



ARCHLAB ACCESS REPORT

*(this report will be made public)**

Call number: December 2016- April 2017

Title of the ARCHLAB TNA Project: *Analysis and Research Methods In Management of Photographic Materials: Gelatin Glass Plate Collections*

Project Acronym: GGPN

User Group:

Name and forename(s) User Group Leader: Alba Guerrero García

Institution: Biblioteca de Arte Fundação Calouste Gulbenkian (FCG)

Name of other researchers of the User Group: José Fernando Vázquez Casillas (UMU)

ARCHLAB Provider/home institution: IPCE

Contact person ARCHLAB Provider/home institution: María Martín Gil

Period of the visit: December 2016 (16 – 22 Dec)

Date of the report: 23 December 2016

Background of the project:

Analysis and Research Methods In Management of Photographic Materials: Gelatin Glass Plate Collections was created with the intention to give support to an ongoing research, as a part of a case study included in a Phd. Initially, we thought about the importance of exchanging knowledge and experiences and try to look for a support to research and collaborate with important institutions, such as in this case the FCG and the IPCE. It could be enriching for the investigation and finally the project was definitely sent, after permission and consensus with the Calouste Gulbenkian Foundation and IPCE. Spain and Portugal, are two countries of the Iberian Peninsula through which, practically, the whole of this research is being carried out and are being taken as case studies in the field of photograph conservation. Although in previous Phd research we include in greater depth conservation criteria, management, values and the importance of research with photographic materials and analog archives, we decided to limit this ARCHLAB project only in a photographic typology by the limitations in time. Accordingly, with previous project needs, we decided together with IPCE members to focus our attention in an ARCHLAB proposal on these types of collections. This contribution to previous research aimed to focus on gelatin glass plate negatives processes and the study of deterioration and treatments. IPCE Photographic Archives have a big and important photographic collection about this type of materials and they have a lot of experience in preservation. Part of this research was intended to be nourished through an exchange of knowledge with institution's staff, which have dedicated decades to these tasks and in order to complete the main project objectives: access and consultation of documentation, reports, data bases, photographic objects and issues related to the conservation treatments carried out by the ARCHLAB provider institution. During the access period, conservators in charge of preservation, research and display, kindly aided to the

investigation development showing the facilities, reports and documentation related to the photographic objects of interest. In collaboration with them, analytical and critical views were developed on some conservation treatments that had been performed, especially on glass plates photographic objects. During the stay, other IPCE departments were also visited to discuss some specific related issues such as digitization, preventive conservation, graphic documents and biodeterioration.

Thanks to GGPN ARCHLAB project in IPCE, it has been possible to develop part of this research and to know more about glass plate negatives collections management. It will contribute with a lot of positive aspects in the future development and help to finish a complete glossary deterioration in gelatin glass plate negatives which we would like to include in a Phd research at the University of Murcia. Results of this access are now an important part of previous research in this topic and case study.

Questions addressed by Access:

ARCHLAB Access in IPCE and previous researches provided several questions about preservation and deterioration of glass plates negatives which led to multiple discussions and arguments:

- Why is important to know how to identify glass plate negatives? Why conservators or people in charge of collections must be capable to properly identify photographic processes and his deterioration?
- What is the influence and how affect storage systems and environmental conditions in glass plates collections?
- Can we recognize, exactly, what are deteriorations in glass plate process in both parts, emulsion and support?
- If glass support deteriorates, how other components affect, coats and emulsions binders? What are the main deteriorations that affect glass? How does biodeterioration affect glass?
- To what extent is important to take into account the photographic process, albumen (most rarely in glass plate), collodion or gelatin, when making decisions about type of treatment? What are the main arguments we have to take into account when we are going to do a conservation treatment in a deteriorated glass plate?
- What is the “best option” or conservation treatment for a broken and severely damaged glass plate? Which things will be needed to take into account to establish the criteria for our decision?
- In the case of broken and emulsion cracks plates, housing or sandwich mount? Cardboard or Glass? What are the problems that each one presents? Can we use other type of materials in sandwich mounts? What could be the most suitable?
- What do we have to take into account when making a sandwich? Is a full seal recommended?
- What is the “ideal” climate and environment for photographic objects of this type? Is the historical climate of objects taken into account in the preventive conservation of photographic materials an important thing to make a choice? How would an abrupt, even controlled, change of "ideal" environment affect glass plates?

