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The First “Scientific Photographs” of a Sperm Whale (1890) : Francisco Afonso Chaves and the Wonderful Inaccuracy of Image

Victor dos Reis

EDITOR'S NOTE

La traduction de l'article en français sera publiée ultérieurement.

“Je vous felicite [sic] de ces premiere [sic]
photographies
scientifiques forte [sic] du cachalot.”
Georges Pouchet, Letter to Francisco Afonso
Chaves (Paris, March 1st, 1890)

Fig. 1

Georges Pouchet ; Francisco Afonso Chaves. « Des formes extérieures du cachalot », *Journal de l'anatomie et de la physiologie normales et pathologiques de l'homme et des animaux*, XXVI, 3 (Mai-Juin), 270-272 + pl. IX, Paris, Éditeur Félix Alcan, 1890.

- 1 In 1890, in Paris, the *Journal de l'anatomie et de la physiologie de l'homme et des animaux* published an article entitled « Des Formes Extérieures du Cachalot », signed by G. Pouchet and F.-A. Chaves, illustrated with three drawings and three photographs. Occupying one page, in addition to the two and a half pages occupied by the text (Fig. 1), these are announced as « the first scientific photographs of the sperm whale ». Through them, it was finally possible to « fix the outer features of this animal, as famous as it is poorly known » and, consequently, to end a long era of inaccurate representations :

the outer forms of the Sperm Whale were totally unknown until recent times and all the classic representations, even the figures illustrating the works of those who saw them being caught were inaccurate, representing the animal with the end of the head flattened and as if cut at a right angle.¹

- 2 The authors of the article were two renowned naturalists : Charles Henri Georges Pouchet (1833-1894), professor of comparative anatomy at the Muséum national d'Histoire naturelle, in Paris, specialist in cetaceans, who participated in scientific expeditions in search of the springs of the Nile in 1856 and to the Arctic Ocean in 1892 ; and the Azorean Francisco Afonso Chaves (1857-1926), tireless traveller, interested in fields as diverse as seismology, geomagnetism and meteorology, but who also dedicated himself to the study of the fauna and flora of the Azores. However, to us, Afonso Chaves is above all the remarkable photographer whose work, carried out between the end of the 19th century and the date of his death and overwhelmingly gathered at the Carlos

Machado Museum, in Ponta Delgada, remained unknown² to scholars and researchers of the theory and history of photography in Portugal until 2010³. He is the author of the three photographs which are the novelty and, consequently, the *raison d'être* of that article : through them the world could see, for the first time, the exact shape of a sperm whale. Photography thus fulfilled one of its two great – and paradoxical – functions attributed by the century which invented it : to offer a scientific representation of the world, as opposed to the artistic representation made by traditional visual means, and producing *wonder*, *marvel* and, in so many other cases, the convincing fiction – or even mystification – of the world. It is in this territory of ambiguity between accuracy and wonder, reproduction and fiction, art and science that, in a particularly clear way to our contemporary eyes, the photographic images of Francisco Afonso Chaves can be placed.

Behind the Scenes : the Correspondence Between Afonso Chaves and Pouchet Throughout 1890

