions would need to be made for reproductions of larger scale originals in order to enlarge the space available for the user to engage in tactile perception. It is obvious that in cases involving a different scale from the original, it is absolutely necessary to accurately render the differences so as not to create a false perception.

A further advantage of 3D printing is that its process is not a stranger to digital epigraphy, since its starting point is the obtaining of a virtual model of the inscription, which is then easily printed. While the processes of thermo-formed and Braille prints require the contacting of the respective authorities in the specialized industries or in publishing houses, it is much easier to buy and to utilize a 3D printer in a museum, in a superintendence or in a university. It is important to remember that whatever technique is used, it is always necessary to consult an appropriate expert to secure the necessary guidance in the preparation of materials. It is not enough to simply take a photo or to draw a picture and print it in 3D. The technical support of someone experienced in this field, someone who knows the psychological and physiological characteristics of the experiential perception in the context of its tangible modeling is absolutely necessary.

Although in the Epigraphy is a marginal aspect, it is worth mentioning the problem of material, which of course does not solve the issues involved in 3D printing. A reproduction in resin will never give the feeling of actually touching stone, marble or bronze material, even if treating it's surface in a way as to give an antique effect and feeling. The technique of reproduction is therefore very useful to facilitate experiential understanding, but only as support to the actual experience of the original. One should of course not think that a copy can completely replace the experience of the original object.

Fig. 18.10. A mirror from Praeneste in the National Etruscan Museum of Villa Giulia in Rome.

18.5. Conclusions

As can be seen, the studies in this field as well as the examples of works on which to experiment with seeing impaired users are as yet few in number. We hope that this essay will lead to inspire a dialogue among the relevant experts, and that more work will be done in the field of epigraphy to make it increasingly accessible for persons with visual disabilities.

The use of 3D technology for the reproduction of epigraphic material is in our opinion very promising. But it requires a substantial amount of materials to be physically touched by the blind and visually impaired, so as in this way to increase our knowledge of how to further improve the current techniques of modeling and reproduction.

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19. Teaching (Digital) Epigraphy

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Abstract
Although having the experience of directly manipulating an ancient text-bearing artifact is important for developing the skills of an epigrapher – an experience that books and photo cannot replace – such access to primary sources is often problematic. In this article we present our experience with teaching students to transcribe and interpret Roman inscribed lead tags, using a Digital Autoptic Process (DAP) in a Web environment, so to develop basic competences in epigraphy and digital epigraphy.

Keywords: educational project, digital epigraphy, epigraphy, Open Access, primary sources

19.1. Introduction

Although undergraduate students are naturally attracted to inscriptions and epigraphy affords them an important window on the past, they are seldom given the opportunity to study inscriptions directly. This is because epigraphical work is seen as the specialist's domain: the analysis of such material generally requires a rather high level of expertise, normally acquired during graduate studies and beyond. Lacking sufficient skills and knowledge to comprehensively understand often complex epigraphic data, undergraduate students are

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simply unable to offer the expert opinions sometimes sought by a project manager. Thus, offering undergraduate students the opportunity to tackle tasks usually reserved to their senior colleagues is certainly not a common occurrence. In our small project "Pedagogical, Scholarly & Technical Experiment in Digital Epigraphy: the Study Case of the *Tesserarum Sisciae Sylloge* (TSS) through a Digital Autoptic Process (DAP)" we aimed to challenge this state of affairs. Using digital methods and a custom-designed course of rapid study, we offered undergraduates the opportunity to tackle epigraphic tasks usually reserved to their senior colleagues. We made use of newly-digitized epigraphic material: Roman commercial lead tags from the ancient city of Siscia.

19.2. Epigraphic primary sources of information

The Roman Department of the Archaeological Museum in Zagreb (AMZ) contains close to 1200 of these inscribed lead tags found in Sisak (Siscia), one of the largest urban centers in south-western Pannonia. Most of them were found during the dredging of the Kupa river before WWI. Since the dredging was localized in the very centre of the town, i.e. in front of the old Roman port quarter, it would seem that all the tags come from a limited area. All of those tags are small lead tablets, of a more or less rectangular shape, pierced with a hole so that the tag could be attached to the bags containing the merchandise or to the merchandise itself with a small rope or a metal wire. They all carry an inscription, most of the time on both sides. Those inscriptions are always, up to now, written in capital letters or the older Roman cursive, sometimes even in a mixture of both. Most of the tags were reused several times and thus they carry traces of older inscriptions (palimpsests). Those inscriptions usually follow the same model: one side of the tag carries personal names, the other side carries an inscription mentioning the merchandise, most of the time in an abbreviated form, as well as a price – normally expressed in *denarii* or fractions of the *denarius* – and quite often an indication of quantity or weight.

Fig. 19.1. No. 12582, obverse and reverse.

A traditional print photograph, such as Fig. 1 (No. 12582), drawn from the archives of the AMZ, limits the student's opportunity to learn to decipher these tags. Even if a professional photographer took this picture with a good quality camera in a fully equipped photographic studio, the reading of the inscription stays riddled with uncertainties and a researcher would have to check the tag *de visu* in order to offer a plausible transcription.

