History of Photography

Wet collodion and a pair of lenses

Carlos Relvas's Stereoscopic Photography: the digital reunion of negatives and prints --Manuscript Draft--

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Carlos Relvas's Stereoscopic Photography: the digital reunion of negatives and prints

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Abstract

The beginning the photographic activity of Carlos Relvas (1838-1894) is closely connected to stereoscopic photography. This fact has not always been quite clear since Carlos Relvas's stereoviews have remained one of the least known sides of his photographic work. The dispersion of his stereo cards among several public and private collections, as well as the long period of inaccessibility to his archive of negatives, hindered the perception of the meaningful work that Carlos Relvas carried out in the production of stereoscopic views of Portugal. One of the main challenges of the 21st-century studies of photography lies in the opportunity to publish online images from early photography collections. Digital media can enhance these collections and expand their reading. Among the main beneficiaries will be photographic negatives, which will gain new heuristic importance in this new environment of mediations. That was our intuition by developing a digital catalogue for the collections of Carlos Relvas's stereoscopic photography aiming to bring together and combine all his negatives and positives and thus, for the first time, allow a comprehensive image of his passion for this type of photography.

Keywords: Carlos Relvas, Portuguese Nineteenth Century Photography; Stereoscopic Photography; Collodion-on-glass negative; Series; Catalogue Raisonné

Self-portrait with stereoscopic camera

1 There are few images as revealing of Carlos Relvas's interest in stereoscopic photography as the
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3 self-portrait in which he depicts himself as photographer, flanked by the equipment, the furniture
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5 and the props of his studio (figure 1). Sitting on a neoclassic column lying on the floor, the still
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7 young photographer portrays himself in a meditative pose, turning his gaze away from the camera.
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9 Around him, displayed as if on a shop window, is all the equipment which would constitute the sce-
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11 nography of the first years of his photographic activity: a backdrop with the view through a half-
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13 open window over a temple in a garden, a railing, a polished table and two chairs with delicately
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15 sculpted backs, props and decorative objects, a majestic curtain and, on the floor at his feet, photo
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17 albums and a sturdy stereoscopic camera. Interacting with this camera, some of his stereoscopic
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19 cards of the Batalha Monastery are presented on the seat of a chair next to him. By slightly magni-
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21 fying the image it is possible to identify a view of the triumphal arch of the Imperfect Chapels as
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23 well as another of the Tombs of the Princes in the Founder's Chapel. These images are dated from
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25 1868, produced in Carlos Relvas' photo campaign on the Batalha Monastery, the first he undertook
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27 of a Portuguese monument, where he photographed with a monoscopic camera and a stereoscopic
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29 camera as well. Analysing this important information in the stereoscopic views inserted in the pho-
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31 tograph enabled us to date this self-portrait as slightly later than 1868, a period very close to Carlos
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33 Relvas's participation in the exhibition of the Fine Arts Promoting Society, in Lisbon (Flores,
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35 2019a), or his acceptance as member of the French Photographic Society, in Paris.
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47 With these elements in mind, it becomes even clearer that this self-portrait is connected to the
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49 launch of Carlos Relvas's career as photographer and with his public presentation in these Societies.
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51 The chosen rhetoric involved essentially a meticulous selection of objects. Each one of them is not
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53 only a sign of luxury but also of refined and artistic taste. The stereo cards and the stereo camera are
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55 an essential part of this highly connotative discourse. While the cards demonstrate his interest in
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57 heritage, namely in one of the most iconic monuments of Portugal and of its identity as Nation, the
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1 stereoscopic camera, on the other hand, a Dallmeyer J.H. model with sliding box dating from the
2 early 1860s, represents the state of the art among the more advanced, portable and also more pres-
3 tigious models of the timeⁱ. By portraying himself with this camera at his feet around 1868, Carlos
4 Relvas depicts himself as a photographer abreast of the latest technical developments in photog-
5 raphy, in possession of a studio as well-equipped as any of his contemporaries in Paris, London and
6 elsewhere in Europe. Were it not for the 18x24 size of this negative, and it might be used as *carte*
7 *de visite*.
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18 Today we can only see this image through its original negative in collodion, since no original prints
19 are known of it. Despite the gaps and the fine canals in the emulsion, its condition is impressive. It
20 is an essential self-portrait to understand the project undertaken by Carlos Relvas to foster the asser-
21 tion of photography as an art form. At the same time, it is a paradigmatic case of the importance
22 that the photographic negative can have, despite its systematic disregard in photography research.
23 The history of photography is a history of photographic prints rather than negatives. Surely it was in
24 the prints that the social history of photography lay, in other words, its circulation, its public recog-
25 nition in exhibitions, albums and other publications. Prints are the ‘final art’ and represent the en-
26 hancing of a perfected set of choices, which makes them, therefore, the type of documents that the
27 history of photography has favoured to ensure an assertive and more linear discourse. Conversely,
28 negatives are often synonymous of laboratory work, hesitations, excluded or retouched areas, more
29 abstract images which are harder to interpret, in short, of an uncertain and risky territory, continu-
30 ously ignored in photographic studies.
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52 This depreciation did not benefit the preservation of photographic negatives of historic value, and
53 for this reason few collections of photographic negatives from the 19th century managed to reach
54 us. On the other hand, even if preserved, the frailty of their emulsions and of their plates, almost al-
55 ways in glass, gradually inhibited their handling and the study of these images, their comparison
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and the possibility of joint analysis with their corresponding prints. Consequently, prints and negatives followed different and, for the most part, isolated lives. The same eventually happened to their studies, estranged in a kind of schism whose impact upon the knowledge of photographic works we have not yet been able to assess.

However, when a photograph is placed next to its negative, new information always emerges which expands the reading of the image, reconstituting a sort of lost original dialogue. Much of this new information derives from the fact that there are areas in the image of the negative which were excluded from the print due to an artistic culture of photography which greatly favoured reframing and other types of interventions to isolate and highlight parts of the images. In monoscopic photography these practices were (and still are) aesthetic options, greatly fostered by the large sizes of the negative plates and the sharpness of their emulsions. On the other hand, in the specific case of stereoscopic photography, reframing was not an aesthetic option but rather a technical requirement which lingered until the late 19th century, namely up to the Verascope formatⁱⁱ, in which we already see a coincidence between the integral image of the negative and the stereoscopic positive.

Until then, in stereoscopic photography the area of the negative tended to be bigger than the positive. This required the selection of a central area common to each of the two images of the negative. This selection was of such importance to ensure a good stereoscopic effect that some photographers adopted the practice of marking the emulsion of the negative with lines along which the paper or glass prints then had to be trimmed, thus preventing future mistakes. As a result, the wide margins that were excluded contain relevant information on the space and the context of some images, as well as objects, props and sometimes even people— studio assistants, for instance— which remained ‘outside the field’. This fact, since it is recurrent in this type of photography, makes the

comparison between the negative and the stereoscopic print even more relevant and even indispensable for an in-depth study of the 19th century photographers who engaged in stereoscopic photography.

This idea was the starting point for the research carried out for the past four years on Carlos Relvas, the most internationally recognized Portuguese photographer in the 19th century. The wide national, and especially international, acclaim that Carlos Relvas earned throughout his career (with medals in photo competitions in Madrid, Paris, Vienna, Berlin, Nice and Philadelphia, among other cities) has diverted the studies carried out so far on Carlos Relvas (Vicente, 1983; Faria e Pavão, 2014; Oliveira, 2006) from the beginning of his photographic activity, that is, from the period when Carlos Relvas combined monoscopic with stereoscopic photography, and was represented by both in European Salons.

Still, the recurrent insertion of stereo cameras or viewers as props in his portraits and self-portraits (figures 2 and 3)ⁱⁱⁱ constitutes an important warning call of the importance that stereoscopic photography must have had at the start of Carlos Relvas's photographic activity. The major obstacle to this analysis lay in the lack of a survey of existing collections. That was the first task of this research, and it was possible to identify eight public and private Portuguese collections^{iv}, as well as the collection of the French Photographic Society in Paris, of which Carlos Relvas became a member in 1869, and where he left the stereoscopic cards of the Society's exhibitions he participated in.

Whereas, as was indeed the case, the dispersion of his stereoscopic cards is remarkable (particularly considering that it is a relatively small set with a total of about 538 prints), the same cannot be said of a substantial part of his stereoscopic negatives which have miraculously been kept in the same institution until today, the Carlos Relvas House-Studio, as I will subsequently describe. The idea of bringing these negatives together with their respective prints and combining them on a digital platform gave rise to one of the main challenges of this project, that of creating a *Catalogue Raisonné*

of *Carlos Relvas's Stereoscopic Photography* which will be accessible online for public consultation and for new analyses by future researchers.