- 3 The correspondence between Afonso Chaves and Georges Pouchet in the Private Estate of Francisco Afonso Chaves, which belonged to the family until 2014⁴, totals seven letters exchanged in the year of the publication of the article : four by Pouchet and three by Afonso Chaves – in this case, the drafts he kept. However, we know that, in the previous year, the Portuguese sent to the French scientist three other missives which remained unanswered : one dated February 12 and the other two written in April and July, accompanied by photographs of cetaceans, as a dolphin and a porpoise fetus⁵.
- 4 In chronological order, the first extant letter is the one which Afonso Chaves wrote on January 20, 1890, making reference to the previous ones and complaining about the lack of response. Through it we also learn that in the « previous year » he had taken « some photographs of two sperm whales captured in Capellas », of which he would now send Pouchet « one of the most interesting » and, might he be interested, he would later send the rest⁶. In his reply, dated January 27, Pouchet described the photograph of the sperm whale as « very interesting » and asked the Portuguese for the rest ; in addition, he immediately proposed to publish them⁷.
- 5 On February 16, Afonso Chaves thanked the invitation and announced the sending of six photographs, numbered on the back, of two sperm whales, one 17 meters long and the other 15.5 meters. The three photographs published in the article belong to this group, these being, therefore, the two sperm whales shown there. In this letter, based on the observations and photographs made by him, the Portuguese naturalist draws attention to the errors which the French colleague made regarding the shape of this cetacean (*cyamus physeteris* or *neocyamus physeteris*), in the notes presented to the Paris Academy of Sciences. It was upon receiving the six photographs which accompanied this letter that Georges Pouchet emphatically declared, in his written reply on March 9, that these were the « first scientific photographs » of the sperm whale and that he wished to publish them in the *Journal de l'anatomie*⁸ – which happened in the following May/June number.
- 6 This news is communicated by Pouchet to Afonso Chaves in the letter of June 28, together with the information that the two fetuses which he had sent arrived in Paris in good condition : « I published in the Journal de / l'Anatomie [...] 3 of your / so

interesting photographs with a small / note entitled *Les formes extérieures du // Cachalot per mm. Pouchet et Chaves* »⁹. Replying in July 18, Afonso Chaves asked Pouchet to send him 50 offprints of the article : « I dare to ask you this in order to have copies of the main sperm whale photographs, copies which many people request »¹⁰.

- 7 In the collection there is a last letter from Pouchet dated 28 July and also a receipt, dated October 8, 1890, regarding the sending, from Ponta Delgada to Lisbon, to « Monsieur le Ministre de l'Instruction publique en France », of « a box with bones of a cetacean », which we know from the correspondence exchanged between Georges Pouchet and the Muséum national d'Histoire naturelle in Paris as final recipient¹¹.

The *Scientific Photographs* of the Sperm Whale

Fig. 2

Francisco Afonso Chaves, *View of two Sperm Whales on the coast of Capelas, São Miguel, 1889*, Gelatin silver print on glass plate, 130 x 175 mm (digital positive), Ponta Delgada, Museu Carlos Machado (Inv. CAC6185N).

Fig. 3

Francisco Afonso Chaves, *View of two Sperm Whales on the coast of Capelas, São Miguel, 1889*, Gelatin silver print on glass plate, 130 x 175 mm (digital positive), Ponta Delgada, Museu Carlos Machado (Inv. CAC6186N).

- 8 Three out of the six photographs which Francisco Afonso Chaves sent to Georges Pouchet on February 16, 1890, were chosen to illustrate the article which they both published in that same year in the *Journal de l'anatomie*. Of these three, only one exists today in the author's large photographic collection¹² – deposited in 1962 at the Carlos Machado Museum, in Ponta Delgada and to which, in 2015, the family added a smaller collection that remained in their possession. However, there are two other photographs in the Ponta Delgada museum which have not been published and which may have been part of the series of six sent to Paris. The surviving photographs are negatives on glass supports measuring 130 x 175 mm (Fig. 2, Fig. 3).
- 9 The three published photographs show the two sperm whales on the rocky shore of Capelas, on the north coast of the island of São Miguel. They present, from top to bottom, three different points of view of one of the sperm whales : a ventral view, a slightly oblique frontal view and a dorsal view. In the latter we can also see the larger sperm whale in the background which, due to its degradation, is hardly distinguishable from the rocks¹³. The three photographs were taken from the shore, very close to the water, information which, interestingly, is provided by the article.
- 10 The two additional photographs which exist in the museum's collection show the location of the event from two elevated points of view, opposing each other, although at different heights and distances from the sperm whales, with a broader view of the place and, above all, of the large number of people which were present on that day – but absent from the photographs published in the *Journal de l'Anatomie*.
- 11 The absolutely central role which the photographs of Francisco Afonso Chaves play in the article published in 1890 is evident. This role, as Georges Pouchet emphatically

stresses, is the consequence of being the first scientific representations –objective, coherent and convincing – of a species hitherto poorly known and poorly represented. Therefore, we must ask : what, after all, makes these photographs scientific ? Where does this objectivity come from and how is this accuracy expressed ?