Most of the tags, if not all, are linked to the wool trade and the textile industry. Words like *LANA, PAN(N)UM, TVNICA, SAGVM, P(A)ENVLA, PAL(L)A, PALLIOLUM, LODIX, BANATA*, and *ABOLLA*, appear regularly enough without being abbreviated and thus the interpretation of common abbreviations like *L, LA, LAN, PAN, T, SAG, PAENV, PAL, LO, LOD, LODI, BANA, AB* is not in doubt. The other abbreviations are mostly related to terms of colour. The prices on those tags are an important information: they indicated the value of the goods or the cost of a given service (e.g. cleaning, fulling, dyeing). It would also appear that they were used by fullers and dyers as ownership tags. By noting the name of the client as well as the type of cloth or service and the price on the tag which was subsequently attached to the item to be processed (i.e. cleaned or dyed), shop owners could easily return their property to the clients as well as charge them the correct fee[1].

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1 Radman-Livaja 2007, Radman-Livaja 2011, Radman-Livaja 2013a, Radman-Livaja 2013b, 165-172, Radman-Livaja 2014, for analogous tags see: Mócsy 1956, 97-104; Egger 1967, 195-210; Frei-Stolba 1984, 127-138; Frei-Stolba 2011, 331-334; Schwinden 1985, 121-137; Schwinden 1993, 215-222; Römer-Martijnse 1990; Römer-Martijnse 1997, 5-48; Feugère 1993, 301-305; Weiss 1991, 211-220; Paci 1995, 29-40; Bassi 1996, 207-216; Bizzarini 2005, 121-135; Buchi and Buonopane 2005, 43-51; Cresci and Pettenò 2010, 42-110; Jacques and Hoët-Van Cauwenberghe 2010, 295-317; Wedenig 2013, 237-246.

Some of the genuine difficulties of the autoptic process are already solved by a static picture in a print publication. The tag has a given position, it is illuminated from one direction only and therefore it already suggests a reading direction. A DAP should be able to confront the students to some of those difficulties and to overcome them alone.

In order to consider the value and usefulness of the DAP in this particular case study, the fact that some of the students had not yet a real background in Latin paleography was actually more of an asset. Indeed, if untrained students with few basic skills can use the digital edition as a specific medium without too much difficulty, albeit under supervision of specialists (Digital Epigraphy, Ancient History, Archaeology, Epigraphy, Computer Graphics and Digital Humanities) then the whole concept would appear as convenient and appropriate for similar case studies and research.

19.3. Digital epigraphy

In fact, the transcription and interpretation of Roman inscribed lead tags are often challenging, and so we ignored how far we could go with these students if useable results would ensue. First we made a selection of fourty tags to be subjected to the adequate digitization process we chose to work with: Reflectance Transforming Imaging (RTI). It is a small but nevertheless representative sample of the whole corpus. The students had at their disposal different kinds of inscriptions, including both easily readable specimens and more challenging graffiti (e.g.: Fig. 1, no. 12582). One may also profit from the assistance of undergraduate and graduate students, which could not often be the case before[2]. This experiment showed that their contribution can be useful, because technology may compensate for their lack of knowledge although the final conclusions have to remain in the domain of scholars familiar with the subject. In any case, this experiment shows how the digital edition may allow both scholars and students to have an open access to what is basically a primary source of information for humanities (presented as a digital facsimile)[3].

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[2] The Laboratorio di Cultura Digitale, lead by Prof. Salvatori, at the University of Pisa, applies the didactic model DIGICRAFT. This means that undergraduate students might share their skills, especially the digital one, in order to allow an entire team to reach its goal. For more information see: http://www.labcd.unipi.it/laboratorio.

[3] Terras (2015) writes about some of the OA issues: "While digitisation is not a pre-requisite

Of course, learners could train themselves on the drawing of the tag, but they would not confront the difficulty of interpreting the numerous ambiguities and the responsibility of deciding what is on the tag.

From a digital epigraphy standpoint, this consists of an online DAP modeled, in Lamé 2015a, Lamé 2015b, on a dispositive analysis and the three fundamental systems of an inscription: writing system (wSystem), textual system (tSystem) and contextual system (cSystem). Three tools compose the DAP: RTI Web viewer, TSS viewer and Mark-Out tool. The last two were specifically designed for the digital edition of the corpus TSS. The following paragraphs present those three DAP tools. Due to the material properties of the lead tags, it is impossible to capture the appearance of the letters with a single image. When holding a tag it is necessary to change the light angle to enhance the different marks on the surface. RTI is a computational photography technique that enables the interactive re-lighting of the observed object from any light direction. This is accomplished combining into a single compact data structure a set of fixed camera photographs taken under many different illumination conditions. The acquisition process is inexpensive and does not require labor intensive steps, unlike 3d model acquisition. RTI visualization allows the user to virtually 'tilt' the object and recreate different lighting conditions, mimicking part of the autoptic process. Another advantage is the magnification provided by the high resolution camera employed. The widespread adoption in browsers of WebGL (Khronos group 2009) recently enable RTI visualization on the Web. We used the RTI Web viewer developed by Visual Computing Lab, ISTI-CNR. High resolution re-illuminable images allow the selection of the best view for each mark, thus allowing the user to obtain an adequate readability of the lead tags through an intuitive interface. Another important advantage of having the tags available online is that the students can easily compare a tag with any other tag already in the database and compare occurrences of a letter in other already transcribed tags. Finally, the Web access facilitates the discussion amongst students and experts worldwide.

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to gaining access to material (...), and while digital surrogates of cultural heritage objects do not have to be openly shared once created, just as the sciences are calling for publication of source data as part of the Open Access movement, opening up access to primary sources in the cultural heritage sector and encouraging them to be published in a way which is as accessible as possible has the potential to change the nature of research outputs in the Humanities and Social Sciences, as well as the nature of research itself in these areas."

The TSS viewer is used to give access to the raw and genuine data (115 photograms with different lighting angles) and also to pick the best photo to be used in the linking tool MarkOut, while the RTI viewer can be consulted in parallel to interactively relight the tag and examine problematic spots.

