

Work Ethics for the *Digitizer*. Opportunities and Best Practices for Production of Digital Archives: the Working Experience of the Photographic Archive of Pompeii

Patrizio Gianferro. Univ. degli Studi di Roma La Sapienza, and Photographic Archive and Rosa Myriam De Lillo, Archive studies, Luigi Sturzo Institute (Italy)

Abstract

In this presentation, we intend to examine the ethical and work-related issues relative to mass digitization projects of photographic archives. Our paper asks: who and what is there behind these productions? Our goal is to analyze and contextualize the activities of the digitizer, the frontline and central figure in the transformation of the archives from analogue to digital.

Historically, the transmission of knowledge is based upon a continuous copying process; whereas monks once manually transferred content from manuscript to manuscript, contemporary digitizers follow in their footsteps, giving old analogue photographs a new digital life by utilizing contemporary transcription pathways.

These aspects will be examined starting with our working experience within the photographic archive of the Pompeii excavations.

During this experience we elaborate upon the idea that digitizers must no longer be considered as mere mechanical performers in the process of digital acquisition, but as consciously trained professionals, able to engage critically in the various processes involved in the creation of a digital archive.

Introduction

The aim of this presentation is to give an account of our contribution within a project called Great Pompeii Project. Our role focused on the digital acquisition of the films comprising the “Soprintendenza Pompei” photographic archive.

In January 2017, during the conference *Incontri Internazionali di studio sugli archivi fotografici e la fotografia di documentazione* at “Naples University Federico II”, the General Director of the Superintendency of Pompeii, Massimo Osanna, presented a paper that explained the work of digitisation within the Great Pompeii Project [1].

Our inquiry will be different inasmuch as it closes on the specific role of the *digitizer* -drawn from our experience- with the intention to trigger a broader debate on the problematic concerns related to massive digitisation projects of composite and extensive photographic archives.

Furthermore, it is important to stress that, in this analysis, the term *digitizer* -even if possibly inappropriate- is deliberately used echoing a recent fashion, where the term is commonly used in describing a professional responsible for the creation of digital surrogates, at least within the Italian context [2]. From our personal perspective, the very use of the term is inadequate to describe a qualified figure, who often needs to have a specific background in archive keeping with a specialisation in photography, for instance. In fact, this issue of terminology has inevitable implications on the execution and development of digital acquisition projects, as well as on their outcomes.



Figure 1: Pompeii, Temple of Jupiter (VII,8,1), II Cent. b.c.

The Great Pompeii Project –GPP-

This project, which the digitisation of the “Soprintendenza Pompei” photographic archive was part of, was sponsored by the Italian government, to tackle the deterioration of Pompeii archaeological site. Indeed in 2010, the *Domus dei Gladiatori* incident described a serious accident which catalysed the attention of mass-media and sparked severe disapproval in public opinion, wherein firm criticism was chiefly directed to the management of the archaeological site [3].

Accordingly, the Italian government, thanks to a specific law - *decreto legge n.34/2011 (art.2)*- established an urgent and more effective conservation program, targeting preservation, prevention, maintenance and restorations of the site [4].

Given the importance of the cultural heritage at stake, the European Union partially funded this extraordinary conservation project, which received 105 million euros, split between Fesr and national financing [5].

To date, this investment of capital and human resources contributed not only to the recovery of many damaged and endangered ancient structures, but also to a remarkable increase in the number of visitors to the site, culminating in 3,5 million guests for Pompeii, Ercolano and Stabia in October of 2016 [6].

The photographic Archive

In addition to the structural recovery and the safety measures implemented to ensure a better use of the archaeological site, an important conservation effort of the paper and photo archives - stored at the Superintendence - was considered as well. Two specialised enterprises were thus outsourced to manage the digitisation and cataloguing activities [7].

This decision, which effectively combined some essential actions to safeguard the archaeological structures with the documentation related to them, is a valuable sign of the

administration's forward-looking attitude, aiming to redevelop the site of Pompeii not only as a tourist attraction, but also as a place of study and scientific research. In fact, as specified by the Technical Document, the purpose of the digitisation activities was "to protect and disseminate this iconographic heritage through digital copy of the original" [8], with the ultimate purpose of providing research tools to both scholars and non-specialized users.