- 12 The article is accompanied by three other images : typical scientific illustrations, these graphic representations made from the photographs show much less and, in this sense, constitute *reduced* versions of them. They reveal only what is necessary to understand certain formal external characteristics of the sperm whale. In this sense, by drawing our attention to these characteristics, by making them understandable and by imposing the truth and rigor which did not exist in previous representations, they demonstrate an argument. But this purposefully communicational function of the drawings is, after all, in conflict with the visual nature of the photographs. In their excess of information, in their radical likelihood, the photographs may in themselves confuse more than clarify, show without necessarily demonstrate, hide more than reveal. The photographs have therefore an excess of information that risks turning invisible and incomprehensible what is new or important in them. This is also why they need a *text*, in this case the article itself, whereas illustrations, as simplified versions of these photographs, only need *captions*.
- 13 But back to the question, what could make these photographs scientific ? The answer, being complex, involves several arguments. One is, from the outset, the characteristics of the medium itself : the photographic device is scientific because, by *generating* a visual projection through physical (optical) laws and by fixing or *memorizing* this luminous projection on a photosensitive surface through chemical laws, it transforms the camera on a technical device which operates through a scientific process. In this sense, the *photographic machine* artefact, which is hardly optically distinguishable from the *camera obscura* artefact¹⁴, indirectly guarantees the rigor and scientific objectivity of its results – the visual representation. The guarantee comes from perspective (that system based on a geometric-mathematical translation of optical laws), the great invention of the Renaissance and the founding theory of modernity – in the sense that, culturally, it operated an aesthetic, artistic, scientific and technological revolution which, among many other things, changed and shaped not only the modern image, in its forms, structures and contents, but, more importantly, the concepts of visible and visual¹⁵. Another reason is the image fixed within this perspective apparatus, which, due to the action of chemical laws incomprehensible to most observers, generates on poor surfaces – metal and glass first and paper later – the richness of an event closer to the mystical *epiphany*, cognitive *wonder* and mental *revelation* rather than the simple production of an imperfect representation, with which modern science, in an extension of ancestral processes, is so often confused.
- 14 The sperm whale's photographs are also scientific because, despite being miniaturized versions of reality, they are able to show more of the world than necessary and, thus, provide an excess – or redundancy – of evidence whose main consequence is to ensure that we *see it* (the world) in them. To believe in these images means to believe that the world is on display in them – but not in obvious demonstration. For this reason, the text written by Pouchet, although short, ensures its correct interpretation. More than this : it ensures the correct vision of the photographs. If the text describes, the images show, but describing textually and showing visually are far from being identical operations by different means ; often one is needed to understand the other. In this

case, unaccustomed or unfamiliar with the exact shapes of a sperm whale, the written description supported by the graphic illustration, in itself a reduction and translation of the photograph, leads us to the understanding and knowledge of what is before our eyes.

Fig. 4

Francisco Afonso Chaves, *View of a Sperm Whale on the coast of Capelas, São Miguel, 1889*, Gelatin silver print on glass plate, 130 x 175 mm (digital positive), Ponta Delgada, Museu Carlos Machado (Inv. CAC6188N).

- 15 The context, the wide and even panoramic view of the *place*¹⁶, with all its details – unnecessary for the understanding of the sperm whale but fundamental to the likelihood of its image, based on the fact that someone was there, witnessed and recorded the event objectively – has also a key role. Like the presence of this theatrical male figure who, holding a stick, rises over the body of the sperm whale – like an *admonitor* who, as in the paintings, looks at and questions us – and gives the monster's body a scale, a size understandable in our familiar visual world (Fig. 4). In this excess, in this redundancy and, ultimately, in this *visual rhetoric*, is the belief in the scientificity of photography also founded. Even if in a photograph as remarkable as this one (with the individual who stands on the sperm whale, with his oblique point of view and the resulting perspective deformation, with the tension of the ropes and the rigidity of the iron chain, with the spiked harpoons and the open wounds), the emotional effectiveness is far greater than the informational or scientific effectiveness of the image.
- 16 If photographs are not *real*, however, they are sufficiently robust to create an *effect of reality*, that is, an analogy with reality¹⁷. Through their analogical signs, codes and representative conventions – in terms of perspective and *chiaroscuro*, for example – they trigger a psychological match between the perception of representation and the

