Ge-conservación
Conservação | Conservation
Investigações em
Conservação do Património

# Retouching Scientific Photography – The Glass Plate Negatives Collection at the Natural History and Science Museum – University of Porto

**Catarina Pereira, Rita Gaspar, Laura Castro, Carolina Barata**

**Abstract:** This work presents a part of a research project on retouching gelatin glass plate photographic negatives, its intentions, impact of the practice on the image and object and its current state of conservation. This is a case study on the use of retouching techniques on a scientific collection belonging to the former Dr. Mendes Correia Anthropology Institute, of the Natural History and Science Museum - University of Porto (MHNC-UP). In scientific photography there is a need for a rigorous record and true representation, which sets apart this type of photographic collection from others. Any alterations, such as retouching, should therefore have little or none aesthetic intentions. Retouched negatives were identified in this scientific and academic collection, and allowed to ascertain the purpose of their use and support the need for its preservation.

**Keyword:** photography, glass plate negatives, retouching, masks, collection, anthropology, history, science

## El Retoque en la Fotografía Científica – La Colección de Negativos de Vidrio del Museo de Historia Natural e de la Ciencia – Universidad de Porto

**Resumen:** Este trabajo presenta una parte del proyecto de investigación sobre el retoque de negativos fotográficos de gelatina y sales de plata sobre placas de vidrio, intenciones, impacto de la práctica en la imagen y objeto y su estado de conservación. Éste es un estudio de caso del uso de las técnicas de retoque en una colección científica, de aquél que fue el Instituto de Antropología Dr. Mendes Correia, del Museo de la Historia Natural y de la Ciencia de la Universidad de Porto (MHNC-UP). En la fotografía científica es necesario un registro riguroso, la representación de la verdad, lo que diferencia este tipo de colección fotográfica de otras. Cualquier alteración, como el retoque, debe tener, por lo tanto, poca o ninguna intención estética. Se identificaron negativos retocados en esta colección científica y académica, lo que permite que se compruebe el propósito de su uso y la necesidad de su preservación.

**Palabras clave:** fotografía, negativos en vidrio, retoque, máscaras, colección, antropología, historia, ciencia

## O Retoque na Fotografia Científica – A Colecção de Negativos de Vidro do Museu de História Natural e da Ciência da Universidade do Porto

**Resumo**: Este trabalho apresenta parte do projecto de investigação sobre o retoque de negativos fotográficos de gelatina e prata em suporte de vidro, intenções, impacto desta prática na imagem e objecto e o seu estado de conservação. Este é um estudo de caso do uso das técnicas de retoque numa colecção de carácter científico, do antigo Instituto de Antropologia Dr. Mendes Correia, do museu de Historia Natural e da Ciência da Universidade de Porto (MHNC-UP). Na fotografia científica há a necessidade de um registo rigoroso e a representação da verdade, o que diferencia este tipo de colecção fotográfica de outras. Qualquer alteração, como o retoque, deve portanto ter mínimas ou nenhumas intenções estéticas. Identificaram-se negativos retocados nesta colecção científica e académica, o que permitiu comprovar o propósito de seu uso e a necessidade da sua preservação.

**Palavras-chave:** fotografia, negativos de vidro, retoque, máscaras, colecção, antropologia, historia, ciência

## Introduction

This paper refers to the survey of a scientific photographic collection of gelatin silver glass plate negatives (dry plate negative process); a preliminary step of a larger project on the retouching of dry plate negatives. This project intends to approach the issues on retouching as it is recurrently found in archive collections, but so far little or nothing specific is being done concerning its preservation as already mentioned elsewhere (Pereira 2010; Herrera Garrido 2011). Although innumerable historical technical books have been written on retouching, studies still need to be done to verify how closely photographers followed those books. Also, no systematic studies have been done in order to understand the impact of retouching on the image, and which were the photographers' intentions as it relates to its specific time and Culture.

The case study in this work is a collection of the Natural History and Science Museum of University of Porto (MHNC-UP), the former Dr. Mendes Correia Anthropology Institute. This is an important collection that accompanies the evolution of this institution from 1890's to 1970's. Here the focus is restricted to the dry plate negative section that is roughly dated from 1890's to1930's. There are no fixed dates as the archival processing has yet to be done.

The preservation and management of photographic negative collections presents several problems to any archive. For one, its number easily surpasses the thousands of specimens. Second, even if it relates to a relatively short time span, most likely it includes different photographic processes and materials. Third, also related to the rapid evolution of photographic processes, some information about each photographic process is often unknown to the archive and conservation staff.

Aside from the historical technical books, there is limited information on the nature of the retouching materials. There are no systematic studies relating the use of the material referenced in such books, known recipes or industrially prepared (Pedersen 2005). Also, studies have yet to be done on how these materials interact with the negative plate, what is their state of conservation and some retouching might be overlooked as deteriorations and not intentional alterations ( Pereira 2016; Herrera Garrido 2011). Understanding the problem on conservation of retouched negatives starts by understanding these issues.