Main objectives of the project proposal:

Calendar and timeline

	Day 1	Day 2	Day 3	Day 4	Day 5
Date	16 th Dec	19 th Dec	20 th Dec	21 st Dec	22 nd Dec
IPCE supervisors	Carlos Teixidor	Carlos Teixidor	Isabel Argerich	Isabel Argerich Alejandro Almazán	Isabel Argerich Carlos Teixidor María Martín Óscar Muñoz
Research material	Nineteenth century photographic collections, documents	Nineteenth century photographic collections, documents	Twentieth century photographic collections, documents	Twentieth century photographic collections, documents	Nineteenth and Twentieth centuries photographic collections, documents
Photographic objects	Wet collodion glass plate negatives J. Laurent collection Daguerreotypes Tintypes Ambrotypes Albums IPCE acquisitions and auctions collection	Wet collodion glass plate negatives J. Laurent collection (cleaning, housings, broken, deteriorated plates)	Gelatin glass plate negatives Archivo Moreno collection (cleaning, housings, broken, deteriorated plates) Nitrate negatives (part of collection)	Gelatin glass plate negatives Archivo Moreno collection (deteriorated plates, sandwich mountings, retouching negatives by autor, masks, big format. Room storage, data loggers. Original photographic furniture belongs to collection)	Wet collodion glass plate negatives J. Laurent Gelatin glass plate negatives Archivo Pando collection Archivo Wunderlich collection. Albums Nitrate and acetate negatives (deteriorated and in original storage) Original photographic furniture belongs to collection.
Reports	Condition reports Articles Auction Catalogs Nineteenth century sold photograph catalogs	Nineteenth century sold photograph catalogs Condition reports Treatment reports	Condition reports Biodeterioration reports	Condition reports Biodeterioration reports Treatment reports Inventories: Broken glass plate inventory, inventory, Old photograph cataloging	Treatment reports Inventories Internships and grants reports
Other information	IPCE Library	IPCE Library Exhibitions catalogs	Old photographic catalogs (Archivo Moreno – Gelatin DOP prints. Positives reproductions in photographic paper of negatives collection) IPCE Library	IPCE Library Room storages, data loggers, HR and T control. Data base Scientific Articles and Researches Information about curatorial work about next IPCE photographic exhibition	IPCE Library Room storages, data loggers, original autors documents. Photograph conservation program courses (index Scientific Articles and Researches Data bases

One of the important objectives of this proposal was to contribute, promote and disseminate photograph conservation research in Spain, because in this field there are still many limitations (educational, professional and working opportunities) when compare to other countries. This research aims to provide a better knowledge about the photographic process through the exchange of experiences between institutions as well as reviews of previous research carried out in this field. Also, as previously mentioned, it is intended to carry out a deteriorations study that affect all parts that compose photographic objects, support and emulsion, that leads us to a better understanding of the artifacts. By knowing these aspects, we can make better decisions regarding conservation treatments. Another topic of this research was to perform a review of types of storage made in glass plate negatives, as well as the behavior of glass (as a photographic support and a mounting material) before environmental conditions, good and adverse, even conducive to biodeterioration and how this factor could affect to material. A previous glass deterioration also affects emulsion in multiples factors. Another fundamental aspect is to shed more light about the choice of materials used for mounting deteriorated plates, besides the importance of being able to distinguish the type of photographic process before making a decision on how to carry out an assembly. In short, to study the behavior of all materials that make up glass plates, focus in this case gelatin glass plate, and to contribute to investigations in conservation treatments as well as to determine the importance of the environmental factors and climate in the life of the object to take them into account before any choice.

Main achievements of the ARCHLAB visit:

Different processes were analyzed and compared their characteristics, collodion and gelatin glass plate negatives, establishing different considerations and guidelines in the treatment for each one. The main treatments developed in IPCE in these materials were related to general conditioning: cataloging, cleaning and storage. We took into account especially objects with greater deterioration such as broken plates, some of them provided with different housings like different customized sinks matts, sandwiches between glasses, etc.



Analyzing conservation treatment with a sandwich mounting between glasses in a wet collodion glass plate negative: "Dame spagnole", circa 1870, J. Laurent & cia collection, IPCE. Photography: Carlos Teixidor.

Special attention was also given to glass deterioration, both, as a photographic medium and as a conservation material used in mountings (sandwich between new glasses), which was studied and observed its behavior in adverse environmental conditions such as high relative humidity and inadequate storage. This, logically, results in deteriorations in the material that affected its physical-chemical stability and aesthetic characteristics. The proliferation of microorganisms and mold, whose releasing acids that attack the surface, deteriorate the glass by modifying its texture, weakening and losing its transparency. Crizzling is another chemical deterioration that occurs, above all, in high RH conditions, in which glass progressively acquires a milky color, becoming translucent and fragile¹. Unprotected storage that leaves glass in contact with others glasses, is also one reason for deterioration, giving rise to the annoying Newton rings, creating iridiscence on the glass surface and altering aesthetics values of the object².