perception of reality. Under certain conditions of visual and psychological effectiveness of representation, frequent in post-Renaissance art, the effect of reality leads, through a « qualitative leap », to another more powerful effect: the *effect of the real*, the attribution, by the observer, of a fictional existence to observed figures and events within the space of reality¹⁸. In other words, he believes that, while not being real, what he sees can exist, may have existed or may exist in reality¹⁹. The effect of the real is, therefore, the creation of a credible illusion of existence out of what is non-existent and eventually impossible: the photograph, more than a representation of the existing, is thus the convincing representation of the *possible*, of the *probable*, but not of the exact.

- 17 Finally, the sperm whale's photographs are still scientific because these fragile physicochemical films on glass sheets have the power to create, in all their reduction of reality to a version devoid of depth, three-dimensionality, movement, time, texture and colour, a wise mystification of verisimilitude: in our repeated and obsessive non-conformity with the impossibility of replicating the world, they are the closest thing to this *utopian circumstance* (the ability to copy) and to this *dystopian place* (the world as a copy). This means that, after all, the accuracy of photography is the *supreme fiction* of modernity, one of the many variants of its incessant search over the past six hundred years of Western visual culture.
- 18 From the middle of the 19th century onwards, in the same period in which photography was invented and disseminated, and especially in the years immediately preceding the publication of Pouchet and Afonso Chaves' article, objectivity (more than accuracy) became the great goal of science and, in particular, of the images it produced²⁰. Because of this, « photographs were preferred for subject matter that might arouse skepticism – because it was rare or spectacular or controversial. [...] A photograph was deemed scientifically objective because it countered a specific kind of scientific subjectivity: intervention to aestheticize or theorize the seen »²¹. And although photography did not create scientific objectivity, it did « become one of its principal vehicles »²².
- 19 The belief in the objectivity of photography replaces and hides its formal inaccuracy while preventing or, at the very least, complicating and enriching its scientific nature. Deformed and deforming, the photographic image not only generated an *optical unconscious*²³ but a profound insensitivity of the modern subject to visual inaccuracy. In this sense, more than a technological marvel, the appropriation, reproduction or credible visual representation which photography makes of the world is a remarkable mental event. A magnanimous creation of ours offered to images and to the world but, above all, to ourselves.

A History of Visual Culture or the Vicissitudes of Accuracy in the Representation of Cetaceans

Fig. 5a-5b

Unknown author, *Sperm whale on the coast of Ancona on February 25, 1601*, 1601, engraving, Amsterdam, Rijksmuseum.

Hendrick Goltzius, painter, Jacob Matham, engraver, *Sperm whale on the coast near Berkhey (Katwijk) on February 3, 1598*, 1598, engraving, Rotterdam, Museum Boijmans Van Beuningen (Inv. BdH 10089 PK).

- 20 In 1601, an anonymous print was published in Italy, representing a sperm whale which on February 25 had washed ashore on the Adriatic coast close to Ancona. The accompanying text asserted that « it was drawn accurately from nature »²⁴. However, this plausible event, witnessed on that beach by a large number of figures, including an individual who is standing over the animal holding a stick, involves, after all, a strange cetacean with ears (Fig. 5a). Curiously, as E. H. Gombrich points out²⁵, there is a similar Dutch engraving picturing a similar event which happened in Berkhey (Katwijk), Holland, on February 3, 1598. Here, three years in advance, the event, the setting, the location and the sperm whale are identical (Fig. 5b). Both show us the same figures measuring it, dismantling it, extracting its oil or simply observing or discussing the unusual creature. Could we be facing a family of unknown or extinct cetaceans ? Or is this a skilled mystification ?

