

# Gillotage. Exploring a mid-nineteenth century relief printing technique

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## ABSTRACT

Gillotage, a relief printing method used in nineteenth century commercial industry, consists of using a lithographic transfer of an image drawn and processed on stone to a metal plate, while avoiding undercutting the raised areas of the design needed to obtain a relief printing plate. Gillotage was a first option when it came to reproducing an illustration in a commercial sphere, being a cheaper alternative to relief printing methods such as wood engraving. This article wrestles with a fundamental problem: is it possible to recreate the material conditions, interpretations and successful printing outcomes as present in original gillotage? How to contend with the unfortunate demands of historical and unfamiliar technologies of reproduction and adapt them to a contemporary practice? Can a project based on an obsolete printing technique used with letterpress printing demonstrate how to engage researchers and students in new printing approaches?

Our technological reconstruction helped us to better understand the materials and components of gillotage, the aesthetic and tactile qualities achieved by these methods which have not entered a printmaking studio. Nevertheless, such operational circumstances may thus be understood as an invitation to experiment, contradicting the original use of making a print as a means to reproduce. We aim to get closer to an alternative printing matrix compatible with letterpress printing while developing methods to involve print practitioners in printing history and experiment with materials in their creative practice.

## GILLOTAGE: NOT SIMPLY A RELIEF-PRINTING TECHNIQUE

If one were to open a drawer in any letterpress and bookbinding studio, one might well find an array of relief printing plates, ranging from halftone photographs to photo-engraved line relief printing blocks. These relief printing plates

are not literally gillotage but are rather a mid-nineteenth century invention. Further, by looking at the turn of the century historical advertisements for graphic company services, one might identify several methods for reproducing drawings, and various terms serving to describe photoengraving relief printing techniques. Such blocks show the mechanical screens and halftones which were widely used in twentieth century printed illustrations. Today, photomechanical companies[1] continue to produce photoengraved magnesium plates, mainly for printing labels and stamping cork



Figure 1



Figure 2

Figure 1 Previous project: Printing from metal relief plates by the early 20th century Portuguese photoengraver Marques de Abreu. Project Lázaro, organized within IN PURE PRINT 2015, Faculty of Fine Art, University of Porto, Portugal. Online access: [https://pureprint.fba.up.pt/2015/?page\\_id=254](https://pureprint.fba.up.pt/2015/?page_id=254). Photo credits: Catarina Marques da Cruz

Figure 2 Printmaking workshop, Marta Belköt and Sandra Costa Brás working on gillotage. Photo credits: Kasia Harciarek, 2020

stoppers.

## INTRODUCTION TO GILLOTAGE

Relief printing plates made by photomechanical methods, resulting in a photographic appearance, contrast with the original gillotage, which had a seductive simplicity. Initially named Panicography, and later called gillotage[2], was a pre-photographic process for reproduction strongly linked to lithography and upon which modern photogravure was developed,. It was Firmin Gillot who first found a way to improve this non-photographic printing process, avoiding the undercutting of the raised areas of the design to produce a relief printing plate. Gillotage involves the combined use of transfer paper and greasy lithographic transfer inks to reproduce original drawings onto zinc plates. After the image has been printed, transferred, or directly drawn to the metal the plate, it is gummed, dusted, well charged with ink and repetitively etched to create a relief printing plate.

One key feature is that gillotage, as a process, testifies to the transformation from an initial separation between techniques to a convergence. An image starts out as a planographic process but gets converted into a relief metal plate compatible with letterpress printing. At the time of its invention, this meant that the syntax of an original drawing, or even a print, could be kept intact and combined with typeset. This is far from being practiced today, as such techniques in a fine art print studio tend to be handled separately. Additionally, technical descriptions do not seem to recognise how difficult it would be to achieve standardised practices and perform advanced means of reproduction based on extensive protocols, as we found out ourselves when reconstructing the process. Further, one is not prepared for the diversity of materials used to coat papers, make an ink or the steps to prepare the plate.

In spite of all this, and being aware of the technological complexity of gillotage[3], we examined how the processes, instruments and materials involved return a lot more for incorporating into the very heterogeneity of drawing and print production. Alongside this, our approach aimed to activate contemporary art practice based on the experimental and innovative value of prepared paper as a privileged stratum.

## BACKGROUND TO TERMS USED AND HISTORY

By converting the chemical lithographic surface into a typographic version, Gillot achieved a crossover, and we may see even today techniques closely derived from gillotage being applied for producing relief printing plates. Gillotage was a popular choice in the commercial sphere as a cheaper and faster way of relief printing than wood engraving. Nevertheless, the impact of gillotage was slow. It took three decades from its first presentation at the 1855 exhibition to actually gain recognition. Even if lithography can be accredited as the first truly reproductive technique, enabling the multiplication of drawings without



Figure 3



Figure 4

Figure 3. Gillotage process: Gumming the plates, and charging with ink. Photo credits: Cristiana Macedo

Figure 4. Preparation of transfer ink: (1) Cooking mutton fat; (2) Separating pure fat from the rest; (3) Adding component ingredients: soap, beeswax, lithographic ink, shellac; (4) Mixing and dissolving it all together; (5) Setting it on fire, leaving half of the ink to burn before covering; (6) Placing in a jar. Photo credits: Marta Belkot, Rafaela Lima, 2020

any interpretation into a new language, it was gillotage, through technological advances introduced by its combination with metal, that actually facilitated the commercial reproduction of images for the illustration of books and magazines.

