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The Imposed Antiquity or Time that Never Passed over Paintings

Procedures and Techniques of Forgers of Paintings and Drawings in Medieval and Early-Modern Styles

I. Introduction: looking for the time's footprint

Since the Renaissance, both collecting and the unusual out-of-control growth of the art market led to the appearance of false artworks. Chroniclers report curious cases of falsifications, mainly made by artists who, by exhibiting their abilities, dared to imitate others' works trying not to be discovered in their fraudulent creations.² Thus, it is an age-old trend in the market: fakes and forgeries were already reported in the Classical Antiquity, although not in every period such items were equally understood and created, obviously, the meaning of the terms evolved, as well as their implications in art, collecting, and the market.

The literature on classical forgeries speaks of slyness, tale-tellers deals, and greed; however, authors rarely mention forgers' creation methods, and the way they worked materially to deceive others. In fact, in reading the main references on the subject, one discovers that writers were more concerned about a historiographical report of the phenomena rather than offering details about a forger's practices. Obviously, this could be understood not only as a question of readers' preferences, but also from the point of view of the literary market. Although methods and procedures used by forgers could be of great interest for specialists, they constitute a very isolated area that has been scarcely studied in an academic context going beyond cunning and craftiness. It is obvious that forgeries, counterfeits, and fakes are still a problem for art historians, but they are also the other side of the coin: they constitute evidence of tendencies in taste, of art market inflation, and of the social scope of the consideration of an artist of the past, which partially reflect, in the end, the cultural interests of societies.

However, forgers were not always forgers per se: in fact, they were rather skilled artisans, artists in training, or illusionist restorers, whose true intentions were by no means to deceive others, thus none of their artworks were made as forgeries. They were often works that were simply created with other aims, and came to be considered forgeries for other reasons, e. g. when they simulated the surfaces' aging over centuries.

That can be, in fact, the main difference between forgers and imitators or followers. Along with an excellent knowledge of particular artistic techniques and the ability to imitate the work of others, there was a more subtle and delicate issue that, from the dawn of forgery, particularly worried forgers: the attempt to legitimize the status of authenticity. In every fake or forgery there is an attempt of legitimating it, hidden in a more or less evident way. That means, frequently, a pretension to imitate the effects of the passing of time on the artwork (more or less successfully) as well as a voluntary omission of any evidence of its actual authorship.

Often a picture or a drawing was aged or 'patinated' (sometimes by adding dark varnishes to simulate the aging of such layers)³ with the sole purpose of achieving a more aesthetically attractive item. That aesthetic point relies on the 'antique' appearance, even when the artwork was made as a mere copy, or as an exercise to prove the skills of the craftsman, with no misleading aim at all. Other times, such actions involved an obvious intentionality to deceive by using various procedures, some of them reported for centuries (using either mechanical, physical or chemical methods, or a combination of them). They are, in short, a series of strategies that aim at replicating time's wear; a fistful of gimmicks to fake an history through suggestive yet credible effects of aging on surfaces. Thus, in their

'vanity fairs', forgers used to consider the appearance of an artwork as something capable of legitimating the artwork itself, or in other words: for such forgeries, time and wearing became appreciated signs of a wonderful truth.

II. Paintings

There are numerous methods used by forgers to legitimize paintings; they use an extremely wide knowledge of 'tricks' that are hardly classifiable, as there are no limits to imagination, and each case study is different and deserves particular attention. However, in this paper, the most common practices will be presented, always keeping in mind the aforementioned singularity of each painting. Thus faking procedures can change or evolve, depending on the subject, the item, the period, the support (canvas or panel), the ability of the forger and his skills, his level of technical knowledge, the quality of the painting, the use of original parts and their condition, and the availability of sources, etc.

Basically, procedures may drastically change depending on the aim or scope of the forgeries: to add an apocryphal signature is not to 'imaginatively' over-paint a large part of a damaged painting; to create an artwork 'ex novo' with new materials is not to recycle old parts to make a hybrid; using an historical copy as a base for an artwork that will later get better with additions is not a style imitation.⁴ As seen, the forgers' goal is the legitimization of the artwork.

2.1 Painting on panel

There it was, there it is. Recycling supports

The support of a painting often reveals a great deal of information to experts. Wood panels have very peculiar characteristics depending on the moment and the place they were assembled, even displaying regional differences. In fact, they are commonly used as first organoleptic evidence for dating an artwork and guessing where it was done.⁵ When looking at a painting, experts and *connoisseurs* expect to find a support that matches the painting's appearance, since each

geographic school has its own characteristics, sometimes even with little variations depending on geographical traditions, master's preferences or materials and availability of resources.⁶ The inconsistency between the painting and its support may be a sign of fraud, but such mismatch can also respond to other reasons.⁷

Expert forgers try to obtain an old original support as a first measure before starting a forgery.⁸ Historical paintings considered of poor or fair quality, as well as those presenting bad conservation conditions, are usually the most desired items for this purpose, since they can be easily purchased for reasonable prices. The poorer or the more damaged they are, the cheaper they can be found at flea markets and antique dealers. While sometimes they can be selected because they respond to some specific needs, many expert forgers purchase old wooden supports or pieces before they really know how they will use them, looking firstly at the apparent age.

Sometimes these supports are reused without any modification, but often they need an adjustment in size, or some form of reparation. These are the most delicate operations, since forgers cut or reinforce parts, and many times it's easy to discover marks of new mechanical tools when looking with a magnifying lens.⁹ Furthermore, when old wood is sawed, its internal color is different from that of the surface due to the presence of lignin, dust and other factors. If the difference is too evident, forgers won't hesitate in masking the newly cut timber's clear sides by resorting to the most diverse methods. These procedures include solutions like using natural walnut dyes, coating with organic size, painting with pigments, applying gesso, or just staining with Judea bitumen or other materials. At any rate, these alterations in the support can be suspicious at first glance; but no proof of falsehood can be stated unless they are backed by more evidence. It is important to consider that such alterations could be justified for other reasons, or merely be a particularity of the given artwork.

Occasionally, wood panels are double recycled pieces, because they were used at some point of their existence as backboards for *marouflage*¹⁰ affixing of canvases, and thus consequently transformed. When the *marouflage* practices became obsolete in conser-

vation and restoration, many of these supports were wrenched and pulled out and became a part to be reused by forgers.

Depending on the knowledge of the counterfeiter, analysis such as dendrochronology could be irrelevant when dealing with historical woods, but a strong relation between recto and verso of the panel must be established. Since forgers also have limitations, they can unconsciously make stylistic mistakes that can be detected easily, by noticing inconsistencies.¹¹ But it's also true that many times they also benefit from the randomness of having special characteristics that usually are explained by unique stories. In any case, wood must be checked, especially if hidden or covered by other elements.

New as old: the making and assembling of new supports

Although it is not common, new supports are also used by forgers, who imitate the way old supports were made. Panels made by attaching timber boards constitute an easy attempt to construct a cheap support. Old timber boards can be highly effective for the purpose of deceiving, but exhaustive observation can reveal the trick. Pallet boards have been documented in several imitations. But such industrial woods often present manufacturing marks, especially marks of sewing or sanding. Other times forgers use high quality common woods that were not so common in the past, and they simply try to mask the surface a bit, falling into evident anachronism.

When new panels are constructed, it is quite difficult to obtain a real credible effect, even if old wood pieces are used. Real historical supports were extensively carved, sewed, and sanded with traditional tools, totally handcrafted. They show real wood alterations (bending, cracks, deformation, fungus, woodworms) that often affect the whole piece, causing significant alterations on the recto, which are very difficult to imitate properly.

Bending and splits can be induced by exposing the support to drastic humidity and temperature changes, causing mechanical movements of the wood structure as a response to such environmental variations. Such

operations can be done only for the assembled panel, when it is still covered with a gesso ground, or finally for the whole finished painting. As will be discussed in the next section, this used to be done when the gesso was already applied. But the bending of a board or panel can be achieved by exposing the wood to humidity and mechanically causing bending or, if the board is not very thick, by applying several layers of a strong organic glue (like a skin size) on one of the sides. When this glue is hot and liquid, it penetrates a bit into the pores, and when it starts to dry and gets colder it usually contracts. The more layers are applied the stiffer it becomes, and the more strength it has, the strain then increases and causes the natural bending of the wood.



Fig. 1: Reverse of a new wooden panel assembled imitating a Spanish Renaissance panel with Italian inspiration, like those found in la Corona de Aragón. Three vertical boards of pinewood have been assembled with dovetails, and reinforced with horizontal slabs. The color of the wood is still light, since it is not a historic panel. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

New wooden supports often present a very bright color, unless old boards are used (Fig. 1).¹² Since they have been recently cut and processed they need a staining dye to look older. Lignin effect is achieved with more lignin; walnut or oak galls stains are very

common for this purpose since they have a moderated tanned tone that can be increased by repeating the application.¹³ In addition, they dry quickly (especially if solved in alcohol) and do not smell. A dusty effect is generally achieved by adding ashes (Fig. 2). However, a stained wood is not a real old wood, and there are always elements that warn the perception and lead us to suspect of it.¹⁴ Smoking the whole support is also a very common trick.¹⁵



Fig. 2: Three examples of wood along a simulated process of aging. a) A plain pinewood support. b) Pinewood dyed with walnut stain. c) Application of ashes while the stain dries. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

New supports are clearly not that dry and the main wood pathologies are difficult to imitate, especially fungus attacks. Many counterfeiters expose the wood supports to elements, specially humidity and light lack, to cause fungus alterations.