This catalogue was only possible because a large part of Carlos Relvas's photographic negatives survived until the present (4,174 collodion-on-glass negatives, 6,604 gelatine and silver bromide-on-glass negatives). Their survival is associated with a story that quite resembles that of finding a treasure and can be summarized thus: when Carlos Relvas died, in 1894, his second wife inherited the house where the couple had lived in Golegã, the same house which had been the spacious and luxurious photographic studio inaugurated by Carlos Relvas in 1875. Although the House-Studio, as it became known, was remodelled and converted into a dwelling with compartments on the first floor where once a magnificent photo studio operated, Carlos Relvas continued to photograph there, on that same first floor. To this end, he kept a small part of the former studio, facing north. This piece of information is important to understand why, even though this was a dwelling, thousands of photographs were kept there. Carlos Relvas's widow remarried, left Golegã and, as a matter of course, the house where she had lived there. The House-Studio would not be inhabited again, and its contents remained in a state of near neglect for about eighty-five years. It was only in 1978 that the house was donated to the Municipality of Golegã by the daughter of Carlos Relvas's widow. It was also then that the worth of its contents was verified by several specialists who visited the site. After specialized technicians from the Portuguese Institute of Museums visited the space, the newspapers could announce in 1981: 'Carlos Relvas's archive discovered in Golegã – Three hundred boxes with photos from the 19th century'.^v

The public recognition of the extraordinary value of this finding enabled a first inventory and treatment to be made on site by the National Photographic Archive starting in 1988. Nevertheless, the extent of the archive and its rundown condition required taking all the photographs to Lisbon in 1996, a move made feasible by means of a protocol signed between the Municipality of Golegã and

the Portuguese Institute of Museums. It was only in 2008 that Carlos Relvas's archive would return to Golegã^{vi}. In the following years, until 2012, the images were scanned, and they were restored and preserved by photographer Luis Pavão's company LUPA. In other words, although Carlos Relvas's archive was discovered in 1978, only after 2012 were technical conditions met for the images to be accessed and studied.

The *Catalogue Raisonné* gives visibility to the work these professional teams carried out, highlighting the importance of these negatives. The first form which seemed to us more symbolic and practical of emphasising the negative in the *Catalogue* was through the negative identification number. The identification numbers given to Carlos Relvas's negatives during the long process of conservation and cataloguing have been kept in use up to now. For this reason, and to avoid the unnecessary multiplication of code numbers of different types, the *Catalogue* not only kept the same numbers to identify the negatives, but it also used them as matrixes for all the corresponding prints identified in the collections. Consequently, any print of a collection that has its matching negative in the House-Studio was given, in this catalogue, the identification number of that negative plus the ending '001', '002' or '003'^{vii}. By anchoring the prints to the id. numbers of the negatives in this way, we are referring the collection to its original matrix and ensuring the long-term sustainability of those data since even if the print should change owner, its relation with the negative will be maintained. Moreover, this situation recovers the lost dialogue between these two typologies, while at the same time aggregating several collections and connecting the entities or institutions they belong to.

View of a river with peasants and photographic laboratory

From the 1850s onwards, there was all over the western world a second generation of amateur photographers who resisted the market success of photography and who extended the romantic spirit and the picturesque themes nurtured in the previous decade by the inventors and pioneers of photography. These photographers already benefitted from the stability of the photographic processes, as well as from the sale of cameras, lenses and paper which had quickly become accessible in specialized shops or on demand. Although many of them already used wet collodion^{viii}, the same emulsion which enabled the flourishing of portrait studios in the cities, their topics of interest remained associated with the world vision and the imagination of the pioneers of photography (Seiberling, 1986): rural landscapes, with a special focus on those including rivers or streams; historic monuments and ruins of churches or bridges; works of art and still nature; as well as specimens of the natural world, in particular bushes and old trees. All these topics were anachronistic in the 1860s when we consider that bore no relation to the ongoing transformations in the landscape and in the natural world as a result of new farming techniques and the railway. Still, to these photographers they represented the opportunity to continue to assert a place for photography in the art world as well as for the topics it still cherished.

Carlos Relvas wanted to be one of these photographers, as was acknowledged by the fact that he always combined his signature of his photos with the phrase 'Phot. Amateur'. His stereoscopic view of a river with peasants and a photographic laboratory (**figure 4**) participates of this picturesque imaginary, that is, of that seminal visual programme which the second generation of amateurs would come to extend. By representing the flow of the river with a long exposure time, the stream acquires a diaphanous, dream-like aspect, resembling a mist which suspends the landscape. On the bank of the river, human figures were placed at different distances to guide the gaze, from the two farm girls sitting on the cliff in the foreground to the background of the image, giving this composition a depth of field which is favourable for the stereoscopic effect. These human figures are used here to provide contrast with the scale of the rocky slopes, recreating the *topos* of romantic painting

in which man emerges minimal and questionable by the natural monument, as is the case of the figure seen in the background, at the top of the slope.

This stereoview by Carlos Relvas is paradigmatic not only by the theme and the composition chosen, but also by the fact that it registers the technique used for its own production, namely, the wet plate collodion. This self-reference is present in a detail which may go unnoticed to those observing the image without using a stereoscopic viewer, but which is quite evident to anyone using the device to see the image properly. The man in the white shirt at the centre of the image has raised one arm to support it on a tent. This tent is the photographic laboratory which the collodion emulsion required in outdoor photography, given the urgency of developing it while the plate was still wet. It is not unusual for these laboratories or other photo equipment to be found on the margins of the negatives in wet collodion. What is absolutely rare is for the laboratory to take centre stage in a photo print as an integral part of the setting. This man used as extra is one of Carlos Relvas's assistants and the collodion laboratory becomes a theme which, although it may be discreet and remain unnoticed to most eyes, it is an important *punctum* for any expert, since it symbolizes the technical requirements of photography and the effort required to transport and package all its materials. In the specific case of Carlos Relvas, this laboratory symbolizes the first twelve years of his career, from 1862 to 1874, in other words, the period when he used exclusively the collodion emulsion. Later Carlos Relvas would adopt the gelatine and silver salts emulsion but, in doing so, he would stop producing stereoscopic photos.

Carlos Relvas's stereoscopic photography was only produced during his 'collodion period'. In other words, stereoscopy and collodion were closely associated in his work, forming a sort of 'technical set' or unity. This conclusion is very recent and was only possible after the stereo negatives kept in the House-Studio had been identified and analysed. This study proved essential to clarify an issue

that was raised by the existing conservation inventories, which pointed to a total of about 1,150 stereo images produced in a strange range of stereo formats (twelve in total, from 8x20 cm to 24x30 cm). These data appeared inconsistent, since the variation in the format of the stereo negatives is usually quite narrow, as this is largely conditioned by the standard size of stereo mounts (c. 8,4x17,3 cm) where the prints are subsequently glued. What our work in the archive eventually revealed is that all negatives with two images had been considered stereoscopic, including those portraits aimed at the format of the cabinet card. The practice of making two exposures on the same plate for a portrait with the format of the cabinet card was fairly common, and there were cameras which accepted large-format plates specifically for this purpose. From the mid-1860s onwards, Carlos Relvas specialized in this type of portrait, which had a minimum format of 17x11cm, but which could also have much larger dimensions, thus explaining the wide variety of formats in double negatives. This possibility of a double negative allowed both two exposures with different poses by the model, and a variation of the exposure times between the two images as well. This option could prove useful for higher-quality printing. By way of illustration, we highlight one of these negatives showing the format of a cabinet card marked out in its emulsion, which would serve as instruction for the reframing to be carried out in the contact print (figure 5).

After this distinction between the types of double negatives was made, the number of stereo negatives was limited to 635 collodion items and, to our surprise at the time, a further thirteen were identified with gelatine and silver salts emulsion. Such a discrepancy as that shown by these figures always begins by suggesting to the researcher the worrying idea that a part of the negatives may have been lost. However, that was not quite what the analysis of these gelatine images would end up indicating. One feature common to all these negatives is their larger format (16.5x21.5 cm, in contrast with the 11x20 format of collodion plates), the same used in many of Carlos Relvas's monoscopic photographs produced with this same gelatine and silver salts emulsion. At first sight, this coincidence suggests that the camera used was the same, a camera which could have a sliding

lens and a 'movable central partition' to enable different uses, such as making cabinet portraits. Although there is no record of this camera, as we saw above, Carlos Relvas was used to this versatility in his collodion cameras, and maybe for that he tried to use this camera as stereoscopic camera with landscapes. However, the result was rather unimpressive. As can be seen in some of these photographs (figures 6 and 7) there is a mismatch between the size of the glass plates used and the image projection area. To put it differently, for a depth-of-field focus the camera lenses project to a smaller area, giving the impression of using a mask. On the other hand, there is a great parallax difference between both images (they are too far apart), and it will be difficult for them to work as stereoscopies.

Thus, these double images are not quite stereoscopies, which would indicate that when Carlos Relvas stopped using collodion and adopted the gelatine and silver salts emulsion, this change implied the use of a new camera and larger glass plates. Although this camera could have two lenses, its depth of field did not make them suitable for stereoscopic view but rather for cabinet portraits which could be prepared with two different exposures. This was 1875 and stereoscopy had already been discontinued in the rest of Europe. When he adopted the gelatine emulsion, Carlos Relvas did not renew his stereo cameras. Photographers were facing other challenges. Carlos Relvas was captivated both by gelatine instant photo and by phototype. One of these double gelatine photographs is indicative that these images may have been 'experiments'. It is a photo taken from the top of the roof of the House-Studio (figure 8). Although the glass ceiling of the studio can be seen in the foreground, the subject of the image is the works in the garden being built around the House-Studio, which occurred following the conclusion of the House-Studio in 1875. Dating this image enables us to place this set of double images in gelatine precisely in the transition period from collodion to gelatine, between 1873 and 1875. This set is indicative of Carlos Relvas's desire to continue to photograph in stereoscopy. However, it is also indicative of regrettably unsuitable equipment for the purpose.