The photographic archive consists of [9]:

1. Film negatives: about 130,000 units (size: 24x36; 6x6; 6x7; 6x9; 20x26).
2. Glass negatives: approximately 10,000 (sizes: 13x18; 18x24; 21x27; 9x13; 8,5x17,5; 30x40).
3. Lantern slides: about 34,500 (35mm).
4. *Diacolor*: 9,000 (6x6, 6x7, 6x9, 9x12, 10x12, 13x18, 23x23; 20,7x25,3).

The designated enterprises also worked to further relevant and precious paper documentation such as inventories, excavation reports and expense diaries, which will not be taken into consideration in this paper, as our goal is to deal exclusively with the photographic material, acquired in digital form by the professional figure of the *digitizer*.

Digitisation of the photographic Archive

The photographic archive digitisation has followed the guidelines of a well-structured Technical Document -an official contractual script describing what the customer expects from the designated enterprises- drawn up in April of 2015, wherein every operational phase and all technical requirements are described in detail, to guarantee the smooth progress of the project.

Concerning digitisation practice, the preliminary phase focused on the analysis of the original photos and the identification of different sizes so that specific machinery and software could be organised [10].

As for the actual digital acquisition of the photographic material, the requirements for experts and technicians have been carefully outlined, stating that "to achieve the agreed standards, the use of specific professional figures is pivotal, both in the coordination and in the realization of the project" [11].

It is pertinent, before listing these professional profiles, to give an account of the high standards outlined in the Technical Document. Among the professional positions required for the completion of the digitisation program and the organisation of the acquired material the Superintendence listed [12]:

1. Project manager (expert in the management of cultural assets with at least 7 years of proven experience)
2. Director of photography (technical expert photographer, with minimum 7 years of proven experience)
3. Photographic operator (technician responsible for the digitisation with skills in production, processing and post production of photographic images, with at least 5 years of documented experience and activities in the field of cultural heritage)

As it can be seen from this list, the photographic operator coincides with the figure of the *digitizer*. Such coincidence will be analysed in the second part of this paper, starting from the etymology of the term *digitizer*.

Now it is useful to briefly address some technical concerns regarding the tools and devices used by the photographic operator/*digitizer* [13], as they are theoretically and pragmatically connected with the etymological facet we will discuss later.

In order to obtain high quality results of the digital images and to ensure the preservation of the original, sophisticated devices were employed. All film negatives, as well as lantern slides and *diacolor*, were digitised with virtual drum scanners, whose technical ability allowed to create master files for optimal preservation of digital material. For all other film and glass negatives with special formats, an A3 flatbed scanner seemed the best solution. In addition, the photographic operator/*digitizer*'s work station was accompanied by sophisticated and regularly calibrated monitors and bright board used for the recognition of the negative's extrinsic characteristics.

Technical requirements for the creation of RAW/TIFF files:

- **Bit Depth:** 16-bit grayscale; 48-bit RGB
- **Spatial resolution and bit depth:**
 - **35mm slides:** 4000 ppi optical real RGB 48-bit mode.
 - **film negatives:** 16-bit gray scale if the negative is b/n, 48-bit RGB to color negative.

Format	35mm	6x6 e 6x7	6x9	9x12 e 10x12	10x15
Resolution	4000 ppi	2800 ppi	2400 ppi	1600 ppi	1400 ppi

Glass negatives: 48-bit RGB

Formt	8,5x17,5	9x12 e 9x13	13x18	18x24	21x27
Resolution	1400 ppi	1600 ppi	1200 ppi	800 ppi	800 ppi

Diacolor: 48-bit RGB

Format	6x6 e 6x7	6x9	9x12 e 10x12	13x18	23x23 e 20,7x25,3
Resolution	2800 ppi	2400 ppi	1600 ppi	1200 ppi	800 ppi

- No corrections have been carried out during the acquisition phase.

The sophisticated scanner, which was the latest version available at the time, generated high quality images -as it can be seen in the chart- and it also allowed to save a considerable amount of time during the acquisition process, calculated in 3,5/4 minutes, for films 35 mm.

