Art Forgeries
ART FORGERIES
IIC NORDIC GROUP 16TH CONGRESS
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PREPRINTS
INTRODUCTION

Art forgeries have been a growing concern in the Scandinavian Art world for the last decades, affecting all forms of art as well as archaeological and historical objects.

Iceland had almost escaped this plague until the 1990s when a private painting restorer, Ólafur Ingi Jónsson, first raised attention to suspicious paintings allegedly by Icelandic Masters, which had been brought to his workshop by collectors. As the number of suspicious works was increasing, preliminary research indicated that the same gallery had sold most of them. In this case, the historical common background of the Nordic countries, especially the strong links between Iceland and Denmark appeared rapidly to have played a key role in the process of forgery, especially for the late 19th-century and Modern art period.

Since then many Icelandic conservators and art historians, as well as European experts have been called upon to participate into an inquiry on art forgery of the widest scope ever conducted in this country. The latest event related to this affair being a several weeks' trial in April and May 2003.

Therefore, when it came to the Icelandic section of the Nordic group of IIC to organize the 16th triennial congress, its members agreed on the choice of the topic Art Forgeries, hoping to create a unique opportunity of gathering specialists in various fields of conservation to share their experience, confront processes and discuss their own methods of dealing with art forgeries.

We are very glad to welcome lecturers coming from all of the Nordic countries as well as from the United States and Great Britain. By offering a large range of lectures issued from different fields of conservation, we hope to strengthen our knowledge and possibly create the basis for an international network of cooperation in the matter of art forgeries.

ACKNOWLEDGEMENTS

As the smallest section of The Nordic Group and the most geographically isolated, The Icelandic association of conservators needed a lot of support, both financial and moral, to be able to organize this event.

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Reykjavik, May 18th 2003

Nathalie Jacqueminet,
Painting conservator at the National Museum of Iceland,
Chairperson of the organizing committee.
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The main subject for this paper is art forgeries in Norway. It is based on my own experiences over a period of more than forty years as head of the conservation department of The National Gallery, Oslo. As such the paper is restricted to paintings.

My first real contact with fakes was in 1959 – a couple of years after I took up my position at the Gallery. I was then appointed as the expert adviser to the police in the case against Norway’s most famous counterfeiter, Casper Caspersen, a restorer who had sold two faked paintings as works by Edvard Munch. Since then I have been adviser to the police in a limited number of cases of counterfeits which have been investigated and taken to court.

In addition to these high profile cases, over the years a number of pictures from the gallery collection have come under suspicion and some of them – mostly from the collection of old European masters – have been identified as forgeries and withdrawn from the exhibition to disappear quietly into the store rooms (Figures 1 and 2).

By far the largest number of more or less dubious pictures, however, have come to my attention through the consultation service of the museum. This has amounted to an almost endless stream of pictures handed in for appraisal by private owners, art dealers and auction houses.

ABSTRACT

The paper is based on the author’s experience during more than forty years as leader of the conservation department of The National Gallery, Oslo. Among the responsibilities of the department has been scrutinizing the gallery collection to detect possible counterfeits and assisting the police and courts in cases of art fraud. Different categories of counterfeits will be discussed – “hard core fakes”, pastiches, copies, spurious signatures etc. Most counterfeits are technically crude and artistically poor and can be detected by evaluation of style and quality. Generally this examination includes the use of simple technical equipment such as binocular microscope and ultra-violet lamp. More rarely, infra-red reflectography and X-radiography are useful. Whenever possible, direct comparison between problematic pictures and documented originals is useful – thus access to a collection of a major art museum like the National Gallery has proved invaluable. In some cases pigment analysis has also provided decisive information. Collaboration between restorer, art historians, and eventually chemist, is recommended.

KEY WORDS
Paintings, counterfeits, Norway.

Sammendrag

Nøkkelord
Malerier, forfalsknings, Norge.

In this paper I shall – after a few general remarks on the problems – try to define the difference between genuine and fake and present the main categories of counterfeits. Following this I will present some typical examples from my own experience and discuss the usual methods of approach in identifying the dubious works.

GENERAL REMARKS

In the same way as in other business activity, art swindle is based on the law of supply and demand. The increasing demand from collectors and museums for pictures by well known masters has lead to “shortage of goods” in the market. Attractive paintings have become comparatively rare, and the high prices make it tempting for the swindler to enter the market in order to meet the demand.

It goes without saying that art swindle is not a modern phenomena in Norway. It is apparent, however, that the problem has been growing during the last decades. From one year to another a substantial number of pictures have been offered for sale under labels that have been misleading. The risk of purchasing counterfeits is an obvious problem for the buyers, who may pay dearly for pictures without value. But counterfeits are also problematic for the art dealers who risk substantial claims for compensa-

1 See also Plahter, L.E. 1989. Svindel med billedkunst i Norge, Vi ser på kunst, Nr. 1A, pp. 4-8.
tion from angry customers. It is obvious that serious art dealers, at least in Oslo, have understood the gravity of the problem and take pains to avoid selling dubious works of art.

When it comes to fighting art swindle, one problem is that the police tends to give low priority to this kind of cases compared to other types of fraud: It is only the most serious cases that are investigated and taken to court. The reason for this may be that generally it is easier to expose a faked painting than to nail the actual faker. Also the amount of money involved in art fraud is as a rule comparatively modest compared to many other types of crimes for profit and financial swindle.

DEFINITIONS

Forgery may be defined as the manufacture – with fraudulent intent with a view to sale – of a work of art in the style of a well known artist. It is essential that the intent is dishonest: It is legal to make copies for private use or to paint in another painters style – the picture is only turned into a fake when deliberately presented – and offered for sale – as an original.

What then is the definition of a genuine painting? One would believe the answer to be simple enough - running something like this: A picture is genuine when presented and sold as a work of its author. However, the distinction between real and fake is not always as easy to define as it might seem, as can be illustrated by the following, curious affair:

The Italian painter Georgio de Chirico (1888 – 1978) ranks as one of the outstanding surrealists. Over the years his paintings gradually became more conventional and naturalistic. His surrealistic pictures, however, obtained considerably higher prices than pictures painted some decades later. De Chirico succumbed to temptation, pre-dated some of his paintings and was taken to court. De Chirico might be the only artist judicially found to have counterfeited his own work.2

CATEGORIES OF HARD CORE FAKES

1. Copy of an original. If the original can be identified, the fake will be relatively easy to expose. One should keep in mind, however, that the artist might have produced replicas, i.e. more than one version of the motif.

2. Pastiche. Elements from two or more pictures are fused into a new composition. Pastiches might be harder to expose because the models might be better camouflaged.

3. Independent compositions executed in a known masters style, but without direct borrowings.

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The Munch Museum condemned the painting as a fake, copied after the museum’s own picture Autumn (Figure 4). Surprisingly, the fake was mounted on the original stretcher of Autumn, which had been replaced by a new one at Ekely. As access to the restoration studios at Ekely was obviously strictly limited, the list of suspects was short, and after some days Caspersen came forward, confessing not only to the forging of Road in Sunset, but also for copying another oil painting and selling it as a Munch. He also admitted to the theft of 14 prints from the collection. For his activity Caspersen was sentenced to 9 months in jail.

The Caspersen affair caused quite a stir in the press. In particular the art dealers were abused for their role, having sold counterfeits without checking their provenance or consulting Munch-experts. It was not lost on the public, either, that Caspersen was a member of the Association of Painting Conservators, the forerunner of the IIC – Nordic Group. As could be expected, parts of the public considered Caspersen as something of genius, having fooled both art historians (he hadn’t) and art dealers.

Among the outstanding Norwegian painters, Christian Krohg and Frits Thaulow offer special difficulties as regards discriminating between real and fake. Christian Krohg (1852-1925) had a central position in the cultural life of Christiania (Oslo) from the 1880s, both as a painter and writer. His best paintings depict everyday scenes from maritime, rural and urban life. However, from the end of the 1880s the quality of his paintings declined disastrously, and it is therefore problematic to sort out the autographs based on quality and style. The difficulty is not lessened by the fact that Krohg over the years engaged at least eight assistants who copied a large numbers of his pictures which were signed – and often touched up – by Krohg. In Krohg’s case it will hardly ever

THE CONDITIONS IN NORWAY

The faker is not creative in the normal sense of the word, in view of the fact that his activity is based on copying and imitating other artist’s works. All the same, the faker will need a certain degree of diligence, technical knowledge, drawing ability and dexterity with the brush to be able to produce saleable products. The fact that the “profession” is not open to every Tom, Dick and Harry may be the reason why hard core fakes appear in relatively limited numbers on the market.

Norwegian painters who have had the “honour” of been faked are among others Hans Gude, Frits Thaulow, Christian Krohg, Edvard Munch, Nikolai Astrup, Thorvald Erichsen, Henrik Sorensen and Kai Fjell. Also abstract painters like Johs. Rian and Jacob Weidemann have been faked, the latter at least even before his death.

The best known faker in Norway is, as already mentioned, Casper Caspersen. In the 1950s he was engaged to assist in the conservation of the large collection of paintings at Edvard Munch’s property Ekely, which the artist had bequeathed to the city of Oslo at his death in 1944. Caspersen was employed as a stretcher-maker, but gradually began to line and restore paintings. In 1956 he became member of the Norwegian Association of Painting Conservators. In 1958 a private owner presented a painting to the Munch Museum for evaluation. The painting, which had been bought from a leading dealer in Oslo, was entitled Road in Sunset and signed E. Munch 1899-98 (sic) (Figure 3).
Over the years I have identified spurious signatures on hundreds of pictures. I must confess that at times I wondered if every second Norwegian used his spare time at the kitchen table faking signatures. However, in a couple of cases investigated by the police it emerged that in each instance one single person was responsible for what could be described as the pure mass production of fraudulent signatures. Thus, to my relief, it seems that most of this business has been run by a few professional swindlers.

As far as I can see, this kind of activity has dwindled during the last decade or so in Oslo. Undoubtedly, the consultation service of The National Gallery has had a preventive effect. A swindler trying to sell pictures with spurious signatures through the auction houses or art dealers will know that most probably he will be exposed immediately. This is due to the fact that the dealers have upgraded their art historical expertise and have even learned how to use an ultra-violet lamp. If a picture gives grounds for suspicion, it will normally be handed in to the Gallery for further examination, and if fraudulent it can be stopped before reaching the market. The fact that the conditions have improved in Oslo, doesn’t mean that the problem isn’t still with us. There is evidence that it has migrated to other cities where the swindlers can operate more or less undisturbed.

Be possible to distinguish between autographs, workshop copies and fakes (Figure 5).

The landscape painter Frits Thaulow (1847-1906) gained popularity at an early stage in his career and sold well. He may have been faked during his lifetime or by any rate shortly after his death. As with Krohg many of the dubious paintings are of the same age as the originals and cannot be exposed by means of technological examinations. This leaves assessment by quality and brushwork alone.

**SPURIOUS SIGNATURES**

By far the most common form of fraud is without doubt false signatures on otherwise unproblematic pictures. The reason why this kind of forgery is so widespread is undoubtedly that no special talent is needed to put a new signature on old painting. The point of departure is a more or less worthless picture, painted with the best intentions by an amateur or insignificant artist, which at one time or another is adorned with the signature of a more successful painter. The picture will obviously have some superficial resemblance in motive and colour with paintings by the artist who’s name is misused (Figures 6 and 7).

False signatures are often copied from signatures reproduced in exhibition or museum catalogues or in art historical works. In Norway it is mainly the generous selection of signatures reproduced in *Norges billedkunst i det nitende og tyvende århundre* (1951-53) that pop up in places where they don’t belong.
EXPOSING FAKES

When a doubtful painting is to be evaluated, the first thing is to consider the painting as a work of art – i.e. its motif, style, colour, brushwork and artistic quality. Based on experience, I find it wise to notice one's own first, intuitive reaction – it is often right. As restorers we should also look at the canvas, panel, cracks, edges, nails, state of conservation etc., not to mention signatures, inscriptions and labels. As restorers we come in very close visual and physical contact with the objects and may over the years accumulate knowledge that is not available to everybody. Frequently it is possible to accept a painting as genuine, or to unmask it as false, just by having a good look at it. It goes without saying that the eye is the most important instrument we have at our disposal, and frequently we have to rely on our eye alone, as no technical equipment or scientific analyses is able to offer assistance.

Direct comparison with documented originals is obviously an advantage; the collections of a major art museum like The National Gallery will thus provide invaluable reference materials. Collaboration with the art historians and other members of the museum staff will often be useful.

Most fakes are quite primitive, both as regards artistic quality, workmanship and research. These can be rejected out of hand without the use of any technical equipment. Usually, however, the visual appraisal should be supported by various technical and scientific means of examination. More or less indispensable is a binocular microscope on a floor stand for surface examination and an ultra-violet lamp. Also infra-red reflectograms and X-ray photographs may in certain instances provide helpful information.

Invariably old paintings will be disfigured by various types of cracks. Some have developed in the drying period of the paint, other will appear slowly over the years as the picture turns more brittle. The cracks will not be evenly distribute throughout the whole pictorial area – the pattern will vary from one part of the composition to another. A naturally grown pattern of cracks is quite difficult to produce artificially in a convincing manner.

To a limited extent we have had pigments from problematic pictures analysed, but such analysis have only rarely provided information that proved decisive one way or another.

When producing a fake, the counterfeiter will be facing a number of problems. Not only should the product be acceptable as regards style, character and quality – which indeed is hard enough – also the materials and workmanship should carry conviction. In addition, the fake should also have an aura of age. Age will inevitable alter the appearance and character of a painting: Stretchers and wood panels darken and might be infested by insects, canvases darken and turns brittle, the pictorial layers crack and flake off, the varnish turn yellow, dust and dirt accumulate on front and back etc. Of course, the counterfeiter cannot wait until time has aged his work naturally, but will have to give his work some ageing treatment. It is difficult to do this convincingly, and it is often easy to detect a fake by the artificial ageing tricks used by the faker. I shall present a few examples of well known gimmicks of the profession.
False cracks have been produced in a variety of ways. For instance, if too much glue is used in the ground, the picture may start cracking more or less immediately. Heating the picture in an oven is another well known trick. By rolling and folding the canvas before it is put on the stretcher, long parallel cracks will form, quite unlike naturally occurring age cracks. One primitive way is to scratch the cracks into the paint with a needle or to paint them on top of the surface. A low magnification microscope is all you need to detect deceptions like these (Figures 8, 9 and 10).