The drawing process consists in associating some heterogeneous elements of the wSystem and the tSystem. MarkOut is the linking tool that allows to represent the graphico-textual (g/t) relationship between those two systems. MarkOut allows the students to work on the wSystem of the inscriptions by drawing the signs over an image of the tag using the mouse. The line is converted in a curve that can be later fixed using handles. Each mark, that represents a phenomenon of the wSystem of the inscription, is assigned to some textual information such as a letter or a symbol (Unicode and/or XML encoding), that represents a textual phenomenon of the tSystem of the inscription. This assignation creates inside the MarkOut the g/t relationship used for query processing. The final result is an SVG file that can be easily parsed to recover the linking information between wSystem and tSystem (e.g. browsing by glyph's shape and interpretation, identifying glyph's position), and easily shared with anyone with a browser (e.g.: Fig. 2). The linking tool MarkOut is one of the editing components of the modular DAP. They fit into communication workflows[4] such as crowdsourcing, editing inscriptions, dialoguing with experts, preserving and promoting cultural heritage and, as here, teaching some skills in epigraphy.

Fig. 19.2. MarkOut Assisted screenshots (detailed part of tag no. 12563) showing the association, expressed in red, of the Unicode Latin characters with the position and the shape of the writing: U+0045 with II (identified as E2 by students) and U+004C with L (L1 or L5).

[4] This raises, of course, questions, most of them outside the purview of this article, about the relationship that evolves between research and our modern societies. We invite the reader to peruse various initiatives such as Sabattini 2006 on the « valeur d'ancienneté » of cultural heritage, that participates to social well-being, the Civic Epistemologies http://www.civic-epistemologies.eu and its Berlin charter, as well as Public History approaches http://public-history-weekly.oldenbourg-verlag.de.

Students were involved for a very short period of time: on average two hours per day over a couple of days only (in Spring 2014 and in Fall 2015). This training was delivered in three steps (“Readings”, “Writings”, “Test & Taste a DAP”) during which there were given some academic documentation about the lead tags, and basic knowledge about digital epigraphy (epigraphic message in a computer, dispositive analysis, existing projects, digital tools, XML and Unicode encoding, DAP, and issues regarding digital representation of artifacts).

Students encountered their first epigraphic challenges with tag no. 12582 (Radman-Livaja 2014, cat 03.13, 347), found in the Kupa river in Sisak and offered by Andrija Colussi to the Archaeological Museum in 1898. It is a rather typical lead tag of an irregular rectangular form, pierced with a hole. Its size (22.7x22.8x2.4 mm) corresponds fairly well to the average size of other specimens found in Siscia. Although its surface is rather damaged and shows clear traces of erasure, the most recent inscription remains quite readable. However, many traces of an older record (or several older records?), complicate significantly the transcription and the interpretation. The last inscription can be read, nevertheless, but it demands a certain effort and quite a lot of experience in Latin palaeography:

Obverse	(palimpsest)
Ateṛ	Ṣịịx̣ṭị
ius	i onis n
	i.ni

Reverse	(palimpsest)
la(na) p(ondo) i	...s
cor(ticea)	..v
ӾΞ£	iir

The inscriptions on the obverse and reverse may not be contemporaneous and we may not affirm with confidence that the individual named Aterius has something to do with the small quantity of wool mentioned on the obverse. The price is rather low, since the value of the transaction appears to be only 1 sestertius and 1 dupondius, i.e. 6/16 of a denarius.

Traces of older inscriptions are hard to read and interpret but several personal names may be surmised. Such a tag was particularly interesting for our experiment. It is quite a challenging inscription, even for a skilled epigraphist and paleographer; we therefore were anxious to find out how efficiently the students would tackle it. Thanks to the DAP, the transcription was not utterly difficult for most students. Obviously, in the first instance, the interpretation was beyond their means, but we were nevertheless impressed by their abilities to read it far more easily than expected.

The DAP definitely offers the possibility to work on such material online, without the obligation to inspect it personally, at least in the first stage.

Thus, students had to face similar issues as scholars who first tackled those epigraphic finds. However, the students had one significant advantage, despite their lack of experience and skill. This major advantage was allowed by DAP technologies, which considerably improved their odds. Despite their lack of elaborate knowledge on the subject, we managed to train them to develop some necessary skills in order to be able to read the inscriptions as well as offer meaningful transcriptions, thanks to the help of digital facsimiles. It was indeed really gratifying to observe their enthusiasm during the experiment as well as their delight when they realized they could do it. Naturally, despite the DAP, whatever the information technology may be, such scientific analysis still requires skilled scholars, but with the help of technology, digital editions may be thoroughly checked and amended far more easily. Besides giving an opportunity to further study the primary source of information and amend the paper editions and publications, it also allows university teachers to train future scholars and specialists, wherever their geographic location may be. In this particular case, the epigraphic material is in Croatia but the analysis was done online by scholars and students from Canada, France, and Italy. We therefore believe that digital epigraphy has a role to fulfill in university teaching

but that one needs to establish right protocols and rigorous methods in order to warrant access to documents and ensure further development of such teaching methods aiming to improve the formation of future specialists.

Fig. 19.3. Glyph Browser: quick access to all the label associated with the glyph's form.

19.4. Practicing epigraphy

Once alone, students were asked to ignore the monetary symbols then to decipher (with or without the help of transcription and drawings) and to classify the written signs according to the following chart (see: Fig. 3). Such preliminary classification gives a first idea of the main general shapes one can find on a lead tag. It is not a paleographical study, which has yet to be done, but it is efficient enough to train students at a first level of deciphering.