1 Decidedly associated to collodion, Carlos Relvas's stereoscopic photography must have been pro-
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3 duced between 1862— the year which can, with greater certainty, be assumed to be the year Carlos
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5 Relvas began to photograph^{ix}— and 1873 or 1874. The interruption which happened in these latter
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7 dates is suggested by the information on the medals on the back of his stereo cards. While the cabi-
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9 net cards accumulate on the back all the medals and decorations Carlos Relvas received until his
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11 death in 1894, thus testifying to the long production period of the cabinet cards, the last series of the
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13 stereo cards, on the other hand, are dated from around 1873. This is a second iteration of the series
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15 entitled 'Vues du Portugal' (now only in French) on the back of which we can see the medal won in
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17 the 1873 Universal Exhibition of Vienna. There are no cards with subsequent medals and awards,
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19 which reveals that the interruption of the production of stereoviews was an abrupt one.
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35 *View of the waiting room of the House-Studio*

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40 When we observe the stereoview of the luxurious waiting room of Carlos Relvas's House-Studio,
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42 inaugurated in 1875 (figure 9), and we notice the discreet presence, among the sideboards on the
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44 right, of two magnificent column stereoscopes, it is impossible not to think that this entertainment
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46 offered to clients while they waited their turn to be photographed was no longer being produced by
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48 Carlos Relvas at the time. Oddly enough, these stereo viewers in the waiting room played a double
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50 role, which the owners of the collections of stereoscopic photography, generally speaking, ceased to
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52 be able to fulfil. In the first place, they preserved the images that were slowly becoming part of the
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54 past (even in those days these viewers were also known as 'archivers' since they served to store,
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56 catalogue and preserve). Secondly, they ensured public access to these images, providing suitable
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stereoscopic viewing for them. It is not possible to know what these viewers, now missing, showed.

Today it is as exciting to imagine the diversified stereoviews by Carlos Relvas presented in these viewers as it is to search in the new media for new ways of presenting and discovering them.

Digital media can bring a new significance to old media. Stereoscopic photography is one of those beneficiaries. The goal of the *Catalogue Raisonné* project is to restore public access to Carlos Relvas's stereoviews but also to enable a broader reading of this photographer's work. Several factors may contribute to this new reading of his images. First and foremost, the unprecedented aggregation of the collections of positives and negatives. The catalogue has enabled 635 stereo negatives of the House-Studio to be combined with 538 stereo cards. As a result, 184 matches were identified. In other words, about one third of the negatives were associated with their respective stereo cards. Although 451 negatives still lack their corresponding prints, these images may emerge in other collections and be integrated in the future. In the same way, also 187 of the positives found do not have their negative preserved in the House-Studio. Disregarding repetitions, it was ascertained that, considering the positives and negatives combined, the Catalogue integrates 784 different stereoviews. This figure, so far unknown, provides a good perspective of the dimension of Carlos Relvas's stereo production.

Another important contribution of the *Catalogue* consists in identifying and first dating the twelve series of stereo cards produced by Carlos Relvas. The card mounts were the common medium for albumin contact prints and enabled the practical handling of images in the viewers. As was the case with other national and foreign stereo photographers, these series stood out above all by the colours of the mounts where the photo prints in albumin were glued, or, as would be the case later, by their titles printed on these cards, such as 'Portugal' or 'Views of Portugal by C. Relvas, Amateur Phot.'. The wide diversity of colours in these cards (beige, grey, yellow, pink, purple, red, blue) is certainly related to personal choices but also to different purchases throughout these years. This element thus

1 becomes an important criterion for dating them, a practice also widely used in the study of other
2 photographers. The existence of series is indicative of images that belong to the same set and
3 which, for that reason, date approximately from the same time. The fact that in this period Carlos
4 Relvas created a vast and unprecedented group of twelve distinct series of stereo cards, not only had
5 the advantage of allowing short chronological intervals to be attributed to each series, but it also
6 suggested the strong possibility that some of these series were contemporary. This dating process
7 was a demanding exercise since their production period was, as we saw, quite short (1862-1874).
8 Still, it was a crucial task, considering that these series are the key to a more precise dating of the
9 negatives, so far dated in long intervals.

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11 Only in some instances was it possible to base the dating on the subjects of the stereoviews. This
12 happens, for example, when it is possible to associate some of the views to specific photo cam-
13 paigns, as is the case of the views of the Batalha Monastery, produced in 1868 (Figure 10). Never-
14 theless, Carlos Relvas sometimes used the same images in different series, even quite apart as re-
15 gards time, which represents an added difficulty when it comes to dating these series. The reason
16 for reusing these views is not clear yet, but it is possible that some images were more sought and
17 more appreciated by him. The views of the romantic Almourol Castle are a good example of an im-
18 age which insistently accompanies him throughout his career (figure 11). In some cases, it is thanks
19 to this repetition that it becomes possible to reconstruct some theme (or even narrative) sequences
20 of some series. Take, as illustration, the sequence of portraits of Carlos Relvas with his wife and
21 sister-in-law, in the Rio de Mouros valley, in Condeixa (figure 12) to understand how, in this case,
22 the *beige*, *yellow* and *Portugal* series complement one another.

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24 However, this repetition of some images throughout the series implies that other perivisual infor-
25 mation becomes more relevant for dating, namely the information kept in the back of these cards.

Much of this information is handwritten captions which enabled better identification of place, buildings and monuments. Comparing the handwriting in his two notebooks preserved in the House-Studio it could be observed that some of these captions were written by Carlos Relvas himself and included a date ('1869'), which was then validated for cataloguing. On the other hand, the reverse sides of the series 'Views from Coimbra' and 'Views from Condeixa and Outskirts' included precious tags where the titles of the series and the precise date of 'April 1867' were printed (figure 13). Unfortunately, these tags were discontinued in the following series. Finally, from 1870 onwards, some of the backs included the medals won in Paris (1870) and in Vienna (1873), making their dating easier.

His pride in these medals and the strong desire to disseminate them created an unusual situation in one of Carlos Relvas's stereo series. We are referring to the 'pink series', thus called because the front of the cards is pink while the back is orange with his first medal printed, a silver medal won in the 9th Exhibition of the French Photographic Society, (figures 14 and 15). What is unusual in this series is that the card used is the same of the 'Views from Portugal' series, but in the latter it was inverted, that is, the image was glued on the opposite side. This situation, apparently improvised, resulted in an original framing of the medal won in the French Photographic Society, (SFP) with the title of the series 'Views from Portugal' printed on both margins in Portuguese and French. In this new visual composition of the back of the mount, Carlos Relvas managed to associate his first medal with the 'Views from Portugal' stereo series, the same series with which he participated in that exhibition in Paris. This may have been a way of acknowledging the importance of this series for winning the prize. In the catalogue of this 1870 exhibition, these images are not listed, they are merely mentioned as 'A large collection of stereo prints on paper'. Besides the 'attempts at the Marion process, in charcoal' also presented in 1870 — a recent innovation that Carlos Relvas was beginning to test—, the stereoviews must surely have been one of the main reasons for the recognition of Carlos Relvas's work in this exhibition. This inference is also suggested by the fact that in this

Society's following exhibition, in 1874, Carlos Relvas perfected the way he presented a considerable set of fifty two stereo views which he submitted to the exhibition, providing detailed captions for the catalogue for the first time and, also for the first time, storing them in two elegant red cases on which he engraved in golden letters: *Épreuves Stéréoscopiques de Carlos Relvas, Amateur. Portugal*'. Thus, it is possible to conclude that the pink series of 1870 is, indeed, not only a small subseries of the 'Views from Portugal' begun in 1869, but also an important symbol of the international recognition given to Carlos Relvas's stereo photography (Flores, 2019a).

The presentation in the catalogue of the twelve series and their time intervals will enable researchers to analyse the evolution of their main subjects. Generally speaking, the landscape, the exterior views of cities and buildings, as well as of monuments, are the predominant subjects. There are few outside portraits, and studio portraits are almost non-existent. The two better known studio stereo portraits represent his family and Carlos Relvas himself in a self-portrait with his camera in his first photographic studio (figure 16). Even monuments are completely absent from the first series (Beige cards, 1862-67; 'Views from Coimbra' and 'Views from Condeixa and Surrounding Area', 1867).

Only from 1868 onwards would they feature prominently in the 'Portugal' and 'Views from Portugal' series, whose objective was to provide a strong representation of Portugal and its heritage in the exhibitions of the French Photographic Society. The dimension of these stereo series by Carlos Relvas is not known, also because there was never a catalogue to order these views^x. In the *Catalogue Raisonné*, the series with more items is the 'Views from Portugal', with 238 cards. Nevertheless, this figure cannot be used to assess its breadth. Conversely, there is a handwritten number sequence left on the back of the cards, probably by collectors, which may be an important indicator of the range of the series. Analysing this numbering, it is surprising to notice, for instance, that the first 'beige' and 'grey' series, dated between 1862 and 1867, should reach such figures as 253 and 287, respectively, thus giving these first series a very unpredictable range.

Besides enabling more precise dating of the negatives, dating the series also enabled the analysis of the formats of their respective negatives. The formats of Carlos Relvas's stereo negatives range from 8x20 cm and 9x20 cm to 11x20 cm and 12x20 cm. Among them, the predominant size is 11x20, a format common to the stereo series he produced from 1862 to 1874. It is possible to claim that it was with this stereo format that Carlos Relvas began to photograph as this is the format which is the basis of his first card series between 1862 and 1867 (series with beige and grey cards, as well as the 'Views from Coimbra' and 'Views from Condeixa' series). Carlos Relvas would only combine this format with others for a very short period of time, between 1867 and 1869. This is the case of the 8x20-cm format, exclusively used in the 'C Relvas' series [Yellow Card with dry stamp] and the 9x20 and 12x20 formats which gave rise to the 'Portugal' series and the 'yellow card' series. These new formats would be discontinued from 1869 onwards, a time when the 11x20 format once again asserted itself, featuring predominantly, for example, in the series 'Views from Portugal by C. Relvas, Amateur Phot.', in all of its iterations (orange, blue or yellow mounts).

