Art and science playing on the margins. On the discovery of photography in the 19th century Brazil.

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Abstract

This paper examines photography as a particular case of a multiple discovery in science and technology. It concerns an original photographic process developed during the 19th century Brazil simultaneously and independently from other processes developed with the same aim elsewhere. A detailed reconstruction of this process created by the Frenchman Hercule Florence is performed by directly investigating his manuscripts and other original documents of the period. Combining elements from the Mertonian Social Theory of Discovery to the Science and Technology Studies approach my aim is to find out the factors that shaped this process and made it possible inside (and despite) the local peripheral circumstances. I argue that the latter is embodied in the final form of Florence's process.

Keywords: multiple discoveries, photography in Brazil, sociology of science

Introduction

The investigation reported here examines the relationship between art and science around the discovery of photography in peripheral contexts. It concerns a photographic process developed in Brazil during the 19th century by the Frenchman Hercule Florence. This process was produced in 1833 independently and simultaneously to other processes

developed with the same aim elsewhere such as the daguerreotype in France and the calotype in England.

Based on a detailed reconstruction of Florence's process, performed by directly investigating his manuscripts and other original documents of the period, and combining elements from the Mertonian Theory of Discovery to the Science[1] and Technology Studies (STS) approach[2], this paper aims to identify the factors that shaped this process and made it possible inside (and despite) the local peripheral circumstances.

In the first decades of the nineteenth century (1800-1839)[3] artists and scientists alike, in countries such as France, England and Brazil, directed their thoughts to a common problem: how to capture images of the real world fast and accurately. Several processes to fix images were developed in the attempt of solving that problem and some of its inventors were globally recognized as precursors of the modern photographic process as it is conceived today. Joseph Nicéphore Niepce (1765-1833) and Louis Jacques Mandé Daguerre (1787-1851), in France, and William Fox Talbot (1800-1877), in England, are among such inventors.

Niepce obtained in 1826, through a process he called heliography, what the history of photography literature has been considering the first photograph produced in the world. Daguerre, after entering into partnership with Niepce in 1829, developed the daguerreotype. This new invention was announced publicly by the French Academy of Sciences in 1839 and patented in England the same year. In 1841, also in England, Talbot patented his process named calotype, later renamed talbotype.

However, many other processes were reportedly being developed around the same time, including Hercule Florence's (1804-1879) "photographie" in 1834. Florence had been developing a process of fixing images using light and silver (or gold) salts since 1833, but interrupted his work when a Brazilian newspaper announced Daguerre's discovery in 1839.

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[1] Social theory of discovery, developed during the 1960's by the sociologist of science Robert Merton, particularly the concept of multiple discovery as photography is a typical case of multiple.

[2] Particularly the idea that technological artifacts incorporate the circumstances of their constitution or in other words their constitution are resulted of a contingent process.

[3] The period under study covers the first attempts to fix images upon paper prepared with silver nitrate developed by Thomas Wedgwood (England, 1800) and goes until 1839 when the discovery of daguerreotype was officially announced in France.

Multiples

In science and technology new ideas aimed at solving a shared 'problem' are often reported by two or more researchers working independently, connected only by a common interest and time of discovery. Such events are known as "multiple discoveries", or simply "multiples". Photography is a particular example in technology. Harmant (1977), for instance, points out that as many as 24 people — including Niepce, Daguerre and Bayard, in France, and Hercule Florence, in Brazil — created different photographic processes throughout the 19th century.

Traditionally the occurrence of multiples has been attributed to the level of development of scientific technique and instrumentation and to a so-called cultural maturation. Following that, photography in Europe has been attributed both to the development of scientific and technical knowledge, concerning the properties of sensitive chemical substances and the improvement of the camera obscura, and to a new world-view that has been taking shape in Europe. This new world-view derived from some social changes linked to the French Revolution and Industrial Revolution, which led to a process of modernization establishing a bourgeois society and a capitalist economy in Europe.

But what one can be said regarding the Brazilian context at that time? Florence's photographic process has been explained using primarily the idea of genius inventor. Authors, such as Morand (1989), argue that Florence was the only person to make an inevitable discovery by chance because there were no social, economic and cultural conditions in the Brazilian context, which could drive anyone's interest in such a pursuit.