19.4.1. Drawing with Hints (No. 12563) with mark out assisted

Obverse

Aeli(i)
Tasti

Reverse

ḷodicem
murtiolaṃ
p(ondo) vi s
X vi s

The tag no. 12563 is a rectangular lead tag of irregular form with a badly damaged and scratched surface. Nevertheless, the most recent inscription is clearly readable while one may still discern traces of older inscriptions. An older inscription might be visible on the obverse, perhaps series of numbers but its meaning remains unclear. Students have transcriptions and drawings (see Fig. 4 and Fig. 5).

12563 (OBV)	A	E	L	I	T	A	S	T	I				
STUD. 1	A10	E2	L1	I1	T1	A10	S3	T2	I1				
STUD. 2	A10	E2	L5	I1	T2	A10	S4?	T2	I1				
12563 (REV)	L	O	D	I	C	E	M						
STUD. 1	L2	O3	D3	I1	C2	E2	M5						
STUD. 2	?	O3	D5	I2?	C2	E3	M5						
	M	U	R	T	I	O	L	A	M	P	V	I	S
STUD. 1	M3	V3	R7	T2	I1	O3	L2	A10	M2	P1	V3	I1	S5
STUD. 2	M3?	V4	R6	T2	I1	O3	L5	A10	M5	P2	V4	I1	S5

Tab. 19.1. No. 12563.

Fig. 19.4. No. 12563 Obverse: students' drawings of the most recent inscription.

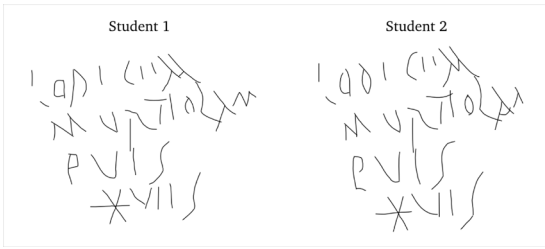

Fig. 19.5. No. 12563 Reverse: students' drawings of the most recent inscription.

19.4.2. Drawing & deciphering without help (obv. No. 13053)

No. 13053 is an irregularly shaped rectangular lead tag with a damaged surface as well which makes the reading rather uncertain. Besides the last, most recent inscription, one still discerns traces of older inscriptions. The reverse is ignored. Students do not have neither transcriptions nor drawings (see MarkOut Expert Fig. 6).

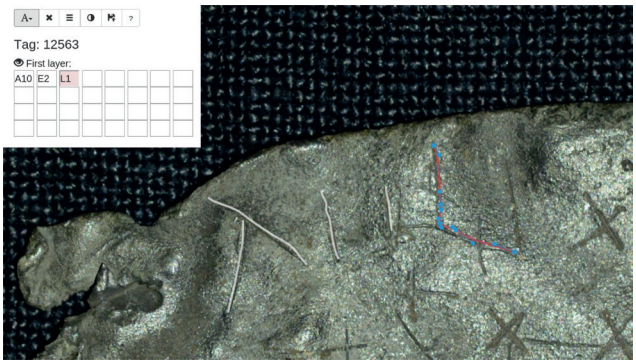

Fig. 19.6. Markout Expert allows free interpretation, specification of the type of glyph's form without providing extra information.

Vale	(palimpsest)
rius lis	X ụi
Martia	tiir ṛ i

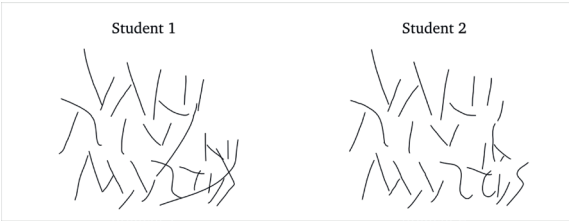

Fig. 19.7. No. 13053 Obverse: students' drawings of the most recent inscription.

The RTI file was presented to the students in an unusual reading position in order to reproduce the epigrapher's initial challenge of determining the proper orientation in which to read the lead tag. Students overcome this difficulty quite quickly (<5 mn).

The last line, MARTIA, gave the student a hard time. Particularly the tail of the damaged S (end of the second line) generates noise on the last letters (see Fig. 7).

13053	V	A	L	E	R	I	U	S	M	A	R	T	I	A
ST. 1	V2	A10	L3	E3	R7	I2	V1	S6	M5	?	R7	T3	?	Ignored
ST. 2	V2	A10	L3	E2	R7	I1	V1	S6?	M5	A10	R6?	T3?	?I1	A2

Tab. 19.2. No. 13053 (obv).

The older, erased layers, on the obverse of tag No. 13053, drawn with dashed lies on the drawings of the academic edition, are more difficult to read. No g/t relationship between wSystem and tSystem was asked to students (see Fig. 8).

Fig. 19.8. No. 13053 Obverse (palimpsest): students' drawing of some palimpsest inscriptions.

19.5. Pedagogical considerations

From the educational standpoint, this pilot project succeeded tremendously. The Canadian students who undertook this transcription in place of the usual research essay were, on average, far more motivated than their peers, and took great pleasure and pride in their work.

One student, whose cumulative grade at university to this point was below average, excelled in this project and said that this was what he imagined university studies were going to be like. Two others prepared a presentation based on this effort, and it was accepted as a 15 minute lecture at the university's annual undergraduate research seminar. Three students are currently working on an exercise of online edition and publication (Épigraphie *en Réseau* - ISSN: 2108-7156) of a lead tag using the Markout file created (SVG).