Moreover, this project involved the creation of a composite working team, formed not only by *digitizers*, but also by cataloguers, who supervised the iconographic material's data

transfer, from the original archaeological sheet, to the cataloguing software. Thus, it has been possible to create a significant online data bank of images that fully represent the historical visual memory of Pompeii, which will be of great importance for scholarly research, as well for members of the general public at large.

Standards and Guidelines

The standards that have been regarded as a model for the overall conception of the project's guidelines, including all those processes such as manipulation, conservation and cataloguing are drawn from the Technical Document, as it specifies national and international norms [14].

Within the remit of this paper, we analyse only those measures concerning the digital acquisition of photographic material, with a particular focus on the *digitizer's* compulsory skills and qualifications and also, on the workflow to be performed during the digital acquisition.

Among the many standards that implemented such a detailed plan, it should be noted that it has not been possible to identify any specific guidelines defining the *digitizer's* competences, nor his essential cultural knowledge and technical skills.

As an example, it is interesting to examine the *Technical Guidelines for Digital Cultural Content Creation Programmes* (It Ed. v. 2.0) [15], which was written in the context of the "Minerva Project", and later adopted as a norm also for the "Soprintendenza Pompei" photographic archive's digitisation project. This manual is a reference for the creation, execution and management of digitisation projects in the field of cultural heritage [16] and the section on staff training states:

the staff involved [needs to receive] an adequate training on the correct handling of original documents and on the use of hardware and software for digitisation. This ensures the effectiveness of the process and it reduces any risk for the originals. Operators involved [...] must have a proper training. Training guidance must be identified in regard to: adopted technologies, treatment of the originals, cataloguing operations, overall management of digitisation programs. Training and staff education is of strategic importance for the success of digitisation projects. In this respect, a growing number of public and academic institutions offer basic and advanced courses on digitisation programs, along with private training agencies and professional associations [17].

This quotation shows how the definition of "staff training", which should aim to educate professionals in digital acquisition, is vague and uncertain. Also, it is important to highlight the generic terminology used to identify these professionals: *operators*. This term -with the additional requirement of photographic qualifications- recurs also in the Technical Document, which was drawn up for the Great Pompeii Project ten years after the Minerva Project Manual. Therefore, despite an increasing number of digitisation projects, a specific and straightforward terminology that qualifies the *digitizer*, has not yet been identified.

Similarly, other national standards which the Technical Document for the Photographic Archive of Pompeii makes reference to, offer equally undetailed definitions of the professional profile of the *digitizer* and his role within the workflow [18].

Who or what is a Digitizer?

As already mentioned, within the Italian context, if one attempts an online search of digital humanities job vacancies, the term *digitizer* appears to be often more used than photographic operator [19].

The word *digitizer*, among the entries of Italian and foreign dictionaries, is explained in the following terms:

- The Italian *Treccani online dictionary* states: "device used to transform analogue signals into digital information that can be used by an electronic system [...] A device that provides directly in figures the value of a physical magnitude, the same as analogue-to-digital converter" [20].
- Likewise, the *Oxford online dictionary* defines the *digitizer* as "a piece of hardware such as a digitizer" [21].

These two instances demonstrate that the definition itself refers to a device, rather than to a professional profile, which is the physical person carrying out the digital acquisition job. Thus, this professional figure finds himself in a very peculiar situation, where the absence of a specific terminology -always with respect to the Italian context- gives rise to this very ambiguity allowing for confusion between device and operator and vice versa, generating a paradox of what or who is a *digitizer*.

This aspect is even more significant when one considers the current historical context, where the most advanced technological devices are substituting human skills, wherein the *operator* is often required only to play a simple role in monitoring the work of a machine.

However, even the term photographic operator turns out to be quite vague in order to describe the skills and qualifications such a professional should possess. It is taken for granted that those who perform such work must necessarily be acquainted with photography, both analogue and digital, as well as with all conventional software used in post-production.