Firmin Gillot followed earlier processes invented by Tissier to turn lithographic stones into relief, and was also aware of the anastatic printing reuse of printed images transferred onto zinc plates (Pinsard, 1897). Perhaps Gillot was also aware of William Blake who, in 1788, created relief etching plates, applying an Illuminated Printing technique as he called it. Gillotage printed images exhibit remarkable continuity between lithographic drawings (Duchâtel & Bénédite, 1907), even though it is a relief-printed output on metal otherwise used for letterpress printing. As a technique, this displaced lithography as the means of printing popular imagery through reproducing the grain of the crayon, and even the brush mark of dry India ink.

Manuals on illustration (Hinton, 1884) clearly mention the differences between the halftone processes and the earlier, non-photographic version of gillotage, considering the former more useful and appropriate for illustration[4]. Significantly, as Comnte details, a wood engraver was no longer needed to redraw and translate the information supplied by the artist, as the Gillotprocessallowed for the mechanical translation of a hand-drawn syntax onto the plate (Bouvier, 2004).

Gillotage, based on the mechanical transfer of images from paper, stone or metal, could be processed by any good plate-maker and then reproduce what others had created almost as if intact (Villon, 1924). Evolution in this process added a key feature: the transfer of papers combined with photomechanical processes made it possible to draw directly for reproduction, avoiding any utilisation of grained stones or metal plates (Harper, 1894). Therefore, whenever drawing for reproduction as publishers at the time insisted on, artists were constrained to a paradigm not matching the expectations of directly engaging in creating an original print.

## CROSSOVER: GILLOTAGE AS AN INFLUENTIAL TECHNIQUE

New developments in photoengraving evolved swiftly from 1880 onwards and, like earlier analogue versions of engraving, continued to play a role in letterpress printing. In a chapter dedicated to this technique, Villon talks of photoengraving in relief or gillotage as one and the same thing (Villon, 1924). Nevertheless, examples of indirect lithographic transfer are less well known, or at least less visible than direct lithographic plates in popular magazines as alternatives based on their combination with photography. Villon, like Davanne (1886-88), considers that the success of gillotage stemmed from its combination with photography, and provides the first clues about the progressive move from stone to plate while suggesting that drawings would be done with autographic ink, and from there to photography.



Figure 5



Figure 6

Figure 5. Transfer of image from stone to transfer paper and from transfer paper to metal plate. Photo credits: Marta Bekot  
 Figure 6. Chão (2021) by Graciela Machado. Installation exhibition: Impressões da Natureza: Ensaios entre jardins. 05 November 2021 to 21 January 2022, Pavilion de exhibitions FBAUP, Porto. Gillotage printed on carbon papers 297 x 210 mm. Photo credit: João Lima

To sum up, panicography, as originally named by its inventor in its 1850s patent, successfully promoted experimentation and, in turn, led to a series of new inventions.[5] This reinforced a revolution in print by enabling an artist's lithographic, etched or drawn image to be transferred directly on to a plate without an intermediary (Grandidier, 1878).[6] In keeping with that principle, later variations appeared (Monet, 1888), with some still based on mechanical strategies, such as Charles-Guillaume Petit's embossed net of lines over a photosensitive gelatine coating (Gervais, 2010). Likewise, when Davanne analysed the alternatives existing for printing photography, he attributed first preference to those based on direct photographic transfer as photo based printing techniques were already then taking over (Davanne, 1886-88).[7] Chemical printmaking was a technical breakthrough, inspiring others to take out patents for similar processes.[8]

### MOTIVE FOR CONDUCTING A TECHNOLOGICAL RECONSTRUCTION BASED ON AN OBSOLETE COMMERCIAL PRACTICE

Commercial printing technology, just like lithography, has largely abandoned letterpress printing and metal as a printing surface. The photo relief techniques in contemporary companies might produce magnesium plates for the rare cases when print practitioners cannot find another way to make their work. Such plates, as photopolymer plates, can be combined with letterpress printing just like phototypographic plates in the past. Hence, if technical solutions seem to exist, responding to creative usages, why should we now recreate the technique of gillotage? Why keep an interest by a process known for its time/labour-intensive procedures and mainly used to reproduce drawings? What is there to see in this technique, having been rendered commercially obsolete? How do artists react to the crafted nature of this reproductive process?

Gillotage is a process displaying an imitative structure. It is a chemical image untouched by artist's hand,[9] in which previously there had only seldom been direct engagement with making a print.[10] Early descriptions of the process note that it took eight years after patenting to improve an idea that was extremely complex to achieve. In the 1870s, Lostalot warned his readers about the difficulties of etching the plates according to the gradations of the original transferred drawings as much as justifying its usage in reproducing artist drawings and illustrations (Lostalot, 1882). Manuals insist how the original process of gillotage is delicate and highly demanding, requiring a sensitive operator to retain the details of the original drawing along its many steps (Lemerrier, 1896).