Poor storage of industrial glasses. From left to right, two packet of glasses with a paper protection between each other and in the last packet (right), glasses are in contact without protection. Consequences and results of poor storage for months have been described. Glass packets in left (Picture 1, back) are protected with sheets of newspaper, a paper with a poor quality that even repels mold growth. Failure to protect the entire surface of the glass with paper has meant that Newton rings are created in some cases. In the last packet, glasses without protection has suffered a moisture condensation and a microclimate inside has developed a biological attack of mold (Picture 2, back). In this cases is needed to clean the surface with an antimicrobial solution (30% Distillated water + 70% ethanol) to eliminate rests of mold. This solution is also recommended in conservation to cleaning support in gelatin glass plates.



¹ KOOB, Stephen P. (2006) *Conservation and care of glass objects*, Archetype Publications and The Corning Museum of Glass, London.

² HERRERA, R. (2014): "La conservación de vidrio en fotografía. Casos prácticos: negativos en placa, autocromos y placas de linterna". En *Jornadas de Investigación emergente en conservación y restauración de patrimonio*, Valencia: Universitat Politècnica de Valencia, 363 – 372.

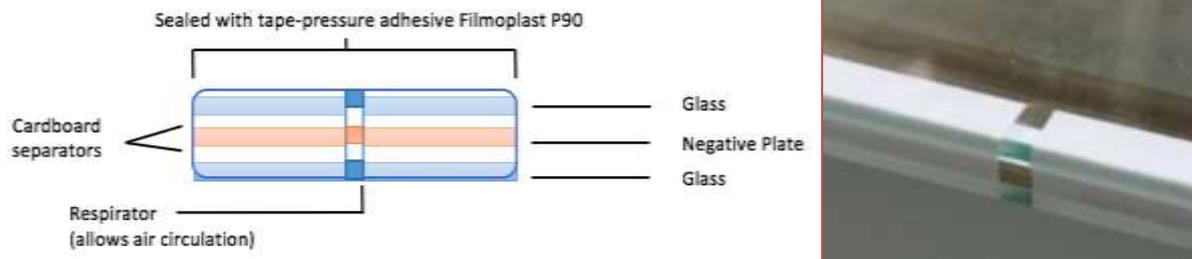
Also, when we talk about sandwich mountings we need to understand that the behavior between two glasses, one new and the original old, is different, and both keep in contact could cause reactions because objects movement are not the same. For all this reasons, is very important the fact that two glasses do not touch each other in a mounting, as well as to leave a small air space between both. This will help to avoid stains or mold growth and the transfer of emulsion too. To know these particularities and how to detect these behaviors about glass as a support and as a material of assembly, is very important for photographic glass plates collections preservation because any irregularity detected in materials will be a warning sign that something is not going well. In case of glass as a photographic medium, if it deteriorates, it will directly affect the emulsion and advance of this deterioration will weaken it, even going to expel photographic coat from the glass support.



Isabel Argerich shows a broken gelatin glass plate negative stored in a four flap envelope paper waiting for a more safe conservation treatment. In similar cases, provisionally, is recommended to place a custom-made cardboard to give more stability to the packaging and negative. If possible, separated deteriorated plates from the rest in better conditions and storage horizontally. Paper enclosures and housings are less safer than glass sandwiches because broken pieces could move more easily. Paradoxically, glass is a harder material but more fragile. Archivo Moreno, IPCE.

In analysis and evaluation of conservation treatments, we discuss about advantages and disadvantages in the use of glass as a mounting material (sandwich) for deteriorated plates, like another kind of housing. It is very important to take into account the type of glass that we are going to use (most stable in chemical terms), photographic emulsion on which we are going to make the plate sandwich (due to different chemistry and behaviors between photographic objects), type and level of deterioration and the importance of placement separators between glasses so that the aforementioned deteriorations do not occur. Likewise, a permanent total sealed of the assembly is not recommended and is very discussed between conservators, because a change of environmental conditions together with other factors inherent in photographic processes (for example, vapors that can release some photographic

processes like collodion emulsions) could be create a microclimate and condensation inside, being hazardous for the object³. The inside of the glass may experience condensation of the moisture, which can be transferred to photographic object. Therefore, some conservators recommend and it is desirable, to leave a little window on each edge (parallel) in order to create a small air circulation in the sandwich between new glasses and the negative. In IPCE glass plate negatives, different mountings are employed. This conservation mounting system is one of them in some cases:



The system is detailed in the diagram and showed in detail of a real example of a wet collodion glass plate in IPCE. In collodion glass plates is important to take account because, as we mentioned, collodion could release chemical vapours and is desirable to leave a stream airflow.