A well known short cut is to paint on top of an old, worthless picture. As the canvas and stretcher are old, no artificial ageing procedure is necessary. The cracks of the original picture will also tend to penetrate to the front, thus also contributing to the appearance of age. The best means of exposing this kind of frauds is by X-ray photography.

The ultra-violet lamp will often immediately give false signatures away and may also betray other kinds of manipulations.

CONCLUSION

What is the driving force behind the counterfeiter? Obviously the answer is simple: Money – easy money and as much as possible. Although the motive is dubious, it seems that the general public tends to consider the faker with some kind of lenient sympathy and admiration. This may seem strange considering that we all wish the law to crack down heavily on other kinds of economical swindle. I believe that the reaction betrays something universally human: It is part of our nature to feel some kind of malicious pleasure when experts have made fools of themselves. A successful faker exposes the fallibility of greedy art dealers, conceited restorers, pompous art historian and snobbish collectors, and it is understandable that someone might gloat a little when the incompetence of the art establishment is exposed in this way.

One peculiar view is that the fakers are cheating the rich, who have enough money in the first place, thus this kind of swindle doesn’t really matter. Even if this line of thought should be acceptable – which it isn’t – it is certainly not solely the rich that are cheated – a good percentage of the victims I have met are quite ordinary people who could ill afford to pay substantial amount of money for pictures that are virtually worthless.

Successful counterfeits will contaminate the work of well known painters and contribute to lower the artist’s general reputation. So, both on account of the reputation of the artists and out of consideration for the collectors, art fraud is a topic that should be taken seriously. I find it praiseworthy that the IIC Nordic Group has made art forgeries the main theme of this conference.

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ABSTRACT

This paper discusses a method of authentication developed by the Finnish National Gallery. The need to develop a system for this purpose arose from case studies with an international aspect (Sweden, Russia). Principles in use: - Reference material - genuine works of art and material data of the artist in question. - Cooperation of experts - a conservator, an art historian and a scientist. - A short synopsis of a research project on Albert Edelfelt’s studio practice (1854-1905). - Artistic and financial responsibility of experts. Methods in use: - The collection of reference material is an essential part the identification activity. - A systematic approach in each case. - Description of technical equipment available in the museum. The subject is presented with case studies of forged paintings signed with false Edelfelt signatures.

KEYWORDS

Faked, technical art history, genuine, comparative analysing method, anachronism.

The following does not seek to be an exhaustive article on art forgeries but rather a general presentation on an identification method in use at the Finnish National Gallery with particular reference to a few examples of forgeries.¹

Forgeryes are an auxiliary theme in art research that requires a great deal of systematic work and fascinates the general public and the media, but offers the researcher involved mainly confusing facts when comparing the amount of time and nature of the information with the collection of data for identification studies of genuine artworks.

The investigation and study of artworks are part of the daily work of the Conservation Department of the Finnish National Gallery. The explicit work includes the collection of information for conservation files, documentation and investigation reports, and the observation, recording and analysis of data on materials and painting technique in connection with attribution and authentication studies and research projects. The implicit aspect, in turn, includes surveys of the condition of works for exhibitions and loans, in which connection the typical features of artists accumulate almost unnoticed to become part of the professional skills of the conservator as a by-product of defining the condition of works and conservation measures.

During the 1980s there were a few major art forgeries in Finland that aroused a great deal of interest in the media. In this connection special colloquiums on this subject began to be arranged. In 1988 I first began to study this theme systematically when lecturing at a specialist seminar on art forgeries held in Pietarsaari, where the main foreign speaker was Professor Björn Hallstrom of the Material-tekniska Högskolan (University of Material Technology) of Stockholm. According to my professional experience R. H. Marijnissen’s book Paintings, Genuine, Fraud, Fake² could well serve as a basic manual for all conservators involved in the investigation of artworks. A method adapted to local conditions can be established on the framework provided by the book. Marijnissen discusses the evolution of materials and techniques, the nature, function and signatures of artworks, the physical history of works, such as ageing phenomena, biological change, use, neglect, conservation and repairs.³ Researchers must definitely keep abreast of professional literature in order to have current dates for materials and

¹ I have been in the service of the Finnish National Gallery for over 30 years. This period has included a great amount of work related to authentication and art forgeries since the 1970s.
³ Other classics of art research of importance for me are: Madeleine Hours: Conservation and Scientific Analysis of Painting, Van Nostrand Reinhold Company, 1976; Art History and Laboratory - Scientific Examination of Easel Paintings, Strasbourg - Council of Europe, Edited by Roger Van Schoute and Hélène Verougstrate-Març; Ragnar Bergmark, Björn Hallström: Ruffel och båg i guldram - Att avslöja konstförfalsknings; Stockholm Wahlström & Wihlstrand, 1987; Stuart J Fleming, Authenticity in Art The Scientific Detection of Forgery, London, 1975. The most recent basic work on the subject is Leslie Carlyle’s, The Artist’s Assistant – Oil Painting Instruction Manuals and Handbooks in Britain 1800-1900 with reference to Selected Eighteenth-century Sources, Archtype Publications, London 2001.
techniques. It is also to have a crystal-clear understanding of the differences between original works, fakes, copies, pastiches, reproductions, replicas and plagiaries.4

The most popular artists for Finnish art forgers are to be found at the top of the price-lists of auction houses. These are names such as Albert Edelfelt, Helene Schjerfbeck, Pekka Halonen, Eero Järnefelt, Akseli Gallen-Kallela and Ellen Thesleff, to name some of the most important ones.

CRITERIA FOR INVESTIGATING ARTWORKS

Artworks in the possession of the police, auction firms, art dealers and private owners are eligible for authentication and identification studies. Police requests for investigations concern all works with which they are officially involved. In other respects, the criterion for our investigations of an artwork is its art-historical significance and the fact that its authenticity is regarded as a matter of interest for the collections of the Finnish National Gallery in the Ateneum, the Sinebrychoff Museum and Kiasma. These investigations are subject to fees.

COMPARATIVE ANALYSIS

In order to serve as an expert body in matters related to art, the museum must have a broad comparative material of works representing the whole output of an artist as complete as possible. The method of comparative analysis is applied in this connection. The Conservation Department has gathered material for several decades into a data bank with information on painting techniques, material and working methods in the form of different kinds of photographs, x-rays, cross-section samples etc. Our working routines include close cooperation with the art-historians and archivists of museums. Photographs, artists' correspondence, exhibition catalogues and reference literature have been collected for over a century for the archives of the Finnish National Gallery.5

An advantage of a large museum is the opportunity to work on an interdisciplinary basis.

The conservator carries out the investigations of materials and techniques and related documentation, while the art-historian checks that the work in question fits the oeuvre of the artist in terms of style and period. The cross-section samples are taken by a specially trained researcher. The conservation unit has even achieved results of scholarly significance by studying a single work of art, although this involves technical art history.6 The artist in terms of style and period. The cross-section samples are taken by a specially trained researcher. The cross-section samples are taken by a specially trained researcher. The cross-section routine includes close cooperation with the art-historians and archivists of museums. Photographs, artists' correspon-

dence, exhibition catalogues and reference literature have been collected for over a century for the archives of the Finnish National Gallery.5

THE EDELFELT PROJECT

The Edelfelt research project, which has been in progress at the conservation unit since 1997, involves technical art history.7 The art-historian Marina Catani and the author have taken as our goal an investigation and study of Albert Edelfelt's painting technique and studio practice. The work will result in an Edelfelt data bank that will serve as reference material for conservation, attribution and authentication studies. The research is of a high scholarly level permitting Marina Catani to prepare her doctoral dissertation on this topic.

THE NORWEGIAN FISHERMAN AS THE STARTING POINT OF THE EDELFELT PROJECT

The Edelfelt project actually began in 1994 when we had the opportunity to repeat our investigation of the Edelfelt forgery The Norwegian Fisherman. On this occasion we had sufficient time and new technical facilities in the recently renovated Ateneum. In 1988 Professor Björn Hallström of the University of Material Technology in Stockholm had presented evidence before the Supreme Court of Sweden that overturned the results of our earlier investigations conducted at the Ateneum in 1985. At the time, we only had one day to carry out the work, and our report was unofficially drawn up upon the request of the Swedish police authorities. On the other hand, the result of the investigation was unequivocal. The signature was on a cracked surface and there were the remains of an old signature in the left corner of the canvas. The asset of the argument presented by Hallström and the Swedish Laboratory of Criminal Technology was that Edelfelt's signature was written on the stretcher. But they completely missed the point that the upper crossing member of the stretcher had been replaced. And it was on this part that all the inscriptions had been made. The wood of this member had been darkened to look similar to the other three and this very edge was more damaged than the other three due to the fragile canvas.

The case of The Norwegian Fisherman made us realize the importance of the knowledge that we already had of Edelfelt’s painting technique. Now it became timely to develop an Edelfelt-related databank. Accordingly, our

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5 Central Art Archives of the Finnish National Gallery. See also http://www.fng.fi.
project began with the objective of investigating indisputably authentic works by Albert Edelfelt. Models and examples for the framework of our project have been the Rembrandt Research Project and the National Gallery’s series Art in the Making.

We chose to study 14 Edelfelts from the collections of the Ateneum. Through these works we can investigate his art studies in Helsinki, Antwerp and Paris. We follow his development as a history painter, plein-air painter, landscape painter, a painter of women, and a portraitist. This study of a Finnish artist can help expand our understanding of the international art scene in Paris towards the close of the 19th century. Our study presents the practices of the studio, the artists’ working methods and conditions. Edelfelt spent most of his life in Paris and was ranked among the elite of European art in international terms.

THE RESPONSIBILITY OF THE ART EXPERT

In taking on the responsibility of the art expert one must continually bear in mind that this does not solely involve economic gain or loss for the owner of the artwork. It is also a question of sketching a picture of the life and output of an artist. The conservator must be aware of the limitations of his or her expertise. A personal code of ethics is an important quality of the conservator.

Vanity has proven to be a major aspect in authentication studies, despite the fact that the most common motive is economic gain. It is notable that many owners of fakes find it easier to bear the economic loss than to admit having been fooled. The Debutante, discussed below, is a classic example of such a case.

THE METHODS AND APPARATUS OF INVESTIGATION

The research method is always systematic in nature. All works of art are first subjected to an ocular investigation, i.e. studied with the eye in good daylight conditions, but in any case in lighting conditions of a minimum of 1000 LUX.

The painted surface and the reverse of the painting are inspected in equal detail. The work is also compared with reference material, such as other paintings, sketches and studies by the claimed artist, illustrations in catalogues and books, slides, and photographs. This comparative investigation is carried out together with the art-historians of the museum. At the same time, the conservator documents the findings of the study of the work. This is done with photographs and notes. The conservator estimates the future need of an analysis of the material. This is done in concert with experts in the analysis of paints and pigments.

Artworks are investigated with visible and ultraviolet light, stereomicroscopy, infrared video and x-radiation. Cross-section samples and other samples of materials are subjected to polarized light microscopy and various micro chemical methods, such as XRF (isotope-induced x-ray fluorescence) and SEM (scanning electron microscopy) combined with EDS (energy-dispersive x-ray microanalysis).

AUTHENTICATION AND FORGERY STUDIES IN A NUTSHELL

Good basic knowledge of the international evolution of materials and techniques, knowledge of general art history and the oeuvre and biography of the artist concerned, analyses of painting materials and techniques and the personal professionalism and experience of the researchers. Forgery studies are based on establishing the anachronisms of provenance, materials and technique in the work being investigated.

THREE EXAMPLES OF FORGERIES

Debutanten (The Debutante), signed and dated, A.Edelfelt, Paris 1880. Oil on canvas.

In the 1940s the Ateneum Art Museum and the Edelfelt expert Bertel Hintze received an enquiry from Sweden as to whether they were familiar with a painting by Albert Edelfelt portraying a young woman in a ball costume (Figure 1). With reference to a photograph of the work, both the museum and Hintze stated that it was not by Edelfelt (Compare with the genuine reference painting from the same year, figure 2). But the owner persisted. Hintze’s archives, now in the Central Art Archives of the Finnish National Gallery, contain extensive correspondence, which revealed that he had travelled to Stockholm to inspect the painting but in 1944 he still maintained that it was a fake. For some reason, however, there appeared an authentication certificate for The Debutante dated 1946 and signed by Bertel Hintze. In spite of this, the work is not included in Hintze’s revised and supplemented catalogue of Edelfelt’s works, which was published in 1953. The above-mentioned correspondence gives an idea of the family that owned the painting. They did not want to admit that it was a forgery, and they continued the
debate throughout the late 20th century. The painting is on sale from time to time, but we have completed the investigation of its authenticity. It underwent a comprehensive technical and art-historical analysis at the Ateneum in 1993.

The work was painted in three separate stages. The lowermost layer is the only one that could possibly date from Edelfelt’s period, but the signature was painted on the second layer, which is from a later time. The painting technique and style, however, exclude the possibility that Edelfelt could have made either the second or the third — and last — layer.

A professional observer would be concerned with the differences between brush techniques of the two styles in raking light. Where Edelfelt’s hand has left a low impasto with tiny brush strokes in the Parisienne Reading II (Figure 4), the hand of this unknown artist of the Debutante has left such high impasto that the face is undetectable (Figure 3).
Madonna and the infant, signed and dated A. Edelfelt 1903, Private collection, Moscow. Oil on canvas.

Its genuine reference: A. Edelfelt: Madonna with Shepherds, an altarpiece for Vaasa Church, 1894, oil on canvas.

This painting was brought to the Ateneum to have its authenticity established in 2000. It had been offered on sale to a Finnish company in Moscow, which, however, also wanted Finnish experts to verify its authenticity. The painting had recently undergone a technical investigation at the State Scientific Conservation Research Institute in Moscow.