Nevertheless, I argue that Florence's ingeniousness does not explain how his photographic process was developed in the 19th century Brazil. Instead it is held much more as evidence that Brazil was an exotic land, not amenable to scientific progress and technological innovation. The context in which Florence worked has been ignored in previous studies, as if it played no part in the process.

Based on the previous assumptions how can the discovery of a photographic process in Brazil be explained? What made Hercule Florence become involved in the problem of representation that motivated his European contemporaries? How did the

contextual factors play a role in Florence's struggle to create an original process of fixing and reproducing images?

This investigation is not asking whether or not photography is a multiple, but rather it is aimed to throw further light on the above questions, placing considerable emphasis on identifying the factors that originated and shaped Florence's photographic process. A detailed reconstruction of his process was carried out through a direct examination of his manuscripts and other relevant documents of the period.

The contingencies

I argue that independent of the context, the daguerreotype, the calotype, and Florence's process were produced as techniques of representation to fulfill new image demands. In Europe, these were mostly created by a new social reality. In Brazil, they came from Florence's need to develop techniques of image reproduction to make public his drawings produced during the Langsdorff expedition[4], creating at the same time techniques of representation which fit into a new conception of landscape launched by Alexander von Humboldt and caught by Florence during his work as a painter in that expedition (Fig. 1).

Fig. 1 - Florence, Apiaká indian, watercolor and ink

[4] Florence has joined other artists and scientists traveling around Brazil from 1825 to 1829.

Humboldt influenced many travelers last century not only for his scientific work and his graphic registrations but also for his orientation and coordination of scientific and artistic works. His influence was spread out through an intense correspondence with the contemporary naturalists, mainly those linked to the Academy of Sciences of Paris and for his performance in international scientific societies.

According to Humboldt, the outcome of traveling artists' work had to reveal a commitment with naturalistic models. In other words, it was required an approach free from artistic motives, assuming a direct observation of the truth of the world, a supposed "objective" representation of the "real world". Florence must have incorporated such ideas through Langsdorff.

The process

Following Florence's process (Fig. 2), the images were fixed by the action of silver salts (chloride and nitrate) or gold (chloride) upon paper which was used as base for the copies. These copies were obtained after 15 minutes of exposure to the sun through contact with drawings made on blackened glass plates used as negatives. Florence first used urine as a fixing agent, later replaced with ammonia. Considering that light was playing the main role in this process, Florence called it "*photographie*".

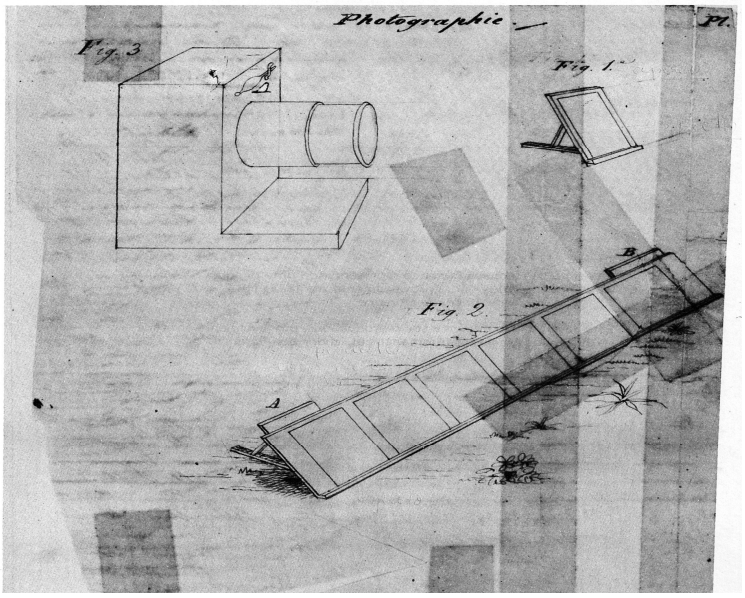

Fig. 2 - Photographic equipment developed and used by Florence

Through this process, Florence impressed pharmaceutical labels (Fig. 3) and a masonry diploma (Fig. 4) around 1833[5]. In 1976, Boris Kossoy, a Brazilian photographer and historian, submitted these experiments to tests at the Rochester Institute of Technology, US, and presented evidence that Florence was the first person to use the word "*photographie*" in 1834. Until then the first use for such word had been attributed to the English chemist and astronomer John Herschel who would have used it five years later in 1839.