Woodworm holes, instead, are easily imitated by using several round section nails or punches with different diameters to cause multi-direction holes, or thin bits with the precision drilling tool. The most bizarre way to achieve such an effect has been occasionally documented: woods were repeatedly shot with hunting ammunition from different angles and considerable distances, and lead pellets caused the holes.¹⁶ But a glance at all them with a magnifying lens quickly reveals fraudulent intervention, since the thin edges caused by real worms cannot be so easily imitated (Fig. 3).

Finally, the assembling of new panels is rarely done with old metal nails, since they are usually quite corroded and thus do not tolerate the action of the hammer without getting damaged. But sometimes forgers overlook this part due to the difficulty of using such old blacksmith's materials. Many times wooden solutions are preferred to avoid such problems, using wood elements and glues instead of iron pieces.

Gessos, chalk grounds and primers and their aging, or the base of the lye

One of the aspects that concerns forgers most when imitating old panels, is the proper use and aging of gessos or grounds. Since they are directly applied to the support, they commonly respond to wood's mechanical movements and alterations, and their impact on the artwork's appearance is great; they are especially relevant when raking light is used to examine the surface. If a support is reused, the gesso is respected most of the times – if it still exists on the panel –, especially if the layer is in good condition, but many times it is also manipulated. The paint layers can be respected or eroded down to the preparation layer, but most of the time gessos are also applied again only if the wood panel is reused as a support, and then they will be properly aged.

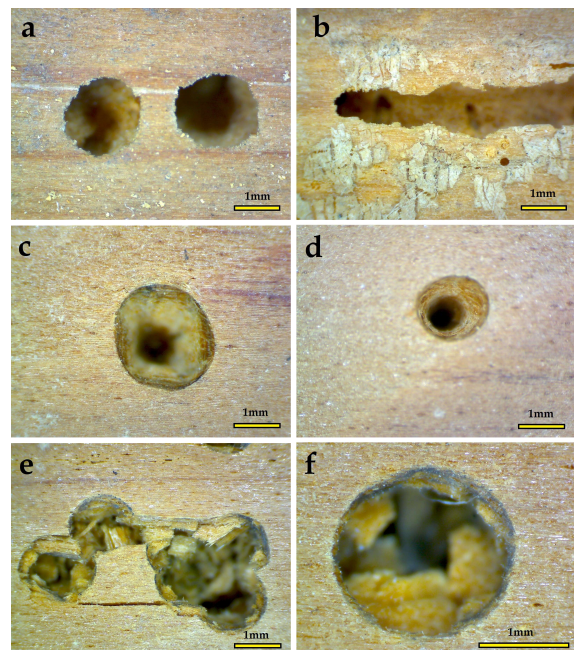


Fig. 3: Examples of real woodworm holes and false ones. a) and b): Real worm galleries. c) and d): Nail holes. e) and f): Gunshot pellet holes. All of them have been found on real artworks studied by the CAEM staff. Note that while the real woodworm holes have shabby borders, eroded and irregular, the nail or point holes are quite rounded, and their inner either pyramidal (c) or conical (d) depending on the instrument that produced them. The gunshot pellets holes show a metal greyish halo in the border of the holes, and cause several damages on wood due to their impact. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

The consequence or result of each aging method is different and depends on which stage of painting these techniques are applied at. Experienced forgers cause these alterations when the wood has already been covered with the gesso and the priming layers, but before starting to paint.¹⁷ They are conscious that if they do it just for the plain wood, much of the alterations that they'll obtain will then be covered and masked by the gesso. Instead, if they wait for the painting to be finished, they can experiment a certain lack of control in the aging, causing important damages to the paint layers and alterations that they cannot really control. Depending on the way they induce aging, the selection of materials becomes crucial. But, even if this is the most followed methodology, when cracks are induced before painting, it's very easy to inadvertently partially cover them,¹⁸ as can be easily observed if a sample is taken for a cross-section study,¹⁹ but even by looking through a magnifying glass, since paint layers do not correspond with the gesses' crackle action (Figs. 4 and 5).



Fig. 4: Miquel Herrero: Reproduction of a head after Domenico Ghirlandaio; 2014; mixed technique on panel. 21 x 30,5 cm; Valencia, Private Collection. (photo by Nemesio Jiménez). An example of reproduction with cracks texture. Tents are induced in the preparation and then covered by painting to achieve a non flat surface effect, as it can be observed on the right image taken with a vertical racking light. This is a properly identified museum quality reproduction, documented and dated, not to be confused with an original or with a forgery.

In order to understand the way counterfeiters age their preparations, first of all, it must be taken into account that forgers use historical recipes to prepare and blend the gesses (specially *creta* and *mezzacreta*).²⁰ Most of the time they are processed materials constituted by an organic binder (parchment glue, or another organic size) filled with calcium carbonate or calcium sulphate,

or even a blend of both. They can also contain other materials like ash, earthen pigments, or white lead, depending on recipes. But their mechanical behavior is very similar in all the cases. The glue and the mineral filler form a gesso putty that is susceptible to cracking when it cools and dries, and when it is exposed to movements of the support. Such movements can be caused by many methods: either by mechanical actions or by environmental reactions to humidity and temperature. All this results in the forming of a special net of crackles, that are often independent of the wood grain. Such cracking nets have been described sometimes as premature drying results,²¹ but they are, in fact, a product of changes in humidity and temperature (Fig. 6).



Fig. 5: Miquel Herrero: Copy of the portrait of Simonetta Vespucci, after Piero di Cosimo; 2014; mixed technique on panel. 46 x 55 cm; Valencia, Private Collection (photo by Nemesio Jiménez). Detail of a split of the wooden support (left) and cracks in the preparation (right). This is a properly identified museum quality reproduction, documented and dated, not to be confused with an original or with a forgery.



Fig. 6: Example of physical-mechanical cracking of the gesso on a panel, as a result of quick changes in humidity and temperature. Although the cracks grow randomly and look natural, their appearance is not that of a common aging pattern for a panel. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

As is known, wood supports change in thickness and shape when subjected to changes in humidity, especially those that have been forcefully and drastically induced. Humidity causes swelling and fiber expansion. Gesso cannot respond to such a movement in the same manner, and it starts to split until it finally cracks. On the other hand, drying causes contraction of the fibers, and once more gesso's response is different to wood's. Temperature fluctuation is another important factor, and is generally associated with humidity and often combined with it. High temperatures make the gesso very dry and fragile, with a high chance of cracking. When temperatures below zero pair with humidity, ice causes damage to the internal structure of the fissures making the edges of the cracks rise, and causing something similar to cupping (Fig. 6). In order to highlight the cracks, it is common to find dark dyes in them, such as ink, charcoal powder, or walnut stain.²² Generally, panels that have been exposed to such extreme environmental conditions often present overcracking. Natural cracks are subtle, thin, and quite moderated, while overaging tends to be a common practice in forgeries for claiming authenticity (Fig. 7).²³



Fig. 7: Example of physical-mechanical cracking of the coloured gesso on a panel, as a result of slow changes in humidity and temperature during a long time. Natural cracks follow the grain of the wood. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

Finally, cracks in the gesso can also be carved or painted,²⁴ but when this is done, it's usually carried out after the painting is finished, and obviously, the result is not so effective, so they are easily detectable.

The color of Time: paint layers and their aging

Against expectations, the paint layers are one of the most neglected elements in many forgeries and fakes, especially in works on panel. Even when the forger is an expert in the imitation of specific artists or schools, the paint layers show evident mistakes in the application of the paint, the *ductus* and the methodologies of work, and often in the selection of materials. Chemical and physical studies of artworks are growing more and more common, and the democratization of the analysis of techniques provides many tools for professionals.²⁵ But this is, in general, new knowledge that didn't worry forgers in the past – and, in fact, was not a matter of interest of counterfeiters till the mid-20th century. The reason is obvious: chemical or physical analyses were not common until then. This entails that, in the past, forgers could select pigments carelessly, incorporating chemical compounds that did not exist in the Renaissance or the Middle Ages.²⁶

Logically, nowadays, fakers and forgers are truly concerned about this, and they try to search for the right sources in order to incorporate into their palette pigments found in authentic paintings of the age. Even with this in mind, sometimes forgers misinterpret colors, not considering their natural aging. Painting trees foliage and landscapes with brown earth is a common mistake. Forgers try to imitate what they see, but in historical paintings such elements that should be greenish in fact brown, it is because of a color oxidation that happens with copper-based green pigments.²⁷

Acquiring the right materials can be a consuming task in terms of time and resources, since many of the historical pigments are difficult to find, such as alchemy vermilion instead of natural cinnabar, white and yellow lead pigments, the minium, orpiment and realgar, azurite, malachite, lapislazuli, or even the more popular copper acetate greens. Not only are they substances that are almost out of commerce, but they are also regulated by laws because of their toxicity. Others, instead, are still common products of painting suppliers, such as ochre and iron oxide earths, siennas, argyle reds, earthen greens, umbers, or charcoal and

smoke blacks. But almost all of them were still in commerce until the first decades of the 20th century.

It's a fact that medieval and renaissance painting is a complex subject, where not only such pigments are expected to be found, but also colorants and dyes that are hard to find (indigo and woad, folium, reseda, saffron, madder lake, kermes lake or lac-dye, among others) are applied in glazing over grisailles or medium-tone areas to achieve chromatic shades and subtle gradations of color. Painting in those periods was the result of complex techniques that used to be mixed and that often involved the use of several binders, mediums, and vehicles in the same artwork.²⁸ Even when the most skilled forgers replicated works of an artist, or even if they had good command of techniques, they'd probably find trouble and difficulties when they had to deal with a variety of techniques, considering the lack of knowledge about such materials and the way they were used. It must be kept in mind that these historical periods were characterized by constant changes and technical revolutions: binder was evolving from tempera to oil in a progressive way; new materials and procedures were starting to be included in painting; new chromatic sensibilities and recipes were followed; new ways of conceiving and executing paintings were carried out (new ways of drawing and painting as a result of a new scope); wooden supports were being displaced with the introduction of canvas; artists were in constant movement, which meant that treatises and technical literature appeared and was consolidated with time. All these factors suppose an enormous variety of ways of painting which have now been systematized and studied well, but are still hard to imitate properly.