The comparative study done in the Finnish National Gallery in 2000 was carried out in cooperation with the art historians of the Ateneum. The Edelfelt scholar Maria Catani was contacted and she stated from the very beginning that she regarded the work to be a copy, because she had studied it earlier. The authenticity had to be tested on material basis in the laboratory, since Catani’s statement from 1994 had been based solely on photographs. Catani maintained that the perspective and signature were too weak and she also knew of an original version in the Museum of Western Art in Odessa and a smaller version in Poznan, Poland. The Russian experts knew the Odessa version. The available documentation like other paintings by Edelfelt, sketches, studies, catalogues, books, illustrations, slides and photographs were gathered.

Among the photographs there was one taken before the original canvas was covered with the lining canvas in January 1996. It is a noteworthy detail that the reverse of the canvas bears the inscribed date 1905 while the obverse
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is marked 1903. It was not possible for purposes of comparison to study the original work in the museum in Odessa, but the author had recently had the opportunity to investigate an other painting by Albert Edelfelt of the same subject, Madonna with shepherds painted for Vaasa Church, 1898. (Figure 6)

It can be clearly seen in an x-ray photograph that beneath the Madonna and Infant is another painting of a girl reading, dressed in a short-sleeved blouse (Figure 7). It is strange that the actual Madonna cannot be seen in the x-ray photograph despite having been painted with a colour containing a great deal of white. In Edelfelt’s time there were only two white paints available: lead and zinc white. Neither of them can come into question here. Lead white is basically dense and x-rays do not pass well through such a layer. Zinc white, in turn, fluoresces under ultraviolet radiation and is therefore easy to note.

The top layer consists of fragmentary brush strokes and the surface is neither uniform nor does it provide a homogeneous coating. The pigment of the top layer has sunk into the fissures that had already formed earlier. This means that the final layer was painted much later on the painting beneath it. It is for this reason that the blue colour can be seen everywhere although it was painted only in the bottom layer.

Seppo Hornitzkyj, the Finnish National Gallery’s cross-section specialist, took over 20 microscopic paint samples from the top painted layer of the Madonna piece. All the samples contained titanium white with selenium, a pigment that was invented in 1915, a decade after Edelfelt’s death. There is also cadmium red, which came into use even later. The painting is not an original work by Albert Edelfelt. The copy is a forgery and the certificate of authenticity of the Russian experts is unfortunately invalid.

Portrait of A Young Girl, Signed and dated: A. Edelfelt 1892, oil on canvas, a private collection, Helsinki. (Figure 8)

This painting has been genuine for more than 60 years, because it has been included in Hintze’s Catalogue raisonné, the first version in 1942. The accumulation of the knowledge on Edelfelt’s technique made it necessary to remove this painting from his oeuvre after the material tests and analysis, also because the lesser quality of the painting.

Also in this case an x-radiograph revealed another motif from the later era with a different brush technique. Pigments were correct for this period but the grinding quality was too fine to have been done during Edelfelt’s lifetime.

CONCLUSIONS

In authentification studies it is important to remember that all artworks, either genuine or fake, will reveal their special features best to a specific method. But one must not accept just one method, as the Russians did with a single x-ray photograph in this case. Had they photographed the whole painting, they would have seen that the style of painting and the young woman’s clothing are too modern, and they would have had to go on to pigment samples in order to note the incorrect pigments. The case of The Debutante shows how little a certificate of authenticity is worth when its author’s ethical code is questionable. In the third example, the Portrait of a Young Girl, Bertel Hintze was simply mistaken. We know now that Hintze’s certificates of authenticity from the 1950s and 1960s have mainly proven to be incorrect, while those that he drew up in the 1930s and 1940s are more reliable. This portrait is for the time being the only incorrectly attributed painting that has been discovered in the catalogue raisonné of Edelfelt’s works.
ABOUT THE AUTHOR

Since 1972 Tuulikki Kilpinen was appointed conservator in the Finnish National Gallery where she acted in different positions from an assistant to the head of conservation. She is now a senior conservator. Her latest interest concerns technical art history in the research project: Albert Edelfelt (1854-1905) and his studio practice.

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BACKGROUND

Vincent van Gogh's self-portrait (Figure 1) in Nasjonalgalleriet, Oslo (NG.M 943, F528, JH1780) has been a part of the museum's collection for more than 90 years. It is beyond doubt a depiction of Vincent van Gogh, but the question is: is it a self-portrait? It measures 51 x 45 cm, a quite normal size for the self-portraits from 1887/88 to 1889. The painting (hereafter called F528) is neither signed nor dated, rather usual for his pictures after he moved to Paris in 1886. Until the 1970's the painting was looked upon as an authentic work by van Gogh. However, the dating of the painting was uncertain and varied between Arles, 1889; Saint-Rémy-de-Provence, September 1889 and Auvers-sur-Oise, June 1890.\(^1\)

From the 1970's until today, the research done by Jan Hulsker and other experts has concluded with scepticism as to its authenticity.\(^2\) There exists only minor research on the painting and the aim of this project is to try to establish a foundation for a new evaluation of the authenticity of the painting.

KEYWORDS

Vincent van Gogh, self-portrait, authenticity, painting technique

PROVENANCE

Before the painting was purchased from the art-dealer Eugène Blot in Paris in 1910, there is no information indicating that F528 has ever been exhibited.\(^3\) The catalogue from Nasjonalgalleriet lists the painting as a possibly self-portrait exhibited in Den Frie Udstillinger, Copenhagen 1937.\(^4\) It is likely however, that this was one of van Gogh's Paris-paintings, possibly F356, JH1248.\(^5\) J.-B. de la Faille states that the painting came from Ambroise Vollard in Paris before it was purchased to the Auguste Pellerin collection.\(^6\)

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1 The indication with letters and numbers refers to the authors of catalogue-raisonné of van Gogh: 
F=J.-B. de la Faille, Paris/Brussel 1928 with revisions in 1939 and 1970; 
2 J.-B. de la Faille (1928) Arles, 1889. 
Scherjon-de Gruyter (1937) Auvers-sur-Oise, June 1890. 
Scherjon-de Gruyter (1937) Auvers-sur-Oise, June 1890. 
Exhibition - Jacquemart-André (1960) Saint-Rémy-de-Provence, September 1889. 
Nasjonalgalleriets katalog (1973) 1889-90. 
Jan Hulsker (1977) Saint-Rémy-de-Provence, September 1889. 
Exhibition - Tokyo/Nagoya 1985-86 Auvers-sur-Oise, July 1890. 
Ingo F. Walther/Rainer Metzger (1990) Saint-Rémy-de-Provence, September 1889. 
3 In his catalogue raisonné, J.-B. de la Faille links the painting to letters 608 and 612, a theory that Hulsker does not agree with.
Fig. 1
Self-portrait by Vincent van Gogh, Nasjonalgalleriet, Oslo. (NG.M 943, F528, JH1780). Oil on canvas (relined), 51 x 45 cm.

Fig. 2
Self-portrait by Vincent van Gogh, Nasjonalgalleriet, Oslo (F258). Backside.

Fig. 3
Self-portrait by Vincent van Gogh, Nasjonalgalleriet, Oslo (F528). Photo from the archives of Galerie E. Druet, 1909, with the inscription: Portrait de van Gogh – Oreille mutilée.

Fig. 4
Self-portrait by Vincent van Gogh, Nasjonalgalleriet, Oslo (F528). X-radiograph.

4 There exists only correspondence and some smaller reports
6 After 1910, F528 has been in the following exhibitions: Fransk kunst, Nasjonalgalleriet in Oslo, 1914, kat. nr. 41; Fransk konst, Nationalmuseum, Stockholm, 1917, kat. nr. 58; Vincent van Gogh, Musée Jacquemart-André, Paris, 1960, kat. nr. 53; De schilder in zijn wereld, Prinsenhof Delft/Koningl. Mus. Voor schone kunsten, Antwerpen, 1964-65, kat. nr. 54; Oslo kommunes kunstsamlinger, 1976; Vincent, National Museum of Western Art, Tokyo 1985/The Nagoya City Museum,1986, Treviso 2002-03.
8 Bodelsen, Mette: Gauguin og van Gogh i København i 1893, København 1984, p. 132
This is also mentioned in the catalogue from Nasjonalgalleriet, but without any other references. In the archive of the art dealer E. Druet there is a photo of F528 from 1909 with an inscription on it: “Portrait de van Gogh – Oreille mutilée” – in the collection of Eugène Blot (Figure 3).\textsuperscript{10} Roland Dorn found that the number 3329 (both written and glued to the back of the stretcher) is a reference to a stock-number in Vollard’s shop around 1900 and connected to a person called Clouet.\textsuperscript{11} In the Vollard archives however, the number 3,329 is referred to as a self-portrait bought from Clouet between June 1904 and December 1907. The Vollard number and the measurements are identical with F528, and there are no comments related to the picture.\textsuperscript{12}

The name Clouet is also registered in the Vollard’s archives in 1896 when he (or she?) sold a portrait of van Gogh to Vollard.\textsuperscript{13}

There does not exist any photo of van Gogh from his years as a painter. Consequently, the impression we have of his appearance is based on about 35 self-portraits and portraits done, among others, by Paul Gauguin and Henri de Toulouse-Lautrec. Some emphasize the Self-portrait in Musée d’Orsay from 1889 (F527, JH1772) as a depiction closely resembling his actual looks.

**VAN GOGH’S PICTURES AND THE SITUATION IN THE ART-MARKET AROUND 1900**

Roland Dorn and Walter Feilchenfeldt state that most of the good-quality fakes of van Gogh were not put into the market before the first decade of the 20th century. Consequently, it is very important to trace ownership back to the 1890’s.\textsuperscript{14} After van Gogh’s death, most of the self-portraits were left in the family-collection, which later became a part of the Van Gogh Museum (The Van Gogh Foundation’s Collection).\textsuperscript{15} Collectors evaluated the circumstances surrounding van Gogh’s art in the beginning of the 20th century as chaotic and confusing. The most serious ones did not buy any paintings without a provenance to the family-collection. The main reason for this was the huge commercial success after the exhibitions in 1905 in the Gallery of Paul Casirrser in Berlin and Stedelijk Museum in Amsterdam.\textsuperscript{16} Julius Meier-Graefe describes how the situation was in 1928: “For a lot of van Gogh paintings, there are no guarantees as to their authenticity without an absolute certainty concerning the provenance.”\textsuperscript{17}

Eugène Blot started out in the art-market as a dealer and collector, and was from early on interested in van Gogh’s works. He bought paintings by him on Père Tanguy’s auction in 1894, but after a while sold his collection and established himself as an art dealer.\textsuperscript{18} Until 1900, most of the trade with van Gogh went through Ambroise Vollard who was one of the the leading art dealers in Paris at the end of the 19th and the beginning of the 20th century. In his memoirs, he writes that even if “the finest of his paintings [van Gogh’s] were offered at about 500 francs, the connoisseurs could not make up their mind to ‘plunge’.”\textsuperscript{19} Auguste Pellerin was an important collector in Paris at that time, and many of the most famous French paintings from the latter part of the 19th century have at one point been in his collection.\textsuperscript{20} It is known that he purchased and sold with great intensity, but there do not, however, exist any complete list of his transactions.\textsuperscript{21} It has not been possible to find any traces of F528 in connection with the Pellerin’s collection. After Vollard had held an exhibition of van Gogh in 1896, his interest in the artist vanished. The reason for this was the limited interest in the artist’s works among the public, and the consequently very low prices.\textsuperscript{22} Julien Leclerq, an art critic and friend of Gauguin, arranged an exhibition in 1901 with the total of 71 artworks of van Gogh. According to lenders’ lists, the most important collectors and art dealers had contributed with pictures, but Pellerin is not mentioned in this connection.\textsuperscript{23} In his three-volume work on modern art from 1904, Julius Meier-Graefe does not put Pellerin in as a collector of van Gogh.\textsuperscript{24}

As an art collector and the Consul General for Norway in Paris from 1906, Pellerin must have been quite close to Jens Thiis, appointed as the director of Nasjonalgalleriet in Oslo from 1908. On several occasions, he sponsored purchases to the museum by paying a part of the total sum.\textsuperscript{25} One might perhaps question the fact that Pellerin ever owned 10 Dorn and Feilchenfeldt (1993), p. 297.
12 From a copy of the Vollard archives in van Gogh Museum archives, MS 421 (4,5).
13 From a copy of the Vollard archives in van Gogh Museum archives, MS 421 (4.2 og 4.4).
15 Five Self-portraits were sold from the family-collection: F527/JH1657 to Vollard Art-Gallery in 1896; F380/JH11225, F525/JH1665 og F345/JH1249 to German collectors ca. 1899-12 and F320/JH1334 to an English dealer in the 1920’s. van Gogh gave away five self-portraits: F295/JH1211 to Bonger, F476/JH1581 to Gauguin; F501/JH1634 to Lavat; F526/JH1309 to Bernard and F529/JH1685 to Ginoux. Vollard bought F526/JH1309 from Bernard og two others, F319/JH1333 og F366/JH1346 probably from Theo van Gogh. Theo gave away two paintings, one to Dr. Gachet, F297/JH1772 and one to the painter Isaacson F626/JH1770.
21 Information from David Brooks, Toronto, Canada, the coordinator of the www.vangoghgallery.com
23 Feilchenfeldt, Walter (1990), p. 43.
24 Meier-Graefe (1904), p. 119-120.
25 Nasjonalgalleriet i Oslo, J. No.35, 1910
F528. He might just have been an intermediary between the director and the art dealer. With the market price of van Gogh at that time, Pellerin could for a relatively small sum of money have bought highlights from van Gogh's production – but we know that he did not. He was not an important collector of van Gogh at the beginning of the 20th century.26

PREVIOUS RESEARCH AND THE INTERPRETATION OF THE X-RADIOGRAPH 27

On the 11th of October 1982, the painting (together with seven others) was stolen from Nasjonalgalleriet. F528 was found undamaged by the German police in Wiesbaden-Frankfurt-Hanau 14th of June 1984.28 The treatment after this incident was consolidation of minor areas of the paint layer.29 The only documentation on previous research of the painting is minor reports and correspondence between Nasjonalgalleriet and two external scholars on van Gogh.30 In a letter to Fogg Art Museum in 1980 31, Leif E. Plahter describes the condition of the painting as no surface damages due to cuts in the paint layer: "The painting has, however, obviously once been taken off the stretcher and folded over twice. This operation produced cracks and minor flakings in the paint in two areas, both running horizontally across the whole width of the painted surface – one through the forehead and one just below the chin. These damages are clearly visible and can perhaps be mistaken for cuts."