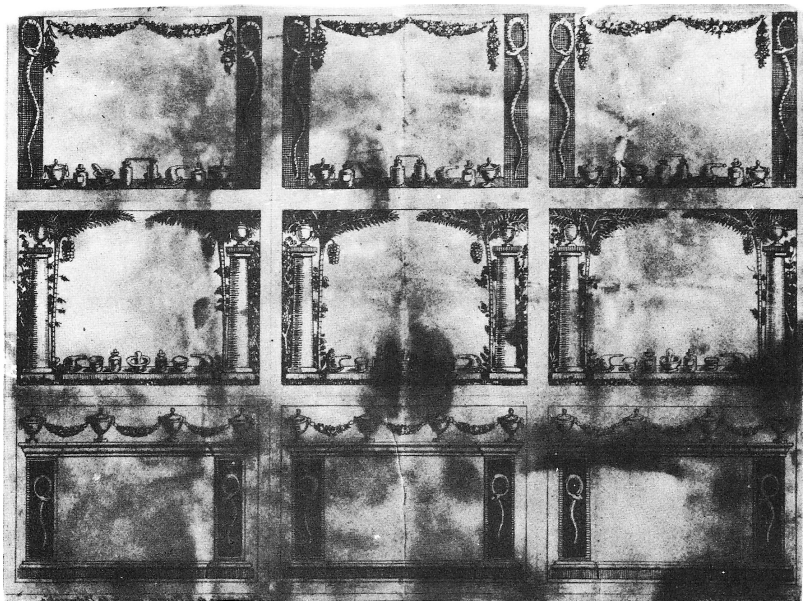

Fig. 3 - Photographic copy of pharmaceutical labels produced by Florence

[5] Although one can read "1833" in Florence's manuscripts, the copies do not show any kind of inscription which can be used as evidence.

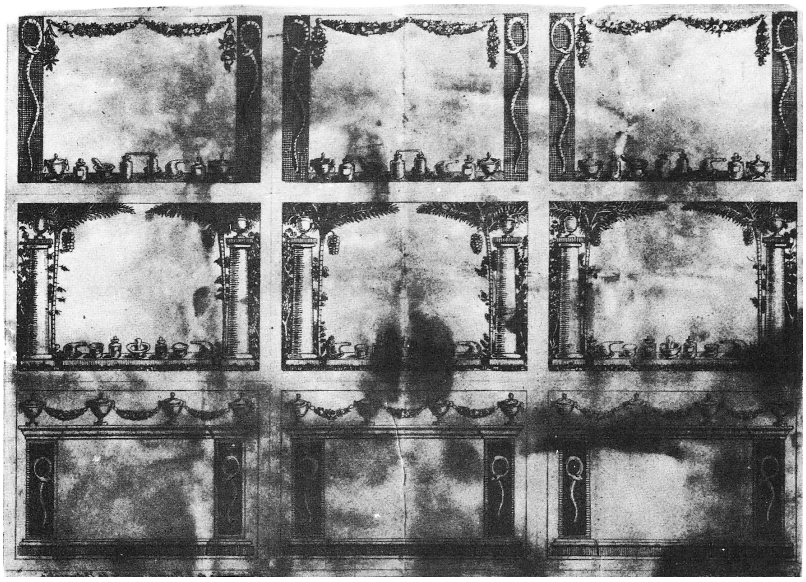

Fig. 4 - Photographic copy of pharmaceutical labels produced by Florence

Conclusion

Photography in Brazil was part of a context created on the margins by a cultural exchange that has grown during 19th century. That created a particular set dominated by a selected group composed by local politicians, artists and amateurs, including Florence himself. This new scenario included the print of newspapers with translations of scientific papers, the arrival of European travelers, the import of books, the immigration of artists and scientists – such as Langsdorff.

I do not deny Hercule Florence's individual talents or the adversities he had to face in his work. The argument here is that those very same adversities helped to shape his process of fixing images. The local peripheral circumstances are embodied in the final form of Florence's process: a photographic process without a camera obscura and the initial use of urine as a fixing substance.

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