Today, to recreate the original material conditions, we needed to reinterpret the historical recipes and instruments found in graphic manuals and look back at digitised specimens and analyse descriptions. Inks and components for making transfer papers are no longer currently used: for example commercial paper brands such as Angerer



Figure 7



Figure 8

Figure 7. Chão (2021) by Graciela Machado. Installation: Impressões da Naturalia: Ensaio entre jardins, 05/11/21 to 21/01/22, Pavilion de exhibitions FBAUP, Porto. Gillotage printed on carbon papers 297 x 210 mm. Photo credit: João Lima  
 Figure 8. Reflection (2020), Marta Bełkot. Gillotage, 420 x 297 mm. Image credit: João Lima

and Gillot or Goeshchl of Vienna have no replacements in the market (Waterhouse, 1890).[11]

### CHALLENGES FOR DEVELOPING AN ADEQUATE METHODOLOGY

To reconstruct such a technique, a printmaker must become a practical researcher trying to combine practical know-how with historical research. One must reconstruct procedures created outside a printmaking studio with a hybrid approach, going through steps of making that involve hands-on training in traditional printmaking techniques: lithography, etching and relief. One needs to share an intellectual engagement with others to be able to create the basic materials to work with – such as transfer inks, transfer papers – after interpreting the technological sources not otherwise dealt with within a fine art print context.

To overcome the material barriers of such a system and to create new opportunities for learning starts out as an exercise in resistance and becomes a vital methodological tool. Revising such settings without excessively compromising the original efficiency and overcoming the distance to making, which has been undermining a printmaking practice, aids the elucidation not only of the purpose of printmaking's reusing of techniques, but of the power of media and processes to expand its limits. Print practitioners involved in this specific re-creation became fascinated with gillotage's material plasticity as much as with its reproductive fidelity. Both the process of plate production as well as the process of printing, in the hands of artists, show examples of how historical print practices lend themselves to appropriation, adaptation and reconstruction, and the utilization of their critical potential. Further, it shows how these approaches contribute to a material interrogation of printmaking.

### OBJECTIVES AND GOALS: TO PROVIDE AN ORIGINAL SPACE TO EXPERIMENT WITH IMAGES

As a technique, gillotage has a revolutionary potential built into the means of its making, which is not possible to anticipate without actually experiencing the process.[12] This technique is also known as rolling up process, based on multistage metal plate treatment, where first the metal plate is immersed in graining bath of alum and nitric acid to create a matt surface to which later the drawn or transferred area is protected from several successive etching stages by gumming, resin dusting and ink charging. (There are similar processes which arose after the development of Gillotage (also termed the French Process) such as The Austrian Process, which differs in priming the metal plate with nutgall and the use of asphalt powder, and also The American Dragon Blood Process which involves dichromate albumen and dragon's blood as the resin substitute.)

### A SET OF PROBLEMS

Historical manuals describe in detail the exact order and number of



Figure 9



Figure 10

Figure 9. Reflection (2020) by Marta Belkot. Gillotage, multiple 420 x 297 mm. Photo credit: Marta Belkot

Figure 10. In the Woods (2020) by Sandra Costa Brás. Photo zincography/gillotage, 280 x 180 mm. Image credit: Sandra Costa Brás

operations that should be undertaken to produce a successful work of gillotage. Following these directions was highly effective for hand-made reconstruction. Several nineteenth century commercially available products were recreated and used within the process[13] as an anti-industrialist stance draws us closer to an artisanal mode of production, even when using semi-industrial set of solutions. The nature of the materials exerted fascination: they provided a reason to slow down and pay close material attention to image formation. Research team members also quickly encountered the imperfections and difficulties this process might meet if it were to be produced in printmaking studios. We came to understand how gillotage owes its success to years of demanding practice within a semi-industrialised context, performed by highly-skilled executants with well-adjusted machinery to reach excellent outcomes.

In order to print by the relief method, the printing plate must have much deeper grooves than for intaglio printing. To do this, we had to produce and test different kinds of transfer and autographic inks based on historical recipes (Wilkinson, 1888; Vidal, 1893), as well as diverse kinds of transfer papers and surface prepared papers – listed by Rhodes (1914) – that are no longer available on the market. To apply Firmin Gillot's method of etching in stages we undertook the process described by William Gamble (1900) as the French process or Rolling up process or also gillotage, which presents complex and multi-layered procedures conducting to a compound printmaking matrix printable in diverse manners.

Initially, we recreated several coatings on heterogeneous papers to identify the best paper to proceed with. Several types of autographic inks were also tested with different nib pens on paper and limestone. Consequently, we transferred the image from limestone to hand-made transfer paper and, under an intaglio press, from the paper itself to a polished zinc plate.

Along with this review, we considered a combination of practices. Through technological reconstruction, we tested the scope of a reproductive competence historically recognised on transfer papers and surface prepared papers combined with gillotage. Finally, we tested the limits of the technique by considering both linear autographic drawings prints based on the bitmap dot structure to understand, in a post-digital context, what the artistic transformations of a digitally-made image reproduced by gillotage might be. Our tests included smooth textured, transparent up to heavily textured transfer papers and direct printing using flexible photopolymer plates.