Retouching practices had specific intentions and cannot be separated from the materials and techniques used for its purpose. A scientific collection gives interesting and important insight on the use of retouching. Because of its specific nature, retouching should be restricted to removing imperfections and prepare for printing, as described below by Schriever.

"The object of negative retouching is to remove all the imperfections from the negatives, placing them in such a condition for printing." (Schriever 1909: vol X 15)

While the overall project will also focus on other uses of retouching, such as those with aesthetics and artistic intentions, including a scientific collection allows better understanding of the basic use, for each retouching technique. Identifying the retouching process – materials and techniques – in its basic use can be more easily related to the photographers' intention and the visual effect, or alteration that was meant to be caused on the image.

## Dr. Mendes Correia Anthropology Institute and the New Natural History and Science Museum - University of Porto

The Natural History and Science Museum of the University of Porto (MHNC-UP) was created in 2015 and results from the fusion of the former Natural History Museum and Science Museum of the University of Porto. The MHNC-UP holds the vast and relevant collections from several scientific areas of the Faculty of Science of the University of Porto, of which we stress Archaeology, Ethnography and Physical Anthropology, most relevant to the work presented here. These collections are supported by a rich archive of textual, graphic and photographic documentation produced by the investigators that collaborated over the years.

The first period represented in the archive documentation refers to the Polytechnic Academy activities, just before the creation of the University of Porto, in 1911. In 1887 a group of former and very active students of the Academy founded the Carlos Ribeiro Society, which would be responsible for the scientific periodical "*Revista de Ciências Naturais e Sociais*" (Matos 2012). Noteworthy among these are Ricardo Severo da Fonseca e Costa (1869-1940) and Artur Augusto Fonseca Cardoso (1865-1912) major promoters and contributors of the Archaeological and Anthropological studies in the end of 19th century and first decade of the 20thcentury. The society reaches the end in 1898 and so the publication (Silva 1997). The same group continues the work and in 1899, without a formal association, they began another publication the "P*ortugália, Materiais para o estudo do Povo Português*" that achieved a significant role in scientific dissemination in the national panorama.

In 1911 the University of Porto and its Faculty of Sciences are created and in the next year opens the Anthropology Laboratory and Museum by the hand of António Mendes Correia (1888-1960), graduated in Medicine and also regent of the Anthropology class. It is also Mendes Correia the responsible for the Anthropological and Ethnographic Portuguese Society and its periodical the "*Revista da Sociedade Portuguesa de Trabalhos de Antropologia e Etnografia*" founded in 1918. Following his predecessor's work Mendes Correia was essential in the growth of the Anthropological Studies in the University of Porto and was the responsible for the subsequent Anthropological School of Porto. In 1923 the Anthropology Laboratory becomes the Anthropological Institute with the recognized status of a Scientific Research Institution.

The Museum and Institute of Anthropology were prolific in the dissemination of its research either in scientific media or to the general public; also they developed their research closely with the teaching activities at the Faculty of Science. This is testified by the collections and archive now reunited in the MHNC-UP.

A part of the photographic collection relates to the period of the Polytechnic Academy; whereas the majority is linked to the activity of both Laboratory and Institute of Anthropology until 1970's. From this collection, the dry plate negatives bears witness to how photography was used as a mean for registration of data and scientific activity, as means to illustrate scientific publications or exhibitions and as visual aids in the classrooms.

**Before Art there was Science**

"Back in the 70's of the last century [referring to the 19th century] – not so many years ago, after all – photography was in its infancy and but little practiced by the general public. Photography as applied today to the arts and sciences was unheard of. Now (…) it is an Art; it is a part of every science. It has revolutionized the art of printing. The magazine and book illustrations, (…), are all the result of photographic process as applied to printing. Its products are the only universal language, understood by all the people of the earth. (…) In fact, the application of photography extends to almost every branch of human endeavor. Its greatest improvements are yet to come." (Schriever 1909: vol I 7-9)

"*After all, the first notice of notoriety and prestige was given by the baton of Science and not by the ways of Art!*" (Nunes 2005: 8)

Photography is born through science and since its existence is recognized as a valuable tool for the record of "truth". Born in times of Positivism, Photography was its most perfect tool as it was believed to be the only true and objective form for recording the "real" without the influence of the observer, as a mechanical process, as a mechanical truth.

Talbot, Daguerre and others recognized its potential for science, but perhaps the landmark for the birth of scientific photography can be set in France with the work by Alfred Donné presented at the Academy of Sciences in 1840. Along with Léon Foucault, Alfred Donné would publish an atlas where, in his words with photography "*so to speak the object itself will be placed before the eyes and in the hands of the audience.*" (Foucault apud Hannavy 2007: 1255-1256)

"Photography wasn't just a means to make a record of something, but also of inventing it. (…). The value of photography of this time, as a document, was socially constructed, since the image was not taken as a representation, but the reality itself" (Matos 2014: 62).