One of the factors that will most contribute to this *Catalogue* allowing a better reading of Carlos Relvas's stereo work is that each image researched is associated on the programmed interface to its respective 'family of images', that is, to its negative (which can also be seen here in its positivised version), and also to the various existing prints, from the same or from different series, duly accompanied by their backs (figure 17). The concept of 'family of images' upon which this catalogue is based found its reference and main inspiration in 'The William Henry Fox Talbot Catalogue Raisonné' developed by photography historian Larry J. Schaaf, and by a team of researchers from Oxford University. Released online in 2017, this catalogue expects to publish 25,000 images by Fox Talbot, and is presented as 'The complete corpus of the works of the Victorian inventor of photography on paper'. The joint presentation of negatives with their respective positives is one of the chief assets of this Fox Talbot Catalogue, which values the heuristic dimension of the negative and brings back the calotype experience, of being able to see the world in inverted tones^{xi}.

1 In the case of Carlos Relvas's Catalogue, the main challenge in the presentation of these images re-
2
3 garded the always difficult stereoscopic viewing. After some solutions were tested, we opted to in-
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5 troduce gif animations in a chosen set of images. This animation is included in the 'family' of the
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7 images, enabling better understanding and experience of the stereo effect of the original. Still, this
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9 idea of 'family' eventually had an unexpected ramification when our research identified in a private
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11 collection a set of 38 glass plates of a projection lantern made from Carlos Relvas's stereo negatives
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13 at the House-Studio (figure 18). The dating of these images is imprecise but the fact that photo-
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15 graphs of the Retrospective Exhibition of Portuguese and Spanish Ornamental Art, held in Lisbon
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17 in 1882, are part of this collection suggests that they were a belated 'reutilization' of their stereo
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19 negatives. In other words, these images are a kind of second generation of prints of the stereo nega-
20
21 tives, they are part of the same 'family of images', so that including them in this catalogue was con-
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23 sidered fundamental. On the other hand, they also point to Carlos Relvas's new interests related to
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25 photographic transparencies for magical lanterns and to the art of image projection, as is also sug-
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27 gested by some of the books he acquired in the last years of his life^{xii}.
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37 By including these glass projections, the first iteration of the *Catalogue Raisonné* of Carlos Rel-
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39 vas's *Stereoscopic Photography* will present a total of 1,211 photographic items, to which 116 files
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41 with gif animations and 259 images of selected backs with relevant information will be associated.
42
43 The *Catalogue Raisonné* has the same structure as an online searchable database, which allows us
44
45 to carry out simple or advanced searches from a broad set of metadata regarding the item, the con-
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47 tent of the image and its context, with a total of fifteen data entries. Besides these searches, the *Cat-*
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49 *alogue Raisonné* may also be used as a lab to observe in detail the magnified images, both positives
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51 and negatives, and it is possible to select some of them for subsequent comparison. And since the
52
53 goal of this Catalogue is to be as comprehensive as possible, there will be a feature to enable users
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55 to suggest new images or contents which may enrich and improve the information presented.
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1 One of the possible developments for this *Catalogue* will be the integration of Carlos Relvas's
2
3 monoscopic photographs. Initially, priority would have to be given to the integration of all the
4
5 monoscopic photos with the same subjects and the same perspectives as the stereo photos. This hap-
6
7 pens fairly frequently in Carlos Relvas's work, especially regarding the photos of monuments,
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9 where the similarities between the monoscopic and the stereoscopic versions often seem to derive
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11 from a true game of mirrors. By presenting this visual diversity, the *Catalogue* will contribute to
12
13 reveal the 19th-century interest of photography in making the best of these two visual cultures.
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Endnotes

ⁱ The sophistication of the Dallmeyer camera was acknowledged not only by its considerable portability but also because it had a ‘movable central partition’ which enabled the camera to be used for monoscopic photographs as well, using the full-size plate or merely parts of it, should one wish to make ‘*cartes de visite*’.

ⁱⁱ The French brand *Verascope* was founded by Jules Richard and recognized as the most popular among amateurs in the early 20th century due to the small size of its plates (4.5 x 10.7 cm).

ⁱⁱⁱ Besides his self-portrait analysed above, another one, simpler in the number of objects featured, once again represents Carlos Relvas accompanied by a luxurious stereoscopic camera, quite possibly a Murray & Heath model from the early 1860s (Figure 3). The prestige associated to the brand Murray & Heath is greatly owed to the fact that this optical company from London collaborated with Charles Wheatstone, the English physicist who invented the first stereoscope, and in 1832 produced for him specular and prismatic stereoscopic viewers (Wade, 2019). Should it be confirmed that this is indeed the camera next to Carlos Relvas in this portrait, its symbolism acquires added value.

^{iv} We are referring to the public collections of Casa dos Patudos — Alpiarça Museum, of Cinemateca Portuguesa, of the Photographic Archive of the General-Directorate of Cultural Heritage, of the Carlos Relvas House-Studio, and to the private collections of João P. Edward Clode, António Pedro Vicente, Luís Beja and Luís Pereira.

^v *Diário de Notícias*, 6 August 1981, p. 8.

^{vi} Carlos Relvas’s archive, kept in the House-Studio, is constituted today by 12,580 photographic items. Besides the negatives already mentioned, 146 albumin prints and 1,656 phototypes are preserved, as well as photo albums, handwritten notebooks, cameras, props and studio furniture, as well as a large number of books, most of which on photography.

^{vii} For instance, the first print identified of the negative 00034-000-016 will be given the id. number 00034-000-016-001. Should this print already have a number previously given to it by its host institution, the record of that id. number is made and kept in the database as ‘original id. number’. Furthermore, it was established as rule that whenever the print has no matching negative, this ‘original id. number’ works as the only number for the image, and no other supplementary number was created. Regarding prints belonging to private collections which have no original id. number nor any associated negative, the project gave them a code using the following nomenclature: CR.JC.P.01.0001 (CR= Carlos Relvas; JC= João P. Edward Clode, collector’s name; P= Positive; 01= number of the series of the stereo card; 0001= number of the item).

^{viii} In 1851, Frederick Scott Archer (1813-1857) invented a process to obtain negatives using a solution of collodion on glass plates. It was a complex procedure since it required that the plates be exposed and developed while still wet, which implied the transport of a laboratory whenever the work was done outdoors. Its major advantage lay in the combination of short exposure times with high image sharpness. Its positives were made using albumen paper or prints in ambrotype and ferrotype. The immediate release of its patent was one of the reasons why wet collodion was the predominant emulsion of photographic negative in the 19th century.

^{ix} The indication of 1862 as the year when Carlos Relvas began his photographic activity does not derive from any written records. The oldest existing record dates from April 1867, and is the label glued to the back of a few stereo cards of the ‘Views from Coimbra’ series. The year 1862 is rather the result of an estimate made from the analysis of some of his early photographs, namely the family portraits where his offspring are still children. On this subject, it is important to highlight that there are other family images, such as a possible portrait of his mother, Clementina Amália de Mascarenhas Pimenta Relvas, who died in 1859. Should her identity be confirmed, it will be possible to push back the beginning of Carlos Relvas’s photographic activity to the late 1850s.

^x Carlos Relvas came from a wealthy family of farmers and we have no way of proving he ever sold his stereoviews. To a certain extent, the ‘Amateur’ in his signature alluded precisely to that. The

lack of catalogues of the Portuguese photographers who engaged in the practice of stereo photography is one of the major limitations of this research in Portugal (Flores, 2019b).

^{xi} The project can be accessed at <https://talbot.bodleian.ox.ac.uk>

^{xii} We refer, for example, to the 1892 book by H. Fourtier, *La pratique des projections: étude méthodique des appareils, les accessoires, usages et applications diverses des projections, conduite des séances*, included in one of the invoices addressed to Carlos Relvas by Lisbon bookseller and publisher M. Gomes in 1894, and which are part of the collection of Casa dos Patudos— Alpiarça Museum.

Wet collodion and a pair of lenses

Carlos Relvas's Stereoscopic Photography: the digital reunion of negatives and prints

Abstract

The beginning the photographic activity of Carlos Relvas (1838-1894) is closely connected to stereoscopic photography. This fact has not always been quite clear since Carlos Relvas's stereoviews have remained one of the least known sides of his photographic work. The dispersion of his stereo cards among several public and private collections, as well as the long period of inaccessibility to his archive of negatives, hindered the perception of the meaningful work that Carlos Relvas carried out in the production of stereoscopic views of Portugal. One of the main challenges of the 21st-century studies of photography lies in the opportunity to publish online images from early photography collections. Digital media can enhance these collections and expand their reading. Among the main beneficiaries will be photographic negatives, which will gain new heuristic importance in this new environment of mediations. That was our intuition by developing a digital catalogue for the collections of Carlos Relvas's stereoscopic photography aiming to bring together and combine all his negatives and positives and thus, for the first time, allow a comprehensive image of his passion for this type of photography.