Plahter states that the x-radiograph "revealed some pentimenti in the dress. It might seem that the portrait was painted on top of some other motive, but this we have not been able to identify."33 In my opinion however, the x-radiograph (Figure 4) reveals a portrait of a man with a beard underneath the visible portrait. And consequently, the x-radiograph does not reveal pentimenti in the dress, but an overpainted portrait with a different design of the dress. The figure in the underlying portrait has a shape of the head slightly different from the visible one. This composition seems to have been covered/partly covered with a greenish paint layer before the visible portrait was executed, and consequently not the result of a continuous painting process (from a sketch to a more or less finished picture) – a feature also known from other works by van Gogh.34 It is however, difficult to get a clear impression if the portrait underneath is a depiction of van Gogh or not. There are a lot of adjustments (pentimenti) within the face and also in the contour of the face. The shape of the head is quite similar to the visible one, but with differences in the description of elements within the composition. The reason why the visible head does not show on the x-radiograph (just slightly in small areas) can be explained by the difference in the use of pigments – the upper level of the paint layer consists mostly of zinc-white, the lower of lead-white.35 Van Gogh used both lead-white and zinc-white; the former often as an element in the ground; the latter in a mixture with other colours.36 But it is also known that he used lead-white as a white pigment both in small areas within a composition and as a white pigment throughout a composition 37, especially in the cases he wanted a fast drying of the oil film.38 Differences in the composition between the two portraits can be interpreted as follows: the shape of the head differs in the connection between throat and head on the right side; along the neck and the back of the head; in the contours of the forehead and in the area of the cheek/nose on the left side and the chin. The position of the eyes has been slightly higher in the underlying head, compared with the visible one. The ear was originally put in a higher position, the chin have been more sharply pointed and the dress has a different design than in the visible portrait. The head seems to have been done in a more ‘en face’ position than in the visible one. This might explain two white areas between the mouth and the eyes as two different stages in the painting process in connection with the position of the highlight of the nose. Both the pronounced black areas (on the x-radiograph), one from the left side of the head, passing the left eye and the nose, the second one in the connection between the throat and the jacket can hardly be explained as anything other than a scraping off of the paint layer. An explanation of this could be that the paint-structure in this way might have been

26 According to de la Faille, Pellerin had for a period of time the following paintings by van Gogh in his ownership: F176 bought from van Schuf, F441a bought from van Bauchy, F506 bought from Gauguin, F528 bought from Vollard and F608 bought from Mirbeau.

27 X-radiography 01.09.69 by Leif E. Plahter, Nasjonalgalleriet. NG Ro nr. 55-57, exp. 25 Kx, 5 minutes.


31 Answer to a question from Professor Vojtech Jirat-Wasiutynski, in May 1980, if the painting in Nasjonalgalleriet had traces of cuts in the head and underneath. With the knowledge the portrait in Nasjonalgalleriet is an original, Pellerin could not have painted van Gogh (as he stated in de la Faille). The only paintings Pellerin depicted are works of his own. This case can therefore not be an intermediary between Pellerin and van Gogh.


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reworked when the paint still was wet. The paint consisting of lead-white has been scraped off and replaced by paint mixed with zink-white, which does not absorb x-rays in the same way (and consequently gives the image of black areas on the X-radiograph).

**MATERIALS AND SURFACE DEFORMATIONS**

The stretcher has a crossbar and the width of the stretcher-bars is 5.2 cm with a design slightly sliding near the outer edge (Figure 2). Paper-strips cover the edges both on the back of the stretcher and along the edges of the painted surface. A label with the inscription "M. Blot" is glued onto one of the strips, and consequently the tag is an evidence of a relining before the painting was included in the museum-collection in Oslo. The canvas (probably linen) is relined with a glue-paste on an unprimed canvas nearly identical with the original (Figure 5). The original support has been cut along all the edges (before the relining), and with the present measurements, it has not been mounted on another stretcher than the existent one. We know that van Gogh often used a rough cheap canvas for sketches and a finer and more expensive one for portraits and important compositions. In this case, the original support is of a much finer canvas than van Gogh normally used.

Profound surface characteristics in F528 are several 'cuts' (35-40 'cuts') in the paintlayer with or without deformations of the brushstrokes. This is evident as a 2 cm wide area where a sharp tool (palett-knife or similar) has been either squeezed against the fresh/semifresh oil-colour (leaving a 2 cm wide mark in the paintlayer) or squeezed/pulled along the surface (leaving deformation of the brushstrokes). This is visible in the face, the throat, the dress and some places in the background on the right side of the figure. These formations are distributed quite regularly on the surface, and it must have been done with intention (Figures 6 & 7).

In the 1980’s, the losses in the paintlayer was interpreted as being the result of mechanical strain (folding of the canvas). In my opinion (except for some losses in the upper paintlayer in the background on the left side of the figure) these are 'damages' produced mechanically as cuts through all the layers of paint to the unprimed canvas (Figures 8 & 9). Along the edges of the lacunas, the deformations have the characteristics of being 'made' at a stage when the oil-paint still was wet/semi-wet. The horizontal 'damage' in the figure's forehead has some of the same characteristics. It is a reasonable conclusion to make that these deformations are closely related to the painting process or a short time after. In this connection, a comparison between cuts in the surface of F528 and the **Self-portrait dedicated to Paul Gauguin** (F476/JH1581) could be interesting.

**PAINTING TECHNIQUE**

One important characteristic of van Gogh’s painting technique was that he could be inspired by many (Millet, Monticelli, Delacroix Pissaro, Gauguin, Signac, Seurat and others), but the results he achieved were always his own.

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39 It does not exist any analyses of the textile fibers and the glue.
40 Identical in quality, weave pattern and the thickness of the threads: 1 cm = 18 in the warp, 20 in the weft.
42 Information from the van Gogh Museum, August 2002.
43 Leif E. Plahters’ interpretation of the losses in the paintlayer.
His aim was not to imitate, but rather to get aquainted with what other artists had to offer and what he thought was interesting: 45

“"My brush stroke has no system at all. I hit the canvas with irregular touches of the brush, which I leave as they are. Patches of thickly laid-on color, spots of canvas left uncovered, here and there portions that are left absolutely unfinished, repetitions, savageries; in short, I am inclined to think that the result is so disquieting and irritating as to be a godsend to those people who have fixed preconceived ideas about technique. [...] Working directly on the spot all the time, I try to grasp what is essential in the drawing – later I fill in the spaces which are bounded by contours – either expressed or not, but in any case felt – with tones which are also simplified [...] In short, my dear comrade, in no case an eye-deceiving job.” 46"

In letters from August 1888 it is evident that van Gogh was searching for a technique that did not involve manipulating with the paint-layer. In a comment on what he wanted to achieve, he refers to some of Manet’s paintings he had just seen at an exhibition: “ [...] nothing but the varied stroke [...] ” 47 Later on this can be found in statements made in letters where he expresses his aim to work in a ‘pure’ alla prima technique with the paint mixed on the palette: “The studies now are really done with a single coat of impasto. The touch is not much divided and the tones are often blended.” 48 His preference for active brushwork, blended colours and rich impasto applied in an wet-on-wet technique is a prominent feature in his paintings from 1888 until 1890. 49

As a comment to one of the versions of The Bedroom in Arles he is writing:

“It was painted so quickly and has dried in such a way that the essence evaporated at once, and so the paint is not firmly stuck to the canvas at all. [...] That study [The Bedroom in Arles] is certainly one of the best – sooner or later it must be recanvased good and solid.” 50

It is evident that he sometimes looked upon his own technique as problematic in the sense of painting so thick that the support could not ‘carry’ the weight without damaging the paint-layer. Several times he mentions ‘recanvas’ as a method to avert this, a method known in conservation as relining. Degas used only the Italian method on his paintings (without the use of a hot iron), and it is known that Manet relined several of his paintings close to the time he painted them. 51 In May 1889 van Gogh writes to his brother:

“Gauguin ought to be able to tell you the adress of a man who could recanvas the canvas of ‘The Bedroom’, and not too expensively. That, I imagine, ought to be repaired for 5 francs; if it is more, then don’t have it done. I do not think that Gauguin paid more when he had his own canvases recanvased pretty often, or Cézanne’s or Pissarro’s.” 52

On van Gogh’s technique and use of colours, the writer and art critic G.-Albert Aurier has formulated the following words:

“Lastly and above all, he [van Gogh] is a hyperesthete with obvious symptoms who perceives with abnormal and possibly even painful intensity the imperceptible and secret character of lines and forms, and even more of colors, of light of the magic iridescence of shadows, of nuances which are invisible to healthy eyes. And that is why the realism of this neurotic, why his sincerity and his truth are so different ... The external and material

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side of his painting is absolutely in correlation with his artistic temperament. In all his works the execution is vigorous, exalted, brutal, intense. His nervous, powerful, often awkward and somewhat heavy draftmanship exaggerates the character, simplifies, and like a master and conqueror it ignores details, achieves a bold synthesis and sometimes, but not always, a great style. His color ... is unbelievably dazzling. He is, as far as I know, the only painter who perceives the coloration of things with such intensity, with such a metallic, gem-like quality [...]" 53

There are few similarities with this description and the technique and use of colour in the F528. In this painting the area describing the throat is defined as a monochrome blue-green area without any modelling, without a clear definition of form, and with no feeling of either skin nor textile. One gets the impression that the area is left in an unfinished (over-painted) state. Generally speaking, the face with a yellow colour (with some traces of red) on top of a green colour has been smoothen out, and there are few (if any) traces of brushmarks. The modelling is in this way not very precise, and gives the impression of a high degree of handling and manipulation after the paint was put onto the support by mainly the use of a brush. If we evaluate the painting as a whole with the relining, losses of paint and deformations in the paintlayer, it gives the impression of quite a rough history between the time it was painted and the time it was put on the wall in Oslo. If the relining was done as a part of a restoration process, the damages probably would have been filled in and retouched. This is not the situation; and today the painting is more or less in the same condition as in 1909. 54

F528 AND THE SELF-PORTRAITS OF VAN GOGH – A COMPARISON

In most of his self-portraits, van Gogh has put himself in the center of the pictorial space from breast up and dressed in shirt and jacket, and F528 is executed within this classical scheme. When it comes to the description of the elements in the face, we find variations in his production, but with certain common features. In almost all the known self-portraits his eyebrows are blueish-green, a colour that is present in F528. Another profound trait in van Gogh’s portraits and self-portraits from 1887/88 is the intense red colour in thin brushstrokes around the eyes, and this phenomenon is also visible in the F528. His hair is normally depicted as reddish-blonde and brushed backwards while his beard is reddish. Both hair and beard are generally painted with thin parallel brushstrokes, and his ears with defined strokes and contour. F528 lacks the characteristic brushstrokes in hair and beard, and the areas are just ’filled in’ with colour without any modelling or definition. The ear is ’deformed’ and out of shape in comparison to his other self-portraits. If the painting is a depiction of van Gogh with a damaged ear, it must have been painted after 23rd of December 1888 (when he mutilated his left ear) and van Gogh (if he is the painter) must have painted the picture without a mirror. For a lot of his self-portraits he used a mirror.

The painting has short brushstrokes in the background following the head’s contour, but these are less defined and as a whole, less systematically put together than in his other self-portraits. The modelling of the paint-layer in the face and hair lacks the characteristic thin brushstrokes put together in a parallel scheme. On the contrary, the paint-layer of F528 in this area is manipulated and flattened, and gives the impression of a diffuse and blurry surface. Generally speaking, his paintings have variations both in colour and technique, but even so, the details are usually executed with refined strokes and details that are lacking in F528. Both stylistically, in the general use of colour and in the brushwork, F528 stands out from other paintings by van Gogh.56 In the total production of van Gogh, there are only one or two paintings with tiny traces of the use of a palette-knife or similar tool to smoothen the paint-layer.57

Van Gogh’s self-portraits are known as notes on his own appearance, and an important element in the evaluation and the authentication of F528 are such interpretations: a depiction of a sick man that soon will succumb to the jaws of death; 54 van Gogh is so depressed that it’s only through the colour that the picture gets its meaning; 59 the painting is only an underdrawing (unfinished painting) done by a man so sick that he is hardly able to paint his own face.60 Jan Hulsker questions this strong connection between sickness and artistic expression, and uses the time before and after a nervous breakdown in the spring of 1890 as an example. The only difference he could notice was a lack in poetic strength; that van Gogh was more related to incidents in the past and that he was not quite as distinct in the drawing as he used to be.61

In his 1970 catalogue, de la Faille comments on just one painting that is comparable with F528 in style and technique, Wheat Field under Threatening Skies With Crows (F779, JH2117). 62 This is one of van Gogh’s most famous

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54 Comparison with the photo fra Druet, 1909.
55 Portrait of Alexander Reid (F343, JH1250); Self-portrait with grey hat (F295, JH1211; Self-portrait with a straw-hat (F526, JH1309); Self-portrait with a straw-hat (F469, JH1310); Portrait of Père Tanguy (F363, JH1351) and (F364, JH1352).
56 This is also confirmed by van Gogh Museum.
57 The van Gogh museum confirms that F806 (A house and two figures, 1890) have some small details done with a palette-knife. The painting is not executed in a technique similar to F528.
58 Jens Thiis (1914)
59 K.Bromig-Kolleritz (1955)
60 K. Morland (1960)
61 Hulsker, Jan (1990), p. 406-408.
paintings (and possibly the last he did\footnote{Hulsker, Jan (1977) p. 479-80.}), and in my opinion has the characteristic precision in the brushstrokes that F528 lacks.

**CONCLUSION**

F 528 is not mentioned in the van Gogh-Bonger’s lists from 1890-92, and in this connection the painting has a weak provenance. A person with the name Clouet handed the picture in to Vollard for sale as a self-portrait some time between June 1904 and December 1907, and both the stocknumber (3329) and the size of the canvas correspond with F528. According to Vollard’s listings, a person with the same name sold a portrait of van Gogh for 200 francs to the art-dealer in 1896. It is not known if this is the same person, but until today, it is not known that a person with the name of Clouet ever has been connected to any other painting by van Gogh. The reference to Vollard in 1904-07, does not to any appreciable extent strengthen the provenance of the painting.