The use of consolidation adhesives in broken plates mounting is also very discussed and is not really clear about his convenience. Several researchs have obtained different results⁴. An important thing when we sealed a glass plate, instead of this, is the use of cardboard spacer or separator to leave a small airflow between both glasses. In addition, cardboards spacers allows the movement of gelatin and glass, dampening the variations of temperature and moisture both external and internal. Also, accompanies the irregularities of the emulsion without the folds being pressed or the tears increasing with the thickness difference of the spacer. These conservation mountings provide above all stability to the glass plate, allow a more safety handling and it is even possible the digitization of the most deteriorated plates in safer conditions. In case of sink mats and housing, paper is a very stable and inert material when has a good quality, does not usually cause problems or reactions in photographic materials. It is safe but its physical stability and handling can be more complicated because, in the case of broken plates, the fragments are loose. However, sometimes, opting for these types of storage systems is safer and is the best option if we are not aware of how the other materials will react. In the case of use other type of materials like glass substitutes such as acrylics plastics, metacrylates (Plexyglass, Acrylite etc. used also in mountings, displays in object conservation), in plate sandwiches are not a safe option. Plastics also present problems such as electrostatic charge (which, in the case of raised emulsions this can be attracted as well as other particles) the great adhesion of dust, tendency to abrasions etc., in spite of the advantage of less cost and less weight than glass and UV filters that containing some of them. These variety of more new materials still needs more research. Borosilicate glasses such as Pyrex are

³ Mogens Koch, photograph conservator and teacher in School of Conservation of the Royal Danish Academy of Fine Arts was developed some researchers about negatives and conservation treatments related to this topic.

⁴ WHITMAN, Katharine (2007). "The History and Conservation of Glass Supported and Protected Photographs", the Andrew W. Mellon & Advanced Residency Program in Photograph Conservation at George Eastman House, Rochester.

the most suitable for sandwiches between glasses due to its great chemical stability and good resistance to temperatures and environment. Similarly, as we have pointed out several times, insist that further research on this subject are needed.

Although glass plate negatives are obsolete objects, it is important to preserve them since they are photographic originals and both, positive and negative, are very important for research because they contain valuable information that can not be appreciated simply in a copy image or digital archive.



Isabel Argerich shows a big format gelatin glass plate negative in a paper enclosure stored horizontally that belongs to Archivo Moreno, IPCE. This plate is retouched and modified by author with masks and this information can be very relevant to research. These details can not be so easily appreciated in the positive copy so it is sometimes important to consult the original source, the matrix of the object as is in the case of the negatives collections. Although digital technologies have contributed to improve access to information and images, the use of analogue archives should remain as a major source of research. This is especially relevant in the field of photography.

In summary, it is still necessary to continue the research on these issues in order to improve storages, mounting systems and conservation treatments of some photographic objects. We need to collaborate not only with other conservators but with experts in other disciplines that give us different points of view and to enrich our conservation work. Similarly, the most important of all, in addition to conservation treatments, will always be the environmental conditions where our collections are preserved. This environment and the objects inside must be periodically controlled, avoiding HR and temperature fluctuations, and establishing a balance that respect the parameters suitable for each photographic process as well as the historical climate in the life of the artifacts where they have been previously (if known), because one of the most potential hazardous in stability of photographic materials are in environmental abrupt changes.

Acknowledges

Thanks to IPCE and all members who approved this project, support and were part of the access: Alejandro Carrión, Miriam Bueso, Isabel Argerich, Carlos Teixidor, Oscar Muñoz, Alejandro Almazán, Emilio Cano. Some Biodeterioration Department members, Nieves Valentin and Alex Gaztañaga for their advices and knowledge. The Calouste Gulbenkian Foundation for allow and support this research. The University of Murcia, in which this PhD research is carried out. The IPERION CH ARCHLAB program and organization, especially, the responsible people who made possible from the beginning this access: Maria Martín Gil and Hilde de Clerck.



*Participant and supervisor members in Iperion ch ARCHLAB home institution IPCE (Spain) at finish the access.
From left to right, Óscar Muñoz, Carlos Teixidor, Alba Guerrero, Isabel Argerich and María Martín.*

Dissemination:

I plan to prepare a publication in an Int Journal in consortium with the ARCHLAB providers	
I plan to include the results in my thesis	X
I have no plans yet	

I agree that the content of the ACCESS report is available on the Iperion CH website making sure that copyright issues of the provider are respected.