Keywords: Carlos Relvas, Portuguese Nineteenth Century Photography; Stereoscopic Photography; Collodion-on-glass negative; Series; Catalogue Raisonné

Self-portrait with stereoscopic camera

There are few images as revealing of Carlos Relvas's interest in stereoscopic photography as the self-portrait in which he depicts himself as photographer, flanked by the equipment, the furniture and the props of his studio (figure 1). Sitting on a neoclassic column lying on the floor, the still young photographer portrays himself in a meditative pose, turning his gaze away from the camera. Around him, displayed as if on a shop window, is all the equipment which would constitute the scenography of the first years of his photographic activity: a backdrop with the view through a half-open window over a temple in a garden, a railing, a polished table and two chairs with delicately sculpted backs, props and decorative objects, a majestic curtain and, on the floor at his feet, photo albums and a sturdy stereoscopic camera. Interacting with this camera, some of his stereoscopic cards of the Batalha Monastery are presented on the seat of a chair next to him. By slightly magnifying the image it is possible to identify a view of the triumphal arch of the Imperfect Chapels as well as another of the Tombs of the Princes in the Founder's Chapel. These images are dated from 1868, produced in Carlos Relvas' photo campaign on the Batalha Monastery, the first he undertook of a Portuguese monument, where he photographed with a monoscopic camera and a stereoscopic camera as well. Analysing this important information in the stereoscopic views inserted in the photograph enabled us to date this self-portrait as slightly later than 1868, a period very close to Carlos Relvas's participation in the exhibition of the Fine Arts Promoting Society, in Lisbon (Flores, 2019a), or his acceptance as member of the French Photographic Society, in Paris.

With these elements in mind, it becomes even clearer that this self-portrait is connected to the launch of Carlos Relvas's career as photographer and with his public presentation in these Societies. The chosen rhetoric involved essentially a meticulous selection of objects. Each one of them is not only a sign of luxury but also of refined and artistic taste. The stereo cards and the stereo camera are an essential part of this highly connotative discourse. While the cards demonstrate his interest in heritage, namely in one of the most iconic monuments of Portugal and of its identity as Nation, the

stereoscopic camera, on the other hand, a Dallmeyer J.H. model with sliding box dating from the early 1860s, represents the state of the art among the more advanced, portable and also more prestigious models of the time¹. By portraying himself with this camera at his feet around 1868, Carlos Relvas depicts himself as a photographer abreast of the latest technical developments in photography, in possession of a studio as well-equipped as any of his contemporaries in Paris, London and elsewhere in Europe. Were it not for the 18x24 size of this negative, and it might be used as *carte de visite*.

Today we can only see this image through its original negative in collodion, since no original prints are known of it. Despite the gaps and the fine canals in the emulsion, its condition is impressive. It is an essential self-portrait to understand the project undertaken by Carlos Relvas to foster the assertion of photography as an art form. At the same time, it is a paradigmatic case of the importance that the photographic negative can have, despite its systematic disregard in photography research. The history of photography is a history of photographic prints rather than negatives. Surely it was in the prints that the social history of photography lay, in other words, its circulation, its public recognition in exhibitions, albums and other publications. Prints are the 'final art' and represent the enhancing of a perfected set of choices, which makes them, therefore, the type of documents that the history of photography has favoured to ensure an assertive and more linear discourse. Conversely, negatives are often synonymous of laboratory work, hesitations, excluded or retouched areas, more abstract images which are harder to interpret, in short, of an uncertain and risky territory, continuously ignored in photographic studies.

This depreciation did not benefit the preservation of photographic negatives of historic value, and for this reason few collections of photographic negatives from the 19th century managed to reach us. On the other hand, even if preserved, the frailty of their emulsions and of their plates, almost always in glass, gradually inhibited their handling and the study of these images, their comparison

and the possibility of joint analysis with their corresponding prints. Consequently, prints and negatives followed different and, for the most part, isolated lives. The same eventually happened to their studies, estranged in a kind of schism whose impact upon the knowledge of photographic works we have not yet been able to assess.

However, when a photograph is placed next to its negative, new information always emerges which expands the reading of the image, reconstituting a sort of lost original dialogue. Much of this new information derives from the fact that there are areas in the image of the negative which were excluded from the print due to an artistic culture of photography which greatly favoured reframing and other types of interventions to isolate and highlight parts of the images. In monoscopic photography these practices were (and still are) aesthetic options, greatly fostered by the large sizes of the negative plates and the sharpness of their emulsions. On the other hand, in the specific case of stereoscopic photography, reframing was not an aesthetic option but rather a technical requirement which lingered until the late 19th century, namely up to the Verascope formatⁱⁱ, in which we already see a coincidence between the integral image of the negative and the stereoscopic positive.

Until then, in stereoscopic photography the area of the negative tended to be bigger than the positive. This required the selection of a central area common to each of the two images of the negative. This selection was of such importance to ensure a good stereoscopic effect that some photographers adopted the practice of marking the emulsion of the negative with lines along which the paper or glass prints then had to be trimmed, thus preventing future mistakes. As a result, the wide margins that were excluded contain relevant information on the space and the context of some images, as well as objects, props and sometimes even people— studio assistants, for instance— which remained ‘outside the field’. This fact, since it is recurrent in this type of photography, makes the comparison between the negative and the stereoscopic print even more relevant and even

indispensable for an in-depth study of the 19th century photographers who engaged in stereoscopic photography.

This idea was the starting point for the research carried out for the past four years on Carlos Relvas, the most internationally recognized Portuguese photographer in the 19th century. The wide national, and especially international, acclaim that Carlos Relvas earned throughout his career (with medals in photo competitions in Madrid, Paris, Vienna, Berlin, Nice and Philadelphia, among other cities) has diverted the studies carried out so far on Carlos Relvas (Vicente, 1983; Faria e Pavão, 2014; Oliveira, 2006) from the beginning of his photographic activity, that is, from the period when Carlos Relvas combined monoscopic with stereoscopic photography, and was represented by both in European Salons.

Still, the recurrent insertion of stereo cameras or viewers as props in his portraits and self-portraits (figures 2 and 3)ⁱⁱⁱ constitutes an important warning call of the importance that stereoscopic photography must have had at the start of Carlos Relvas's photographic activity. The major obstacle to this analysis lay in the lack of a survey of existing collections. That was the first task of this research, and it was possible to identify eight public and private Portuguese collections^{iv}, as well as the collection of the French Photographic Society in Paris, of which Carlos Relvas became a member in 1869, and where he left the stereoscopic cards of the Society's exhibitions he participated in. Whereas, as was indeed the case, the dispersion of his stereoscopic cards is remarkable (particularly considering that it is a relatively small set with a total of about 538 prints), the same cannot be said of a substantial part of his stereoscopic negatives which have miraculously been kept in the same institution until today, the Carlos Relvas House-Studio, as I will subsequently describe. The idea of bringing these negatives together with their respective prints and combining them on a digital platform gave rise to one of the main challenges of this project, that of creating a

Catalogue Raisonné of Carlos Relvas's Stereoscopic Photography which will be accessible online for public consultation and for new analyses by future researchers.

This catalogue was only possible because a large part of Carlos Relvas's photographic negatives survived until the present (4,174 collodion-on-glass negatives, 6,604 gelatine and silver bromide-on-glass negatives). Their survival is associated with a story that quite resembles that of finding a treasure and can be summarized thus: when Carlos Relvas died, in 1894, his second wife inherited the house where the couple had lived in Golegã, the same house which had been the spacious and luxurious photographic studio inaugurated by Carlos Relvas in 1875. Although the House-Studio, as it became known, was remodelled and converted into a dwelling with compartments on the first floor where once a magnificent photo studio operated, Carlos Relvas continued to photograph there, on that same first floor. To this end, he kept a small part of the former studio, facing north. This piece of information is important to understand why, even though this was a dwelling, thousands of photographs were kept there. Carlos Relvas's widow remarried, left Golegã and, as a matter of course, the house where she had lived there. The House-Studio would not be inhabited again, and its contents remained in a state of near neglect for about eighty-five years. It was only in 1978 that the house was donated to the Municipality of Golegã by the daughter of Carlos Relvas's widow. It was also then that the worth of its contents was verified by several specialists who visited the site. After specialized technicians from the Portuguese Institute of Museums visited the space, the newspapers could announce in 1981: 'Carlos Relvas's archive discovered in Golegã – Three hundred boxes with photos from the 19th century'.^v

The public recognition of the extraordinary value of this finding enabled a first inventory and treatment to be made on site by the National Photographic Archive starting in 1988. Nevertheless, the extent of the archive and its rundown condition required taking all the photographs to Lisbon in 1996, a move made feasible by means of a protocol signed between the Municipality of Golegã and

the Portuguese Institute of Museums. It was only in 2008 that Carlos Relvas's archive would return to Golegã^{vi}. In the following years, until 2012, the images were scanned, and they were restored and preserved by photographer Luis Pavão's company LUPA. In other words, although Carlos Relvas's archive was discovered in 1978, only after 2012 were technical conditions met for the images to be accessed and studied.

The *Catalogue Raisonné* gives visibility to the work these professional teams carried out, highlighting the importance of these negatives. The first form which seemed to us more symbolic and practical of emphasising the negative in the *Catalogue* was through the negative identification number. The identification numbers given to Carlos Relvas's negatives during the long process of conservation and cataloguing have been kept in use up to now. For this reason, and to avoid the unnecessary multiplication of code numbers of different types, the *Catalogue* not only kept the same numbers to identify the negatives, but it also used them as matrixes for all the corresponding prints identified in the collections. Consequently, any print of a collection that has its matching negative in the House-Studio was given, in this catalogue, the identification number of that negative plus the ending '001', '002' or '003'^{vii}. By anchoring the prints to the id. numbers of the negatives in this way, we are referring the collection to its original matrix and ensuring the long-term sustainability of those data since even if the print should change owner, its relation with the negative will be maintained. Moreover, this situation recovers the lost dialogue between these two typologies, while at the same time aggregating several collections and connecting the entities or institutions they belong to.