## INTERPRETING A PROCESS

In basic terms, gillotage consists of the lithographic transfer of the image drawn and processed on the stone to the metal plate. Let's not forget, Firmin Gillot took Senefelder's invention of lithographic transfer paper, combined it with the application of transfer ink, and applied it to produce a product that could be used with mechanical letterpress

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printing. The indexical nature of the original drawing or photograph is undermined by the process as the flat tonal image supplied by a transfer method is deeply etched and converted to a relief plate.[14]

It should be stressed that such close material attention to gillotage served the purpose of developing a new set of artworks where each researcher involved in its reconstruction elaborated on the use of various transfer and imprinting processes.

## **METAPHORIC GROUND**

Graciela Machado's approach was motivated by a desire to find a new kind of reproduction to be added to a list of experimental techniques collected over the years. Exposure to gillotage plates provoked her to question the function of direct material contact and the prominent presence of earth in her practice. Through the medium of print installation, Machado looked for an original tangible ground upon where she could construct an infinite horizon line.

Typically gillotage prints are associated with bold black ink deposited on white paper. In Graciela Machado's proposal, through the unconventional use of carbon paper, this solidity turns into transience, a delicate understatement of transparency and immateriality found during the process of making the plate (Chão, 2021 by Graciela Machado). The difficulty, inaccessibility, and non-obviousness of a dialogue with gillotage resulted in a sequence of fragile, thin black carbon papers. Both plates were used to generate the images, as the prints obtained on carbon paper repeated the relevance of working with compounds so as to create a metaphoric ground. A long-term search around the use of a single image caught in Iceland in 2008 turned into an endless image printed onto a delicate and sensitive commercial black paper composed of cellulose, wax, grease, pigment, which was, in the end, a fragment of earth endlessly changing. A prepared surface paper produced for copy and transfer purposes is reversed in its function: from transferring a design up to hold the three-dimensional properties of relief and intaglio plates moulded into its surface with white ink. In some prints, one experiences the deprivation of its initial wax due to the pressure deployed during printing, so acute when using a gillotage plate. Materiality, time passing, and a certain feeling of violence, expressed in the ground lifting, serves to describe image volatility, touch, and the fleeting memory of a place, here used as a metaphor to an endangered land.

## **DIGITAL ETHER**

Marta Belkot's (co-author) and Brás' attraction to gillotage was based precisely on its hybrid profile. Brás' plates combined lithographic sensitivity to grease with a bichromate photosensitive solution to obtain images directly on metal plates that echo a black and white photography laboratory, although the negative images are here enriched with dramatic surface qualities. Belkot's plates were built from fingerprints as typed on acetate placed on top of a computer

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keyboard.

The light but repetitive motion of bodily contact signifying the hours we pass in front of computers, and reminding us of the ubiquity of the digital in our lives, was converted through greasy transfer ink to give substance to routines that usually leave no visible trace. Brás developed her images out of film negatives taken in a forest during the pandemic, exploring the concept of impermanence and emptiness. For both artists, the important foundation of their work is the depiction of delay, the waiting, the unforeseen and the absence of absolute control. Both artists approach the concern over seeking refuge from the digital ether and to confront the self with print materiality as a means to question the circumstances in which we were or are.

## REFLECTION

To assess the viability of a time-consuming process, one must balance its potential for the print practitioner who wishes to produce alternatives based on natural ingredients. Secondly, re-creation of a technique confirms whether it can create a disruptive technology in the face of already available historical fine art techniques. Thirdly, this is a technique completely based on analogue means, despite being the forerunner of directly transcribable photographic processes. Fourthly, as an autographic technique, this involves a mechanical transfer of drawings, using methods developed within the field of lithography, etching and relief, applied in various ways. Fifthly, Gillotage's inability to reproduce gradations of tone may be challenged. Finally, not having access to any original matrices nor prints, we relied upon one principle: that technological reconstruction allows the print practitioner to experiment and transform technological fascination into art.

Moreover, challenging the reproductive competence of the process, to focus on material aspects, leads us onto further topics of future research. Using original recipes developed within a commercial sphere offers print practitioners the scope for gaining new tools to understand printmaking. This includes the utilisation of customised hand coated grounds on paper for drawing or printmaking. The study must be followed by systematic experimentation, which is in itself not without problems and limitations. For example, some recipes may have been published in an abbreviated written form (Cumming, 1948), while others relate to a semi-industrial daily practice of a specialised graphic art company at the turn of the nineteenth century (Smith et al., 1936). Hence, these new insights were shared within a workshop where a first manual describing the step by step of this practice was presented. This research also builds upon earlier topics of investigation which collected, inventoried and recreated an extensive number of historic sources on paper (Machado & Belkot, 2019).

Recreating gillotage opened up several kinds of experimentation: to study how heavily prepared papers can replace conventional matrixes as masters for creating further effects; to extend the function and characteristics of the preparatory system used in gillotage metal plate

preparation; to gain a wider perspective on materials used to produce grounds, coatings, drawing and processing inks. Along with such ideas, one must accept that perhaps the nineteenth century techniques can no longer be recreated with the same efficiency and probable uniformity. Debates about the originality and acceptability of the reproductive printmaking process are no longer contentious (Pelzer-Montana, 2018). Morenus makes it clear that when Joseph Pennel applies lithographic transfer paper, it is about allowing diversity, heterogeneity and multiplicity in a practice where the means of reproduction coexists with the means of creation (Morenus, 2004). What is at stake when one works with gillotage plates is the perception of printmaking as a visceral medium in which techniques from the past may find a way of dealing with materiality, and time. Therefore, the process of remaking gillotage by artists opens several possibilities: translating images using a technology tainted by an imitative structure; rediscovering forgotten materials, processes, techniques, and object-character.