Underdrawings are also mistreated elements.²⁹ Many times a tracing paper is used to fix the design, ensuring the formal result (Figs. 8 and 9). Other times a graphite pencil is used or a just simple charcoal sketching is done. Many forgers forgot that underdrawings became axial in the study of an artist or school production, and only a few of them properly imitated both the style of the painting and that of the drawing, considering that the *ductus* of a drawing is very difficult to imitate, and just a minimal portion of forgers were able to.

Putting aside the question of the selection of material and procedures, it's also a fact that color layers are difficult to age, especially when the support is panel. Unlike gessos and chalk grounds, paint (tempera or oil) is much more flexible and it's difficult to produce cracks on it. There are plenty of ways to achieve these results, but none of them is really effective. Egg temperas are capable of producing subtle cracks,³⁰ while oil paint on panel, due to its flexibility, is very difficult to crack. Even when craquelure is achieved, they do not seem real because they tend to affect only the paint and not the gesso layer, as is common in historic paintings. The addition of drying agents to quickly accelerate the polymerizing of oil is very common, although these results are very difficult to achieve on panel, and are really easy to obtain when using cloths supports, as will be shown later.



Fig. 8: Detail of a cracked panel with the drawing already on it before the phase of colouring. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

High-temperature expositions can create blisters and other alterations that are used to damage the surface (Fig. 10) even if they do not imitate real painting pathologies or the results of natural degradation. Low-

temperature exposition and humidity are also used with these aims, although their power of alteration is not so visually effective, and while these elements can cause the degradation paint layers, they are difficult to control. Friction, abrasion and other calamities are carried out over the surfaces to wear them, many times with no logic at all. Getting dirty or oxidized tanned tones used to be an easy trick for forgers, who sometimes applied inks, dirty water solutions, or walnut stains over the painting before the varnishing.



Fig. 9: Miquel Herrero: Copy of the portrait of Simonetta Vespucci, after Piero di Cosimo; 2014; mixed technique on panel. 46 x 55 cm; Valencia, Private Collection (IR photo by Nemesio Jiménez). Detail of underdrawing, done with a charcoal tracing paper.

To conclude, let's take into account the level of difficulty; the probability of ruining the work; the investment of time and resources; and finally, the quality of the results. Forgers of panels usually prefer to properly age other parts, like supports, primers, or varnishes, instead of acting on the painting layers, in a very different way from what occurs for painting on canvas.

Looking through a glass onion: varnishes and their aging

The flat and smooth textures of gessoes over wood panels, and the thin layering of paint with no *impastos* become the perfect surface to receive a nice varnish. Natural resin varnishes first turn golden in hue and then progressively darker with age, causing some distortion of the artist's original colors. That may be the main reason why forgers prefer to channel their efforts in properly aging varnishes, which are in fact used to hide the falsity of the painting.

Since almost every painting on panel has been varnished at least once, it is very frequent to find this element associated with paintings on this support. In fact, it is very typical to find many overlapping varnishes in imitations and forgeries of Medieval and Renaissance artworks. Some of the layers may have been applied by the forger if it is not an old piece, and others can be the result of actions carried away by their owners to improve the appearance of the artwork. Sometimes even selective cleanings of varnish are found (Fig. 11).



Fig 10: Unknown: Copy of a fragment of the Altar Frontal of Santa Maria de Mossoll; 20th century; mixed technique on panel. Catalonia, Private Collection. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).



Fig. 11: Miquel Herrero: Copy of the Agnolo Doni, after Raffaello; 2014; oil on panel. 44 x 59 cm. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). Ultraviolet Fluorescence UVF image, and detail. A noticeable varnish cleaning is visible on the sky at the right side of the figure, in its face and in the dress. This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain).

But forgers usually pay attention to the varnish, since it constitutes the real skin of the painting, especially when working with flat surfaces like those provided by panels, on which an enameled appearance is expected. They usually prefer an old looking varnish over the painting in order to enhance and warm the colors, to get a tonal improvement that properly integrates all the parts, and especially to mask the painting layers.

All these actions are carried out by repeating the application of varnishes and by using tanned brown or burst dyed compounds, typical colored varnishes, like the one called Dutch varnish. There are many recipes for these varnishes,³¹ but all of them simulate a partially oxidized compound with its characteristic yellow fading.³²

Varnishes were used many times to cause crackles over the painting. Fine cracking can be formed if a strong glue coat is applied over a still drying varnish, or even oil medium.³³ The varnish itself can be induced to form a crackle when it's applied over a paint layer that is still drying, due to the tension of the drying surface. But these are very particular cracks, never seen in medieval and early-modern paintings; instead, they can be associated to 19th century painting practices, or to a chemical interaction between compounds (Fig. 12).

Now, there actually exist commercial crackling varnishes. Some of them need to be applied over recently painted layers to get the painting crackled. Others are two compound varnishes that must be overlaid and

that react between them creating a net of hairlines that can be controlled by time exposition (letting it act more or less) or by thickness of application (depending on the amount of the effect that is desired). But the cracks produced in transparent varnishes are barely visible, and they are very subtle and thin, so they are frequently enhanced with bitumen or similar substances.³⁴ It is a trick that can be easily detected with a magnifying lens. Ultraviolet fluorescence is a very effective technical way to study varnishes and their alterations, to localize cleanings and to determinate the amount and oxidation of varnish.³⁵

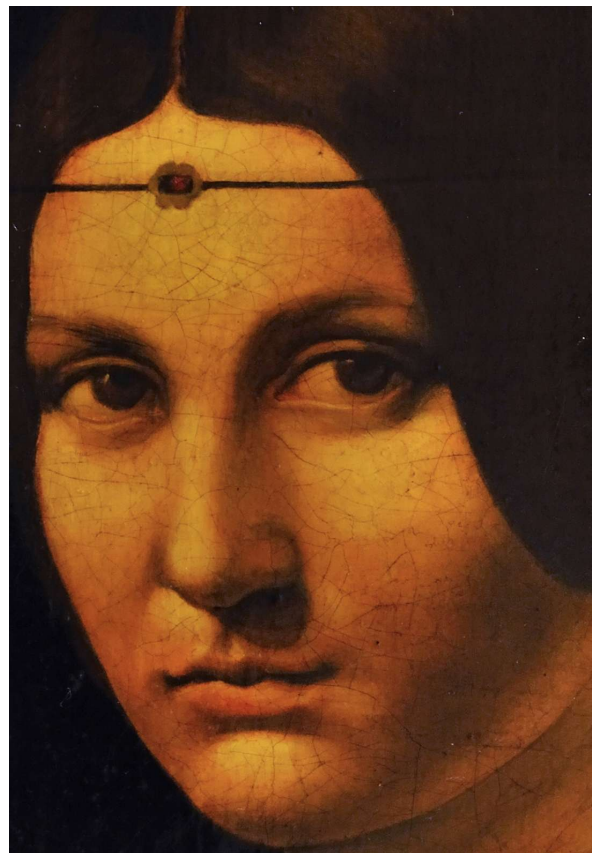


Fig. 12: Miquel Herrero: Copy of the portrait of La Belle Ferronière, after Leonardo; 2013; mixed technique on panel; 30,5 x 21,5 cm; Valencia, Private Collection (photo by Nemesio Jiménez). Detail of the crackle on the yellowed varnish.

The brush of time: patinas and other alterations

Although colored varnishes and dirty glazes constitute a kind of patina over the surfaces of an artwork by

themselves,³⁶ forgers usually push the envelope in the quest of the desired appearance of antiquity. Felipe de Guevara (ca. 1500-1563), in his treaty titled *Los Comentarios de la Pintura* (1550), reports a practice that has been widely documented in old forgeries and copies. When he refers to Hieronymus Bosch counterfeits, he states that artworks were smoked to tan the surfaces and get not only antiquity, but authority.³⁷ In fact, a simple glance at many pastiches, forgeries, and copies until the 19th century will show how smoking was a widespread practice for such a purpose, causing the characteristic yellowish brown stain over the surface and making the colors to look dark and dirty (Figs. 13-14).³⁸ Sometimes forgers use fire simply to overdo it and cause a more visible and notorious alteration. They burn little parts of the artworks to simulate damages caused by the vicinity to fire. By 'eventful design of fate' this kind of alterations used to be found on borders, frames, ornamental parts, and not much on the main figures, thus revealing a clear intention of selective and premeditated damaging (Fig. 10).³⁹ Embers and candles are frequently used to 'toast' parts and to cause punctual burnings, although the latter leave very recognizable marks, due to smoke staining. Candles are also used to fleck the painted surface with wax drops, although it is not a common process in forgeries, maybe for the lack of control of its results, but was associated to forgeries of medieval and religious paintings.

Judea bitumen is the quintessence of imitators. That black tar dyeing material has been used as a pigment, a finisher, a darkener, and a protector for many works, but its main use is as a patina: to simulate age through a supposed dignity of filth, since it imitates a tanned look by color alteration, smoke action, and dust adhesion. It was widely used by artisans, but it was also used by 17th century painters, and thus its presence cannot be considered a sign of spuriousness straight off. However, it can be found in many forgeries, especially in those which are not professional. Sometimes a superficial microscopy or the direct observation through a magnifying lens can help identify this substance, although a chemical analysis is recommended. Ultraviolet light can also be helpful for such purposes, but it's obviously limited, since there are other matters like varnishes, mediums, resins, and

some pigments that can have their own fluorescence and that will disturb the recognition of bitumen. Great forgers are aware of the real filth that must be on the surfaces, and do not doubt in adding previously collected dust or ashes, especially in the reverse and over the hidden parts (Fig. 2c).