View of a river with peasants and photographic laboratory

From the 1850s onwards, there was all over the western world a second generation of amateur photographers who resisted the market success of photography and who extended the romantic spirit and the picturesque themes nurtured in the previous decade by the inventors and pioneers of photography. These photographers already benefitted from the stability of the photographic processes, as well as from the sale of cameras, lenses and paper which had quickly become accessible in specialized shops or on demand. Although many of them already used wet collodion^{viii}, the same emulsion which enabled the flourishing of portrait studios in the cities, their topics of interest remained associated with the world vision and the imagination of the pioneers of photography (Seiberling, 1986): rural landscapes, with a special focus on those including rivers or streams; historic monuments and ruins of churches or bridges; works of art and still nature; as well as specimens of the natural world, in particular bushes and old trees. All these topics were anachronistic in the 1860s when we consider that bore no relation to the ongoing transformations in the landscape and in the natural world as a result of new farming techniques and the railway. Still, to these photographers they represented the opportunity to continue to assert a place for photography in the art world as well as for the topics it still cherished.

Carlos Relvas wanted to be one of these photographers, as was acknowledged by the fact that he always combined his signature of his photos with the phrase 'Phot. Amateur'. His stereoscopic view of a river with peasants and a photographic laboratory (**figure 4**) participates of this picturesque imaginary, that is, of that seminal visual programme which the second generation of amateurs would come to extend. By representing the flow of the river with a long exposure time, the stream acquires a diaphanous, dream-like aspect, resembling a mist which suspends the landscape. On the bank of the river, human figures were placed at different distances to guide the gaze, from the two farm girls sitting on the cliff in the foreground to the background of the image, giving this composition a depth of field which is favourable for the stereoscopic effect. These human figures are used here to provide contrast with the scale of the rocky slopes, recreating the *topos* of romantic

painting in which man emerges minimal and questionable by the natural monument, as is the case of the figure seen in the background, at the top of the slope.

This stereoview by Carlos Relvas is paradigmatic not only by the theme and the composition chosen, but also by the fact that it registers the technique used for its own production, namely, the wet plate collodion. This self-reference is present in a detail which may go unnoticed to those observing the image without using a stereoscopic viewer, but which is quite evident to anyone using the device to see the image properly. The man in the white shirt at the centre of the image has raised one arm to support it on a tent. This tent is the photographic laboratory which the collodion emulsion required in outdoor photography, given the urgency of developing it while the plate was still wet. It is not unusual for these laboratories or other photo equipment to be found on the margins of the negatives in wet collodion. What is absolutely rare is for the laboratory to take centre stage in a photo print as an integral part of the setting. This man used as extra is one of Carlos Relvas's assistants and the collodion laboratory becomes a theme which, although it may be discreet and remain unnoticed to most eyes, it is an important *punctum* for any expert, since it symbolizes the technical requirements of photography and the effort required to transport and package all its materials. In the specific case of Carlos Relvas, this laboratory symbolizes the first twelve years of his career, from 1862 to 1874, in other words, the period when he used exclusively the collodion emulsion. Later Carlos Relvas would adopt the gelatine and silver salts emulsion but, in doing so, he would stop producing stereoscopic photos.

Carlos Relvas's stereoscopic photography was only produced during his 'collodion period'. In other words, stereoscopy and collodion were closely associated in his work, forming a sort of 'technical set' or unity. This conclusion is very recent and was only possible after the stereo negatives kept in the House-Studio had been identified and analysed. This study proved essential to clarify an issue that was raised by the existing conservation inventories, which pointed to a total of about 1,150

stereo images produced in a strange range of stereo formats (twelve in total, from 8x20 cm to 24x30 cm). These data appeared inconsistent, since the variation in the format of the stereo negatives is usually quite narrow, as this is largely conditioned by the standard size of stereo mounts (c. 8,4x17,3 cm) where the prints are subsequently glued. What our work in the archive eventually revealed is that all negatives with two images had been considered stereoscopic, including those portraits aimed at the format of the cabinet card. The practice of making two exposures on the same plate for a portrait with the format of the cabinet card was fairly common, and there were cameras which accepted large-format plates specifically for this purpose. From the mid-1860s onwards, Carlos Relvas specialized in this type of portrait, which had a minimum format of 17x11cm, but which could also have much larger dimensions, thus explaining the wide variety of formats in double negatives. This possibility of a double negative allowed both two exposures with different poses by the model, and a variation of the exposure times between the two images as well. This option could prove useful for higher-quality printing. By way of illustration, we highlight one of these negatives showing the format of a cabinet card marked out in its emulsion, which would serve as instruction for the reframing to be carried out in the contact print (figure 5).

After this distinction between the types of double negatives was made, the number of stereo negatives was limited to 635 collodion items and, to our surprise at the time, a further thirteen were identified with gelatine and silver salts emulsion. Such a discrepancy as that shown by these figures always begins by suggesting to the researcher the worrying idea that a part of the negatives may have been lost. However, that was not quite what the analysis of these gelatine images would end up indicating. One feature common to all these negatives is their larger format (16.5x21.5 cm, in contrast with the 11x20 format of collodion plates), the same used in many of Carlos Relvas's monoscopic photographs produced with this same gelatine and silver salts emulsion. At first sight, this coincidence suggests that the camera used was the same, a camera which could have a sliding lens and a 'movable central partition' to enable different uses, such as making cabinet portraits.

Although there is no record of this camera, as we saw above, Carlos Relvas was used to this versatility in his collodion cameras, and maybe for that he tried to use this camera as stereoscopic camera with landscapes. However, the result was rather unimpressive. As can be seen in some of these photographs (figures 6 and 7) there is a mismatch between the size of the glass plates used and the image projection area. To put it differently, for a depth-of-field focus the camera lenses project to a smaller area, giving the impression of using a mask. On the other hand, there is a great parallax difference between both images (they are too far apart), and it will be difficult for them to work as stereoscopies.

Thus, these double images are not quite stereoscopies, which would indicate that when Carlos Relvas stopped using collodion and adopted the gelatine and silver salts emulsion, this change implied the use of a new camera and larger glass plates. Although this camera could have two lenses, its depth of field did not make them suitable for stereoscopic view but rather for cabinet portraits which could be prepared with two different exposures. This was 1875 and stereoscopy had already been discontinued in the rest of Europe. When he adopted the gelatine emulsion, Carlos Relvas did not renew his stereo cameras. Photographers were facing other challenges. Carlos Relvas was captivated both by gelatine instant photo and by phototype. One of these double gelatine photographs is indicative that these images may have been ‘experiments’. It is a photo taken from the top of the roof of the House-Studio (figure 8). Although the glass ceiling of the studio can be seen in the foreground, the subject of the image is the works in the garden being built around the House-Studio, which occurred following the conclusion of the House-Studio in 1875. Dating this image enables us to place this set of double images in gelatine precisely in the transition period from collodion to gelatine, between 1873 and 1875. This set is indicative of Carlos Relvas’s desire to continue to photograph in stereoscopy. However, it is also indicative of regrettably unsuitable equipment for the purpose.

Decidedly associated to collodion, Carlos Relvas's stereoscopic photography must have been produced between 1862— the year which can, with greater certainty, be assumed to be the year Carlos Relvas began to photograph^{ix}— and 1873 or 1874. The interruption which happened in these latter dates is suggested by the information on the medals on the back of his stereo cards. While the cabinet cards accumulate on the back all the medals and decorations Carlos Relvas received until his death in 1894, thus testifying to the long production period of the cabinet cards, the last series of the stereo cards, on the other hand, are dated from around 1873. This is a second iteration of the series entitled 'Vues du Portugal' (now only in French) on the back of which we can see the medal won in the 1873 Universal Exhibition of Vienna. There are no cards with subsequent medals and awards, which reveals that the interruption of the production of stereoviews was an abrupt one.

View of the waiting room of the House-Studio

When we observe the stereoview of the luxurious waiting room of Carlos Relvas's House-Studio, inaugurated in 1875 (figure 9), and we notice the discreet presence, among the sideboards on the right, of two magnificent column stereoscopes, it is impossible not to think that this entertainment offered to clients while they waited their turn to be photographed was no longer being produced by Carlos Relvas at the time. Oddly enough, these stereo viewers in the waiting room played a double role, which the owners of the collections of stereoscopic photography, generally speaking, ceased to be able to fulfil. In the first place, they preserved the images that were slowly becoming part of the past (even in those days these viewers were also known as 'archivers' since they served to store, catalogue and preserve). Secondly, they ensured public access to these images, providing suitable stereoscopic viewing for them. It is not possible to know what these viewers, now missing, showed.

Today it is as exciting to imagine the diversified stereoviews by Carlos Relvas presented in these viewers as it is to search in the new media for new ways of presenting and discovering them.

Digital media can bring a new significance to old media. Stereoscopic photography is one of those beneficiaries. The goal of the *Catalogue Raisonné* project is to restore public access to Carlos Relvas's stereoviews but also to enable a broader reading of this photographer's work. Several factors may contribute to this new reading of his images. First and foremost, the unprecedented aggregation of the collections of positives and negatives. The catalogue has enabled 635 stereo negatives of the House-Studio to be combined with 538 stereo cards. As a result, 184 matches were identified. In other words, about one third of the negatives were associated with their respective stereo cards. Although 451 negatives still lack their corresponding prints, these images may emerge in other collections and be integrated in the future. In the same way, also 187 of the positives found do not have their negative preserved in the House-Studio. Disregarding repetitions, it was ascertained that, considering the positives and negatives combined, the Catalogue integrates 784 different stereoviews. This figure, so far unknown, provides a good perspective of the dimension of Carlos Relvas's stereo production.