Some of the uncommon qualities of these materials made them particularly able to be studied by undergraduate students with little or no Latin. The transcription of the tags' oddly shaped letters was a skill that any person literate in a Latin-script language (but not necessarily in Latin) could acquire. Indeed any additional understanding of Latin grammar and syntax afford a reader little additional advantage, given the tags' copious abbreviations. The tags' frequent and regular use of symbols and numbers meant that the latin-less student could nevertheless quickly begin to 'read' the tags, or at least glean information from them.

However much the student researchers' enthusiasm compensated, there were some impediments which will need to be removed before a large number of students can undertake this work. To unilingual Anglophone students, the research materials on the tags are daunting because little of it is available in English. Our volunteers were mostly bilingual Canadians who could read French as well as English.

19.6. Conclusion

Gaining expertise with material remains requires time. When a museum trains students, this time is often limited due to constrained facilities and personnel. In addition, the epigraphic material may be fragile and delicate: the less these are manipulated by hands the best it is for their preservation. We believe that a process similar to the one described here will allow us and others to train far more, wherever they may be in the world, while well preserving the materials. It will represent a useful intermediary step that develops both epigraphic and digital skills. However, adding such a step will require us to renew, in some regards, the way we train learners and to reconsider who teaches what and how. The benefits of this renewal, though, would be many:

it would ensure the transmission of epigraphic tradition and the acquisition of good digital skills, whether to train eminent specialists or to allow access to the roots of societies to the greatest number.

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20. Epigraphy in Italian High Schools

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Abstract
The paper focuses on the possible uses of Epigraphy when teaching Latin to Italian High School students. Inscriptions (especially from the school's territory) make Latin "come to life" because even the simplest of texts is real. Inscriptions are an excellent tool to internalize declensions, but they can also broaden the horizons offered by the literary sources. The Eagle databases offer ready-to-use materials to teachers who are less familiar with the traditional supports.

Keywords: High School Education, Latin Grammar, Lexicon, Translations, EDR Database, Roman Asisium

20.1. Introduction

High school students often feel that Latin is not a "real" language. Every attempt to use Latin as a modern language, by the creation of words from the contemporary world or by using it in a conversation, makes Latin seem even more artificial.

In this framework, for a Latin teacher the first two years of high school are the most challenging. This is when students have to acquire the grammar, but hardly see the point of learning so many rules by heart (even if the prescriptive approaches have now given way to descriptive linguistics). However, when students start studying Literature and reading literary texts, they generally realize that it was worth making the effort. Hence, one can imagine the frustration of *Liceo Linguistico* (Foreign Languages High School) pupils, who only do Latin for the first two years, and will never see the results of such hard work.

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One could object that in the first two years teachers should mix grammar and culture: but with only two lessons per week, and classes with a high number of students, there would simply be not enough time. Moreover, the approach to unedited literary texts is arduous because they contain too many unknown structures and often need to be at least partially translated.

Inscriptions can be an effective solution to this problem: they make Latin authentic. They are often short and therefore quite easily readable. They exist in reality, they can be seen and even touched – which should never be forgotten in a society where visual communication is so important. Through epigraphy the Classics become, in a way, "multimedia": this is what scholars mean by the expression "words on stone". Even if generally, when visiting a museum, inscriptions are not of such interest as the statues or mosaics, they do strike students as something concrete and, in a certain sense, "alive". That is why they are a good tool to improve the ability to read, understand and translate Latin.

The use of local materials, which can be checked out personally, may more easily arouse the learners' attention. That is why in this paper I will mainly refer to inscriptions from modern Umbria (*regiones* VI and VII, from *Perusia*) and especially from *Asisium*, used at school during my experimental lessons. The local museum, best known as the "Foro romano", hosts a huge collection of inscriptions that were catalogued in 2008 by pupils of the *Liceo Properzio*, under my supervision, with details of the type of inscription, material, place of origin and chronology. Previously a booklet about Roman Assisi had been written,[1] both in Italian and English, comprising a page about the famous tetrastyle with a translation of the inscription on the base (CIL 11, 05372 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr025323, later inserted in the MediaWiki page), which recalls the official inauguration of the aedicule: at the time, as was the Roman custom, money was given to *decurions*, *seviri Augustales* and the common people. Thanks to these few lines, the class is taken on a journey to ancient *Asisium*, and gets a lot of feedback about religion, architecture, social life and economy in the first century A.D.

1 http://www.liceoassisi.it/index.php?option=com_content\&view=article\&id=47:assisi-romana\&catid=6:i-nostri-risultati\&Itemid=34.

20.2. How to use inscriptions

Inscriptions in high school can be used in a variety of ways, but particularly in the following fields:

- elements of Latin grammar, syntax and linguistics;[2]
- culture and history;
- and also, to a lesser extent, lexicon.

20.2.1. Lexicon in context

Although the acquisition of lexicon is essential in order to access the conceptual categories of a culture, it is extremely difficult to learn words without using them actively, and it is a terrible mistake, often made by school textbooks, to provide long lists of terms, especially if de-contextualized and only based on the frequency with which they are used.

Many manuals, influenced by modern languages, offer lexicon in concrete fields (such as food, clothing or education), but this does not necessarily entail that the students will be more attracted by these topics. There is also the risk of reducing culture to anecdotes. Experience shows that with a limited amount of time and taking into account the selective memory of teenagers, you have to choose what your priority is. The main reason why a school-level student should do Latin is because of the deep impact of Roman cultural and linguistic heritage on our world: therefore, in my opinion, the words that students need to learn the most are:

- the ones that are relevant for their Italian derivates (e.g. *os, oris*);
- the ones that belong to the most significant semantic fields (always keeping in mind that some words are more important than others: for instance, knowing the difference between *bellum* and *pugna* helps to develop the comprehension of the two different categories; on the contrary, a non-specialized student does not need to know who a *primus pilus* was);
- the abstract ones that are fundamental to understanding the Roman way of thinking (e.g. *imperium, virtus, fas*).