The advances that the dry plate process introduces allowed for great development of the use of photography in science. With previous process, the wet collodion, from the preparation of the negative to its development needed to be done in minutes. The dry plates, the gelatin process, even if initially not much more sensitive than those with collodion emulsion, allowed for a simplification of the photographic process (Frizot 1995: 233-235; Hannavy 2007: 884-885). The preparation and development could be done in separate stages and separated in time, and this simplified the photographers work that know could be restricted to obtaining the image.

The dry plate process is a landmark in photography and, in a way, the culmination of photography technology, after this, more developments were possible in photography but generally the photographic process remained the same, with a positive-negative process and gelatin emulsions, until the recent times of digital photography (Frizot 1995).

**Photography and Mendes Correia**

The History of Portuguese Photography in Science is well described in the works of different authors (Nunes 2005; Peres 2013: 265-272; Costa 2014). All of them noted the well-known compilation of communications organized in 1940 by Augusto da Silva Carvalho, doctor, professor of Medicine and distinguished elected member of the Lisbon Academy of Science. These communications were published with the title "Celebration of Photography Centennial. Memoires of the Science Class of the Lisbon Academy of Science" (Carvalho 1940). The invited speakers, and among them Mendes Correia, were an elite of the Portuguese scientific society. The communication that he submitted was read by Carvalho and mentions different works, by other scientists, as examples of the use of photography in anthropological studies (Correia 1940).

In Portugal Nunes (2005: 7-8) noticed that in the last quarter of the 19th century the practice of photography was done by a cultural elite, lovers of novelties and technical progress, and the several National Scientific societies and institutions had implemented their own photography departments, which is testimony of the importance given to the practice of photography as a tool for science.

Peres, in her work (2013: 519-627), does not treat the topic of anthropology in particular, but includes a chapter about the relation of Photography with the practice of teaching and scientific research. Is important to realize that photography was not only a tool for producing records or a means of studying a subject but was simultaneously and continually used as a teaching tool and means for illustration of scientific publications.

On the relation of photography and Anthropology there are good references by Patricia Matos relating to the work of Mendes Correia and the Anthropology Institute of the University of Porto of his time (Matos 2012, 2014). Anthropology, she explains, since its beginnings resorted to measurements and observation of "types" that would

give keys to the characterization of physiognomy; and photography was soon used as a method to make record of such characteristics. The practice of turning the "living in the still and the subject into an object" accomplished by means of photography was fundamental in the process of defining anthropology as a science. Photography allowed: "objectiveness and so establishing Anthropology comparative methods (…) and the establishment of methods reinforces and validates the status of Anthropology as a Science" (Matos 2014: 45).

In her thesis Patricia Matos refers several works by Mendes Correia and emphasizes his recognition of the importance of photography as a record tool in the research process and for printing the research results. Photography was used in the class of Anthropology taught by Mendes Correia. In its program dated 1915 a list of tasks to do in class describes: "(…) 2. a living anthropologic observation (descriptive characters, anthropometry, photography profile and frontal view, conclusions); (…) 7. study of a skull (description craniometry, photography, conclusions)." (Matos 2012: 99); emphasizing how photography was included and important as a teaching tool.

The records studied by Matos also revealed that when presenting a project for financing Mendes Correia would always include a request to buy photographic equipment (Matos 2014: 48-49). She also mentions that often it was the Professor's brother, Humberto Mendes Correia, an engineer, who would be the photographer in the projects, and in charge of collecting and processing the images. Although it is not yet clear if there was a photographic laboratory in the department for the images development or if the images were printed resorting to external photographic studios services.

**Retouching Science**

"The sensitive photographic film is the true retina of the scientist," declared the astronomer, P.J.C. Janssen in 1888" (Hannavy 2007: 1255)

Although in practice to this day, updated to digital editing tools, retouching seems a contradiction with the intention of making a photographic record, as its function is to alter the recorded image, and thus to alter the photographed reality.

The validity of retouching was questioned not just today, but since its beginnings. Authors of historical technical books wrote explaining it, teaching it and justifying it. Each photographer and author, at one point or other, had to take a stand on the use of retouching.

More or less advanced the photographic process, there were still technical difficulties, derived from the subject or the photographic process itself. For example, when the subject was poorly lit, or had high contrasts it was difficult to completely represent and differentiate the tonal scale, *i e*, brightness and contrast aspects. As another example, the early photographic emulsions weren't sensitive to the entire visible spectrum specially blues and reds, as a result: skies with or without clouds would come out the same blank surface; bright or dark oranges and reds would appear as the same dull blacks.

To overcome the shortcomings of photography, the negative was retouched; and before digital photography, any alterations, such as retouching, was done by skillful hands and mentioned in almost every manual.