Another important contribution of the *Catalogue* consists in identifying and first dating the twelve series of stereo cards produced by Carlos Relvas. The card mounts were the common medium for albumin contact prints and enabled the practical handling of images in the viewers. As was the case with other national and foreign stereo photographers, these series stood out above all by the colours of the mounts where the photo prints in albumin were glued, or, as would be the case later, by their titles printed on these cards, such as 'Portugal' or 'Views of Portugal by C. Relvas, Amateur Phot.'. The wide diversity of colours in these cards (beige, grey, yellow, pink, purple, red, blue) is certainly related to personal choices but also to different purchases throughout these years. This element thus becomes an important criterion for dating them, a practice also widely used in the study of other

photographers. The existence of series is indicative of images that belong to the same set and which, for that reason, date approximately from the same time. The fact that in this period Carlos Relvas created a vast and unprecedented group of twelve distinct series of stereo cards, not only had the advantage of allowing short chronological intervals to be attributed to each series, but it also suggested the strong possibility that some of these series were contemporary. This dating process was a demanding exercise since their production period was, as we saw, quite short (1862-1874). Still, it was a crucial task, considering that these series are the key to a more precise dating of the negatives, so far dated in long intervals.

Only in some instances was it possible to base the dating on the subjects of the stereoviews. This happens, for example, when it is possible to associate some of the views to specific photo campaigns, as is the case of the views of the Batalha Monastery, produced in 1868 (Figure 10). Nevertheless, Carlos Relvas sometimes used the same images in different series, even quite apart as regards time, which represents an added difficulty when it comes to dating these series. The reason for reusing these views is not clear yet, but it is possible that some images were more sought and more appreciated by him. The views of the romantic Almourol Castle are a good example of an image which insistently accompanies him throughout his career (figure 11). In some cases, it is thanks to this repetition that it becomes possible to reconstruct some theme (or even narrative) sequences of some series. Take, as illustration, the sequence of portraits of Carlos Relvas with his wife and sister-in-law, in the Rio de Mouros valley, in Condeixa (figure 12) to understand how, in this case, the *beige*, *yellow* and *Portugal* series complement one another.

However, this repetition of some images throughout the series implies that other perivisual information becomes more relevant for dating, namely the information kept in the back of these cards. Much of this information is handwritten captions which enabled better identification of place, buildings and monuments. Comparing the handwriting in his two notebooks preserved in the

House-Studio it could be observed that some of these captions were written by Carlos Relvas himself and included a date ('1869'), which was then validated for cataloguing. On the other hand, the reverse sides of the series 'Views from Coimbra' and 'Views from Condeixa and Outskirts' included precious tags where the titles of the series and the precise date of 'April 1867' were printed (figure 13). Unfortunately, these tags were discontinued in the following series. Finally, from 1870 onwards, some of the backs included the medals won in Paris (1870) and in Vienna (1873), making their dating easier.

His pride in these medals and the strong desire to disseminate them created an unusual situation in one of Carlos Relvas's stereo series. We are referring to the 'pink series', thus called because the front of the cards is pink while the back is orange with his first medal printed, a silver medal won in the 9th Exhibition of the French Photographic Society, (figures 14 and 15). What is unusual in this series is that the card used is the same of the 'Views from Portugal' series, but in the latter it was inverted, that is, the image was glued on the opposite side. This situation, apparently improvised, resulted in an original framing of the medal won in the French Photographic Society, (SFP) with the title of the series 'Views from Portugal' printed on both margins in Portuguese and French. In this new visual composition of the back of the mount, Carlos Relvas managed to associate his first medal with the 'Views from Portugal' stereo series, the same series with which he participated in that exhibition in Paris. This may have been a way of acknowledging the importance of this series for winning the prize. In the catalogue of this 1870 exhibition, these images are not listed, they are merely mentioned as 'A large collection of stereo prints on paper'. Besides the 'attempts at the Marion process, in charcoal' also presented in 1870 — a recent innovation that Carlos Relvas was beginning to test—, the stereoviews must surely have been one of the main reasons for the recognition of Carlos Relvas's work in this exhibition. This inference is also suggested by the fact that in this Society's following exhibition, in 1874, Carlos Relvas perfected the way he presented a considerable set of fifty two stereo views which he submitted to the exhibition, providing detailed

captions for the catalogue for the first time and, also for the first time, storing them in two elegant red cases on which he engraved in golden letters: *Épreuves Stéréoscopiques de Carlos Relvas, Amateur. Portugal*'. Thus, it is possible to conclude that the pink series of 1870 is, indeed, not only a small subseries of the 'Views from Portugal' begun in 1869, but also an important symbol of the international recognition given to Carlos Relvas's stereo photography (Flores, 2019a).

The presentation in the catalogue of the twelve series and their time intervals will enable researchers to analyse the evolution of their main subjects. Generally speaking, the landscape, the exterior views of cities and buildings, as well as of monuments, are the predominant subjects. There are few outside portraits, and studio portraits are almost non-existent. The two better known studio stereo portraits represent his family and Carlos Relvas himself in a self-portrait with his camera in his first photographic studio (figure 16). Even monuments are completely absent from the first series (Beige cards, 1862-67; 'Views from Coimbra' and 'Views from Condeixa and Surrounding Area', 1867). Only from 1868 onwards would they feature prominently in the 'Portugal' and 'Views from Portugal' series, whose objective was to provide a strong representation of Portugal and its heritage in the exhibitions of the French Photographic Society. The dimension of these stereo series by Carlos Relvas is not known, also because there was never a catalogue to order these views^x. In the *Catalogue Raisonné*, the series with more items is the 'Views from Portugal', with 238 cards. Nevertheless, this figure cannot be used to assess its breadth. Conversely, there is a handwritten number sequence left on the back of the cards, probably by collectors, which may be an important indicator of the range of the series. Analysing this numbering, it is surprising to notice, for instance, that the first 'beige' and 'grey' series, dated between 1862 and 1867, should reach such figures as 253 and 287, respectively, thus giving these first series a very unpredictable range.

Besides enabling more precise dating of the negatives, dating the series also enabled the analysis of the formats of their respective negatives. The formats of Carlos Relvas's stereo negatives range

from 8x20 cm and 9x20 cm to 11x20 cm and 12x20 cm. Among them, the predominant size is 11x20, a format common to the stereo series he produced from 1862 to 1874. It is possible to claim that it was with this stereo format that Carlos Relvas began to photograph as this is the format which is the basis of his first card series between 1862 and 1867 (series with beige and grey cards, as well as the 'Views from Coimbra' and 'Views from Condeixa' series). Carlos Relvas would only combine this format with others for a very short period of time, between 1867 and 1869. This is the case of the 8x20-cm format, exclusively used in the 'C Relvas' series [Yellow Card with dry stamp] and the 9x20 and 12x20 formats which gave rise to the 'Portugal' series and the 'yellow card' series. These new formats would be discontinued from 1869 onwards, a time when the 11x20 format once again asserted itself, featuring predominantly, for example, in the series 'Views from Portugal by C. Relvas, Amateur Phot.', in all of its iterations (orange, blue or yellow mounts).

One of the factors that will most contribute to this *Catalogue* allowing a better reading of Carlos Relvas's stereo work is that each image researched is associated on the programmed interface to its respective 'family of images', that is, to its negative (which can also be seen here in its positivised version), and also to the various existing prints, from the same or from different series, duly accompanied by their backs (figure 17). The concept of 'family of images' upon which this catalogue is based found its reference and main inspiration in 'The William Henry Fox Talbot Catalogue Raisonné' developed by photography historian Larry J. Schaaf, and by a team of researchers from Oxford University. Released online in 2017, this catalogue expects to publish 25,000 images by Fox Talbot, and is presented as 'The complete corpus of the works of the Victorian inventor of photography on paper'. The joint presentation of negatives with their respective positives is one of the chief assets of this Fox Talbot Catalogue, which values the heuristic dimension of the negative and brings back the calotype experience, of being able to see the world in inverted tones^{xi}.

In the case of Carlos Relvas's Catalogue, the main challenge in the presentation of these images regarded the always difficult stereoscopic viewing. After some solutions were tested, we opted to introduce gif animations in a chosen set of images. This animation is included in the 'family' of the images, enabling better understanding and experience of the stereo effect of the original. Still, this idea of 'family' eventually had an unexpected ramification when our research identified in a private collection a set of 38 glass plates of a projection lantern made from Carlos Relvas's stereo negatives at the House-Studio (figure 18). The dating of these images is imprecise but the fact that photographs of the Retrospective Exhibition of Portuguese and Spanish Ornamental Art, held in Lisbon in 1882, are part of this collection suggests that they were a belated 'reutilization' of their stereo negatives. In other words, these images are a kind of second generation of prints of the stereo negatives, they are part of the same 'family of images', so that including them in this catalogue was considered fundamental. On the other hand, they also point to Carlos Relvas's new interests related to photographic transparencies for magical lanterns and to the art of image projection, as is also suggested by some of the books he acquired in the last years of his life^{xii}.

By including these glass projections, the first iteration of the *Catalogue Raisonné of Carlos Relvas's Stereoscopic Photography* will present a total of 1,211 photographic items, to which 116 files with gif animations and 259 images of selected backs with relevant information will be associated. The *Catalogue Raisonné* has the same structure as an online searchable database, which allows us to carry out simple or advanced searches from a broad set of metadata regarding the item, the content of the image and its context, with a total of fifteen data entries. Besides these searches, the *Catalogue Raisonné* may also be used as a lab to observe in detail the magnified images, both positives and negatives, and it is possible to select some of them for subsequent comparison. And since the goal of this Catalogue is to be as comprehensive as possible, there will be a feature to enable users to suggest new images or contents which may enrich and improve the information presented.