Some smaller elements in the description of the face are concurrent with other portraits and self-portraits, and the use of lead-white does not separate this painting from others in his production. However, a comparison of the likeness in portraiture, style and painting technique, reveals that F528 lacks the most important features visible both in his self-portraits and his painting production as a whole. If F528 should be looked upon as a painting by van Gogh, it is likely as an unfinished or a rejected self-portrait. The ‘cuts’ in the paint-layer may be ‘damages’ to indicate this or, more unlikely, a chance occurrence in this connection. It is not known if van Gogh ever relined some of his paintings,\footnote{Information from van Gogh Museum, August 2002.} but in this case the relining must be regarded as a part of a new mounting rather than a part of a conservation process.

It is not unlikely that F528 is modelled on the *Self-portrait* (F 626, JH 1770), but the likeness in the depiction is closer to the drawing *Self-portrait* (F1378r, JH1197). Independently of genre, we can hardly esteem the painting as a result of a hyperesthete’s work as Aurier puts it in 1890, neither should it be seen as a faker’s serious attempt to fool the experts.

If we focus on the depiction of van Gogh, there seems to be a concurrence between the title of the painting in Druet’s archive in 1909 (portrait with a mutilated ear), and his actual appearance in the picture. It is not known that he ever depicted himself with the mutilated ear visible, and if so, this would be a unique situation. If the picture, however, is looked upon as a depiction of van Gogh with a mutilated ear, painted by another person, the situation would, of course, be totally changed. If this artist wanted the picture to appear as a self-portrait, a fatal error has been done by putting the mutilated ear on the wrong side of the head. If the painting is looked upon as a portrait of van Gogh, however, the composition is correct. The only problem is that such a painting cannot have been painted by van Gogh.

In this case we have a situation with quite a weak provenance, on one hand – and a picture that does not resemble any other painting in the total production of Vincent van Gogh, on the other. The only possibility for a final conclusion in this case seems to be a thorough technical investigation, and an answer to the question: Who is this ‘mysterious’ Clouet? Until then – we do not have any conclusive answer to the question: genuine or fake?  

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\[4-7th \text{June 2003, Reykjavik, Iceland}\]

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\[63 \text{Hulsker, Jan (1977) p. 479-80.}\]
\[64 \text{Information from van Gogh Museum, August 2002.}\]
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AN ART HISTORIAN’S ANALYSIS OF ALLEGEDLY FORGED PAINTINGS

JÚLÍANA GOTTSKÁLKDÓTTIR

ABSTRACT

The presentation is based on my experience of analysing paintings whose authenticity is considered suspicious, using art-historical principles in order to demonstrate whether or not they admit artistic comparison with authentic works by the artists to whom they have been attributed with a signature. The study covered works bearing the names of three pioneers of modern Icelandic painting. My problem was to devise a technique which attempted to deal with the works objectively. A major part of my study was a comparison of unquestionably authentic works by the respective artists, with those included in the study. My presentation will consider questions regarding the conflict between objectivity and subjectivity, such as: does the researcher have a comprehensive enough knowledge of the artist's work to be able to demonstrate whether a work is by him or not? Don't deviations in an artist's work need to be taken into account? Which works are most suitable for comparison: the well known ones or the ones the artist might never have wanted to exhibit? Do works by the same artist have common characteristics despite the differences in quality between them? Can a researcher trust in the insights acquired through familiarity with works by the artists in question?

KEYWORDS
Art forgeries, art historian, authenticity

In this lecture I shall discuss my part in an extensive investigation of allegedly forged paintings, which were attributed to several leading Icelandic artists of the 20th century. The background to the investigation, which began in the late 1990s and lasted off and on for over five years, was a formal complaint made to the National Commissioner of Police with regard to a reasoned suspicion that many forged paintings were on the art market in Iceland.

No case of this nature had arisen before in Icelandic society, at least not of this scale. Cultural history and social factors both contribute to this. One of the main reasons, I believe, is that only a short time has passed since Icelandic artists began to make art their career. This was only about a century ago, when urban society was beginning to develop in Iceland. Most of the pioneers of Icelandic art thus lived into the second half of the twentieth century, and it is only 30 years since the last of them died. Some of them had patrons who bought their works in quantity, and it was not until the last two decades that the art collections of these people went into circulation in any quantity, and onto the art market. Well into the 20th century, many purchasers of works of art knew the artists, and even when that was not the case it was common to buy art direct from the artist. The anonymous market is thus a relatively new phenomenon in Icelandic art life. In my view, this changed situation, i.e. the development of an art market, in addition to the fact that people appear not to have realised the possible implications of this change, is the main reason why more works of unknown origin or provenance have come into circulation than ever before.

In the investigation, I was requested to explain, on the grounds of artistic analysis, whether a work, suspected to be a forgery, was artistically comparable with the works of the artist to whom it was attributed by signature, or not. I dealt with, on the one hand, 24 oil paintings signed with the names of three painters whose careers began in the early decades of the 20th century, and who are counted among the pioneers of modern Icelandic art. These painters are Þorarinn B. Þorláksson (1867-1924), Ægirýr Jónsson (1876-1958) and Jón Stefánsson (1881-1962), whose works enjoy great popularity among Icelanders and are sought-after on the market.
Secondly I was assigned, in collaboration with another Icelandic art historian, Kristín G. Guðnadóttir, to analyse 65 works signed with the name of the Icelandic Cobra artist Svavar Guðnason (1909-1988); of these, just over 20 were oil paintings, and about 45 on paper, mostly watercolours. Svavar Guðnason (Figure 1) marks a turning-point in Icelandic art. He was the leading proponent of the abstract in Iceland, and one of the most important representatives of abstract expressionism in Nordic art. In the 1940s he was active in the group behind the “Hestudstillingen” (Harvest Exhibition) in Copenhagen, and played a part in the development of spontaneous abstract painting. He is thus well known by name outside Iceland. It is clear from this that the works which were suspected to be forgeries were attributed to several of Iceland's best-known and most respected artists.

I think I am safe in saying that this project was a new experience for us art historians; in addition to myself and Kristín G. Guðnadóttir, art historian Hrafnhildur Schram also worked on the investigation. In an art historian's work, the focus is generally on works which are regarded as most interesting from an artistic viewpoint. Those which are regarded as less good are normally examined in a certain context, for instance as juvenilia or drafts, or taking account of themes or subjects which may be seen in a certain context, for instance as juvenilia or drafts, or taking account of themes or subjects which may be seen in a certain context, and so on. But the works of one artist are linked together, regardless of certain differences, such as variations in quality, by certain traits of artistic character, which one believes one recognises, due to one's knowledge of the artist's work. I mention this aspect of the matter, regarding the variable quality of the same artist's work, because the works under consideration required comparison with works of the relevant painter of different levels of quality, or works from different stages of the artist's development.

The project assigned to us in the investigation thus entailed not least an objective comparison of the works under investigation with authentic works of the artists involved, taking account of their artistic character. This meant analysing the methods typical of the works in each category, and also the painters' artistic intent, taking account of their place in the context of art history.

With the exception of my collaboration with Kristín G. Guðnadóttir we art historians worked independently. I believe, however, that our approach was similar, as the works were of a similar period, that is from the first half of the 20th century. A key factor in this work was to develop reasoned arguments, in as objective discussion of the works as possible.

The works subject to investigation could be divided into three categories.

1 Old works where the original signature had been effaced and a new one painted instead. In some case some areas had been painted over, or new features had been added.
2 New works, i.e. copies, painted from the works of the artists to whom they were attributed, either as drafts of known works of the relevant artist, or as completed works, imitating his/her paintings.
3 New works painted taking account of the works of the relevant artists with regard to subject and to some extent style, without being direct copies.

Obviously, the suspect works appear to have something in common with the authentic works of the relevant artists. Works of the same school, with regard to style or choice of subject, as the work of the artist to whom they are attributed, may at first glance appear to belong to his oeuvre, although closer examination may reveal a different truth. And it is precisely these exterior formal attributes which may deceive what I call the innocent eye of the beholder. This innocence of the eye is often explained as lack of knowledge of the works of the relevant artists, and this is largely true. However, it is also important to bear in mind the state of mind with which the observer looks at the work. While extensive knowledge of the methods and attitudes of the relevant artist is one of the main premises for distinguishing what is, from what appears to be, one cannot always rely upon the judgment of the eye, even the trained eye. Should the observer not consider the possibility that a work may be wrongly attributed, he may simply accept it at face value. One of the factors which can promote a critical approach is research into the work of artists, and promulgation of this knowledge to the public. But discussion of the origin or provenance of works of art can also be very important. Here in Iceland it transpired that the debate which arose, following suspicions regarding the reliability of information provided about the provenance of works of art on the market, led to works of art being viewed more critically than before. The debate was also a reminder of the need to promote research into the work of Icelandic artists.

As I am of the view that the similarities between the works played a key role in the marketing of the works under investigation, my approach was to take this as the starting point of my examination. The principal question I asked myself was, what must be done, and, perhaps equally important, what must be avoided, in order to reach some reliable conclusion about whether a work was by the relevant artist or not. This meant a different approach from that which is usually used in art history, where insight and subjective evaluation play an important role in the interpretation of a work of art.

Fig. 1
My aim was to describe the work I examined as objectively as possible, by describing the subject, style and method, with a close examination of the use of colour and brushstrokes. This objective examination and description was also a record of the features which appeared to be inconsistent with what has been defined as the artistic character of the relevant artists. The problem was to explain the nature of the inconsistency one felt one discerned. These inconsistencies led to further examination of works of the relevant artist, both in museums and in private collections. In such an investigation it is important to have access to less well-known works, both those which are regarded as less good and those which are unfinished, and also early drafts.

In the last cases, it was important to examine works bequeathed to museums by artists, or purchased by the museums from their estates after their death. This part of the museums’ archive, which rarely leaves storage, demonstrates the importance for research into art history of museums having works or documents which provide insight into artists’ methods, or are earlier stages of well-known works. Such works may display a different aspect of the artist from the one he himself chose to present.

During the investigation the question arose of whether artists were always consistent in their methods, and whether what appeared to be inconsistencies were any proof that a work was not by the relevant artist. Was it possible to discern common characteristics of the works, although they could be classified as being of different standards of quality? Was there anything in the inconsistencies which was contrary to some fundamental aspect of the methods and attitudes of the relevant artist?

This examination of the various aspects of the relevant artists’ work both widened and deepened my perception of their work. I felt that I was quite familiar with their works before I began, but I had not then studied them as minutely, and certainly not with the intention of demonstrating something conclusively, which was based on an objective rather than a subjective approach. The last of these factors was not the least important; i.e. on the basis of an objective analysis of the methods and attitudes of the artists to their art, to explain the sensations they aimed to induce by their work, with the purpose of being able to make a reasoned argument as to whether the suspect works were artistically comparable to the artists’ authenticated work.

As an example of the works I was asked to examine, I shall discuss several still lifes signed with the name of Jón Stefánsson. These were among the first works investigated, in early 1998 (Figures 2, 3 and 4). The case was tried a year later in the Reykjavík District Court, and the works were judged to be forgeries. This verdict was upheld later that year by the Supreme Court.

The painter Jón Stefánsson was one of the principal proponents of modernism, derived from French artist Paul Cézanne, in Icelandic art in the 1920s. He attended Kristian Zahrtmann’s art school in Copenhagen in the first decade of the 20th century, then went to Paris where he studied at Henri Matisse’s school for three years, and became familiar with the work of Cézanne, which deeply influenced him. On his return to Iceland in 1924, Stefánsson became one of
the country’s most active and influential landscape artists, and it is as such that he still best known. Portraits and still lifes also play an important part in his work, and he painted still lifes more than most contemporary Icelandic artists. It is not least in the portraits and still lifes that links may be discerned between Stefánsson and other Nordic, especially Danish, artists of the same generation. He lived for many years in Denmark, and associated with artists of the period of Danish art known as “tidlig modernisme” (early modernism).

The still lifes under examination had features which indicated that they were by an artist or artists familiar with the still-life tradition of the Nordic region, influenced by French artist Paul Cézanne. The subjects were typical of that school: a bowl of apples on a table, a vase of flowers, a wine bottle. A certain similarity of composition could also be discerned with the works of Stefánsson; opposites were juxtaposed, such as oblique lines, which draw the viewer’s eye, against horizontal lines. This was one of the characteristics of many of Stefánsson’s works. Nor was it unthinkable that something of the brushwork of some of the pictures was reminiscent of his touch. But there were other factors that did not add up. The question was, what were they, and how to define them? What aspects of the composition were inconsistent with the character of his still lifes? What was it that made the colours appear less luscious, the plane of colour less subtle? How did Stefánsson achieve these effects? This demanded a detailed examination of his works, to be followed by an equally minute examination of the works signed with his name.

I take here the example of a well-known still life by Stefánsson (Figure 5), which illustrates many of the characteristics of his work. The picture was painted in Copenhagen in 1919, and is one of his oldest known works. In spite of the classical look, it has clear features of the Cézanne school. For instance, the artist departs from the traditional central perspective, by portraying objects from different points of view. The forms are typically dense, and the colours make a sensual impression; on closer examination one may see that the artist has achieved this by short brushstrokes in layered paint, and sensitive interplay of pure colours. The background plane is subtle, lightened in places, darkened in others. During my investigation I examined other still lifes by Stefánsson, and other works, including works which had been purchased from his widow’s estate after her death. Some were unsigned, and appeared to be unfinished. Nonetheless, the colour planes had the same characteristic fullness, and the forms the same density, as in his better-known works. Stefánsson was renowned for making great demands of himself as an artist, and it is known that he did not find it easy to paint. His works were well thought-out, both in formal structure and in their use of colour, on the basis of the artist’s theoretical conception.

In comparing Stefánsson’s works and those under investigation, one of the methods I used was to compare the visual effect of the works, when viewed together. I did this by projecting alternately, at some speed, high-quality transparencies of Stefánsson’s works and of the works under discussion. By these rapid switches, I observed a difference, mainly concerned with the effect of colour on the perception. Stefánsson’s works were characterised by light and fullness, while the colour planes of the works appeared monotone, and hence flat. A comparison of the works revealed a fundamental difference in method. Instead of the interplay of pure colours in Stefánsson’s work, the colours in these paintings were blended and seemed muddy, and the brushwork was unmethodical. It was obvious that the painter of these works had not developed the methods applied by Stefánsson to achieve the colour effects described. On further examination, the pictures also revealed far more conventional composition than in Stefánsson’s work, especially with regard to his departure from central perspective, which he had learned from Cézanne.