Fig. 6

Hendrick Goltzius, *The Beached Sperm Whale near Berkhey (Katwijk)*, 1598, Black chalk, pen in reddish brown, brush in reddish brown and grey on paper, 296 x 448 mm, Haarlem, Teylers Museum (Inv. 080).

- 21 In reality, what must have happened was that the Dutch artist saw the sperm whale but mistook a fin for an ear, resulting in the situation described by Pouchet and Chaves in their article : the recurring inaccuracy in the representation of these great cetaceans. The Dutch print is directly derived from a painting, apparently lost, by Hendrick Goltzius (1588-1617), having generated several other prints, including variations by Jacob Matham (1571-1631) and Jan Saenredam (c. 1565-1607), dated 1602 and 1603 respectively (Fig. 6). In all of them, in slightly different ways, it is an ear – artificial but not totally improbable in visual terms – that we see represented. Therefore, the Dutch artist, dealing with a being which was unknown to him, not only draw an ear but, based on his experience, was led to correct nature : he placed the ear close to the eyes²⁶, because in all the creatures which were familiar to him, ears were close to the eyes and not where the fin he mistook for ear was. None of this caused doubt or surprise to all those who, in the following years, copied the image. In other words, as Gombrich points out, representing « the unfamiliar involves greater difficulties than is usually believed »²⁷. Therefore, we always represent the unknown equipped with what is familiar to us. It should not be surprising that the resulting images are, more than usual, strange hybrids halfway between two worlds.
- 22 What about the Italian artist ? Essentially, the Italian print is the mirror version of the Dutch one. Therefore, we can conclude that, given the difficult task of representing the strange, unknown and mythical animal on a beach in the city of Ancona, the Italian artist chose to copy the Dutch print. Perhaps for this decision, the copying of an image, produced in another country just three years earlier, instead of creating a new one, may have contributed the time discrepancy, as in the case of Afonso Chaves, between his arrival at the site and the actual incident ; the eventual degradation or dismantling of the respective body when representing it ; or, at another level, the artist's

relativization of the concept of veracity. Unquestionable, however, is its visual update and full integration in the new era of *mechanical reproducibility* of the image, which was produced in series by printing machines and spread quickly and cheaply throughout Europe. One thing is certain : we are not facing any species of extinct cetacean, but only facing the repetition of the same error several times. We are, moreover, facing a typical event in visual culture : an image generates new images and we, in general, trust them. This is one of the most impressive powers of images : referring to other images and originating, directly or indirectly, in its time or beyond it, new images – and reinforced beliefs²⁸.

- 23 As a representation, simulacrum or artificial substitute, the image has a power that does not lie in its accuracy but in its effectiveness within a given context²⁹ : a power based on its ability to replace and simulate, and not to reproduce or portray the prototype. Therefore, a photographic representation is neither equal to the thing it represents nor to the perception it generates in the mind of its observer, although, in any case, it cannot be truly understood independently from the objective and subjective relations which it establishes with any of them. In this sense, the image is a substitute for another visual object because it produces the same effect and not because it is optically identical to it ; because it *simulates* it and not because it imitates it.
- 24 Considered in this way, the image as a representation of objects, places and events, does not refer exclusively to what is visible, but rather to everything that acquires a visual existence through it. This remarkable extension of its power of representation is only possible due to the double and inseparable ability of the image *to make visible* what is invisible to the human eye and *to make visual* what by definition does not belong to the domain of the visual - for example, thoughts, sensations and emotions. Therefore, *to make visible* and *to make visual* are fundamental roles of images throughout their history, a role which attained new meanings with the invention and development of new visual technologies – such as photography.
- 25 In the scientific photographs of Afonso Chaves' sperm whale, this power of the image, which does not depend on accuracy but on its visual and emotional effectiveness, is particularly evident. Especially in the case of that specific one in which the photographer is closest, the view is particularly deformed from the frontal and slightly oblique point of view and an occasional helper, equipped with a stick, testifies to the triumph of photography, the photographer and the modern visual representation over the unknown, now a harmless trophy but, despite its acquired familiarity, still uncertain, improbable and, above all, disturbing.