Fig. 13: Unknown: Nobleman on horseback (imitating a Renaissance style); 19th century; tempera on panel; 57,5 x 43,5 cm; Inv. CL.1 n.1092; Venezia, Museo Correr (Verona, LANIAC, Università di Verona/Venezia, Museo Correr). Notice the dirt and tan colour achieved by smoking the surface.

In general terms, forgers and counterfeiters consider damage as a credible sign of history, and they use and abuse alterations.⁴⁰ It's not unusual to find panels that have long been exposed to the action of environmental elements causing losses, cracks, swelling, and other alterations, even when they know that until a certain point it is very difficult to control the response of the panel to such climatic influences (Fig. 14).

Insect depositions and flyspecks are also added by forgers by using the most varied methods. The most common are those which are done by flecking the surface with inks or pigment colored resins, by using a stiff brush, or by painting them with the point of a needle with a very subtle brush.⁴¹

Sometimes if they have the perception of having gone too far, they will consider restoring the artwork and stop pathologies, making little reparations and over-painting parts.⁴² Occasionally, they even cause the alteration themselves to restore them after. One of the most typical ones is to break the panels in their joints and then fix them again by adding a stripe of linen or hemp cloth, and eventual wooden back reinforcing slats, crossbars members or similar. In the end, a conservation restoration process is evidence of appreciation and willingness of preservation. Furthermore, it is also a sign of history. Hence conservation and restoration activities are used, once more, to legitimate a spurious past.

2.2 Painting on canvas

Ancient clothes for new paintings: recycling canvases

Since painting materials were not cheap and painters were not the artisans with the highest status, materials were optimized, so until the 19th century, recycling was a need rather than a mood. A canvas and a stretcher could have many lives together, but they could also live separately.

Even the best painters reused their own canvases, sometimes just by painting a totally different new picture over the older one, without any kind of preparation. But many times the paint layers were slightly eroded, and then a new ground layer was extended covering the painting, as can still be seen in many canvases. It was, in fact, a rather common practice. Forgers used to do the same, with a very different scope and purpose, as is reported among the main personalities in the art of deception.⁴³

Canvases may show specific characteristics depending on when and where they were weaved.⁴⁴ Before the 19th century, manual looms were quite different from mechanical weaving prototypes, and they are radically diverse if compared to the post-industrial revolution mechanically-woven canvases, and ultimately very different from electric woven contemporary objects. Hence, the amount of threads of warp and welt as well as the kind of nodes and the materials can be very different; and so can the result of a loom, depending on the kind of technology used to weave the cloth,

even if all other parameters are the same. Thus, the canvas as a support can reveal a great amount of useful information that partially serves to verify its age and possibly its provenance. This has traditionally been used as an analytic evidence, and forgers know it.



Fig. 14: Unknown: Riding Soldiers and Infantry (imitating the Renaissance style); 19th century; tempera on panel; 50 x 57,5 cm; Inv. CL.1 n.1101; Venezia, Museo Correr (Verona, LANIAC, Università di Verona/Venezia, Museo Correr). Notice the dirt and tan colour achieved by smoking the surface.

Hans van Meegeren, for example, in counterfeiting Vermeer paintings, used to look for canvases dating back to the 17th century, and carefully removed the frame, the stretcher, and the blacksmith nails. He eroded the paint layers until reaching the ground by using special sandpapers and round shaped pumice stone. He aided himself with a solution of caustic soda to soften the dried oil layers. After taking away the whole paint layers in a hard and time-consuming process, he had his old canvases ready for painting.⁴⁵

Depending on the canvas, the ground or preparation and on its whole condition, the act of removing the painting without causing any damage to the cloth can be more or less thorny. Forgers use either solvents like alcohol and acetone aided with small mechanical sanders, or commercial painting strippers, removing the unwanted paint with a spatula.⁴⁶

Many times forgers were not able to keep the preparation, and they would push away the canvas from its back to try to detach and separate some of the layers from the cloth. They finally removed them with a blunt knife or a spatula. But this method uses to cause

distension of the cloth and it is very easy to rip or tear the tissue, especially if the fibers are dry and wick, although these are alterations that are often used by forgers to prove antiquity.⁴⁷ To detect this procedure is not easy when the canvas is old, so an authentication of the cloth may not be very relevant if doubts about authenticity exist for the painting.

New clothes for old-looking paintings. Aging canvases

Although among professional forgers the most common method was to reuse old canvases, as mentioned above, sometimes properly aged new canvases can be found, even though this solution is more common for the 19th and 20th century style forgeries, rather than in early-modern ones.

But even considering this premise, it must be kept in mind that manually weaved cloth was made up to the 20th century in ways that were very similar to the historical ones, even by using historical traditional looms that were still in use until the middle of the century in various rural locations of Europe. Essentially, they differ from historical ones only in age, because the same technology and materials were used. These kinds of productions still show signs of recent manufacturing. Lignin does not cover the fibers, so they are not as dark as historical ones, and they seem not to be as dry as the truly old ones. In an attempt at solving both problems, forgers need to finish the new canvases to get a tanned and dried look for the tissues.

For the first problem, they used to apply dyes to tan the fibers by using vegetal stains like walnut stain or inks, tea, coffee, or even a blend of some of these dyes, adding ashes to reduce the smell and to get a pretty dirty finish, with a not-so-golden-brown appearance.⁴⁸ They sometimes add also vinegar, iron oxide, and mordents to better fix the color. The process is simple: the cloth is soaked in the chosen solution for a while, and after properly drying it, it can be stretched and primed. Sometimes, this is done after having applied the preparation, to induce the dye to stain the innermost cracks, after their formation, as they use to show a clean cloth underneath.

For the second problem, that is, a dried appearance, forgers use ovens or furnaces to literally

bake the cloth at not too high temperature, but for a long time. Sometimes they first wash the canvas thoroughly with concentrated lye or with acids in aqueous solutions to cause embrittlement or the weakness of the fibers, this increases the drying effect. Spread embers on a hot iron plate, applied over the extended canvas, can achieve a similar result.

But once more, forgers have many methods and, despite what many people believe, their imagination cannot ever be underrated. They usually prefer to work with historic canvases, regarding always the premise: the more historic parts are in the fake, the less doubt of authenticity there will be.

A net of hollowness. Cracking preparations on canvases

An artwork is always desired in good condition; for forgeries, however, pathologies are preferred. Obviously, letting aside the question of the nobility of patinas and the beauty of time marks, alterations are common in most of the original historical paintings. They have been normalized to the extent that they often go unnoticed, but their absence in a work does not go unnoticed, even when this represents an exceptionally positive fact. A glance at documented forgeries proves that while there are thousands of originals with no signs of evident alterations, there is no forgery without them, and cracks are the most usual resource.⁴⁹

Forgeries on canvases always show cracks, even more frequently than what happens in the case of fake works on panel, however sometimes they have no logic whatsoever. The 17th centuries canvases for example, do not respond to cracking like those of the 19th century, not only for the obvious differences among the two different cloths, but also for the difference in the stretchers, the grounds and primers, the drying agents, painting layers, varnishes, and so on. Thus, while a close cupping characterizes baroque canvases, other kinds of cracks like tents and cleavages can be easily found over nineteenth-century canvases and are not common in works from the 17th century. Most forgers are aware that cracking makes the work look good; it helps to make the forgery more credible, and it reinforces the antiquity appearance. However, many times, they overlook the conditioning factors for crack-

ing formation. Inexpert forgers confuse all kinds of cracks, and they do not pay attention to the incongruences among them. For example, drying cracks (shrinkage or traction crackle) are not a sign of age, but they are a sign of bad manipulation.⁵⁰ It's obvious that they are, in fact, cracks, but they are associated with the use of drying agents and with the covering of thick parts still drying, with thin and brittle layers of paint. Real processes affect all the layers, and are actually quite difficult to reproduce in artificial ways, since natural cracking, as mentioned, is the result of very long and subtle mechanical movement processes.⁵¹

Many forgers roll the canvas in both directions (vertical and horizontal), once the preparation is dry enough, to cause breakings on it (Figs. 15).⁵² This method forms a net of cracks that do not respond to a real stretcher cracking pattern. Perpendicular *craquelures* in canvases are abnormal, since they are not really a physical response to factors of humidity and temperature. Since cracking occurs as evidence of a slow stabilization of materials after mechanical movements caused by the supports, they form specific patterns, considering the whole of materials constituting the artwork and the suffered pathologies. There are many examples of these procedures, since this is one of the most followed practices⁵³ (Fig. 16).

Other times, cracks are produced with the canvas mounted over the stretcher. The forger applies the preparation to the canvas that is partially loose and lets it dry. Then they tighten the canvas using the keys, until a certain point. This usually causes the typical stretcher cracking, developed in the painting's corner in a diagonal sense, and caused by overtightening. After this first tension, dents, impact crackles, or stress cracks are very often produced by pushing the canvas from the back, what causes certain deformation of the cloth, warping, and cleaving. When a canvas is totally stiff and well dried, it becomes extremely brittle, and applying pressure from its rear with a soft rubber ball can cause spider-web patterns of cracks.⁵⁴ After this, the cloth is tightened again in the stretcher, which almost always means that the inner space between cracks increases, hence making the lines more evident.