One of the possible developments for this *Catalogue* will be the integration of Carlos Relvas's monoscopic photographs. Initially, priority would have to be given to the integration of all the monoscopic photos with the same subjects and the same perspectives as the stereo photos. This happens fairly frequently in Carlos Relvas's work, especially regarding the photos of monuments, where the similarities between the monoscopic and the stereoscopic versions often seem to derive from a true game of mirrors. By presenting this visual diversity, the *Catalogue* will contribute to reveal the 19th-century interest of photography in making the best of these two visual cultures.

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Endnotes

ⁱ The sophistication of the Dallmeyer camera was acknowledged not only by its considerable portability but also because it had a ‘movable central partition’ which enabled the camera to be used for monoscopic photographs as well, using the full-size plate or merely parts of it, should one wish to make ‘*cartes de visite*’.

ⁱⁱ The French brand *Verascope* was founded by Jules Richard and recognized as the most popular among amateurs in the early 20th century due to the small size of its plates (4.5 x 10.7 cm).

ⁱⁱⁱ Besides his self-portrait analysed above, another one, simpler in the number of objects featured, once again represents Carlos Relvas accompanied by a luxurious stereoscopic camera, quite possibly a Murray & Heath model from the early 1860s (Figure 3). The prestige associated to the brand Murray & Heath is greatly owed to the fact that this optical company from London collaborated with Charles Wheatstone, the English physicist who invented the first stereoscope, and in 1832 produced for him specular and prismatic stereoscopic viewers (Wade, 2019). Should it be confirmed that this is indeed the camera next to Carlos Relvas in this portrait, its symbolism acquires added value.

^{iv} We are referring to the public collections of Casa dos Patudos — Alpiarça Museum, of Cinemateca Portuguesa, of the Photographic Archive of the General-Directorate of Cultural Heritage, of the Carlos Relvas House-Studio, and to the private collections of João P. Edward Clode, António Pedro Vicente, Luís Beja and Luís Pereira.

^v *Diário de Notícias*, 6 August 1981, p. 8.

^{vi} Carlos Relvas’s archive, kept in the House-Studio, is constituted today by 12,580 photographic items. Besides the negatives already mentioned, 146 albumin prints and 1,656 phototypes are preserved, as well as photo albums, handwritten notebooks, cameras, props and studio furniture, as well as a large number of books, most of which on photography.

^{vii} For instance, the first print identified of the negative 00034-000-016 will be given the id. number 00034-000-016-001. Should this print already have a number previously given to it by its host institution, the record of that id. number is made and kept in the database as ‘original id. number’.

Furthermore, it was established as rule that whenever the print has no matching negative, this ‘original id. number’ works as the only number for the image, and no other supplementary number was created. Regarding prints belonging to private collections which have no original id. number nor any associated negative, the project gave them a code using the following nomenclature: CR.JC.P.01.0001 (CR= Carlos Relvas; JC= João P. Edward Clode, collector’s name; P= Positive; 01= number of the series of the stereo card; 0001= number of the item).

^{viii} In 1851, Frederick Scott Archer (1813-1857) invented a process to obtain negatives using a solution of collodion on glass plates. It was a complex procedure since it required that the plates be exposed and developed while still wet, which implied the transport of a laboratory whenever the work was done outdoors. Its major advantage lay in the combination of short exposure times with high image sharpness. Its positives were made using albumen paper or prints in ambrotype and ferrotype. The immediate release of its patent was one of the reasons why wet collodion was the predominant emulsion of photographic negative in the 19th century.

^{ix} The indication of 1862 as the year when Carlos Relvas began his photographic activity does not derive from any written records. The oldest existing record dates from April 1867, and is the label glued to the back of a few stereo cards of the ‘Views from Coimbra’ series. The year 1862 is rather the result of an estimate made from the analysis of some of his early photographs, namely the family portraits where his offspring are still children. On this subject, it is important to highlight that there are other family images, such as a possible portrait of his mother, Clementina Amália de Mascarenhas Pimenta Relvas, who died in 1859. Should her identity be confirmed, it will be possible to push back the beginning of Carlos Relvas’s photographic activity to the late 1850s.

^x Carlos Relvas came from a wealthy family of farmers and we have no way of proving he ever sold his stereoviews. To a certain extent, the ‘Amateur’ in his signature alluded precisely to that. The lack of catalogues of the Portuguese photographers who engaged in the practice of stereo photography is one of the major limitations of this research in Portugal (Flores, 2019b).

^{xi} The project can be accessed at <https://talbot.bodleian.ox.ac.uk>

^{xii} We refer, for example, to the 1892 book by H. Fourtier, *La pratique des projections: étude méthodique des appareils, les accessoires, usages et applications diverses des projections, conduite des séances*, included in one of the invoices addressed to Carlos Relvas by Lisbon bookseller and publisher M. Gomes in 1894, and which are part of the collection of Casa dos Patudos— Alpiarça Museum.

Brief note

I am an Associate Professor at Universidade Lusófona de Humanidades e Tecnologias, in Lisbon, and a researcher of the cultural history of early visual media, namely stereoscopic photography, at the Research Center of Applied Communication, Culture and New Technologies (CICANT). I have recently been the principal investigator of two research projects dedicated to Carlos Relvas, the most internationally recognized Portuguese photographer in the 19th century whose stereoscopic work had not yet been studied. This paper stems from those projects ('European Stereo Masters: Carlos Relvas' (2017-2018); 'Carlos Relvas Full 3D. The Stereo Catalogue' (2019)). I'd like to highlight two publications, also based on previous research projects on stereoscopic photography. The first one is a paper: "The Animation of the Photographic: Stereoscopy and Cinema. The experiments of Aurélio da Paz dos Reis" (*Early Popular Visual Culture*, 2016) and the second one is book I edited: *The Third Image. Stereoscopic Photography in Portugal* (Documenta, 2019).

Figure 1- Carlos Relvas, *Self-portrait with his studio equipment and stereoscopic camera*, collodion-on-glass negative (positivised), 1862-1873. Carlos Relvas Studio House: 00013-000-055

Figure 2- Carlos Relvas, *Self-portrait with his daughter Margarida and a stereoscopic camera*, collodion-on-glass negative (positivised) 1873-1874. Carlos Relvas Studio House: 00078-000-018

Figure 3- Carlos Relvas, *Self-portrait with a stereoscopic camera*, collodion-on-glass negative (positivised), 1862-1873. Carlos Relvas Studio House: 0001-000-040

Figure 4- Carlos Relvas, *River view with peasants and photographic lab*, stereoscopic albumen print from collodion-on-glass negative, gray series, 1867-1869. Cinemateca Portuguesa— Museu do Cinema: PC1649/023

Figure 5- Carlos Relvas, *Studio portrait of a man*, double exposure in a collodion-on-glass negative (positivised), 1862-1873. Carlos Relvas Studio House: 00013-000-089

Figures 6 and 7- Carlos Relvas, *Almourol Castle*, double exposure in a gelatin and silver glass plate negative (positivised), 1874-75. Carlos Relvas Studio House: 00040-003-008 and 00040-003-009.

Figure 8- Carlos Relvas, *View of Golegã from the roof of the House-Studio*, double exposure in a gelatin and silver-on-glass negative (positivised), 1874-1875. Carlos Relvas Studio House: 00040-003-017

Figure 9- Carlos Relvas, *House-Studio waiting room*, untransposed stereoscopic collodion-on-glass negative (positivised), 1874-1875. Carlos Relvas Studio House: 00014-000-055

Figure 10- Carlos Relvas, *Campanile, Monastery of Santa Maria da Vitória, Batalha*. Stereoscopic albumen print from collodion-on-glass negative, series 'Portugal', 1868. Cinemateca Portuguesa—Museu do Cinema: PC974/012

Figure 11- Carlos Relvas, *Almourol Castle*, Stereoscopic albumen print from collodion-on-glass negative, yellow series, 1868-1869. Cinemateca Portuguesa— Museu do Cinema: PC1649/010

Figure 12- Carlos Relvas, *Self-Portrait with his wife and his sister in law next to a river bed, Condeixa*, Photocomposition of a sequence with three half stereoscopic albumen prints from collodion-on-glass negative, 1868-1869. Arquivo de Documentação Fotográfica, DGPC: 00044.001.023; 00044.001.019, e Collection João P. Edward Clode: 00036-000-036-001.

Figure 13- Back of a stereoscopic card by Carlos Relvas, series 'Vistas de Coimbra', 1867. Casa dos Patudos—Museu de Alpiarça: CR-ME-1566

Figure 14- Carlos Relvas, Brown horse next to Carlos Relvas's first photographic studio, stereoscopic albumen print from collodion-on-glass negative, pink series. Collection João P. Edward Claude: CR.JC.P.10.0002

Figure 15- Back of a stereoscopic card by Carlos Relvas with his SFP silver medal [1870]. Collection João P. Edward Clode: CR.JC.P.10.0002

Figure 16- Carlos Relvas, *Self-portrait in his first studio*, stereoscopic albumen print from collodion-on-glass negative, yellow series, 1868-1869. Casa dos Patudos—Museu de Alpiarça: CR-IE-1577

Figure 17- Visual draft of the interface design for the Catalogue Raisonné of Carlos Relvas's Stereoscopic Photography

Figure 18- Carlos Relvas, *Outskirts of Braga*, hand colored gelatin print on glass for projection, 1862-1882. Collection Frederico Cunha: CR.FC.P.0002