NOTES

1. « Les formes extérieures du Cachalot ont été complètement méconnues jusqu'en ces derniers temps et toutes les représentations classiques, même les figures illustrant les ouvrages de ceux qui les avaient vu pêcher étaient inexactes, représentant l'animal avec l'extrémité de la tête aplatie et comme coupée carrément. / L'un de nous a eu enfin l'occasion de photographier deux

- Cachalots tués sur la côte de San Miquel des Açores, et qui permettent de fixer définitivement les traits extérieurs de cet animal aussi célèbre que peu connu. Nous nous bornons à reproduire ces photographies, les premières photographies scientifiques qui aient été faites du Cachalot, et à en donner ici la légende explicative ». Georges POUCHET et Francisco AFONSO CHAVES, « Des formes extérieures du cachalot », *Journal de l'anatomie et de la physiologie normales et pathologiques de l'homme et des animaux*, XXVI, 3 (Mai-Juin), 270-272 + pl. IX, Paris, Éditeur Félix Alcan, 1890, p. 270.
2. Cf. António SENA, *Uma História de Fotografia, Portugal 1839 a 1991*, Lisboa, Comissariado para a Europália 91 / Imprensa Nacional-Casa da Moeda, 1991.; António SENA, *História da Imagem Fotográfica em Portugal, 1839-1997*, Porto, Porto Editora, 1998 ; M. C. SÉREN, *A Fotografia, op. cit.*
3. Margarida MEDEIROS, « Paradoxos da Modernidade : o Mundo sob as Lentes Estereoscópicas de Francisco Afonso Chaves », Victor dos Reis (dir.), *A República e a Modernidade : Revelar, Renovar, Regressar*, Ponta Delgada, Museu Carlos Machado, 2010, p. 37-43 ; Victor dos REIS (dir.), *A República e a Modernidade : Revelar, Renovar, Regressar*, Ponta Delgada : Museu Carlos Machado, 2010 ; Victor dos REIS, « O Fotógrafo Estereoscópico : a Descoberta da Obra Fotográfica de Francisco Afonso de Chaves (1857-1926) », *Estúdio I*, 2, 2010, p. 50-56 ; Victor dos REIS, « O Rasto de um Corpo no Espaço, ou o Observador como Sujeito Vidente em Francisco Afonso Chaves (1857-1926) ». *Estúdio*, II, 4, 2011, p. 12-18 ; Victor dos REIS, « Fumo, Vapor e Lava : as Paisagens Incertas de Francisco Afonso Chaves (1857-1926) », *Estúdio IV*, 8, 2013, p. 42-51 ; Victor dos REIS, « O corpo como hipótese : sucessão, sobreposição e transparência em Francisco Afonso Chaves (1857-1926) », Margarida MEDEIROS (dir.), *Fotogramas : Ensaios sobre a Fotografia*, Lisboa, Documenta, 2016, p. 157-166 ; Victor dos REIS, « Francisco Afonso Chaves, o Fotógrafo Errante », Pedro PASCOAL DE MELO (dir.), *O Património Perto de Si : Entre o Passado e o Presente*, Ponta Delgada, CRESAÇOR, 2018, p. 62-63.
4. In 2014 Francisco Afonso Chaves Private Estate was deposited in the public library and regional archive of Ponta Delgada (BPARPD).
5. Cf. draft of the letter from Francisco Afonso Chaves to Georges Pouchet, dated January 20, 1890 (Private Estate of F. Afonso Chaves).
6. « L'année dernière j'ai fait quelques / photographies de deux cachalots cap-/turés à Capellas, je vous envoie une / des plus intéressantes, et je vous en-/verrai les autres si vous le dési-/rerez » (Letter from Francisco Afonso Chaves to Georges Pouchet, datada de 20 de Janeiro de 1890, p. 1r ; Private Estate of F. Afonso Chaves). It should be noted that in these manuscripts letters the spelling of the French words is not always correct.
7. Cf. letter from Georges Pouchet to Francisco Afonso Chaves, dated 27 January 1890 (Private Estate of F. Afonso Chaves).
8. « Je vous felicite [sic] de ces premiere [sic] photographies / scientifiques forte du cachalot. [...] Ces photographies ont-elles été publiées ? Si elles ne l'ont pas été [sic] [...] voulez vous [sic] me permettre de les publier dans / le Journal de l'Anatomie en votre nom bien entendu [?] » (Letter from Georges Pouchet to Francisco Afonso Chaves, dated 9 March 1890, p. 1r ; Private Estate of F. Afonso Chaves).
9. « J'ai publié dans le n° du Journal de / l'Anatomie [...] 3 de vos / si intéressante [sic] photographies avec une petite / note intitulée Les formes extérieures du // Cachalot par mm. Pouchet et Chaves » (Letter from Georges Pouchet to Francisco Afonso Chaves, dated 28 June 1890, p. 1v-2r ; Private Estate of F. Afonso Chaves).
10. « Pouvez-vous avoir la bonté de faire imprimer pour moi 50 separata de la note sur la forme / extérieure du cachalot, qui va paraître / dans le Journal de l'Anatomie ? J'ose / vous prier cela, parce que ainsi j'aurai / des epreuves [sic] des principales / photographies du cachalot, épreuves que beaucoup de personnes me deman-/dent » (Letter from Francisco Afonso Chaves to Georges Pouchet, dated 18 July 1890, p. 1r ; Private Estate of F. Afonso Chaves). In this letter, Afonso Chaves, regarding the difficulty of accurately classifying porpoises, refers to the photograph he sent of an adult specimen that existed in the Ponta Delgada museum.