Fig. 15: A rolled canvas, already prepared and cracked. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain).

Sometimes, at this point, canvases are disassembled and removed from the stretchers, and soaked into dyeing solutions, like aqueous inks, charcoal water or walnut stain. This has two finalities. The first one is to cause the shrinking of the canvas: since the priming layers are not able to mechanically respond to that shrinking, cupping is created. Second, the inside of the cracks gets stained and darkened, this accentuates the cracking net. Finally, they mount the canvas that is ready for painting on the stretcher again. The main problem that forgers find with all these procedures is the same previously described for panels: they used to involuntarily cover their precious cracking net with paint, which doesn't respond in the same way to that cracking pattern. Such an incongruity is, in fact, quite easy to detect, as mentioned before, and constitutes overwhelming proof of their procedures.



Fig. 16: Unknown: Apostle (imitating the style of El Greco); 19th century; oil on canvas; 52,5 x 42 cm. Catalonia, Private Collection. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). Detail of the image taken with vertical racking light. Horizontal tent crack-lines produced by the rolling of the canvas are noticeable.

The color of antiquity: paint layers and their aging (II)

As for the aging of supports and grounds, many of the aforementioned procedures for the case of panels are still valid and applicable for the color aging over canvases. When forgers age the color layer, they keep in mind its oxidation and fading, but also its drying and cracking.

Old paintings are always very dried and hardened. Traditional *connoisseurs* used a scalpel to examine the hardness of the painting, and alcohol to prove if it was able to solve and fade.⁵⁵ To circumvent such practices, forgers used to add resins or glue to the painting to provide an extra hardness and to avoid the solvents quick reaction.⁵⁶

If they have the cracks already formed on the preparation, they use fine needles, scalpels, or surgical knives, to clean a bit of the inner of the crack they have painted on. Otherwise, the paint fills the gaps or the breaches. But this work is a botch,

because what actually happened can be clearly seen with a simple glance. Magnifying glasses and microscopes are even more helpful in order to detect such bungles. Some other forgers are very careful and simply avoid covering the inner of cracks.

Others prefer to age the canvas when the painting is finished (Figs. 17-18). There are several studies that have shown how to crack paint layers, but mainly the addition of a siccativ (drying agent) is considered as a first step, sometimes in great amounts. Then, when the layers are dried enough, a mechanical pushing from the back, a rolling, a tightening or a combination of several methods constitutes the second step, which leads to crack the stratus of color and preparation. Other times, the drying agents act together with an extra dry atmosphere. Maybe one of the most famous (but also particular) cases is the experience reported by Hans van Meegeren, who, after many experiments, found a formula that led him to crack all the layers. Van Meegeren added phenol formaldehyde and lily oil, making a product that was applied to cover the entire surface, and then he put the canvases in a self-constructed special oven.⁵⁷ Nevertheless, this cannot be considered as an exceptional report, since the combination of drying agents and stoves or ovens is quite common for these purposes.⁵⁸ It must be stressed, however, that baking the painting does not produce the effect of cracking, as a great part of the literature states,⁵⁹ but serves just to get the paint extra dried.⁶⁰

As mentioned before, one trick practised by some forgers is to use egg tempera as a base for the painting, and then make it crack by bending the cloth from the back. Since egg tempera is not elastic it tends to crackle.⁶¹ Some of them combine egg tempera with oil and drying agents, and others even voluntarily alter the classic rule of 'fat over lean' painting with tempera on '*mezza creta*'⁶² preparation, which means that cracking is often guaranteed. Then they use varnishes to fix the paint to the support, using the inner cracks as fastening points.



Fig. 17: Miquel Herrero and the students of Master in Expertise, Evaluation and Analysis of Art Works Degree: Apostle; 2015-2016; oil on canvas. 41 x 38 cm. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). Detail of the surface of the canvas, aged after the whole painting was properly finished. Notice the pattern of the cracks, the abrasion, and the subtle cupping. This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain).

Stretchers and frames and the validation of a lye

Recycled stretchers are very precious for forgers, just as much as historic frames. Such elements are, in fact, doubly prized if they match or if they are acquired together as part of the same ensemble, something that is not always possible. Early-modern stretchers do not have keys, and are very hard to find; they were often thinner and attached with nails.

Almost always, original stretchers have been substituted by new sturdy ones, which are generally thicker and constructed with wider members. These wooden elements normally leave common stretcher marks creases (sometimes lines of cracks) in the ground or paint layers of a painting following the inside edges of stretcher members or the edges of cross-members, and they're always caused by the support resting against or touching the members of the stretcher. They are common evident in historical paintings. But forgers frequently forget to include such marks, even though the stretcher has been supposedly substituted.

Historic frames are often used as containers of a supposed truth, and that's the reason why forgers do not hesitate to acquire them, even if they are not cheap. Sometimes great historic frames can be found together with fair quality contemporary paintings at antique fairs at relatively low prices. If it's possible to re-use the stretcher and the canvas, a forger has the main elements to construct his forgery, and all these

parts will have an internal coherency. Hence, frames cannot be used as evidence of authenticity in any case.



Fig. 18: Miquel Herrero and the students of Master in Expertise, Evaluation and Analysis of Art Works Degree: Apostle; 2015-2016; oil on canvas. 41 x 38 cm. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain).

The imposed time: holes, reparations and other alterations

In order to accentuate the action of time, many pathologies are added to artworks artificially. Among them, the most common are dimples and dents; impact crackles, or cracks in spider net shape or radiating circles caused by a blow.

Water damages are also very common: staining on the rear of the canvases, but even liftings, delamination, and losses of paint resulting from water coming into contact with the painting and then drying.

Cuts, tears, and holes, openings, or hollow losses in the support are also very common. Sometimes they have even been repaired with patches, made of small pieces of canvas, mending through adhesion the problem from the rear of the canvas. Even the created lacunas and losses present 'quick' interventions, usually of fair quality to increase the difference between 'old' and new areas. Such kinds of pathologies constitute a perfect example of drastic damages to impose time. Once more, as stated before, restoration lends credibility to the forgery.

When eyes don't see, the heart doesn't feel. The trick of lining

The *summum* of the restoration practices as a legitimization evidence is lining. Lining is an auxiliary support applied by a conservator to the original support when it is no longer strong enough to carry the weight of the painting, which used to be very frequent in historic supports. The great majority of the sixteenth- and seventeenth-century canvases are lined behind, so expectations of finding original canvases without linings are very scarce and limited. Linings can be constructed from a variety of materials, such as cotton, linen hemp, fiberglass, etc., but the most frequent are in traditional canvas.

Beyond the appearance of antiquity lent by such rear canvases, lining is useful to hide the original cloth, so it's a very helpful tool for forgers in order to mislead buyers; since removing the lining is not a quick and easy operation, forgers consider the benefits of incorporating such an element.⁶³

III. Graphic artworks

Forgeries of graphic works have multiple advantages for falsifiers when compared with paintings. Among them it must be highlighted that many times they are more subtle and less evident; they attract less attention and go unnoticed in a noisy market. They are easy and cheap to produce, so, even when their prices are lower, they provide more profit in proportion. Drawings are often a less saturated area in which to work,

so forgers feel more comfortable there. Unlike what happens with paintings, there is much room to research on fakes of Renaissance drawings, since many of them have still not been detected and there is much to say about this issue. Undoubtedly, Eric Hebborn's contribution must be underscored, therefore there is no need to digress on this topic, since the most interesting techniques of trickery have been already described.

But it's important to highlight that even nowadays graphic artworks are still among the most forged pieces, considering that contemporary drawings and stamps have a large market, and as it happened for paintings, forgers' methods include a great many technical stratagems, each case study being different and disserving a particular solution. Renaissance and early-modern drawings are still being counterfeited due to the lack of detections in this field. Science and diagnosis still have much to say on the detection of forged drawings, it is also a question of education and consciousness, since designs are considered as minor subjects of study.

Ripping pieces of history. Old papers as a new support

For a forger of historic drawings, old paper is a must, but acquiring Medieval or Renaissance paper is not always possible. Sometimes forgers have to glance through antique shops and flea markets in their quest for the right sheet of paper.⁶⁴ If they are lucky, they can even find items that have been pretty well preserved within books and notebooks, to a point that nobody will believe their age. It's logical since they must be unused sheets, that haven't been handled much. But that is not what they really need, because paper in too good condition does not fit much within the idea of a worn support like the one expected of a drawing that has been circulating as a picture, changing hands. For such cases, forgers may even consider ageing the paper a bit more, and, depending on the technique they chose, they do it before or after executing the drawing.

Generally, what forgers expect from old paper is that it looks old, with an appearance that is not always exempted of the problems and disadvantages related

to age. Old paper tends to be greasy; it can also contain undesired stains and marks, which means that sometimes the ink doesn't flow properly over it. Hebborn offers many solutions for such problems, like rubbing the greasy paper with half a potato or applying ammonia for grease-free paper, or using powdered chalk, benzene, or blotting paper on the stains to remove them.⁶⁵

Some parts can have scratches or other natural pathologies that will cause ink expansion through fibers, which will spoil the result if left there. When this happens, forgers tend to intentionally erode, tear, stain, or damage such parts until they make them unrecognizable.

White sheets go yellow. Aging new papers

Although it is common to use old sheets of paper, sometimes forgers need to age them or just work with new materials that have to be properly aged. The first thing to consider is dyeing paper. For this purpose, sheets can be soaked in a solution of permanganate or either with stout, tea, coffee, oak-galls stain, chestnut cork, licorice, or any other vegetal infusion, in a very similar process to that described for dyeing canvases.⁶⁶ Sheets can also be tanned using an oven, to get a dry and weak finish, or a combination of both (Fig. 19), and finally they can be even smoked.⁶⁷ After the bath, the sheets of paper usually present warping and planner distortions. Flatness can be reobtained by ironing.