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[2] Hartnett 2012; McCarthy 1992.

Accordingly, a teacher should concentrate on those aspects of Roman society that are still pre-eminent for us: archaeology (Roman buildings, domus, theatres, roads), myths and religion, politics (Empire, war and globalization). Inscriptions certainly offer a less varied lexical repertoire than a literary text, but can still help to give substance to these contexts.

In an inscription such as CIL 11, 05400 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr025350:

> *P(ublius) Decimius P(ubli) l(ibertus) Eros / Merula, medicus / clinicus, chirurgus, / ocularius, VIvir. / Hic pro libertate dedit ((sestertium)) (quinquaginta milia). / Hic pro seviratu in rem p(ublicam) / dedit ((sestertium)) (duo milia). / Hic in statuas ponendas in / aedem Herculis dedit ((sestertium)) (triginta milia). / Hic in vias sternendas in / publicum dedit ((sestertium)) (triginta septem milia). / Hic pridie quam mortuus est / reliquit patrimoni / ((sestertium)) - - -*

not only does a student make contact with the technical lexicon of medicine and words related to building activities (*statuas ponere, vias sternere*), but he can also perceive the "evergetic spirit" of an ancient society: a physician was usually a freedman coming from the East, who could be very rich and spend his money for public utility; whenever a person obtained a priesthood, he used to pay a *summa honoraria*. The text can also be used for linguistic purposes (prepositions like *pro*; partitive genitive; deponent verbs).

This does not mean that inscriptions are not useful for seeing specific abstract words in their context: when talking about Roman virtues and *mos maiorum*, the famous *Clipeus* from Arles (*AE* 1952, 0165 = *AE* 1994, 0227) is a perfect complement to chapter 34 of the *Res Gestae* (formally an inscription, too):

> *Senatus / populusque Romanus / imp(eratori) Caesari / Divi f(ilio) / Augusto / co(n)s(uli) VIII dedit clupeum / virtutis, clementiae, / iustitiae, pietatis erga / deos patriamque.T*

20.2.2. Grammar

One of the biggest problems in teaching Latin to young students is that they find it really difficult to understand declensions. In the preliminary lessons the sentences used are very simple and can be understood and even translated without really acquiring the syntactic function of the words.

For instance, if I say *Iulia rosas amat*, even an Italian who knows no Latin can get the meaning of the sentence. Problems are encountered when the texts to translate become more complex: only when it is too late does an ill-prepared teacher realize that the class has not internalized the language system and the patterns.

In funerary inscriptions the value of cases is essential. The texts can be simple, but if you want to understand who is dead, who is the dedicant and what the relationship between them is, you have to distinguish dative and nominative cases. Moreover, the concordance of the different elements of the onomastics (especially *praenomina* and filiation) is a good way to encourage (and, for a teacher, to test) the learning of declensions not in a merely mnemonic, but also in an active way.

Examples:

- CIL 11, 05501 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr025449:

  Noniae / Privatae, / C(aius) Propertius / - - - - - -

You can use an inscription as easy as this one to revise first and second declension, and at the same time to teach the structure of a Roman name.

- CIL 11, 05461 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr025411:

  A(n)noru(m) XIX. / Calventia / C(ai) f(ilia) Polla, / L(ucius) Vistinius vir, / Gavia mater / posuer(unt).

This inscription offers the chance to get feedback about mistakes in the use of language, or to reflect on mortality and marriage.

- CIL 11, 05399 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr025349:

  P(ublius) Decimius P(ubli) l(ibertus) Eros / Merula VIvir / viam a cisterna / ad domum L(uci) Muti / stravit ea pecunia / - - - - - -

With an inscription like this you can address different topics, both historical (the importance of freedmen, the imperial cult) and linguistic

ones (indirect complements, uses of *is ea id* as an adjective and to introduce a relative clause that, in this case, has evidently been lost).

At the beginner's level, the sentences used for examplifications, exercises and translations are often fictitious and banal. They give a false image of antiquity: for instance, when you start with the first declension you get the wrong impression of a "female" world simply because the masculine nouns are rare. Students are unimpressed; these sentences have no significance for them. Those provided by inscriptions may be equally easy and short (without any editing), but they are not banal because they are a mirror of a society, they offer a historical perspective; there is always a story behind them. Even the simplest ones can give us precious information.

Let us consider a famous inscription from the Cathedral in Assisi (CIL 11, 05390 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr025340):

> *Post(umus) Mimesius C(ai) f(ilius), T(itus) Mimesius Sert(oris) f(ilius), Ner(o) Capidas C(ai) f(ilius) Ruf(- - -), / Ner(o) Babrius T(iti) f(ilius), C(aius) Capidas T(iti) f(ilius) C(ai) n(epos), V(ibius) Voisienus T(iti) f(ilius) marones / murum ab fornice ad circum et fornicem cisternamq(ue) d(e) s(enatus) s(ententia) faciundum coiravere.*

The text is plain, especially with the abbreviations solved. Even so, many considerations can be made:

- for grammar: third declension nouns such as *maro* and *fornix*; complements of direction; gerundive to express purpose; subject/verb agreement; use of the form *-ere* in the perfect tense personal endings;
- for history: the use of the Latin language prior to the Social War, as proof of the intense Romanization of the area at the end of the II century B.C.;[3] the presence of elements in the names that are not Roman but of Umbrian origin;
- for archaeology: the building of terraces to create public spaces in a town like Assisi established on a hill; the identification of the area around San Rufino as the "acropolis"; the incorporation of the Roman wall into the left nave of the church (the inscription being still *in situ*).