Photography was born in science and scientists were the first to write about it. As an example, a reference to a German author: Hermann Wilhelm Vogel (1834-1898). He was a well-recognized photo-chemist that left us important contributions to photography such as dyes for color sensitization of photographic plates, and he wrote several books, essays and articles. He was the founder of the *Photographische Mitteilungen*, one of the first periodicals dedicated to photography. Among other accomplishments he was chairman at the Commercial Academy of Berlin and head of the only department of photo-chemistry in Prussia (Hannavy 2007: 1455-1456). In his *Lehrbuch der Photographie* (Vogel 1870) – Handbook of Photography – he touches every aspect of the photographic process, from the photographic atelier to recipes and formulations or even qualities that a photographer should have. From reading its preface and table of contents right away stands out that Vogel also understood photography as an art. There is even a chapter in this book dedicated to the aesthetics of photography. On retouching Vogel is prudent and can be considered a purist because he only recommends its use as means to overcome technical difficulties and not to alter the image even on artistic photography. He recognizes the shortcomings of photography and describes different scenarios always raising the question "Is this truth?" In some scenarios he recommends proper lighting, framing of the subject or other pre-photography considerations but on occasions the problem cannot be solve; problems of contrast, or sharpness, or color differentiation in the black and white, etc. He asks once again "Is this truth?" and answers "The photographer succeeds finally by retouching the negative." (Vogel 1867: 390)

He does not proceed teaching the retouching methods and instead refers in several instances to another German author, Johannes Grasshoff, who was also a photographer and water colour painter.

**The MHNC-UP negative collection survey**

The first step of the study was to obtain an overview of the collection. Understand its background and how it relates with the museum and its activities. Second, the identification and selection of potential specimens to enter this project, was made. Third, a preliminary record was done

for each selected object, including a digital record of the image. From here the focus was the identification of the retouching techniques and their relation to the image and its original intended use.

The MHNC-UP photographic collection it wasn't yet organized and processed and it is dispersed in several boxes of different shapes and sizes and rather dispersed in the museum facilities, with little annotations and there are no complete records of how many objects there are, respective dating and identification of subjects. Negatives, transparencies and photographic prints are stored in envelopes, boxes, albums and, in some cases, with no protective enclosures at all. Drawings, maps and other documents are also found, because often, objects in the same envelope, relate to a specific topic or were separated for a publication and not for a specific moment or research project.

It was noted that at one point an effort to identify the photographic objects was done but the task was not completed and the known records are incomplete and little information can be cross-referenced. The possibility to work alongside with the curator of the collection allowed for the identification of subjects and connections with the work of the former Anthropology Institute.

After the first overview the identified retouched dry plate negatives sums up to less than a hundred specimens, therefore they were all selected for this study. Other photographic objects were also considered for context, which were those included in the same envelopes and boxes that stored the retouched negatives. This corresponds to little more than 200 objects, including the photographic objects only: negatives, prints and transparencies.

A preliminary record was undertaken including the following information: photographic process; standard size; note of any inscription on the object itself, envelopes and other secondary and primary containers; identification of image subject and image purpose and assessment of the conservation condition.

**Retouching negatives - some observations**

What is presented here is the result of the observations of the MHNC-UP collection, relating also with other published studies by the authors and others (Pereira 2010, 2016; Herrera Garrido 2011) and innumerable historical technical literature on retouching. So far, these observations were conducted without analytical support thus no materials were yet identified; possible materials are suggested according with names used generically to describe some techniques in the historical literature. Here it will not be discussed the aesthetic or even artistic components of retouching but only the purpose of the different techniques in overcoming the technical problems.

Retouching is to alter the image by adding or removing material from the negative plate, and done following 4 basic alterations, or retouching techniques:

a.- A powdery makeup applied with the fingers on the glass surface; this would lighten the underexposed areas.

b.- Red colorants, frequently *new coccine* dye, but also other colors, such as yellow, green or black, applied in thin layers, with a brush, were commonly used to repair tears and other gaps or holes on the gelatin surface that might occur by accident, improper handling or manufacturing process. They could also be used, like the makeup, to correct contrast or brightness. Sometimes it was used also to accomplish similar effects of masks, used in opaque layers.

c.- Graphite pencil, used over a previously varnished surface of the emulsion, also to repair imperfections of the surface and to brighten and heighten contrast lines.

d.- Etching, done by removal of the gelatinous surface with knife, needle or abrasive powders, had the same purposes of the pencil but with a darkening effect. Etching was also used as means of writing to mark and frame parts of the image to prepare for publication.

Another way to alter the negative was by using masks and all the techniques could be used simultaneously on the same negative. The difference between retouching and masking is that, the first is the application or removal of material on the negative itself, and it is permanent; while the second refers to alterations introduced usually by a secondary layer that most times can be removed. Masks were used usually to cover parts of the negative, for example with opaque paper, card stock or other materials such as inks, so the result would be a cutout, *i e*, as if cutting a part of the original image, but without actually cutting the negative. Most of the times, this process can be reversed by separating the paper from the negative, however sometimes the paper was in such way that its removal damages the negative (Pereira 2010, 2016).