Nevertheless, especially when it comes to massive acquisition projects, the *digitizer* inevitably needs to have some, even basic, knowledge concerning archive keeping, conservation and handling of analogue photographs, especially when it comes to valuable and fragile material, such as the glass negative of the "Soprintendenza Pompei".

We describe this compulsory knowledge, although rudimentary, with the purpose of highlighting the very delicate procedures a *digitizer* is asked to perform. Being in close contact with the archive's photographic documents, in fact, he must be aware that he is not working with singular, self-referential objects, but rather with segments of a more complex trajectory, tied together by an inseparable bond. This attitude needs to permeate every stage of his job performance, especially during the very critical moment of extracting a document from its context, in order to be digitally acquired, and then reallocating it as a part of a bigger whole, where it is preserved. In this case, it is not a matter of mere "organisation skills", because an expertise in archive keeping becomes pivotal, and it can be assimilated only through work experience or specialized training courses.

Indeed, in Italian Universities, photography seminars are almost absent, and sometimes they are tied to an historical and artistic context, which inhibits other possible interpretations of the photographic object. By the same token, the increasingly rare - and sometimes defective- archive keeping departments do not provide enough specific classes dedicated to the handling and

even the simple cataloguing of photographic material. It is an almost paradoxical approach if one considers the recent trend, which sees public and private institutions being more and more eager to digitise their visual memory.

Work-flow critical problem

To date, in the context of digital humanities, the production of digital surrogates plays a crucial role, above all in the accessing of historical information. This tendency is likely to exponentially increase in the near future, when the digital *medium* will become one of the more effective forms of consultation. The process of online consultation, in fact, not only goes beyond time and space limits, but it also facilitates a more efficient use of original sources, with a consequent better and long-lasting preservation of the material. This is also deeply entangled with the need to transmit historical memory through the copy of the documents produced by it.

As one can imagine, one of the problems regarding digital acquisition on a massive scale lays in the mechanical nature of the operations which, in sequence, follow one another. The operator must carry out an almost alienating task, as the digitisation machine quickly produces surrogate images that he must judge and validate in very short time intervals.

Having said that, one can better understand how the role of the *digitizer* becomes crucial and influential in the preservation and transmission of knowledge: he is not a mere executor referring to a scanner, but he is the frontline and central figure in the transformation of the archive from analogue to digital. His technical and cultural skills should ensure a high degree of critical judgment, which necessarily comes from a strong awareness of work ethics, not only in relation to the worker himself, but also to the cultural and social context in which he operates.

A possible solution to the problem of mechanical repetition could be the creation of a code of ethics, which not only protects the worker but also provides a rotational cycle of tasks that a *digitizer* should usually undertake. For example, one might propose an alternation between digitisation work and its processing, as well as a third phase concerning quality checks and proper archival arrangement of the created documents.

A workflow that alternates the different phases of digitisation, could, first of all, alleviate some of its mechanical burden, because the operator would no longer be forced to repeat the same procedure over and over again. Moreover, it could prompt the *digitizer* to better assess the quality of the work completed, both in the acquisition and in the post-production phase.

Not to mention that, if the *digitizer* is engaged in such a structured workflow, by virtue of his analytical work on each, singular item, he is able to gather numerous and valuable technical and historical information. Thus, he has the possibility of better grasping all those creation and evolution features, proper to a photographic fund.

This aspect becomes all the more remarkable considering that these kind of massive scale projects are generally carried out only when included within global schemes: one would then waste the opportunity of gaining all this relevant information with the sole purpose of speeding up the acquisition [22].

An historical parallel

Before drawing our conclusions, it seems appropriate to establish a parallel between the figure of the *digitizer* and that of the medieval copyist, whose similarities arise from the same kind of mechanical and repetitive work, a task devoted to the duplication process with educational and conservative aims. This

analogy seems quite appropriate to reflect on the poor visibility of these workers, who, however, are entrusted with a major role in the transmission of knowledge.

The act of coping one letter after the other, from one support to another, or the act of transferring a photographic image, from an analogue format to a digital one, are the working practices that virtually associate medieval copyists and contemporary *digitizers*.