[3] Coarelli 1991.

Schoolbooks rarely seize these opportunities offered by inscriptions, so the main problem for a teacher is to access appropriate material.[4] Holding a PhD in Roman History, I am fortunate enough to already know many sources. However, a graduate may not have enough knowledge in epigraphy, may not be familiar with the *Corpus Inscriptionum Latinarum*; that is why the EAGLE project can offer tools for further insights. It also goes without saying that the multimedia approach is very suitable to students.

Here are some examples taken from manuals where you can see the different attitude of authors towards the epigraphic material:

- Barbieri 2015, 39: the inscription of the architect C. Vettius Gratus (CIL 10, 03392 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr160781) is merely a decorative element on the page, without any relation to the topic (phonetic changes from Latin to Italian);
- Domenici 2012, 40: *programmata* from Pompeii are introduced to explain the Roman naming system;
- Gambis Meini and Roffi 2013, 269-270: *tabellae defixionum* are used for different purposes (demonstrative adjectives, functions of subjunctive); the subject (magic in the ancient world) may not be relevant in a school context (the possession of such knowledge is not required), but sounds very intriguing to students.

20.3. Translations

Translating inscriptions is a difficult task for everyone and especially for high school students.

First of all, they will not find any help elsewhere: every other Latin text can easily be found – even if not always correctly translated – on student internet sites and in blogs (such as *Splash Latino*). But we all know very well that the Internet still lacks many Italian translations of inscriptions.

Secondly, the style and the structures are different. Even when all abbreviations and integrations are explained (a teacher should at least show the meaning of round and square brackets but should not ask a pupil to solve an abbreviation, except the easy ones), the word order cannot immediately be reconstructed, especially in decrees and *carmina epigraphica*.

[4] See the observations made by Carpenter 2006. One of the most successful attempts to teach Latin through Epigraphy comes from the Anglo-Saxon area: LaFleur 2010.

School dictionaries are not intended for interpreting epigraphical lexicon: some words may not be present (such as *maro*, seen above), their meaning may not always be explained (e.g. *centonarius*, *sevir*). A lot of institutions and *formulae* which are clear to a specialist (e.g. *quattuorvir iure dicundo*) may be hard to understand or to translate. It is, however, also the case that a teacher cannot dedicate too much time to introducing these words to the class because his ultimate aim is different; so it is better to focus on materials that do not contain much specific lexicon.

Examples:

- CIL 11, 04431 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr025160:

  [Inf]austo, levis umbra, tuo mihi flebilis hora / sorte tua certe tempus in omne fuit.

This funerary inscription from *Ameria* contains two verses, but the position of the words is tricky; *infausto* may be taken as an adjective (as it is most commonly) and its meaning is basically the same as *sorte tua*; students who are not used to poetry may not recognize the anastrophe *tempus in omne*.

- CIL 11, 04391 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr025123:

  Iuliae M(arci) f(iliae) Felicitati, / uxori C(ai) Curiati Eutychetis / IIIIvir(i), magistrae Fortu/nae Mel(ioris), coll(egium) centonarior(um) / ob merita eius. Quo honore / contenta sumptum omnem / remisit et ob dedic(ationem) ded(it) sin/gulis ((sestertios)) XX n(ummos) et hoc amplius / arkae eorum intul(it) ((sestertium)) V m(ilia) n(ummum) / ut die natalis sui (ante diem) V Id(us) Mai(as) / ex usuris eius summae epu/lantes imperpetuum divider(ent), / quod si divisio die s(upra) s(cripta) celebrata non / fuerit tunc pertineb(it) omn(is) summa / ad familiam publicam.

Specialists are well used to an inscription like this. A high school student may find unexpected difficulties in understanding the meaning of *magistra* (not teacher but priestess), but also *centonarius* or even *hoc amplius*; not to mention the Roman calendar system, which always takes too much time to explain!

Nevertheless, this kind of challenge is exactly what makes inscriptions the perfect tool to fully appreciate what the art of translation is.

The article published by F. Bigi in the Proceedings of the First EAGLE International Conference[5] includes many observations regarding the problems that may be encountered, for instance when translating names and titles. In particular, I find the suggestion that round brackets should be used in the translations to provide further explanations about specific offices rendered with the technical derivative word, or for concepts omitted in the original Latin text, very useful. It might be worthwhile to provide a few more tips from personal experience:

- CIL 11, 04213 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr025123: *Interamna Nahars* should be further qualified as "Terni" to help those readers who are not familiar with Umbrian cities;
- CIL 11, 01925 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr142701: the names of the emperors *M. Aurelius Antoninus* and *M. Antoninus Pius Germanicus Sarmaticus* need to be explained (Caracalla and Marcus Aurelius) to avoid confusion. It should be noted that in my classes proper names, and not only those of emperors but also of other people, were generally translated into Italian, even if it is advisable to transcribe them in the nominative case;[6] the same thing was done with *cognomina ex virtute*, considering that they are intuitively interpretable for an Italian. We are also faced here with a case of nouns that do not exist in our language (*abnepos*, *adnepos*), which makes the translation less fluent than the original.