**Dry plate negatives from MHNC-UP collection**

The MHNC-UP collection includes photography done with different purposes, namely:

a) Research tool for record keeping in laboratory or field work.

b) Classroom aids and learning materials; (The preliminary survey to the collection revealed hundreds of transparencies – collections of positive images on glass, and later on film – with the notation "classroom resources").

c) Illustration of scientific publications and exhibitions.

d) Record of the participation of the institute researchers in social and scientific events and exhibitions.

The collection also includes commissioned work to National and foreign Scientific Institutions and photographic studios. As mentioned above, Matos (2014: 48-49) found references that Mendes Correia would include in his project financing requests for the acquisition of photographic equipment and would have a person dedicated to the task of obtaining the photographs. But it is not yet clear if the prints were done in house or ordered outside the institution, to private photographic studios. Hiring private professionals would happen at least sometimes, as evidences were found in the collection especially for images separated for publication. In the envelopes containing negatives and prints several envelopes and other documents were also found [figure 1] with brands and advertisement of photographic studios from Porto, such as: Alvão & Co., Bazar Foto-Amador, Fotografia Guedes or Estudio Teófilo Rego.


**Figure 1**.- Stationary found in the MHNC-UP collection, from photographic studios working in Porto the first half of the 20th century: a) stamp on a photographic print from Fotografia Guedes; b) envelope from Alvão & Co.; c) Teófilo Rego stamp on a photographic print, that reads "another photo from Teófilo Rego"; d) stamp from an envelope from Bazar Foto-Amador.

**Some Selected Examples**

At this stage some observations about the nature of the collection are already possible and relations were sought to the use of retouching and its effect and image purpose, whether as means of dissemination of scientific research, or other uses. Here are presented some examples of retouched negatives that were found during this first phase of this study in order to illustrate the uses of the retouching techniques but also the original purposes of the photographic objects.

The first two examples [figure 2 and 3] are two portraits of Mendes Correia found among several other images on different topics probably separated for the illustration of a publication on Mendes Correia biography, as written on the corresponding envelope.

Figure 2 shows a negative with tears on the emulsion probably as a result of improper handling. These tears were retouched using a red dye; its appearance suggests that the dye was applied with a brush on the emulsion side [figure 2c].

In the second example [figures 3] the negative was retouched with the makeup technique and a pink powder was applied on the glass surface, using the fingers, the creases of the fingertip are visible on the surface, probably followed by scrapping of the outline of the arm. This was done to achieve better contrast between the arm and the background of the image. In this example the makeup shows signs of deterioration with large areas of lost material.

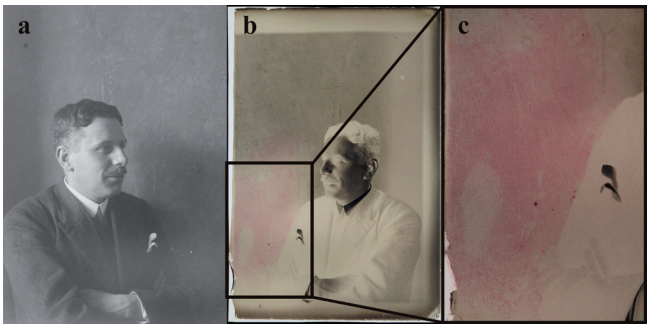


**Figure 3**.- Portrait of Mendes Correia: a) positive image obtained with digital tools; b) negative; c) detail of the area highlighted in b.

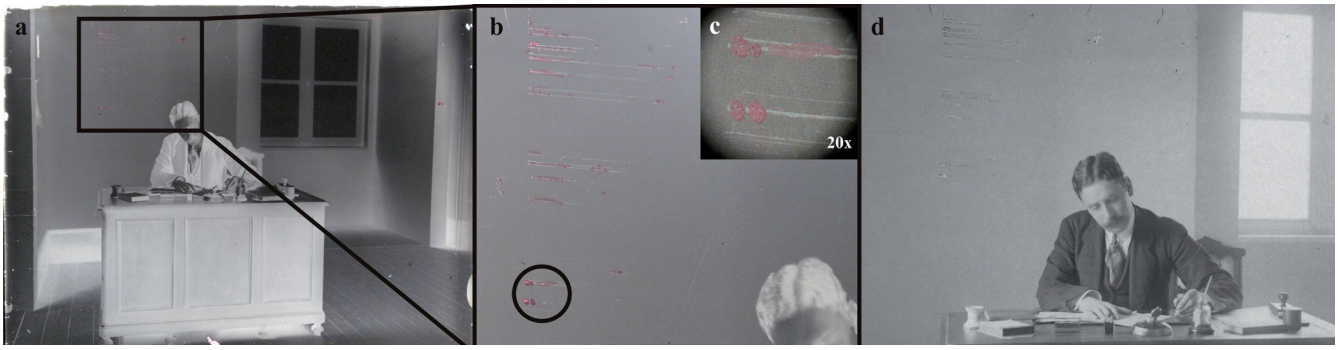


**Figure 2**.- Portrait of Mendes Correia at his desk: a) negative; b) detail, of the area highlighted in a; c) detail, of the area highlighted in b observed on a stereomicroscope 20x magnification; d) positive image obtained with digital tools.