11. In fact, in the letter of 18 July, Afonso Chaves communicated to Pouchet his pleasure in offering the skeleton of a *Grampus rissoanus*, today known as *Grampus griseus* or a Risso's dolphin, as long as this ensured the payment of the packaging and transport (Letter from Francisco Afonso Chaves to Georges Pouchet, dated July 18, 1890, p. 1v ; Private Estate of F. Afonso Chaves). Pouchet, on July 28, agrees and recommends sending on behalf of the minister, as it appears later on the receipt (Letter from Georges Pouchet to Francisco Afonso Chaves, dated July 28, 1890, p. 2r ; Private Estate of F. Afonso Chaves).
12. There are two negative versions of this photograph at the Carlos Machado Museum, which are distinguished only by very subtle differences (CAC6188 and CAC6189).
13. Afonso Chaves, in the letter of 20 January, says : « Je n'étais pas à Capellas quand / le cachalot à été [sic] pris et quand j'y suis / arrivé le dépècement était [sic] très avancé » (Letter from Francisco Afonso Chaves to Georges Pouchet, dated January 20, 1890, p. 1v ; Private Estate of F. Afonso Chaves).
14. At least, from the moment that it, at the beginning of the 17th century, started to be equipped with lenses, first fixed and then adjustable (cf. Martin KEMP, *The Science of Art : Optical Themes in Western Art from Brunelleschi to Seurat*, New Haven, Yale University Press, 1990). It will be the invention of the photosensitive surface capable of fixing the projected images that will transform the obscure camera into a new machine.
15. Victor dos REIS, *O Olho Prisioneiro e o Desafio do Céu : A Primeira Demonstração Perspéctica de Filippo Brunelleschi como Invenção e Paradigma da Perspectiva Central*, Lisboa, Faculdade de Belas Artes da Universidade de Lisboa, 2002.
16. Like so many other sets of photographs by Afonso Chaves (cf. V. dos REIS, « Fumo, Vapor e Lava », *op. cit.*) these too, both those published in the article and those in the estate, seem to form a recognizable series that involves a trajectory of the camera in space (that is, the photographer's eye and, with it, ours), from far to near, from the top of the cliff to the bottom of the beach to finally describe a cinematic path around of the dead body.
17. Jean-Pierre OUDART, « L'effet de réel », *Cahiers du cinéma*, 228 (Mars-Avril), p. 19.
18. *Ibid.*, p. 19, p. 25.
19. Cf. Jacques AUMONT, *The Image*, (trad. en anglais par Claire Pajackowska), Londres, British Film Institute, 1997 (éd. originale *L'Image*, Paris, Nathan, 1990), p. 79-80.
20. Cf. Lorrain DASTON et Peter GALISON, *Objectivity*, New York, Zone Books, 2007.
21. *Ibid.*, p. 135.
22. *Ibid.*, p. 197.
23. Walter BENJAMIN, « A Short History of Photography », trad. par Stanley Mitchell, *Screen*, 13, 1, 1972, p. 7 (éd. originale « Kleine Geschichte der Photographie », *Literarische Welt*, 18 septembre, 25 septembre, 2 octobre 1931).
24. "Ritratto qui dal naturale appunto" (Cf. E. H. GOMBRICH, *Art and Illusion : A Study in the Psychology of Pictorial Representation*, (5^a ed.) Londres, Phaidon Press, 1994, p. 69).
25. *Ibid.*, p. 69-70.
26. *Ibid.*, p. 69.
27. *Ibid.*, p. 70.
28. Cf. V. dos REIS, « O Fotógrafo Estereoscópico », *op. cit.*
29. E. H. GOMBRICH, *Art and Illusion*, *op. cit.*, p. 94.