Old paper has historic watermarks, but they are not always easy to come by. They are also used for the purpose of giving legitimization to the counterfeit. Watermarks are applied by three basic methods. The first one is by modelling the motif with metal wire and passing it with some pressure into a stamp press.⁶⁸ Sometimes the results achieved are not convincing, and they show evidence of too much pressure. Hebborn describes two alternative methods: one by painting the watermark with colorless oil (e.g. poppy oil), and another by scratching the design in the back of the sheet with a razor-blade or scalpel.⁶⁹ A common magnifying glass or pocket microscope is enough to reveal such impostures.

A dark purpose. Inks creation

The technique and materials chosen by the forger can be crucial. Charcoal, chalks, sanguine pencil, black pencil, metal points, or inks were preferred techniques in the Renaissance, but the works in inks and gouaches were probably most popular. New inks have nothing in common with early-modern ones. They are actually produced using totally different compounds, so many times forgers do not doubt in creating their own inks, always following historical recipes, generally iron-gall inks or sometimes charcoal-gum ones, although the first are the most common. Fortunately, there is a great amount of research on ink characterization that helps discriminate — at least sometimes — between actual historical inks and current reproductions.⁷⁰



Fig. 19: Miquel Herrero and the students of Master in Expertise, Evaluation and Analysis of Art Works Degree: Italian Renaissance style figure; 2015-2016; black pencil and chalk. 10,2 x 16 cm. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain). Note the marks of a baking grill on the back.

The ruin of a drawing. Pathologies and alterations

It would be very difficult to report or recount all the 'tricks' used to cause pathologies on paper sheets, since they are unlimited. The pretension is only to describe some of the most common ones. Since drawings are supposed to have circulated widely, and are always made on very unstable supports (paper or cardboard), forgers tend to inflict unnecessary damage

to many of their productions in order to simulate wear, sometimes almost ruining the drawings. Several are reported by Hebborn, but they are not the only ones. When recycling old sheets, wormwood holes are very desirable elements for counterfeiters, but sometimes they have to be sure not to cover the inner rim of the holes with ink, charcoal, or any pigment used, otherwise it seems too evident that the drawing was designed after the opening of the hole, which results in an anachronism. Thus, forgers use chewed pulp paper to plug those holes. After drawing, they remove their patches. Hence, worm galleries may never be a definitive sign of age.

When cutting new and old sheets, forgers prefer to leave some beards or fringes on the edges. They also cause erosion on the edges, using knives to make them seem to have been worn down.⁷¹ Folding, crumpling, and ironing are also among the main activities of counterfeiters to age paper sheets. Sometimes they even cause tears or ripping and they just glue or attach the torn sheet onto a new cardboard support. This also makes it more difficult to do a proper examination of the 'original' support, making a transmitted light inspection useless.

Acidifying the paper by spraying some acids on it is a common practice to induce weakness of the fiber structure. Nitric or hydrochloric acids are frequently used, sometimes in combination with an oven's heat.

Oiling the paper is a quite common trick for many forgers to induce transparency of the paper or even to simulate that sometimes such a sheet was used as a '*cartalucida*' for tracing (Fig. 20). When time passes, such oils become darker, inducing the paper to fade into a golden brown tone. Partially staining with oils is also quite common in many forgeries.

Humidity alterations are also considered by forgers. Under the right environmental conditions mold and mildew thrive on cellulose supports. Although they are produced artificially by staining with diverse substances or directly imitated by painting,⁷² to induce their formation is relatively simple. There are two main factors used for it: darkness and humidity.

Seals, stamps, inscriptions, and inventory numbers are often added to the papers, using different calligraphies.⁷³ Once more, all these elements are used to legitimate the false creations.⁷⁴



Fig. 20: Miquel Herrero and the students of Master in Expertise, Evaluation and Analysis of Art Works Degree: Drawing after Peter Brueghel; 2015-2016; ink on paper. 14 x 18 cm. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain).

IV. Conclusions

Medieval and Renaissance counterfeits are becoming less and less common, partly because of changing fashions and partly due to considerations on the technical difficulty. In general, it could have been a lucrative business in other times when collecting of these types of works of art was in vogue and there was also a production boom of such pieces, directly related to their social recognition and value.

At the present, art forgers bet more on contemporary or almost contemporary artworks: there is less difficulty in finding analogous materials for the imitated works; contemporary art is usually better paid; and finally, the effectiveness of diagnostic methods and technical studies of works of art is increasing day by day, and forging historical pictures becomes a time- and resources-consuming task. Nowadays, the techniques of physical and chemical analyses offer very precise results, leaving little room for maneuver for counterfeiters, who can hardly avoid the scope of such methods.⁷⁵ Not only must they thoroughly know the style and *ductus* of the artists of these times and be able to imitate them, but they also need to know the pathologies that affect these works, as well as the complete composition of each of the layers, something that is absolutely impossible for them. Hence, all the fakes of Medieval and Renaissance works, however

perfect they may seem, are detected sooner rather than later.

This article has exposed the methods, procedures and materials used by forgers of works of art, exemplifying their strategies, and revealing where their imposture lies. For the art that never was, time's action could be imitated, but never substituted.

Endnotes

- The present work takes part in the activities of the consolidated research group ACEM ("Arte y Cultura de Época Moderna"), supported with funds of the Generalitat de Catalunya [2014SGR242]. It also takes part in the activities of research of the FPU program [FPU2014/01768], supported with funds of the Ministerio de Educación, Cultura y Deporte, of the Spanish Government. The present paper is the result of a sharing of observations and thoughts of the three authors. A mere curriculum balance specifies that Miquel Herrero-Cortell owes the section dedicated to painting on panel, Paola Artoni is the author of the section dedicated to paintings on canvas, while Valeria Cafà is responsible for the section of graphic works.
- On Forgeries in the Renaissance: cf. Miquel Herrero-Cortell, *Del sacar de otras pinturas. Consideración de las copias pictóricas a la luz de los tratados y otros textos del Renacimiento: reputación teórica versus repercusión práctica*, in: *Revista de Humanidades*, no. 35, 2018 (forthcoming).
- It's, in fact, an analogous phenomenon to the patination of bronze and metal artefacts: a rusty finish makes the object visually more interesting than a metallic appearance.
- Otto Kurz, *Falsi e falsari*, ed. Licia Ragghianti Collobi, Vicenza 1961 (1996).
- La pintura europea sobre tablas: Siglos XV, XVI y XVII*, ed. Ministerio de la Cultura, Madrid 2010.
- Rustin S. Levenson, *Examining the Techniques and Materials of Painting*, in: *The Expert versus the Object. Judging Fakes and False Attributions in the Visual Arts*, ed. Ronald D. Spencer, Oxford 2004, p. 113.
- The causes for this mismatch are obvious. For example, a copy of a painting done outside the workshop where the original was done may suppose several differences in the support construction and even in its materials, especially when the painting was subjected to an eventual long trip for market reasons. Furthermore, when copies were executed long time after the original these differences could even be bigger. On these topics is very useful: David Phillips, *The Evidence*, in: *Exhibiting Authenticity*, Manchester 1997, p. 42-69.
- George Savage, *Forgeries, Fakes and Reproductions. A Handbook for Collectors*, Barry & Rockcliff, Londres, 1963, p. 43; Stuart J. Fleming, *Authenticity in Art. The Scientific Detection of Forgery*, Bristol 1975, p. 50; John Fitz/Maurice Mills/John M. Mansfield, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, London 1979, p. 122; Gianni Mazzoni, *Falsi d'autore. Icilio Federico Joni e la cultura del falso tra Otto e Novecento*, Siena 2004, p. 23; M. Ken Perenyi, *Caveat emptor. The Secret Life of an American Art Forger*, New York 2012, p. 56.
- Levenson 2004, *Examining the Techniques and Materials of Painting*, p. 113.
- Marouflage* is a technique for affixing a painted canvas to a panel or to a wall.
- For example, a 15th century Castilian wine panel is not expected to be found as a support in a 15th century Italian painting. It could obviously be an artwork of an Italian artist made in Castilia, but this fact would make the object a rare and bizarre item. Cf. Phillips 1997, *The Evidence*, p. 51.
- Savage 1963, *Forgeries, Fakes and Reproductions*, p. 43, 46.
- Fitz/Mills/Mansfield 1979, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, p. 122.
- Erich Hebborn, *The Art Forger's Handbook*, London 1997, p. 135.
- Gianni Mazzoni 2004, *Falsi d'autore*, p. 52.
- Sepp Schüller, *Forgers, Dealers, Experts. Strange Chapters in the History of Art*, New York 1960, p. 158; Hebborn 1997, *The Art Forger's Handbook*, p. 135.
- Perenyi 2012, *Caveat emptor*, p. 158-159.
- Levenson 2004, *Examining the Techniques and Materials of Painting*, p. 115.
- Gianni Mazzoni, *L'Italie, "une fabrique d'objets anciens"*, in: *Primitifs italiens, Palais Fesch - Musée des Beaux-Arts Ajaccio*, 29 Juin-1 October 2012, p. 278, 279.
- Hebborn 1997, *The Art Forger's Handbook*, p. 57; Perenyi 2012, *Caveat emptor*, p. 60, 154.
- Mazzoni 2012, *L'Italie, "une fabrique d'objets anciens"*, pp. 278, 279.
- Savage 1963, *Forgeries, Fakes and Reproductions*, p. 234.
- Kurz 1961 (1996), *Falsi e falsari*, p. 42.
- Schüller 1960, *Forgers, Dealers, Experts*, p. 158; Savage 1963, *Forgeries, Fakes and Reproductions*, p. 235.
- Even though such popularization opens a fan of tools and solutions for art historians, curators, conservators-restorers, art dealers and collectors, diagnosis and expertise must only be carried out by professionals, since the risk of misinterpretation is always present. It's a multidisciplinary field structured by transversal subjects, and even when it's carried out by an expert professional he/she will also require the participation and help of a whole team, involving chemists and scientists, art historians, fine arts technique experts, conservators or curators and a bunch of specialists before a final statement is pronounced.
- Savage 1963, *Forgeries, Fakes and Reproductions*, p. 258.
- Mazzoni 2004, *Falsi d'autore*, p. 52.
- Yet Cennini recommends using different binders depending on the color, other treatises seem to confirm that statement.
- Savage 1963, *Forgeries, Fakes and Reproductions*, p. 250.
- Fitz/Mills/Mansfield 1979, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, p. 125.
- Even nowadays the Dutch varnish is used and commercially distributed, but there exist aging varnishes also, that are in fact yellowed transparent compounds.
- Mazzoni 2004, *Falsi d'autore*, p. 52; Perenyi 2012, *Caveat emptor*, p. 42.
- Kurz 1961 (1996), *Falsi e falsari*, p. 40-41; Hebborn 1997, *The Art Forger's Handbook*, p. 148.
- Perenyi 2012, *Caveat emptor*, p. 42.
- Once more this proof must be interpreted by professionals, because an enormous amount of varnish over an artwork is not a proof of falsity and can be explained by other reasons. But it is also a fact that many fakes and forgeries present a notorious abuse of varnish.
- Fitz/Mills/Mansfield 1979, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, p. 126.
- "Ansi vienen a ser infinitas las pinturas de este género, selladas con el nombre de Hyerónimo Bosco, falsamente inscripto, en las cuales á él nunca le pasó por el pensamiento poner las manos, sino el humo y cortos ingenios, ahumándolas á las chimeneas para dalles autoridad y antigüedad." Felipe Guevara, *Comentarios de la Pintura*, Madrid 1550 (1788), p. 42.
- Hebborn 1997, *The Art Forger's Handbook*, p. 140-141.
- Kurz 1961 (1996), *Falsi e falsari*, p. 42.
- Ibid.; Fitz/Mills/Mansfield 1979, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, p. 128-129.
- Icilio Federico Joni, *Le Memorie di un pittore di quadri antichi, con alcune descrizioni sulla pittura a tempera e sul modo di fare invecchiare i dipinti e le dorature [With plates, including a portrait]*, Siena 1932, p. 43, 135, 264; Kurz 1961 (1996), *Falsi e falsari*, p. 43; Fleming 1975, *Authenticity in Art. The Scientific Detection of Forgery*, p. 13; Perenyi 2012, *Caveat emptor*, p. 264.
- Kurz 1961 (1996), *Falsi e falsari*, p. 43.
- Savage 1963, *Forgeries, Fakes and Reproductions*, p. 229-230; Max J. Friedländer, *On Forgeries*, in: *The Expert versus the Object. Judging Fakes and False Attributions in the Visual Arts*, ed. Ronald D. Spencer, Oxford 2004, p. 43.
- Levenson 2004, *Examining the Techniques*, p. 113.
- Savage 1963, *Forgeries, Fakes and Reproductions*, p. 232.
- Hebborn 1997, *The Art Forger's Handbook*, p. 91-92; Perenyi 2012, *Caveat emptor*, p. 187.
- Hebborn 1997, *The Art Forger's Handbook*, p. 138.
- Ibid., p. 137.
- Friedländer 2004, *On Forgeries*, p. 42.
- Levenson 2004, *Examining the Techniques*, p. 115.
- Spike Bucklow, *The Description of Craquelure Patterns*, in: *Studies in Conservation*, 42, nº 3, 1997, pp. 129-140.
- Bucklow 1997, *The Description of Craquelure Patterns*, p. 233; Hebborn 1997, *The Art Forger's Handbook*, p. 149; Levenson 2004, *Examining the Techniques*, p. 115.
- Mazzoni 2004, *Falsi d'autore*, p. 332.
- Perenyi 2012, *Caveat emptor*, p. 188.