## FUTURE STUDIES

The process of translating forgotten techniques into actions, and the multiple issues raised by doing this, provides valuable lessons about experiential knowledge and broadening methodologies of research in art practice. Working on this in a contemporary printmaking studio may reinforce a fact within artistic research that collaboration is vital for experimental approaches to image reproduction.

Reconstructing the craft and knowledge of pre-industrialised contexts consolidates the scope of fine art printing in new and significant ways. Hands-on research, combined with the application of information found in practical books on graphic arts, helps to reintroduce materials, preparatory systems and techniques, all informed by the richness and complexity of pre-industrial making. As such, new methods of plate making can be found which focus on the sole goal of producing image facsimiles. Original recipes can be rather detailed and assume knowledge from then existing practical training which has since disappeared. Nevertheless, the rediscovered materials add a unique angle of research into artistic practices, particularly in techniques developed to efficiently reproduce pre-drawn images.

This explains the printmaker's role in systematising and complementing pre-industrialised printing methods to fine art print contexts. Whilst these may suggest offering artists and designers access to old materials and complex techniques, the principles may have value for the development of new, fully integrated approaches to highly creative and experimental print production, thus expanding current print media research boundaries.

By carrying out this technological reconstruction, print history is re-interpreted. The remaking displayed in plates and prints, coated papers and various other hitherto-forgotten methods in fine art studio practice reveals how chemical printing disrupted and expanded the possibilities for pictorial expression. Bringing together separate inventions of

printing, hybrids such as gillotage reveal new ways of looking back at history. Moreover, even though gillotage was the first method to propose an alternative to reproductive wood engraving, anticipating the hegemony of the halftone image present in later inventions, in contemporary practice it proposes original technical features which are valid for expanding the scope of relief and lithographic printed images.

## POSSIBILITIES FOR CONTEMPORARY PRODUCTION

Practical research[15] demonstrates how such methods developed within commercial contexts can be reconstructed through deploying basic printmaking studio equipment. Components of the process can be substituted by hand crafted products responding to the technical demands of the transfer process to produce a drawing appearance which in many ways mimics the look of a print.[16] Despite the complex and time-consuming tasks used within commercial sphere of printing efficiency, in the fine art print context, the gillotage process promotes innovative applications and forces a feature of the culture of printing: cooperation in order to produce all its key components. Replications can take place based on collected coating formulas and transfer inks and using a lithographic or intaglio press.[17] Brushing coatings or impressing textures onto prepared papers, similar to printing with water-based India ink, rank among the various options found in the commercial paper brands available in the past (Machado et al., 2020). Most importantly, such decisions allow researchers to gain first-hand experience of an intensified print process based on paper and plate as a privileged stratum for drawing.

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## FOOTNOTES

[1] Such as Fotomecânica Molográfica in Oporto, Portugal.

[2] Firmin Gillot was a lithographer born in 1820. Panicographie, later called Gillotage, zincography, was patented in 1850. He opened his industrial establishment in 1852.

[3] From 1877, the process was combined with photography. By using Gillot paper, instead of using analogical mechanical transfer, the photoengravers would photograph and expose a positive taken from the original scraperboard autographic drawn image directly onto the plate. gillotage was then a photomechanical process.

[4] Often used for documenting for illustrated journalism publications.

[5]The 1850s patent describes the process of panicographie as enabling people to reproduce drawings or prints on a zinc plate.

[6] Descriptions mention the use of autographic ink transfers, but also prints and drawings on stone, direct metal transfers and typographic proof transfers, demonstrating the intermediary nature introduced by transfer paper.

[7] Davanne explains the difficult balance between ink transfer and etching and is well aware of the difficulties in achieving a good relief printing with gillotage.

[8] When reading descriptions, similar solutions to the later use of scraperboards were patented by Kracow. The first mention of the updated gillot version on the use of prepared surface papers is actually based on impressing crossed lines with a roulette. The mechanical structure helps to transform the drawing into the net of lines or dots needed for reproduction, the same as Kracow would achieve by impressing.

[9] Process prints such as gillotage were employed at the same time as original fine art print techniques were under reconsideration by modern artists.

[10] Involvement with plate making was not possible as this was the work of specialised workers.

[11] The best tinted papers are referred to as manufactured by these brands in Practical Notes on The Preparation of Drawings by Waterhouse.

[12] Earlier tests reviewed the use of photosensitive albumen with dragon's blood as an acid resistant resin and one stage biting. In this case Korn's and Charbonnel's commercial transfer inks were used. Such results, combined with straightforward bibliographical references, gave us the confidence to proceed onto producing a more complex multi-biting plate. See Projeto Lázaro arqueologia de um património tecnológico de origem comercial, organização: i2ADS, Unidade de Investigação em Arte e Design / FBAUP, University of Porto, Portugal, December 2015 to December 2018.

[13] Nutgall's decoction, processing mutton fat, transfer ink and finishing ink.