There were various factors in the methods and attitudes of the painter of these works which differed from the characteristics of the work of Stefánsson sufficiently for me to conclude that they could not be his work. In my view, however, they are good examples of works which, at first impression, appear to share some of the attributes of his work. The research of conservator Viktor Smári Sæmundsson revealed that the painter’s name was Wils. He was a Danish artist, a year older than Jón Stefánsson, who

Fig. 5

Fig. 6
Þórarinn B. Þorláksson, Þingvellir, 1900. The National Gallery of Iceland.
had studied at Zahrtmann’s school at about the same time!

These three paintings signed with the name of Jón Stefánsson were old pictures, on which the original signature had been effaced and Stefánsson’s name substituted. The same applied to many other works attributed to him, and to painters Bórarinn B. Pórláksson (Figure 6) and Ásgrímur Jónsson. All of them studied in Copenhagen, and all began their careers in the early decades of the twentieth century. Pórláksson and Jónsson had become familiar with the Danish school of Romantic naturalism in landscape art, and followed this course. Pórálksson remained faithful to that tradition, while Jónsson was influenced by French Impressionism, which made its mark on his work. On their return to Iceland, all these artists took Icelandic landscape as their main theme, although Jón Stefánsson is also known for his still lifes, as mentioned before. Thus these Icelandic artists were moulded by Danish artistic tradition, and they have parallels in Danish art with regard both to training and artistic development, although their choice of subject was shaped over time by their Icelandic surroundings, as witness the fact that Icelandic landscape became their principal subject.

Bearing this in mind, it is interesting that, of the works under investigation attributed to these artists, only a small minority were landscapes. Of ten works signed with Pórláksson’s name, only three were landscapes, and none of the four signed with Jónsson’s name. Interiors, still lifes and portraits comprised the majority of the pictures, while such subjects are rare in the oeuvres of both these artists. Nor was there any landscape painting among the ten works under investigation signed with the name of Jón Stefánsson. All the paintings were still lifes; as mentioned before, Stefánsson was quite active in this genre, and far more so than most of his Icelandic contemporaries.

This gave grounds for further investigation, especially with regard to Pórláksson and Jónsson. As the works signed with their names bore the form of signature they used early in their careers, I felt it was correct to consider whether these could be rare works, which had only now come to light. An analysis such as that described above, in which the works were compared with authenticated works, revealed, however, a considerable difference in the methods and intentions of the artists. Inconsistencies of the same kind could also be discerned in almost all the still lifes signed with the name of Jón Stefánsson.

While it is not possible to generalise, on the basis of my own examination, about the proportion of different genres represented in the works under investigation, questions arise about the high proportion of works of genres which comprise only a small proportion of the oeuvres of these Icelandic painters. One may ask whether the explanation is that it was easier to find paintings in these genres by Danish painters of the same generation as the first Icelandic professional artists, rather than paintings which could have represented Icelandic landscapes.

Our investigation revealed, in addition, an alternative method to substituting the signature on an old painting; this was to paint a new picture on an old canvas. This applied, for instance, to the works signed with the name of Svarr Guðnason. This was the most extensive part of the investigation carried out by us art historians. For practical reasons, this will have to be discussed at a later time. Although it was not my intention to make an evaluation of the artistic value of the works under investigation, the comparison between them and works of unchallenged authenticity by the artists revealed a considerable difference. This undeniably raised questions on the moral issues. One may say that, by the representation of inferior works of art as those of Iceland’s most renowned and respected artists, their own work was devalued. I do not mean this in the sense of market value, but of their place in cultural history, and not least the reputation of deceased artists. This raises the question of the future of these works, which are signed with the names of these artists, but which are not their work.
In this paper I shall discuss the background and investigation of three allegedly forged paintings, which were among those involved in what has been called the “Big Forgery Case.”

In late 1997 staff of the National Commissioner of Police contacted the National Gallery of Iceland in connection with investigation of the alleged forgery of works of art. This was the first time that such a case had been submitted to the Commissioner's office. The problem faced by the police was that they lacked expertise to deal with such a case, and so assistance and advice was requested from the National Gallery in resolution of the case, as it was suspected to be of large scale. A conservator who ran a company on the open market had been noticing for some time that an unusually large number of paintings by prominent Icelandic artists, now deceased, was on the market. When he was able to trace the provenance of a work which he believed was demonstrably a forgery, he started to look for more forgeries. This search led to a total of about 170 paintings, watercolours and drawings being notified to the National Commissioner of Police as forgeries in both district court and Supreme Court.

A case of three works was submitted to the Reykjavik District Court in 1999, and subsequently appealed to the Supreme Court. This case was in a sense a test case, as no case of this nature had come before the Icelandic courts before. The case ended with the three works being judged to be forgeries in both district court and the Supreme Court. For this reason a decision was made to focus on analysis of the binding materials used with the pigments in the works, in the hope that it would prove possible to determine the age of the pigments from the binding materials used. The binding materials were analysed using IR-FT (Infrared Fourier Transform) microscope equipment, and carried out at the University of Iceland Science Institute. These analyses proved to be of the greatest importance; together with other technical and art-historical investigation, they led to 102 works being presented as evidence in the case of the National Commissioner of Police against two men who were believed to be responsible for the forgeries. All the works were examined, but the public prosecutor reduced the number of works included in the case to 102 for legal reasons, although most of the works were proved to be forgeries. At the time of writing, the case involving these 102 works is before the courts, and will not be discussed further here.

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METHODS

The examination of the three works was carried out by photographing them in standard conditions, and scanning and photographing them in ultra-violet and infra-red light. The surface and reverse of the paintings were examined and photographed under a microscope, and samples of paint were removed in the presence of the police in places where
ultraviolet reflection indicated recent paint. Samples of the original paint were also taken, where UV reflection indicated old paint. The samples were numbered, and sent to the University of Iceland Science Institute for analysis of the binding materials used under the FT-IR microscope. Paint was also peeled off the area where it was suspected that an original signature had been rubbed down and covered with new paint.

**ITEM Nº 26**

The first painting under discussion in court was item no. 26, a still life of fruit, a jug and a bottle on a table. *(Figure 1).* It is signed “Jón Stefánsson” in black paint in the bottom right-hand corner *(Figure 2).* Ultraviolet reflection of the work revealed dark-blue fluorescence in several parts of the foreground, and the black colour of the signature made a strong appearance. Both of these features indicate recent paint *(Figure 3).* Above the signature, in an area where dark-blue fluorescence appeared under UV reflection, indicating recent paint, infra-red reflection revealed the name “Wils” under the new paint. Microscopic examination revealed signs that the signature had been rubbed down with sandpaper. The traces indicated that an attempt had been made to erase the signature, which was then painted over in greyish-blue paint. The same greyish-blue tone may be seen elsewhere in the lower part of the painting, with no obvious purpose, except perhaps to distract attention from this area, as this tone is not found in the original painting. The greyish-blue paint and the black paint of the signature differ from the other paint in the work. They have a softer texture, and are less translucent than conventional oil paints. When the greyish-blue paint was peeled off where the signature “Wils” had been observed, traces of red paint, which had been rubbed down, were observed, forming the word “Wils”, thus confirming the observation made under infrared reflection *(Figure 4).* Wilhelm Wils was a Danish painter born in 1880.²

The analysis of the binding materials from this work in the FT-IR microscope indicated that the original painting was painted with conventional oil paints, while the areas which appeared dark-blue in UV reflection, and the signature “Jón Stefánsson,” contained alkyd (form of polyester). The conclusions of the analysis of binding materials were consistent with the results of the UV reflection, i.e. that this was a modern paint, containing plastics. Only very small quantities of extenders were found in this modern paint, and

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hence there is a very high probability that this was artists’ paint, to which a drying agent containing alkyd had been added, to speed up the drying of the new paint. For comparison, an analysis was made of Griffin artists’ paints, which are the only artists paints on the market containing alkyd.\textsuperscript{3} It transpired that they contained more extenders than the samples containing alkyd, and hence it was concluded that Griffin paints had not been used. The proportion of alkyd was also more constant in the Griffin paints than in the samples taken from the works, which had been revealed to contain alkyd. In that case, the proportion of alkyd was variable and random.

Painter Jón Stefánsson died in 1962,\textsuperscript{4} some years before the first artists’ paints containing alkyd came onto the market. An oil paint medium containing alkyd, Liquin, was first manufactured by Winsor & Newton in 1968,\textsuperscript{5} and artists’ paints containing alkyd were first marketed in 1976 by the same company.\textsuperscript{6} In Iceland alkyd binding medium for artists were first produced by the paint manufacturer Harpa in 1973.\textsuperscript{7} Jón Stefánsson could therefore not have used alkyd materials for painting, as he was deceased before they were placed on the market.

Alkyd was first placed on the market in 1926 or 27 in the USA. It was first used in industrial and house paint in the USA during and after World War II, but such paints did not become common in Europe until the 1950s.\textsuperscript{8} These industrial and house paints are easily distinguished from artists’ paints, as their appearance and characteristics are quite different, and these paints contain far more extenders that artists’ paints.

Avant-garde artists in the USA are known to have used house paint in their works in the first half of the 20\textsuperscript{th} century, with the objective, among other things, of distinguishing their work from the traditional oil painting, by different use of materials. These works differ from conventional oil paintings due to their texture.\textsuperscript{9} When a medium containing alkyd is mixed with artists’ paints, the appearance and character of the paint is not as obviously different from a conventional oil painting as the house paints. There is a difference, however: for instance, one of the characteristic features of paints mixed with alkyd is that the colours blend differently, probably due to the rapid drying of alkyd paint, so that flows of different colour may be discerned under a microscope, whereas they blend together more in paint that dries more slowly. Paint containing alkyd was also found to be far softer and more elastic than the old oil paint in the works in question.

It was regarded as conclusively proven that the work was a forgery. Staff of the National Commissioner of Police has also found evidence that showed that the work had been signed “Wils” when sold at auction in Denmark by the prior owner, as a photograph of the painting with this signature had been produced by the prior owner (Figures 5 & 6).

**ITEMS Nº 23 & 27**

Items 23 (Figure 7) and 27 (Figure 12) were examined in the same manner. Both were signed “Jón Stefánsson” in the lower right-hand corner in black paint, like item 26. (Figures 8 & 13). Ultraviolet reflection indicated slight overpainting in the works, and the signatures appeared strongly. (Figures 9 & 14). Microscope examination revealed that the areas which had been painted over with recent paint had been rubbed down with sandpaper. Lighting and photography of item 23 in natrium light revealed the signature “Wils 12,” unclear and much rubbed-away, beneath the overpainting at the left of the picture plane (Figure 10). The same overpainting colour could be discerned under the black signature “Jón Stefánsson.” This signature had thus clearly been added after the overpainting (Figure 12). Analysis of the binding materials in paint samples in a FT-IR microscope also confirmed what had been revealed by UV reflection.

\begin{itemize}
  \item[\textsuperscript{3}] Pearce, Emma, Educational and Technical Services Manager, Winsor & Newton, 1997, oct.
  \item[\textsuperscript{4}] Listasafn Íslands 1884-1984, Íslenks listaverk í eigu safnsins, Reykjavík 1985.
  \item[\textsuperscript{5}] Pearce, Emma, Educational and Technical Services Manager, Winsor & Newton, 1998, oct.
  \item[\textsuperscript{6}] Pearce, Emma, Educational and Technical Services Manager, Winsor & Newton, 1998, oct.
  \item[\textsuperscript{7}] Atlí Ásbjörnsson, chief engineer, Málningarverksmiðjan Harpa, 1997, nov.
\end{itemize}
Where fluorescence indicated recent paint, including the signature, the analysis of the paint revealed alkyd-mixed paint with small quantities of extenders, while oil was found in the paint samples taken where fluorescence indicated old paint. The purported artist Jón Stefánsson died in 1962, as mentioned above, and could therefore not have used an alkyd medium which did not go into production until 1968.

In the case of item nº 27 it did not prove possible to discern any hidden signature by technical photography or lighting. Ultraviolet reflection of the work revealed recent paint in the foreground of the work at the right-hand side, and the signature “Jón Stefánsson” was on top of this recent paint. The signature had thus been painted after the overpainting. Under a microscope a much-erased and overpainted area could be discerned just above the signature “Jón Stefánsson,” and it could be seen that two attempts had been made at the signature. Analysis of paint samples...
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by FT-IR microscope showed alkyd in the recent paint, but oil in the samples taken where fluorescence indicated older paint. The paint analysis thus confirmed the findings of the UV reflection. When the new paint was peeled off the rubbed-down area, traces of red paint were revealed under the overpainting. As the area had been rubbed down to the support of the work, i.e. the actual canvas, little remained of the red paint. A four-letter word could, however, be discerned, and one may deduce that the signature was probably “Wils,” (Figure 15).

As mentioned above, the case of these three paintings was a test case in the Icelandic courts. It was regarded as conclusively proven that the works were forgeries, as has been described here. Icelandic legislation does not provide authority for erasing a provably forged signature from such works unless the rights-holder institutes legal proceedings to demand that this be done. Nor is it permissible for the authorities to mark the works specifically as forgeries. Instead, the National Gallery was requested to keep the relevant documents and information on the works, so that information will be available in one place and accessible to scholars and others who need to make use of it. The works will thus remain privately owned, and their future will be decided by the market.
USES OF INFRARED SPECTROSCOPY IN ART CONSERVATION

SIGURÐUR JAKOBSSON

ABSTRACT

Fourier Transform Infrared Spectroscopy (FTIR) is probably the most extensively used technology in analyzing materials of unknown composition in chemical laboratories and museums around the world. It provides wide-ranging information on virtually any type of sample, organic or inorganic, whether it is a solid, liquid or gas. It is a non-destructive technique that supplies immediate information about the chemical composition and the class of the sample, and with the use of spectral libraries, a positive and exact identification is in most cases possible. Single component materials are most easily identified but with some practice and experience, the individual components of complex materials, such as paints, can also be identified. Furthermore, FTIR has the advantage that a very small sample is needed: for a KBr pellet one milligram suffices and with the use of an FTIR-microscope, or a diamond cell, nanogram sample quantities can be examined. The Attenuated Total Reflection (ATR) technique is now gaining popularity in conservation work, especially where sampling is difficult or considered improper, the object can be analyzed “in situ”, no sampling is required and the object is left intact.