ABSTRACTS

In 1890, in Paris, a text entitled « Des formes extérieures du Cachalot » was published, signed by G. Pouchet and F.-A. Chaves and illustrated with three drawings and three photographs. These are advertised as "the first scientific photographs of the whale." Through them it is finally possible to "fix the exterior features of this animal, as famous as poorly known" and therefore, as stated in the opening, ending a long era of inaccurate representations. The authors of the article are two reputed naturalists : Charles Henri Georges Pouchet (1833-1894), and the Azorean Francisco Afonso Chaves (1857-1926). Afonso Chaves is also a remarkable photographer whose work, mostly stereoscopic, remained unknown until recently. The aim of this paper is to analyse the photographs of Francisco Afonso Chaves and realize why they play a central role in the publication of 1890. As emphatically stressed by Georges Pouchet, they constitute the first scientific representations of a species hitherto poorly understood and poorly visually represented. But ultimately, what makes these photographs scientific ? And how does the *visual* and the *visible* mingle in these images ?

En 1890, à Paris, a été publié un texte intitulé « Des formes extérieures du Cachalot », signé par G. Pouchet et F.-A. Chaves, illustré de trois dessins et de trois photographies. Celles-ci sont annoncées comme « les premières photographies scientifiques de la baleine ». Grâce à eux, il est enfin possible de « réparer les caractéristiques extérieures de cet animal, aussi connu que mal connu » et donc, comme indiqué dans l'ouverture, mettant fin à une longue ère de représentations inexactes. Les auteurs de l'article sont deux naturalistes réputés : Charles Henri Georges Pouchet (1833-1894) et l'Azorean Francisco Afonso Chaves (1857-1926). Ce dernier est également un photographe remarquable dont le travail, principalement stéréoscopique, est resté inconnu au cours des dernières décennies. Le but de cet article est d'analyser les photographies de Francisco Afonso Chaves et de comprendre pourquoi elles jouent un rôle central dans la publication de 1890. Comme le souligne avec force Georges Pouchet, elles constituent les premières représentations scientifiques d'une espèce jusqu'alors mal comprise et mal visuellement représentée. Mais finalement, qu'est-ce qui rend ces photographies scientifiques ? Et comment le *visuel* et le *visible* se mêlent-ils dans ces images ?

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Mots-clés: Francisco Afonso Chaves, photographie, représentation scientifique, visible, visuelle

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