[14] Gillotage involves the production of a relief printing plate and, as such, differs from zincography, as the latter is only superficially etched, and printed as a lithograph. By means of several intervening steps, a flat image is sufficiently raised to be printed on a conventional letterpress machine.

[15] Workshop entitled: Gillotage. Exploring a mid-nineteenth century relief printing technique. Professor Graciela Machado (writer) and PhD students: Marta Bełkot (cowriter) and Sandra Costa Brás (cowriter) at the Post-Digital Letterpress Printing Conference, FBAUP, Porto, Portugal.

[16] Process papers obviate the need to draw on matrices as tinted grained papers heavily coated and printed with black lines can be used as substitutes. Lithography transfer paper, and greasy inks made to work on manual lithographic transfers are other gillotage key components.

[17] A mechanical intaglio hand press was used for calendaring or impressing textures. Textures found in the original prepared surface were reproduced using grained stone, fabric and plastics. Procedures previously developed to facilitate photomechanical reproduction in an industrial context can be applied using basic print studio technology.

IMAGE GALLERY



Figure 1. Previous project: Printing from metal relief plates by the early 20th century Portuguese photoengraver Marques de Abreu. Project Lázaro, organized within IN PURE PRINT 2015, Faculty of Fine Art, University of Porto, Portugal. Online access: [https://pureprint.fba.up.pt/2015/?page\\_id=254](https://pureprint.fba.up.pt/2015/?page_id=254). Photo credits: Catarina Marques da Cruz  
Figure 2. Printmaking workshop, Marta Belkot and Sandra Costa Brás working on gillotage. Photo credits: Kasia Harciarek, 2020



Figure 3. Gillotage process: Gumming the plates, and charging with ink. Photo credits: Cristiana Macedo

Figure 4. Preparation of transfer ink: (1) Cooking mutton fat; (2) Separating pure fat from the rest; (3) Adding component ingredients: soap, beeswax, lithographic ink, shellac; (4) Mixing and dissolving it all together; (5) Setting it on fire, leaving half of the ink to burn before covering; (6) Placing in a jar. Photo credits: Marta Belkot, Rafaela Lima, 2020