KEYWORDS

FTIR, paint, conservation.

PAINT

The three main constituents of paint are a resin binding medium, a pigment and an extender or a filler. Modern paints also commonly contain minor amounts of additives, such as surfactants, thickeners and antifoam agents, added in very small quantities. The major individual paint constituents can easily be identified with FTIR in spite of some overlapping bands of resins, pigment and extenders, but the additives are usually beyond the detection limit.

The most common binding media in modern paints are oils, linseed oil being the traditional favorite, acrylics, polymers of acrylic and methacrylic acid esters, introduced in the 1950’s and 1960’s and alkyds, which are polyesters of a polyhydric alcohol and a polybasic carboxylic acid. Alkyds are mostly used in commercial household and industrial paints but have not reached popularity as artists’ paints. The only full color line is the Griffin line from Winsor and Newton. Despite some overlapping bands of resins, pigment and extenders, but the additives are usually beyond the detection limit.

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There are hundreds of pigments available today and a detailed discussion of these is beyond the scope of this presentation. Pigments can be either inorganic, made from ground minerals, colored earths, soot etc. or organic, derived from vegetable or animal sources or made synthetically. Although most pigments show up in the mid-infrared region their identification can be problematic due to chemical variation from one source to another and overlapping bands, and access to an extensive spectral database like the IRUG collection is essential in pigment identification. The heavy metal pigments, such as vermilion (HgS) and the cadmium colors, are transparent in the mid-infrared and a different technique (XRD, FIR) has to be used to identify these colors. However, colormen often mix cadmium colors with barium sulphate, and the presence of barium sulphate, in addition to another extender, in red, orange and yellow paints could indicate the presence of cadmium colors (Learner, 1996).

Extenders are added to most paints in varying amounts to diffuse or dilute the pigments. These are inert, colorless, white or transparent substances that also serve to improve and increase wearing qualities of paints. Household paints contain a large amount of extenders whereas artists’ paints contain less (this can often be used to distinguish between the two kinds of paint). The most common extenders are calcium carbonate (calcite, chalk, marble dust, whiting, lime white), barium sulphate (blanc
fixe, baryte, permanent white), kaolin (china clay, pipe clay, white bole), magnesium carbonate (magnesite), calcium sulphate (gypsum, gesso, terra alba), and talc (soapstone, steatite). The extenders are easily spotted in FTIR spectra; most have prominent bands in the fingerprint region and often overlap pigment and binder bands.

As an example a spectrum of an alkyd resin is shown in Figure 1. All esters give rise to three distinguishing bands in the fingerprint region, the so-called rule of three. The first is the carbonyl C=O stretch at 1730 cm⁻¹, the second band at 1270 cm⁻¹ is due to asymmetric stretching of the C-C and C-O bonds attached to the carbonyl carbon and is called the C-C-O stretch. The third band is split at 1130 cm⁻¹ and 1072 cm⁻¹ and is due to a vibration of the ester oxygen and the next two carbons attached to it and is called the O-C-C stretch.

In this vibration the O-C and C-O bonds stretch asymmetrically. The two weak bands at 1580 cm⁻¹ and 1600 cm⁻¹ are aromatic ring modes and the band at 744 cm⁻¹ represents an aromatic out-of-plane C-H bend. Two bands at 2927 cm⁻¹ and 2856 cm⁻¹ are due to methyl C-H stretches. The single most distinguishing feature of an alkyd resin is the broad and prominent band at 1270 cm⁻¹ that can be shifted ± 10 cm⁻¹ depending on the environment.

Figures 2 and 3 show spectra of the pigment French ultramarine, or synthetic lapis lazuli, and of a calcite extender respectively. These spectra show a much simpler pattern in the mid-infrared fingerprint region, as do most inorganic materials, and band assignment is rather straightforward (Farmer, 1974) but will not be discussed here.

Figure 4 shows the spectrum of an Ultramarine paint from Winsor and Newton, Griffin line. This spectrum can be shown to be a composite of the three spectra shown in figures 1-3, i.e. an ultramarine pigment (marked with *), a calcite extender (marked with •) and an alkyd binding material (marked with +).

The bands at 2925 cm⁻¹, 2853 cm⁻¹, 1730 cm⁻¹ and 1270 cm⁻¹ are all characteristic of the alkyd binding material and the broad band at 900 cm⁻¹ to 1200 cm⁻¹ is a composite band of the ultramarine pigment at 1010 cm⁻¹ and the alkyd bands at 1070 cm⁻¹ and 1130 cm⁻¹ which shows up as a shoulder. The twin bands at 658 cm⁻¹ and 693 cm⁻¹ both belong to the pigment spectrum. The presence of calcite as a filler can be determined from the broad band at 1450 cm⁻¹ and the sharp medium sized band at 880 cm⁻¹ on the flank of the pigment band, as well as a small band at approximately 1800 cm⁻¹.

In this way paint spectra can be split up into their contributing constituents and useful information about the individual component obtained.

**CASE STUDIES**

Some case studies involving the use of FTIR spectroscopy in art research and conservation will be discussed in detail.

1. Samples from a painting attributed to the Icelandic painter Jón Stefánsson (1881-1962) were analyzed by FTIR. Samples from the signature and over-painted areas were shown to contain alkyd binding medium whereas the rest of the painting had been painted with oil colors. Further investigation revealed the remains of a hidden signature by the Danish painter Vilhelm Wils.
2. Ink spots on paper have been analyzed with ATR showing the difference between iron gall inks and bear berry inks that supposedly were used on Icelandic medieval manuscripts.
3. Derrick et al. (1999) have shown that FTIR can be used to trace a lapis lazuli pigment back to its origin. An absorption band at 2340 cm⁻¹ occurred only in lapis lazuli from the Badakhshan mines in Afghanistan and was not present in lapis lazuli from Chile and Siberia.
References

IRUG Spectral Database. Infrared and Raman Users group.

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Sigurður Jakobsson received a PhD in chemistry from Arizona State University (1984) and has since then conducted research in high P and T phase equilibria and spectroscopy at the MRSEC center ASU, the University of Hannover, Germany and the Science Institute, University of Iceland where he is a senior research scientist.

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DISCOVERING MASTERPIECES AND DETECTING FORGERIES: CAN SCIENCE HELP?

AVIVA BURNSTOCK

ABSTRACT

_In the context of definitions of forgery and masterpiece, this paper discusses the contribution of the data gathered using some established methods for the technical study of painting materials and techniques, for the detection of forged paintings. The methods include microscopy, X-radiography, infrared reflectography, elemental analysis and other instrumental analytical methods for characterisation of organic materials. The issues of evaluating technical material are illustrated using selected case studies of paintings ascribed to Sandro Botticelli, Modigliani, School of Holbein and Luca Signorelli. The use of anomalous materials and or painting methods for the original work is discussed with regard to the characterisation of forgeries. The limitations imposed by subjective interpretation of data derived from individual technical studies are described using the case studies._

KEYWORDS


INTRODUCTION

Application of selected well-established methods for the characterisation of materials and techniques of paintings may provide evidence to support the attribution of a painting to a date, geographical origin and possibly to a specific artist. In the last decades a number of published technical studies of firmly attributed paintings have provided a frame of reference for technical studies of paintings with little or no documented provenance, date or attribution. For example, publications such as the _Art in the Making_ series summarise the results of technical studies of groups of works by a single artist, or group of painters working at the same time. _Impressionism, Italian Painting before 1400_ and _Rembrandt_ [1-3] provides benchmarks with which to compare the results of studies of other paintings, using similar methods. Publications on the dates of introduction of pigments to the artists’ palette (see, for example, _Artists Pigments: A Handbook_. Vols 1-3) [4], the introduction of commercially primed canvases and use of a variety of fabrics for painting, and the effects of artificial ageing on painting materials have all been more closely studied, thus providing more material evidence for the detection of forgeries.

Ever more precise identification of materials is now possible: the development of instrumental techniques for analysis of very small samples from paintings (for inorganic materials: Energy dispersive X-ray spectroscopy (EDX); X-ray diffraction (XRD); laser Raman spectroscopy (RS), the characterisation of bonds in organic and inorganic materials using Fourier-transform infrared spectroscopy (FTIR), and for organic binding media, resins and organic dyestuffs; gas and liquid chromatography GC or LC-MS and related techniques. Precise material identification also includes the inorganic and organic components of modern manufacturers paints, extenders, dyestuffs and inorganic base used for organic pigments, and the characterisation of the organic binding medium for the coloured materials, coatings and priming. All this hard evidence must surely make it difficult to produce a convincing forgery, at least of a painting made before the 19th century.

Although the possible methods for analysis offer, in theory, the opportunity for detailed material characterisation of paintings, interpretation of technical data is in itself subjective. Practical and financial constraints influence the choice of methods for technical study that may only be available in selected museums. The opportunity for close technical study of paintings is far more limited for those working independently and for auction houses (who have a legal requirement to attribute authenticity before a sale). Conclusions drawn from technical data may also be hampered by a paucity of comparable studies or the subjectivity of the interpretation.

The case studies described in this paper were selected to illustrate selected issues relating to the contribution of technical evidence for the classification of a forgery, copy or arguably an artist’s masterpiece, and to highlight some criteria used for attribution to date or artist.

Definitions

A dictionary definition of a masterpiece is given as “a consummate piece of workmanship” or “one’s best work”. With regard to paintings, one could also say that a masterpiece is “a great work firmly attributed to a known artist (or Master, an artist of quality)”. Few would argue that the entire oeuvre of any known artist is of even quality, therefore attribution to a master may not be adequate to qualify all works as masterpieces.

 Forgery is defined as “counterfeit, to falsify” – thus, a painting made with intent to deceive may be delegated a true forgery. The designation of copies, contemporary with the work or later, made in the course of studying painting is different from a deliberate forgery. Copies (never intended to deceive) may be signed or unsigned, may be made from extant works or from photographs, using similar or different materials and techniques to the original. Copies may be taken directly, or made “in the style of”. It is this group of works that are difficult to characterise, using stylistic or
technical criteria, particularly where no associated documentation exists that relates to provenance, artist or date.

**Case Studies: Technical examination of paintings**

The selection of four case studies given below by no means illustrates the full range of problems facing the technical art historian/conservator in the classification of works as forgeries or masterpieces. The first example is a 20thC forgery of an early 15thC painting, where there is documentary evidence of the life of the forger. The second relates to an investigation of a hitherto unknown painting for which no documentary records of any kind exist, where technical evidence played a significant role in a subsequent attribution to a well-known painter, thereby arguably raising the status of the work to a masterpiece. The third example describes the subjective interpretation of X-radiographs in the designation of a forgery or copy of a work signed Modigliani, and the last example illustrates how X-radiography is known to forgers as a technical tool for their discovery.

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**Fig. 1:** Madonna of the Veil, Courtauld Institute Gallery, once attributed to Sandro Botticelli c.1500, now to Umberto Giunti (c.1920).

**Fig. 2:** Photograph of the face of Lillian Gish, and actress and star of silent movies of the 1920’s.

**Madonna of the Veil**, Courtauld Institute Gallery, Lee Bequest, 1947, once attributed to Sandro Botticelli c.1500, now to Umberto Giunti, c.1920.

The painting (Figure 1) was in the Courtauld Institute Gallery from 1947, part of the Lee Bequest of 1947. The following summary is based in part on a technical study of the painting carried out in 1993 by Annette King [5].

Lord Lee of Fareham purchased the painting in 1930; a copy of Lord Lee’s cheque for $25,000 to Florentine lawyer Luigi Albrighi still exists, dated October 27th of that year. Leading art critic Roger Fry hailed it as a masterpiece by Sandro Botticelli, and in 1932 put the work forward for a Medici print by the Medici Society. Kenneth Clark subsequently likened the Madonna to a 1920’s screen goddess (arguably like that of Lillian Gish, whose face shows a striking resemblance to the Madonna in the painting, Figure 2).

The painting support comprises a single piece of worm-eaten poplar with a curved top (47 cm (w) x 88 cm (h) at maximum), with narrow edge strips. An X-radiograph of the painting (Figure 3) does not, on first inspection, provide indications that the work is not consistent with the 15thC. However, the poplar panel is of poor quality; there appears to have been no attempt to fill the knots in the wood prior to applying the gesso, nor is there any evidence for application of a fabric to the panel – although in the absence of comparable data on the preparation of panels used in Botticelli’s workshop, this alone may not be sufficient to raise suspicions.
binocular microscopy, is also not unusual. This was exacerbated by a yellow natural resin varnish, characterised as such by its greenish appearance in ultraviolet light.

Examination of the painting using a binocular microscope (providing between 10x and 40x magnification) highlighted several technical anomalies – the use of brown granular pigment for the foliage, and the use of paint for the Virgin’s robe with very fine particle size, where the use of coarse pigment azurite or alternatively natural ultramarine might be expected in a 15thC painting. These observations were followed up in the examination of paint samples prepared as cross-sections for study of the paint layers and identification of pigments and binding medium (using a combination of light microscopy, SEM/EDX and staining for organic materials). While the white gesso preparation on the panel was identified as calcium sulphate (bound in glue), and is therefore consistent with 15thC practice, Figure 4 illustrates as cross section from the Virgin’s robe, where under layers comprised a mixture of cobalt blue, lead white, zinc chromate yellow and viridian, with Prussian blue and French ultramarine used for upper layers. Samples from the greenest foliage contained viridian and chrome yellow together with more traditional lead white and iron oxide pigments.

The presence of these 19thC pigments in the “original” paint and the absence of underlying paint that might be consistent with the materials used in other late 15thC paintings led to the conclusion that the earliest possible date for the painting was the mid 19thC. This would seem to be reasonable in the light of suspicions by connoisseurs of art history prior to the technical study.

Several questions remain that might be worth considering: In this case, the technical investigation was informed by the opinions of historians and the extant documentary evidence of forgery.