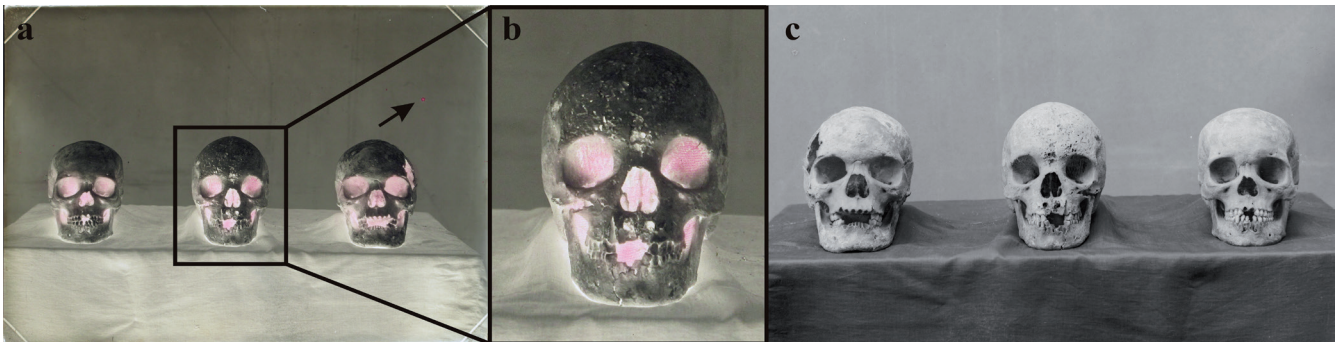


**Figure 4**.- Osteology, three skulls, frontal view: a) negative; b) detail of the area highlighted in a, showing partial fingerprints; c) detail, positive image obtained with digital tools.

The normal activities of the institute frequently included photographic records of bones for archive purposes and illustration of scientific publications also, this type of record was done during research or classroom activities, as the institute researchers collaborated closely with the Faculty of Science. The example shown in figures 4 represents three skulls that were used in population anthropometric studies. In this case retouching was done to overcome the technical shortcomings of optical nature and emulsion sensitivity. The cavities of the skulls were retouched with pink powder makeup to lighten underexposed areas, applied with the finger tips, and the hole in the emulsion, indicated with an arrow, was filled using a liquid red dye applied with brush.

Images obtained with the purpose of illustrating articles and other scientific publications are frequently found in this collection, as it may be observed in the examples shown in figures 5 and 6. These photographs are from a set of Bronze Age ceramic objects from the Tachoal Necropolis (Alpiaraça, Portugal), belonging to the former Anthropological Museum of the Faculty of Sciences of Porto (at the time in its 2nd year of existence). This set was used in the 21st number of the O Archeologo Português periodical, from 1916, one of the major Portuguese publications in the field of anthropology of its time (Correia 1916) [figure 5a]. What stands out most about these negatives are the visible etched marks indicating framing, what were the selected images and objects, and the order they should appear in the publication. The piece marked with "fig. 2" in figure 6a can be recognized in the inverted image of the top right object of figure 6c. This publication also includes schematic drawings of objects that were done using photographs as models, which were also in the same set of negatives [figure 5b-d].

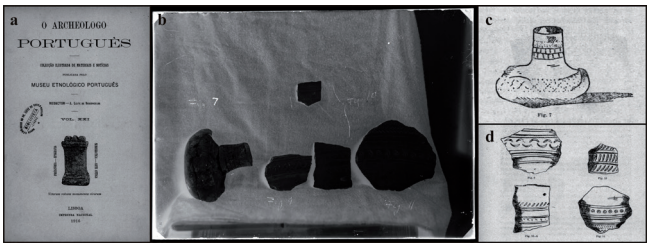


**Figure 5**.- a) Title page from O Archeologo Português , Vol 21, 1916; b) Negative showing Bronze Age ceramic objects, Tachoal Necropolis; c and d) details from page 333 and 336, respectively, with drawings corresponding to the objects shown on the negative in b (Correia 1916).