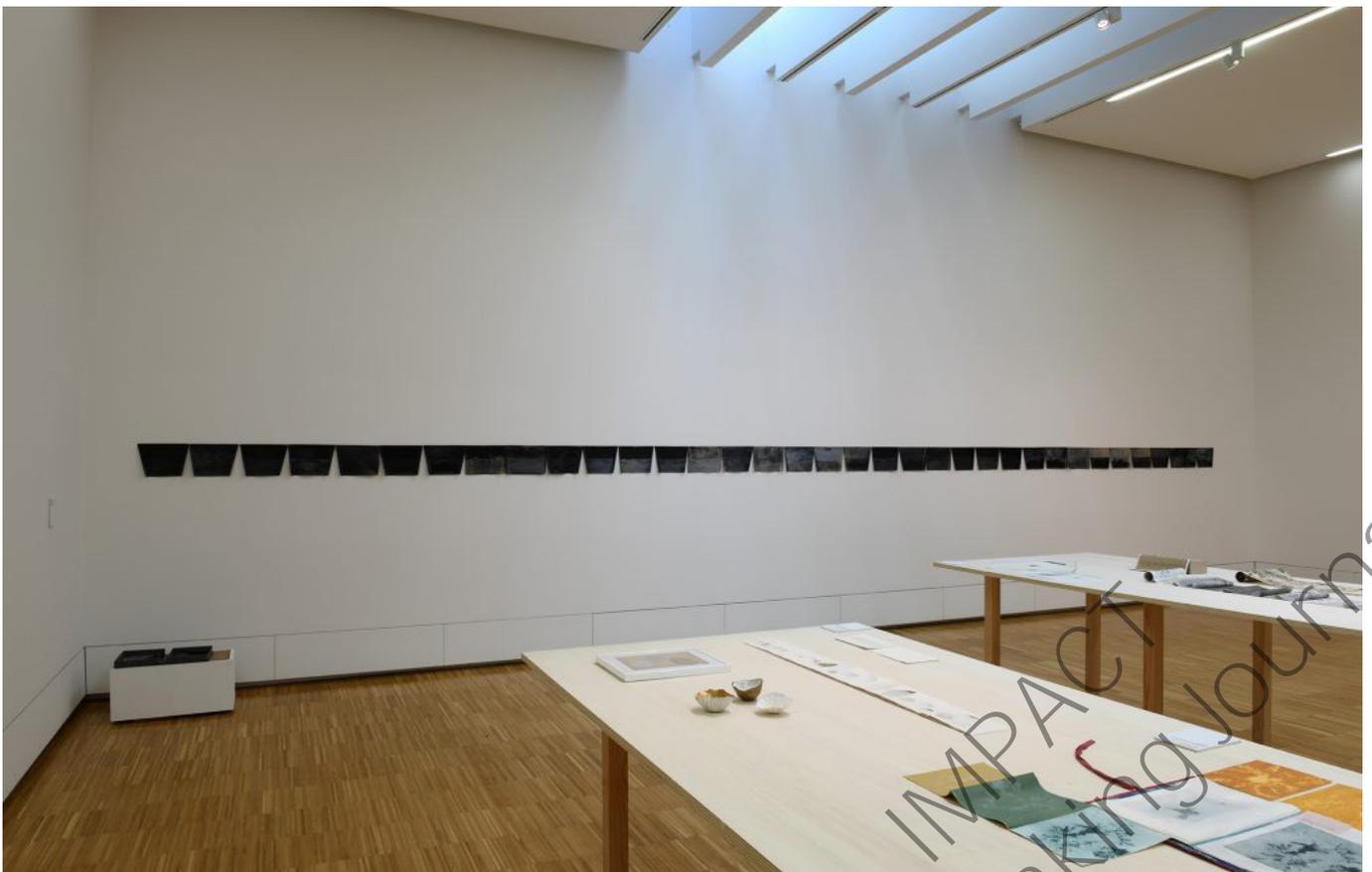


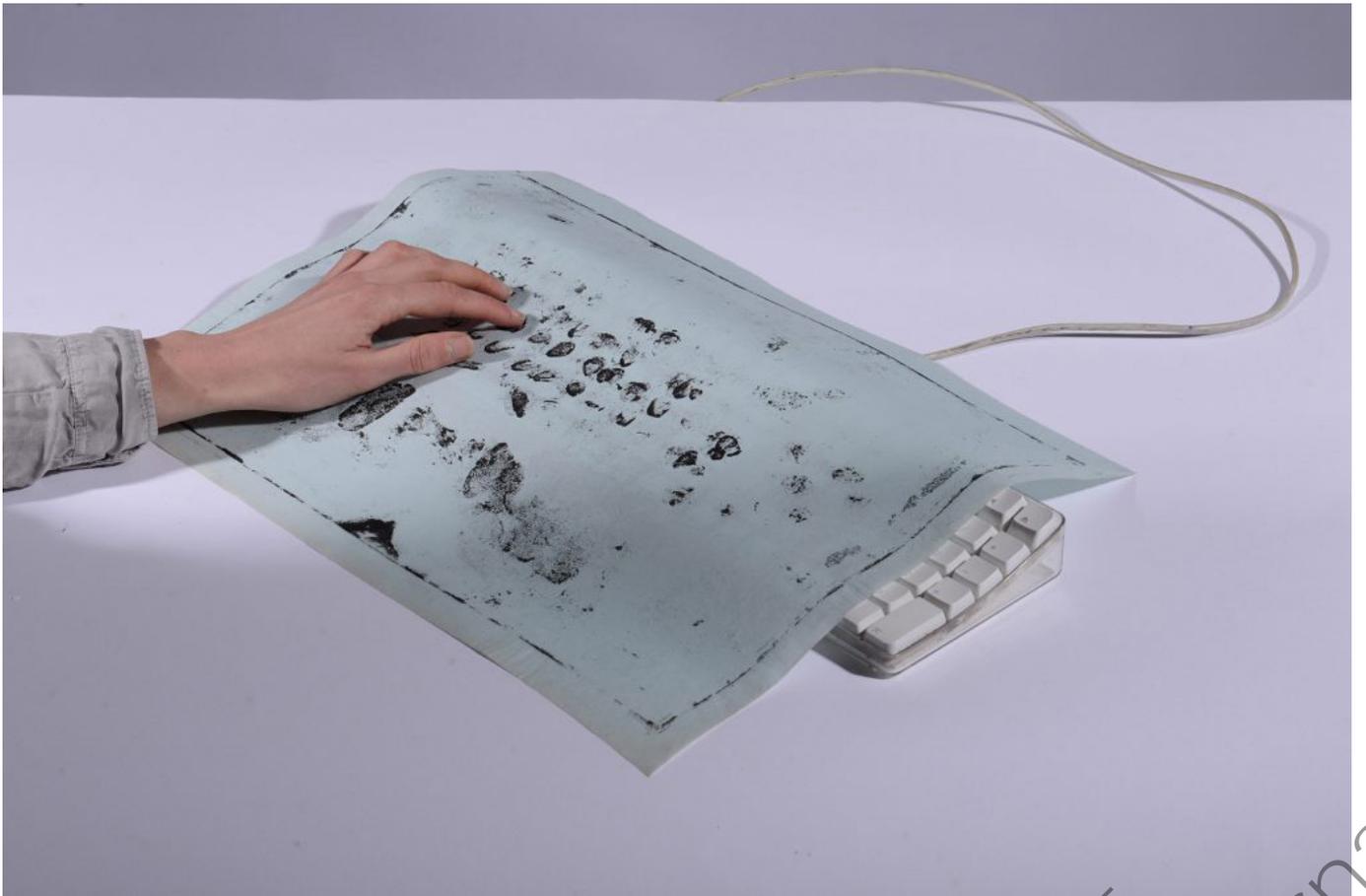
Figure 5. Transfer of image from stone to transfer paper and from transfer paper to metal plate. Photo credits: Marta Belkot

Figure 6. Chão (2021) by Graciela Machado. Installation exhibition: Impressões da Natureza: Ensaio entre jardins. 05 November 2021 to 21 January 2022, Pavilion de exhibitions FBAUP, Porto. Gillotage printed on carbon papers 297 x 210 mm. Photo credit: João Lima