The concept of coping, duplication, and reproduction of an original document -pertinent to written texts, but extendable to iconography as well- carries with it long history that can be traced back to the birth of the practice of writing and information dissemination.

This virtual *file rouge* is connected to the concept of reproduction for promulgation purposes and it brings together different eras and cultures in a completely transversal way, as in the context of digital reproductions we still speak about today.

The idea that man has been relieved from the burden of “manual copying”, by machines -scanner in this case- in order to produce a digital copy that can be defined under the coveted label of *faithful reproduction* is totally wrong.

Like the medieval copyists potential for interpretative or calligraphic errors, it goes without saying that also *digitizers* can make mistakes in the process of digital acquisition. Among the most common and often difficult to detect, we want to highlight the acquisitions of original negatives scanned “the wrong way around”. This could mislead a distracted and unfortunate observer, who by virtue of the alleged authenticity of the document, can be led towards completely incorrect interpretations.

Nevertheless, coming back to the human involvement in the copying and the reproduction process, it seems relevant to pay tribute to the medieval copyists by quoting a famous *colophon*, written by Leone da Novara. He emphasizes not only the problems related to the mechanical nature of the copyist work, but also the physical suffering caused by the succession of repetitive movements:

dorsum inclinat, costas in ventrem mergit et omne fastidium corporis nutrit [23]

Reading this quotation in our current era, and given the many similarities that exist between the amanuensis' duplicating work and that of the *digitizer*, one might wonder if in future, while sampling a digital image's metadata information -like the medieval *colophon*- some similar considerations could appear.

Conclusions

With this paper, which is based on our work experience as *digitizers* within the Great Pompeii Project, we deliberately have not tried to provide any practical solutions, apart from those proposed in relation to the digitisation's workflow. Instead, we wanted to provide the foundation for thoughts and reflections, in an attempt to open a debate, hopefully able to trigger the awareness of the experts in the field. Our goal is to recognize the professional figure of the *digitizer*, who, as we have seen, is entrusted with a crucial task in the process of transmission and use of knowledge.

Acknowledging this value means above all offering well-structured and ongoing training in response to urgent needs, such as the acquisition of cultural heritage in digital format.

We wanted to address these technical issues to reflect upon the many perspectives encompassing the professional ethics of the

digitizer: not only in terms of work, but also to think about the kind of work ethics which should permeate this professional body, in a shared *koinè* of cultural values for the correct interpretation and enhancement of the ancient legacies bearing a cultural value [24].

We think it will be possible to conceive of new working guidelines in the near future, especially in terms of employed methodologies undoubtedly much more organized than those mentioned in this paper. These should improve the work of the *digitizer* but also the product created by this professional, that is a result of the transition from the material world to the immaterial digital dimension, where the lack of a direct contact with the original must be carefully supervised and mediated. This particular activity, while being facilitated by ever more advanced technologies, inevitably requires methods for qualitative control, precisely carried out by the *digitizer*. Thus, the *digitizer*, rather than being regarded as a mere mechanical executor, should be seen as an indispensable figure not so much in the sphere of production, but rather in that of the supervision of high standards and of quality and similarity to the original document that one replicates.

Working at the Superintendence photographic archive has been an extraordinary opportunity to get closer to “a huge, unique archive, an authentic map of the city history” [25], which allowed us to *virtually* travel through the “everyday life patterns imprinted in homes, in workshops, in sacred and profane public space” [26].

Acknowledgments

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Author's Biography

Patrizio Gianferro has a master's degree in Art History from the "Roma Tre" University. In 2016 he graduated with a master's degree in Library, Archive and Palaeographic Studies from the "Sapienza" University. He has years of experience working as Assistant Archivist at the British School at Rome. His research interests concern the field of documentation photography, particularly historical images for Art History research.

Rosa Myriam De Lillo holds a master's degree in History and Cultural Heritage Conservation from "Tuscia" University (Viterbo). Following a post-graduation internship, she began working at the Library Enit (The Italian Tourist Board) (Rome). In 2011, she moved to England, where she has been working as a supervisor within an international team at The Regency Townhouse for a digitisation project: *The Myhousemystreet project*. In 2012, she attended the Vatican Library School.