55. Kurz 1961 (1996), *Falsi e falsari*, p. 39.
56. Hebborn 1997, *The Art Forger's Handbook*, p. 148-149.
57. Frank Arnau, *El arte de falsificar el arte*, Barcelona 1961, p. 292-294; Ricardo Medina Moyano, *Arte y derecho penal. El caso Han Van Meegeren*, in: *Boletín Cultural y Bibliográfico*, vol. 11, no. 1, 1968, p. 121-129; Fitz/Mills/Mansfield 1979, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, p. 157.
58. Friedländer 2004, *On Forgeries*, p. 42.
59. Schüller 1960, *Forgers, Dealers, Experts*, p. 158; Kurz 1961 (1996), *Falsi e falsari*, p. 40.
60. Hebborn 1997, *The Art Forger's Handbook*, p. 150.
61. Fitz, Mills, Mansfield 1979, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries* p. 125.
62. *Mezza creta* is a preparation formula based on traditional *creta* with a certain portion of oil.
63. Savage 1963, *Forgeries, Fakes and Reproductions*, p. 230; Fitz/Mills/Mansfield 1979, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, p. 126; Hebborn 1997, *The Art Forger's Handbook*, p. 136; Perenyi 2012, *Caveat emptor*, p. 239.
64. Schüller 1960, *Forgers, Dealers, Experts*, p. 158. That seems to be analogous for all counterfeiters of drawings. "Elmyr de Hory, por ejemplo, buscaba en librerías de viejo papel de los años 20's para imitar obras de Picasso de aquel periodo." Citation from Clara Zamora, *¿Arte o Falacia? El pintor y falsificador húngaro Elmyr de Hory*, in: *Erebea, Revista de Humanidades y Ciencias Sociales*, nº 4, 2014, p. 353-368, here p. 362.
65. Hebborn 1997, *The Art Forger's Handbook*, p. 16.
66. Fitz, Mills, Mansfield 1979, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, p. 166; Hebborn 1997, *The Art Forger's Handbook*, p. 18.
67. Hebborn 1997, *The Art Forger's Handbook*, p. 49.
68. Fitz/Mills/Mansfield 1979, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, p. 166.
69. Hebborn 1997, *The Art Forger's Handbook*, p. 11.
70. A good example is the Doctoral Thesis of Gemma María Contreras, *La tinta de escritura en los manuscritos de archivo valencianos, 1250-1600. Análisis, identificación de componentes y valoración de su estado de conservación*, PhD Thesis, Universitat de Valencia, Valencia 2015.
71. Hebborn 1997, *The Art Forger's Handbook*, p. 53.
72. Fitz/Mills/Mansfield 1979, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, p. 166.
73. Hebborn 1997, *The Art Forger's Handbook*, p. 73.
74. Savage 1963, *Forgeries, Fakes and Reproductions*, p. 270.
75. Fleming 1975, *Authenticity in Art. The Scientific Detection of Forgery*; Mauro Matteini/Arcangelo Moles, *Ciencia y Restauración. Método de Investigación*, San Sebastián 2001; *Scientific Investigation of Copies, Fakes and Forgeries*, ed. Paul Craddock, Abingdon-on-Thames 2009.
- John Fitz, Maurice Mills, John M. Mansfield, *The Genuine Article. The Making and Unmasking of Fakes and Forgeries*, London 1979.
- Stuart J. Fleming, *Authenticity in Art. The Scientific Detection of Forgery*, Bristol 1975.
- María Angela Franco Mata, *Falsificaciones de reliquias, copias antiguas y falsificaciones modernas de Arte Medieval*, in: *Boletín de la Anabad*, vol. 45, no 3, 1995, p. 119-130.
- Bruno Frey, *La economía del arte: una visión personal, y Las falsificaciones en arte: ¿qué falsificaciones?*, Barcelona 2000.
- Felipe Guevara, *Comentarios de la Pintura*, Madrid 1550 (1788).
- Erich Hebborn, *The Art Forger's Handbook*, London 1997.
- Miquel Herrero-Cortell, *Del sacar de otras pinturas. Consideración de las copias pictóricas a la luz de los tratados y otros textos del Renacimiento: reputación teórica versus repercusión práctica* in: *Revista de Humanidades*, no. 35, 2018 (in press).
- Miquel Herrero-Cortell, *Las copias en la conservación del legado artístico. La réplica pictórica documentada*, in: *La piel de los edificios: técnicas artísticas y formas de intervención sobre el patrimonio cultural. La Historia del Arte como reflexión y compromiso*. Universitat de València, 2014.
- Mark Jones, *Fake? The Art of Deception*, British Museum Publications, London 1963 (1990).
- Ilcilio Federico Joni, *Le Memorie di un pittore di quadri antichi, con alcune descrizioni sulla pittura a tempera e sul modo di fare invecchiare i dipinti e le dorature [With plates, including a portrait]*, Siena 1932.
- La pintura europea sobre tablas: Siglos XV, XVI y XVII*, ed. Ministerio de la Cultura, Madrid 2010.
- Rustin S. Levenson, *Examining the Techniques and Materials of Painting*, in: *The Expert versus the Object. Judging Fakes and False Attributions in the Visual Arts*, ed. Ronald D. Spencer, Oxford 2004.
- María López Planells, *Estudio de las distintas técnicas analíticas para el establecimiento y detección de falsificaciones en el mundo del arte*, Tesis Doctoral, 2011.
- Ralph Mayer, *Materiales y técnicas del arte*, Barcelona 1992.
- Mauro Matteini/Arcangelo Moles, *Ciencia y Restauración. Método de Investigación*, San Sebastián 2001.
- Gianni Mazzoni, *Falsi d'autore. Ilcilio Federico Joni e la cultura del falso tra Otto e Novecento*, Siena 2004.
- Gianni Mazzoni, *L'Italie, "une fabrique d'objets anciens"*, in: *Primitifs italiens, Palais Fesch - Musée des Beaux-Arts Ajaccio*, 29 Juin -1 October 2012, p. 261-263.
- Ricardo Medina Moyano, *Arte y derecho penal. El caso Han Van Meegeren*, in: *Boletín Cultural y Bibliográfico*, vol. 11 no 01, 1968, p. 121-129.
- Ken Perenyi, *Caveat emptor. The Secret Life of an American Art Forger*, New York 2012.
- David Philips, (Ed.) *The Evidence*, in: *Exhibiting Authenticity*, Manchester University Press, Manchester 1997, p. 42-69.
- George Savage, *Forgeries, Fakes and Reproductions. A Handbook for Collectors*, Barry & Rockcliff, Londres, 1963.
- Sepp Schüller, *Forgers, Dealers, Experts. Strange Chapters in the History of Art*, New York 1960.
- Scientific Investigation of Copies, Fakes and Forgeries*, ed. Paul Craddock, Abingdon-on-Thames 2009.
- The Expert versus the Object. Judging Fakes and False Attributions in the Visual Arts*, ed. Ronald D. Spencer, Oxford 2004.