This type of activity works better with *Liceo Classico* (Grammar School) pupils, who do translations from Latin and Greek almost every day and who are more at ease with the use of dictionaries. However, there are still hurdles to overcome. The ministerial syllabus set out for the course focuses on Literature and culminates in a specific exam requirement, the translation of a piece of literary prose. Is this "epigraphical" activity helpful? Does it take up too much of the time which should be employed in translating the Classics? The answer to both these questions is "yes". On the one hand, as I said, students have to "jump into translating" without a net (the Net, in fact). On the other hand, if at the end of the final year pupils are required to translate

5 Bigi 2014.

6 http://www.eagle-network.eu/wiki/index.php/Guidelines_for_Translators.

a passage from certain authors, then clearly it would be more appropriate for them to concentrate on this activity as much as possible during the months prior to the exam. For this reason, epigraphy can only be a supplement to traditional assignments; the Italian national *curricula* are apparently very free, but at the same time they are very rigid. Yet, a few forays into epigraphy can be stimulating, because the class perceives them as an intriguing novelty, especially if not subject to assessment. After all, it would probably be too difficult to prepare a test with grades and scores on this subject and could deprive this activity of its extemporaneous and enjoyable aspect.

20.4. Inscriptions and literature: a few samples

On a more advanced level, inscriptions may also integrate certain aspects related to the study of Latin Literature. The most typical example could be a comparison between the *Tabula Claudiana* (CIL 13, 01668) and Tacitus' account (*Annales*, XI, 23-24):[7] reading the original document is a privileged occasion to determine how reliable the historian is when using his sources.

Highly original suggestions have been provided by Mauro Reali (who is also the author of different school manuals), in a paper published online.[8] Being an expert on the subject, he offers a comparison between the "noble" form of the political-philosophical *amicitia* presented in Cicero's *Laelius* and the term *amicus* mentioned in inscriptions from the lower levels of society, such as CIL 05, 05300 from *Comum* (a funerary stela made by a freedman for Pliny the Younger) or CIL 05, 05923 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr124245 regarding a strange case of "friend deletion" long before the Facebook era.[9]

An interesting example from Umbria can be found in AE 1992, 0560-0561 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr150659 and http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr150784. The first gravestone recalls the acquisition of a tomb — which had previously

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7 On which see Jahn 1993.

8 http://mediaclassica.loescher.it/nuove-e-93vecchie94-forme-di-multimedialita.n2799; see also Reali and Turazza 2015.

9 http://www.laricerca.loescher.it/lingue-classiche/327-un-amico-o-amicus-e-per-sempre.html.

been despoiled — by an heir of the founder, who then installed another *cippus* for 40 friends (*amicis meis*, i.e. freedmen probably belonging to the same association):

> *Viator, resiste et rogo / te et lege. Post annos XXVII ven[i] / Hispellum, in patriam meam. Scio / me oportere colere hunc locum / ubi ossa meorum requiescunt et mea / et amicorum meorum. Ex hoc sepulch[ro] / cippi perierunt duo et frontes duae. Sciun[t] / qui surupuit et acturi simus et legimus, / satis est testium etqs.*

As for the Augustan age, Reali suggests showing some monumental inscriptions of the *princeps* (he impressively goes so far as to compare the qualifications *Imperator Caesar Augustus* to a modern logo or even a *hashtag*). On this subject, the altars *Augusto sacrum* put up by *Perusia restituta* (CIL 11, 01923 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr142666, http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr142667, http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr142668, http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr142669), even with a simple text, offer the opportunity to deal with an aspect as crucial as the imperial cult. Traditionally, we read that Augustus was worshipped directly only in the Eastern provinces, but not in Rome and Italy. The inscriptions from *Perusia* testify that things are effectively more complex; these documents also offer remarkable information about the *restitutio* of the town, destroyed at the end of the *bellum* in 40 B.C. A few years later *Perusia* would become *Augusta*, as you can read on the city gates, especially on the newly restored Etruscan Arch (CIL 11, 01929 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr142706).

Teaching, as I do, in a school named after Propertius, I always stress the importance of reconstructing the origin of the poet through the epigraphical data of the *gens Propertia*, the greatest number of written documents of the family having been found in Assisi.

For more than two hundred years, beginning with the *Vois(ienus) Ner. (filius) Propertius* mentioned among the Umbrian magistrates of the late II century B.C., this *gens* stands out in the town for its social influence and wealth.[10] It is always very exciting to combine

[10] Forni 1986; Zuddas 2006.

the information on *Passennus Paullus Propertius Blaesus* given by CIL 11, 05405 = http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr025355 and that contained in two Letters by Pliny (VI, 15 and IX, 22). Pliny, showing great concern for his friend's illness but also great esteem for him as an elegiac poet, asserts that he is a descendant and fellow citizen of Propertius; the inscription (the front of an honorific base), providing the full name, with the tribe Sergia typical of the inhabitants of *Asisium*, is indirect, but clear, evidence that the Augustan poet was born there. The information provided by the inscription and the literary text integrates perfectly. Students find it fascinating to look for traces of the poet inside the town, especially when they read the following graffito on an interior wall of a Roman house underneath the church of Santa Maria Maggiore (http://www.edr-edr.it/edr_programmi/res_complex_comune.php?do=book&id_nr=edr028769):[11]

> *[- - - I]ovino consulibb(us) (ante diem) VIII Kal(endas) Martias domum oscilavi Musae.*

This house was still visited in the fourth century A.D., which really supports the theory that it used to be the poet's residence, and remained an object of reverence for centuries. Through the stories of *Passennus Paullus* and *Sextus Propertius* macro-history and local history meet to make the past come alive in every corner of the modern town.

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11 Boldrighini 2014, 244-246.

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