## First Conclusions and Final Remarks

At this point the materials used for retouching have not been identified, but some conclusion can be made about its intended use. Materials selected for retouching apparently follow the recommendations mentioned in literature for technical retouching. The use of different retouching techniques is restricted in overcoming limitations or correcting flaws from image processing or improper

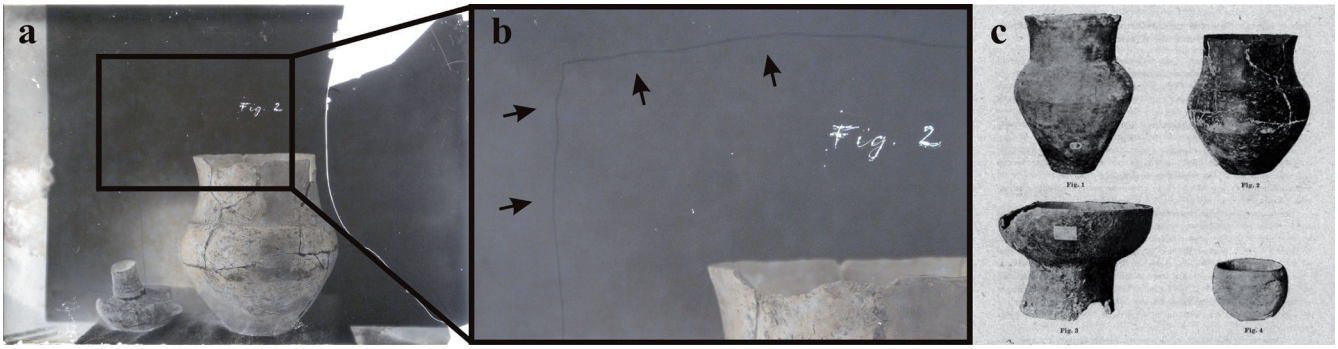


**Figure 6**.- a) Negative showing Bronze Age ceramic container, Tachoal Necropolis; b) Detail, the area highlighted in a the arrows point the etchings that identify the piece to be reproduce and order of publication (enhanced digitally for contrast); c) Details from page 332 of the publication mentioned in figure 5 with corresponding piece, top right (Correia 1916).

handling. Other retouches or masks were commonly used to emphasize or better display the subjects on images intended for the classroom, exhibition or publication.

The makeup is the most fragile material, susceptible of deteriorating as it is a powdery substance with evidently little binding material and applied over the glass surface. The retouched negatives show how photography was used as a record and means of dissemination of knowledge at the Anthropology Institute and the Science Faculty of University of Porto in the first half of the 20th century. The importance given to Photography by Mendes Correia and other researchers of the Dr. Mendes Correia Anthropology Institute is noticeable when surveying the MHNC-UP photographic collection. A glimpse of the past and how the research was done may be seen through these negatives.

Although often overlooked, the intentional changes introduced by retouching have a documentary value in the history of the object and history of photography. The image cannot be dissociated from its support, and the same applies to the effect introduced by retouching and the materials used to do it. Retouching negatives was clearly a common practice even in the context of scientific photography; and need to be preserved.

This project intends to give answers to these issues and other related questions by studying the dry plates presented here and in other relevant Portuguese collections. Understanding the use of retouching, its intentions, the impact of the practice on the final image and object and its state of conservation, will provide directions for the establishment of a new conservation protocol, more suitable to the collections under study; and will also gather cues to understanding the Visual Culture of its time.

## References

CARVALHO, A. (1940)."Comemoração do Centenário da Fotografia". *Sep. Memórias da Academia das Ciências de Lisboa, classe Ciências*. Lisboa: Academia das Ciências de Lisboa.

CORREIA, A. A. M. (1916). "Sobre alguns objectos protoistóricos e lusitano-romanos especialmente de Alpiarça e Silvã". Lisboa. O *Archeologo Português* XXI: 331-337.

CORREIA, A. A. M. (1940). "Nota sobre a fotografia aplicada à Antropologia em Portugal". In *Comemoração do Centenário da Fotografia. Sep. Memórias da Academia das Ciências de Lisboa, classe Ciências*, Carvalho, A. (coord.). Lisboa: Academia das Ciências de Lisboa, 123-125.

COSTA, F. M; JARDIM, M. E. (coord.). (2014). *100 anos de fotografia científica em Portugal* (1839-1939). Imagens e instrumentos. Lisboa: Edições 70.

FRIZOT, M. (dir.) (1995). *Nouvelle Histoire de la Photographie*. Paris: Ed. Bordas - Adam Biro.

HANNAVY, J. (Ed.). (2007). *Encyclopedia of Nineteenth-Century Photography*. New York: Routledge.

HERRERA GARRIDO, R. (2011)."Técnicas de retoque de negativos fotográficos historia y conservación". *Pátina*, 16: 125-136.http://revista-patina.escrbc.com/numero/16. [Accessed: 03/05/2016].

MATOS, P. (2012). "Mendes Correia e a Escola de Antropologia do Porto: Contribuição para o estudo das relações entre antropologia, nacionalismo e colonialismo (de finais do século XIX aos finais da década de 50 do século XX)". Thesis. Lisbon: Instituto de Ciências Sociais da Universidade de Lisboa.http://hdl.handle.net/10451/7831. [Accessed 02-11-2016].

MATOS, P. F. (2014). "A fotografia na obra de Mendes Correia (1 888-1960): Modos de representar, diferenciar e classificar da Antropologia Colonial". In *O Império da Visão – Fotografia no contexto colonial Português* (1860-1960). Vicente, F. L. (org.).Lisboa: Edições 70, 45-66.