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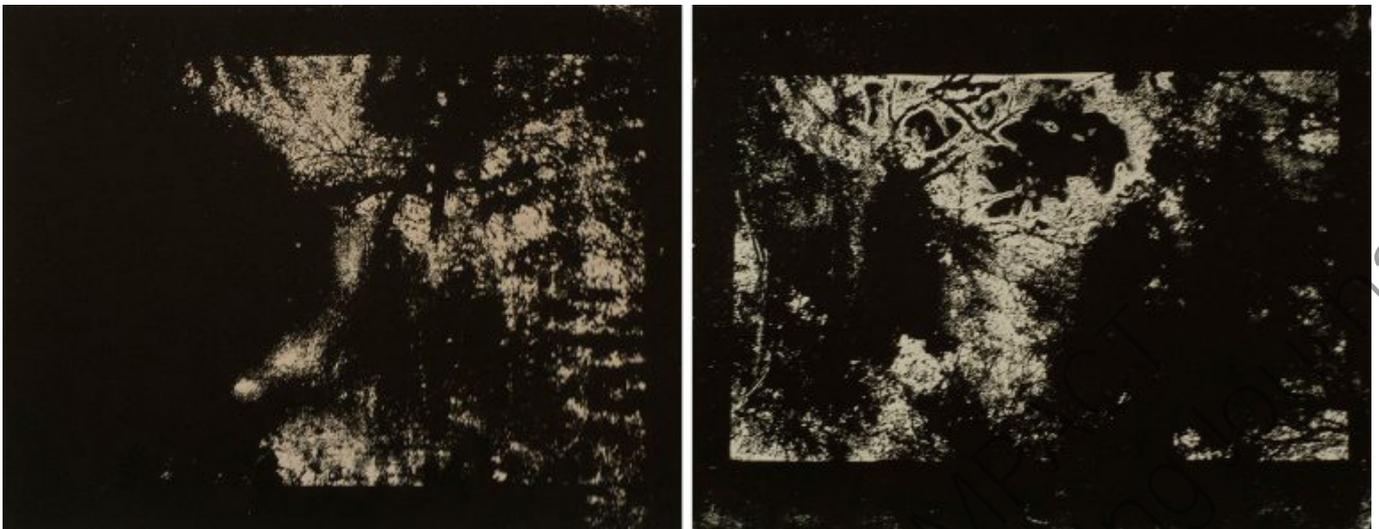
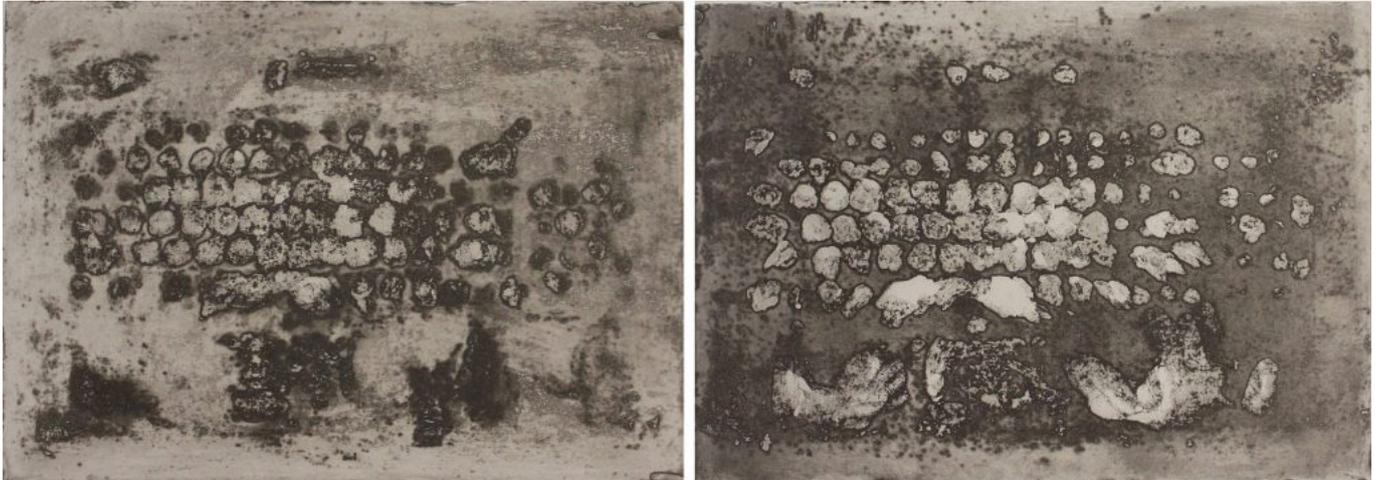
Figure 7. Chão (2021) by Graciela Machado. Installation: Impressões da Naturalia: Ensaios entre jardins, 05/11/21 to 21/01/22, Pavilion de exhibitions FBAUP, Porto. Gillotage printed on carbon papers 297 x 210 mm. Photo credit: João Lima



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Figure 8. Reflection (2020), Marta Belkot. Gillotage, 420 x 297 mm. Image credit: João Lima

IMPACT  
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Figure 9. Reflection (2020) by Marta Belkot. Gillotage, multiple 420 x 297 mm. Photo credit: Marta Belkot

Figure 10. In the Woods (2020) by Sandra Costa Brás. Photo zincography/gillotage, 280 x 180 mm. Image credit: Sandra Costa Brás