Bibliography

Frank Arnau, *El arte de falsificar el arte*, Barcelona 1961.

Spike Bucklow, *The Description of Craquelure Patterns*, in: *Studies in Conservation*, 42, nº 3, 1997, pp. 129-140.

Gemma María Contreras, *La tinta de escritura en los manuscritos de archivo valencianos, 1250-1600. Análisis, identificación de componentes y valoración de su estado de conservación*, PhD Thesis, Universitat de Valencia, Valencia 2015.

Max Doerner, *The Materials of the Artist and their Use in Painting*, New York 1962.

Gillo Dorfles, *Falsificaciones y fetiches*, Madrid 2010.

El experto frente al objeto. Dictaminar las falsificaciones y las atribuciones falsas en el arte visual, ed. Davies Spencer, Madrid 2011.

Paul Eudel, *La falsificación de antigüedades y objetos de arte. Alteraciones, fraudes y adulteraciones descubiertas*, Buenos Aires 1947.

Max J. Friedländer, *On Forgeries*, in: *The Expert versus the Object. Judging Fakes and False Attributions in the Visual Arts*, ed. Ronald D. Spencer, Oxford 2004, p. 40-46.

Hans Tietze, *Genuine and False. Copies, Imitations, Forgeries*, London 1948.

Otto Kurz, *Falsi e falsari*, ed. Licia Ragghianti Collobi, Vicenza 1961 (1996).

Clara Zamora, *¿Arte o Falacia? El pintor y falsificador húngaro Elmyr de Hory*, in: *Erebea, Revista de Humanidades y Ciencias Sociales*, nº 4, 2014, p. 353-368.

Figures

Fig. 1: Reverse of a new wooden panel assembled imitating a Spanish Renaissance panel with Italian inspiration, like those found in la Corona de Aragón. Three vertical boards of pinewood have been assembled with dovetails, and reinforced with horizontal slabs. The color of the wood is still light, since it is not a historic panel. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

Fig. 2: Three examples of wood along a simulated process of aging. a) A plain pinewood support. b) Pinewood dyed with walnut stain. c) Application of ashes while the stain dries. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

Fig. 3: Examples of real woodworm holes and false ones. a) and b): Real worm galleries. c) and d): Nail holes. e) and f): Gunshot pellet holes. All of them have been found on real artworks studied by the CAEM staff. Note that while the real woodworm holes have shabby borders, eroded and irregular, the nail or point holes are quite rounded, and their inner either pyramidal (c) or conical (d) depending on the instrument that produced them. The gunshot pellets holes show a metal greyish halo in the border of the holes, and cause several damages on wood due to their impact. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

Fig. 4: Miquel Herrero: Reproduction of a head after Domenico Ghirlandaio; 2014; mixed technique on panel. 21 x 30,5 cm; Valencia, Private Collection (photo by Nemesio Jiménez). An example of reproduction with cracks texture. Tents are induced in the preparation and then covered by painting to achieve a non flat surface effect, as it can be observed on the right image taken with a vertical racking light. This is a properly identified museum quality reproduction, documented and dated, not to be confused with an original or with a forgery.

Fig. 5: Miquel Herrero: Copy of the portrait of Simonetta Vespucci, after Piero di Cosimo; 2014; mixed technique on panel. 46 x 55 cm; Valencia, Private Collection (photo by Nemesio Jiménez). Detail of a split of the wooden support (left) and cracks in the preparation (right). This is a properly identified museum quality reproduction, documented and dated, not to be confused with an original or with a forgery.

Fig. 6: Example of physical-mechanical cracking of the gesso on a panel, as a result of quick changes in humidity and temperature. Although the cracks grow randomly and look natural, their appearance is not that of a common aging pattern for a panel. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

Fig. 7: Example of physical-mechanical cracking of the coloured gesso on a panel, as a result of slow changes in humidity and temperature during a long time. Natural cracks follow the grain of the wood. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

Fig. 8: Detail of a cracked panel with the drawing already on it before the phase of colouring. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

Fig. 9: Miquel Herrero: Copy of the portrait of Simonetta Vespucci, after Piero di Cosimo; 2014; mixed technique on panel. 46 x 55 cm; Valencia, Private Collection (IR photo by Nemesio Jiménez). Detail of underdrawing, done with a charcoal tracing paper.

Fig. 10: Unknown: Copy of a fragment of the Altar Frontal of Santa Maria de Mossoll; 20th century; mixed technique on panel. Catalonia, Private Collection. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives).

Fig. 11: Miquel Herrero: Copy of the Agnolo Doni, after Raffaello; 2014; oil on panel. 44 x 59 cm. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). Ultraviolet Fluorescence UVF image, and detail. A noticeable varnish cleaning is visible on the sky at the right side of the figure, in its face and in the dress. This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain).

Fig. 12: Miquel Herrero: Copy of the portrait of La Belle Ferronnière, after Leonardo; 2013; mixed technique on panel; 30,5 x 21,5 cm; Valencia, Private Collection (photo by Nemesio Jiménez). Detail of the crackle on the yellowed varnish.

Fig. 13: Unknown: Nobleman on horseback (imitating a Renaissance style); 19th century; tempera on panel; 57,5 x 43,5 cm; Inv. CL.1 n.1092; Venezia, Museo Correr (Verona, LANIAC, Università di Verona/Venezia, Museo Correr). Notice the dirt and tan colour achieved by smoking the surface.

Fig. 14: Unknown: Riding Soldiers and Infantry (imitating the Renaissance style); 19th century; tempera on panel; 50 x 57,5 cm; Inv. CL.1 n.1101; Venezia, Museo Correr (Verona, LANIAC, Università di Verona/Venezia, Museo Correr). Notice the dirt and tan colour achieved by smoking the surface.

Fig. 15: A rolled canvas, already prepared and cracked. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain).

Fig. 16: Unknown: Apostle (imitating the style of El Greco); 19th century; oil on canvas; 52,5 x 42 cm. Catalonia, Private Collection. Centre d'Art d'Època Moderna, Universitat de Lleida. (CAEM archives). Detail of the image taken with vertical racking light. Horizontal tent crack-lines produced by the rolling of the canvas are noticeable.

Fig. 17: Miquel Herrero and the students of Master in Expertise, Evaluation and Analysis of Art Works Degree: Apostle; 2015-2016; oil on canvas. 41 x 38 cm. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). Detail of the surface of the canvas, aged after the whole painting was properly finished. Notice the pattern of the cracks, the abrasion, and the subtle cupping. This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain).

Fig. 18: Miquel Herrero and the students of Master in Expertise, Evaluation and Analysis of Art Works Degree:

Apostle; 2015-2016; oil on canvas. 41 x 38 cm. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain).

Fig. 19: Miquel Herrero and the students of Master in Expertise, Evaluation and Analysis of Art Works Degree: Italian Renaissance style figure; 2015-2016; black pencil and chalk. 10,2 x 16 cm. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain). Note the marks of a baking grill on the back.

Fig. 20: Miquel Herrero and the students of Master in Expertise, Evaluation and Analysis of Art Works Degree: Drawing after Peter Brueghel; 2015-2016; ink on paper. 14 x 18 cm. Centre d'Art d'Època Moderna, Universitat de Lleida (CAEM archives). This is a didactic reproduction for the students of the Master in Expertise, Evaluation and Analysis of Art Works Degree, Universitat de Lleida (Spain).

Summary

This paper delves into the techniques and procedures of forgers in order to analyze their productions. A large variety of methods are implemented: the reuse of original supports, the mixing of original parts with faked parts, and artificial aging of new materials. In sum, these 'tricks' consist of many strategies that aim at simulating the passing of time, to fake an object's history through suggestive yet credible effects of aging on surfaces, which were (and are) achieved physically, chemically, or mechanically. The article focuses on the strategies employed in reusing materials, aging supports, cracking preparations, altering the pictorial films, oxidizing colors and varnishes, and feigning other pathologies such as dirt, wormwood, mold, insect depositions, and even historical restorations, with the intention of deceiving the eye, and ultimately imposing on the artworks a past that they never had. Several cases are considered, including methodological examples of paintings on panel and canvas, as well as graphic works.

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Title

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