NUNES, M. F. (2005). "Arqueologia de uma prática científica em Portugal – uma história da fotografia". História. III - 6: 169-183. http://ler.letras.up.pt/uploads/ficheiros/3382.pdf. [Accessed 02-11-2016].

PEDERSEN, K. B.; Kejser, U. B.; Christensen, M. C. (2005). Coatings on Black-and-white Glass Plates and Films. In C. McCabe, Coatings on Photographs: Materials, Techniques, and Conservation (pp. 108-131). American Institute for Conservation of Histooric and Artistic Works.

PEREIRA, C. (2010). "O retoque do negativo fotográfico: estudo de uma colecção do Arquivo Fotográfico da Câmara Municipal de Lisboa". *Estudos de Conservação e Restauro*, 2: 38-57. http://revistas.rcaap.pt/ecr/article/view/3153/2542. [Accessed: 03/5/2016].

PEREIRA, C. (2016). "Materials and techniques for retouching glass plate photographic negatives in the beginning of the 20th century". In *III International Meeting on Retouching of Cultural Heritage: RECH3*. Porto. Escola Artística e Profissional Árvore, 65-72 https://issuu.com/ineditar/docs/postprints_rech3 [Accessed: 03/5/2016].

PERES, I. V. (2013). "Fotografia científica em Portugal, das origens ao séc. XX: investigação e ensino em química e instrumentação", thesis. Lisbon: Faculdade de Belas Artes da Universidade de Lisboa. http://hdl.handle.net/10451/8692. [Accessed: 03/10/2016].

SCHRIEVER, J. B. (1909). Complete self-instructing library of practical photography Vol. 1-10 Scranton: American School of Art and Photography. https://archive.org/details/completeselfinst10schriala. [Accessed: 10/6/2016]

SILVA, A. S. (1997)."O Porto em busca da Renascença (1880-1911)". *Penélope: Género, discurso e guerra*, 17: 51-69.

VOGEL, H. W. (1870). *Lehrbuch der Photographie - Theorie, Praxis und Kunst der Photographie*. Berlin: Louis Gerschel Verlagsbuchhandlung. https://archive.org/details/lehrbuchderphoto00voge. [Accessed: 03/05/2016].

**Catarina Pereira**
catarinacortes@gmail.com
Universidade Católica Portuguesa

Presently a Researcher and PhD student at the School of Arts, CITAR, Catholic University of Porto. Has a Master in Science in Conservation by Nova of Lisbon in 2013 and a degree in Art - Conservation and Restoration of Paintings by School of Arts, UCP in 2007. Fellow in Conservation and Restoration at the Laboratory HERCULES, University of Évora from 2013 to 2015. In Spain, 2009, she obtained training and internship at the Conservation and Restoration Institute of Valencia in the Documents department.
http://orcid.org/0000-0003-0926-1154

**Rita Gaspar**
rgaspar@mhnc.up.pt
Museu de História Natural e da Ciência da Universidade do Porto

Degree in History – Archeology from the Faculty of Arts of the University of Lisbon in 2002, holds a Master degree in Geoarchaeology from the Faculty of Science of University of Lisbon in 2008. Coordinator of several archaeological interventions, one of mention, the coordination of the Study of the Pre-History at the Vale do Sabor. Since 2015 is responsible for the Archeology, Ethnography and Physics Anthropology departments of the Natural History and Science Museum of the University of Porto.
http://orcid.org/0000-0003-1546-6332

**Laura Castro**
lcastro@porto.ucp.pt
Universidade Católica Portuguesa

Director of the School of Arts of the Portuguese Catholic University where she also theaches. Researcher at the Research Center for Science and Technology of the Arts (CITAR) in the same School. Has a PhD from the Faculty of Fine Arts of the University of Porto in 2010 and Master in Art History from the Faculty of Social Sciences and Humanities of the Nova of Lisbon in 1993 and a degree in the same area by the Faculty of Arts of the University of Porto in 1985. Member of the Portuguese Association of Art Historians and of the International Association of Art Critics.
http://orcid.org/0000-0002-8470-2557.

**Carolina Barata**
cbarata@porto.ucp.pt
Universidade Católica Portuguesa

Degree in Conservation and Restoration, and post-graduation in Art Expertise, Master's degree in Applied Chemistry and a PhD in Geosciences. She started her professional activity in 1996 having joined several working teams in the field of Easel Painting, wooden Sculpture and Photography collections Conservation. Since 2005 lecturer and a researcher at the School of Arts of the Portuguese Catholic University (EA/UCP). Since 2016 coordinator of the Master's Degree in Conservation and Restoration in the same School. Member of the Research Center for Science and Technology of the Arts (CITAR) at EA/UCP and of the Research Center of Geobiosciences, Geotechnologies and Geoengineering (GeoBioTec) of the University of Aveiro.
http://orcid.org/0000-0003-3379-1905

**Artículo enviado el 10/08/2017**
**Artículo aceptado el 15/11/2017**