Mazzoni [6] argues that doubt on stylistic grounds preceded technical studies as evidenced by such striking influences of a contemporary “look” in this and other works now attributed to Umberto Giunti, a known forger of paintings active in Florence in the 1920’s and ‘30s. Giunti trained at the Institute...
of Fine Arts in Siena, mentored by Icilio Frederico Ioni, another known forger of early Italian paintings [7]. He is said to have created 15thC Florentine works based on a fusion of styles used by painters such as Matteo di Giovanni, Filippino Lippi, Andrea Mantegna, Domenico Ghirlandaio, Carpaccio, and others, working from photographic plates of the original works, sometimes printed in reverse. The similarity between the head of the Lee Collection Madonna and the head of the Virgin from the S. Barnabus Altarpiece (Figure 5) that was on display in the Accademia, then in the Uffizi in Florence during the 1920's, has led to the suggestion that Giunti may have worked from a photograph of the S. Barnabus Virgin, printed in reverse. Sale of the works was organised by the disreputable Albrighi, a lawyer whose old world charm and superficial respectability bought him admission to the moneyped English aristocracy.

In this case, with evidence of forgery in advance of the technical study, it is possible that material evidence was interpreted with a prejudicial slant. Here the analysis of paint samples provided crucial evidence in favour of attribution of the work as an outright forgery – a 20thC painting made using an old and damaged traditional support, prepared in the traditional manner. The evidence provided by the non-invasive methods of technical study alone were by no means conclusive: Contemporary connoisseurs agree that the painting is a pastiche of quality [8]. Without evidence from analysis of pigments used for the Madonna of the Veil, comparison with the very limited number of published stud-

ies of the techniques of works assigned to Botticelli might have led to a conservative attribution such as Workshop of, or even the less confident Style of Botticelli [9]. In this instance, the use of pigments not available in the 15thC reinforced the attribution of the work in the forger's oeuvre that was, after all, already documented. Herein lies the problem: If no such documentation was extant, the attribution as forgery might have been more difficult, for the random nature of sampling from a painting carried out through discoloured varnish and repaint might have revealed only areas of loss and restoration. What if some original 15thC paint was present under significant restoration, missed in the course of technical study? How much original paint might be required for a very damaged painting to be attributed as 15thC? Ten percent of the surface? Fifty percent? And how easy is it to distinguish between a very damaged original and an old painting reused by a forger?

The Madonna of the Veil was included in the “Fakes” exhibition at the British Museum in 1990. Now listed in Checklist of paintings [10] as Sandro Botticelli (1444/5–1510), forgery in the manner of the Virgin and Child 19thC. (?) tempera on panel, arched top 88.22 x 45.7 (cm).

Amedeo Modigliani, Female Nude ca.1916, oil on canvas, 92.4 x 59.8 cm, signed Courtauld gift 1932 (Figure 6) and Portrait of a Woman, private collection, signed Modigliani (Figure 7).
This case study illustrates the use of X-radiography for characterisation of the handling of paint by an artist. Figure 8 is a detail of the X-radiograph of the figure from the Courtauld Female Nude, a work firmly attributed to Modigliani. The radiograph shows Modigliani’s unusual method for applying flesh paint, using a large round-ended brush. Loading the brush with paint, the artist used a stabbing motion to apply it to the canvas. This caused the end of the brush to splay apart, making characteristic brush markings that are evident in the radiograph. By contrast, the radiograph from the Portrait of a Woman (Figure 9) features small, hesitant brushstrokes used for the whole work. Subjective interpretation of the comparison of radiographs alone might lead to the conclusion that the works could not be by the same hand.

If available, data from pigment and paint characterisation of the works might support this hypothesis, if significant and characteristic differences were found between the pigments employed and or the binding medium. However, without a comparable context of technical studies of the artist’s attributed oeuvre, precise material data characterisation has limited value. This is arguably made still more problematic because in 1916 most contemporary pigments (apart from selected modern synthetic dyestuffs and titanium white) had been in use for several decades, and therefore rejection of the attribution to Modigliani on the basis of the dates of introduction of pigments is limited.

The signature on both works is applied directly over the paint, with no sign of strengthening or interlayers of varnish.

Signature analysis was not carried out. However, this issue may be of little relevance, and it is known that in some cases Modigliani’s works may have been signed by others after his death. Without the context of comparable technical studies of Modigliani’s works, such comparison is of limited value in terms of defining forgery from masterpiece.
Virgin & Child (with Saint Christopher?) Italian 15thC? Private collection

This painting (Figure 10) came to the Courtauld for technical study in the mid-1990's with no accompanying documentation, and was entirely unknown to Signorelli scholars.

The wooden panel support (43.5 x 28.5 cm) is probably poplar, with much woodworm damage. The support has been restored on the verso, surface channels filled and painted over with an earth-coloured paint. The paint on the front extends to within about two cm of each edge of the panel. The front had been recently restored, including a glossy final varnish, which contains some pigment (tinted varnish). There is extensive inpainting of losses and damages to the paint, deceptive in style but clearly visible under close inspection and under a low-powered microscope. Areas of loss and damage include the edges, sky, the Virgin’s right hand, and the child’s ear. These and some of the other areas of loss and abrasion are visible in reflected infrared light (using an IR Vidicon camera, with computer-linked image grabbing system and processed using Photoshop software).

Infrared imaging provided information both on the condition of the painting and on the underdrawing of the composition (Figures 11 & 12; IR details from Child’s legs). The presence of fine broken lines that may be indicative of the use of charcoal, and drawing in a fluid medium (applied using a brush or pen), suggest that the composition is underdrawn using a dry medium for the broad outlines of figures and hatching, using a denser black carbon-containing material in an organic medium.

Losses to paint and ground were also evident in an X-radiograph (Figure 13), although this was more difficult to interpret. The X-ray absorbent filler used to fill the extensive worm channels dominates the X-radiographic image to some extent. However, the use of lead white pigment for the flesh paint provided some useful insights into changes in the composition. The most notable feature of the radiograph relates to an earlier painting of the Child, lower than the present version. An image of an earlier position of the Child is clearly evident in the radiograph, executed in paint, which exhibits drying cracks (in the legs, for example, but also in the torso).

Changes in composition gleaned from IR examination and X-radiographs of the painting suggest that there are three versions of the Christ child: the present painted version, a second version, drawn and painted (as described above) and a third version, underdrawn but not worked up in paint, to the right of the final position. In the infrared image, the face of the Child in the second version is visible in the dark shadow between the third Child’s arm and knee.

The original paint of the Virgin’s right hand is heavily abraded,
Samples of paint were prepared for examination of the paint layer structure and identification of pigments. But sample sites were limited due to the highly finished surface of the painting following its recent restoration. The following summarises the findings, which in no way comprise a comprehensive study of the materials and techniques employed for the painting. Samples of paint were examined using light microscopy and where required, energy dispersive X-ray spectroscopy (EDX) analysis was carried out to identify selected pigments.

Ground/priming layers: Only one sample-contained paint attached to the original gesso ground, which consists of a mixture of calcium sulphate, probably bound with animal skin glue. Other samples, from the sky and the Virgin’s blue drapery, included a layer of buff-coloured underpaint applied over the gesso, consisting of a mixture of calcium sulphate, charcoal black, ferric oxide ochre and a few particles of red lead. It may be that this buff-coloured layer is present as a general *imprimatura* layer (its absence on some of the samples may be due to the sampling process), although the layer is thicker than the thin scumble, which is usually described as an *imprimatura*. Alternatively, it may be a second priming, or a *sfumato*-style underpainting. Further study of paint samples might clarify this aspect of the technique.

Fig. 13
X-radiograph of Virgin & Child (with Saint Christopher?) Italian 15thC? Private collection.

Fig. 14
Cross-section from yellow highlight in foreground grassy foliage from Virgin & Child (with Saint Christopher?) Italian 15thC? Private collection. Malachite mixed with lead-tin yellow underpaint with highlights in lead-tin yellow.

Pigments and paint layer structure: The Virgin’s dark blue robe was painted using the blue-green pigments made from the natural minerals azurite and malachite (copper carbonate). These pigments are applied in a single layer over the brownish underpaint, although a sample taken from near the hem of the robe showed extra layers beneath the blue robe paint layer which probably correspond to foreground foliage painted first. (The robe was then extended, covering it.) The underlayers comprise two very thin layers of a mixture of lead white, finely ground charcoal and a red lake pigment, which would have appeared purplish in colour, followed by azurite with a copper “resinate” green (see discussion below of binding medium).

A sample of the Virgin’s green drapery from near her yellow sash was underpainted with a mixture of a copper green pigment and azurite, followed by a light green layer of lead-tin yellow and lead white with the same copper green pigment, then glazed with two layers of copper “resinate”. Malachite, without azurite, is used mixed with lead-tin yellow in the foreground foliage, with highlights of the grass applied using lead-tin yellow (*Figure 14*). The sky is executed in one layer, using a mixture of lead white and azurite. While the blue paint of the sky is well preserved, where copper carbonate pigments are used unmixed with lead white (such as in the Virgin’s blue drapery) the binding medium for the paint has discoloured and darkened. This darkening is fairly uniform throughout the paint layers. This may have contributed to an overall alteration (darkening) in the appearance of the robe. This darkening has been observed in oil medium but is also possible where a fatty egg tempera medium is employed in combination with copper pigments.

An assessment of the composition of the binding medium was made using a combination of ultra-violet fluorescence microscopy and biological staining tests. The darkened medium in samples from the Virgin’s robe gave a positive test for oil (using pink-fluorescing stain Rhodamine B). This does not rule out fatty tempera, although no positive stain for egg proteins was observed using Acid Fuscin. The identification of copper “resinate”, that is a copper pigment dissolved in a resinous medium, was based entirely on the
Following the technical study, *The Virgin and Child with S. Christopher* was exhibited alongside firmly attributed works by Luca Signorelli at the National Gallery in London in 1998, and is included in art historian Tom Henry’s catalogue for the exhibition entitled *Signorelli in British Collections* [12]. One conclusion that could be reached is that in this instance, technical evidence contributed significantly to the upgrading of a painting without provenance to a work by a well-known painter, Luca Signorelli. Signorelli was active in Volterra and Cortona from c.1470, and produced works commissioned by the great Florentine patron Lorenzo de Medici, and must be considered a Master painter. However, in the context of the greatest works by Signorelli, such as his famous *End of the World* frescoes painted in 1499 in the Cappella Nova in the Cathedral of Orvieto, it might take compelling arguments to attribute Masterpiece status to *The Virgin and Child with S. Christopher*.

**Portrait of a Woman c.16thC School of Holbein?**

*Portrait of a Woman*, painted on canvas, came to the Courtauld Institute for X-radiography in 1985. The figure wears a headdress that suggested mid 16thC English origin, optimistically ascribed to the School of Holbein. *Figure 15* illustrates an X-radiograph of the painting, revealing these words written in red lead pigment beneath the brown iron oxide, x-ray transparent paint of the background: "Old Masters for your Xmas Gifts". The forger of this Tudor-style portrait had a sense of humour, and clearly knew that X-radiography would reveal the forger's intent.

**DISCUSSION**

The growing body of knowledge on painting techniques gleaned from technical research together with opportunities for analysis of painting materials currently on offer are more than likely to uncover most deliberate forgeries. But a number of additional issues for interpretation of technical studies of paintings are not addressed in the cases described here.

The characterisation of forgeries of modern or contemporary paintings pose particular problems – modern forgeries cannot be classified on the basis that the main body of the work utilises pigments not available at the date of making. It is plausible that published material on techniques may educate modern forgers, both in the materials and making of paintings and the means for detection of forgeries, as illustrated by the last example of the School of Holbein forgery.

The classification of paintings that use anomalous techniques for paintings made using traditional materials may fall outside the criteria for attribution. At present, without additional evidence of great quality (suggesting a masterwork); similarity to a known master school or period, nor "intent to deceive" leaves these works with at best a loose assignment to a century (?), or nationality (?) (e.g., “Italian? 15thC?”) based on style.

Ambiguities in the definition of “masterpiece” are equally prevalent. Problems abound in the attribution of paintings – those made in the Workshop of Botticelli or his...
pupil/colleague Fillipino Lippi, for example, where a number of assistants and specialist craftsmen are known to have been employed in the studio. Just who collaborated, equally or partially, in the making of both large and small works? To whom do we assign a painting that may, using infrared reflectography, contain two different styles of underdrawing, and evidence of the use of a cartoon for transfer by pouncing? Where an X-radiograph may suggest parts of flesh paint using generous admixture of lead white and other figures appear almost as reserves, can we conclude this to be the contribution of two hands? Some collaborators in workshop practice may be named (from documentation of payment to goldsmiths or assistants, for example). Others who may have played a significant part in the making of the work may never be known.

Interpretation of analytical data from paintings is in itself problematic, not only due to subjectivity of interpretation of visual and scientific data. The condition of paintings often limits access to original paint, both for visual or microscopic study and for sample taking. Repeated cleaning of paintings, replacement of varnishes, consolidation of flaking paint and lining may affect results of analyses, in particular organic analyses. The thinness of paint layers, the lack of spatially resolved techniques for organic analysis, and the small number of specialists in the field are all limitations to the gathering of precise information about the nature of organic materials such as natural resins, gums, animal glue and oils. This includes combinations of the above for coatings, and varnishes or interlayers between paint – and this further limits interpretations about their typical use in painting. Nor are the ambiguities that arise in the authentication of a masterpiece is surely the greater experience.

More commonplace than forgeries is the scenario in which paintings made as copies or pastiches without intention to deceive are subsequently sold with unreliable attribution or even passed off as masterpieces. A forger requires a network of well-connected outwardly respectable public intermediaries who negotiate the sale of the paintings, such as Ioni and Giunti’s profitable association with lawyer Luigi Albrighti during the 1930s. These stories are fascinating, although the discovery of a masterpiece is surely the greater experience.

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References

[8] Personal communication, Dr. Sally Korman, Curator, National Gallery, London.

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FAKE FAKES IN THE FORGER’S OEUVRE
ONE MORE STORY ABOUT ELMYR DE HORY

JOHANNES RØD

ABSTRACT
After Elmyr de Hory was revealed as an art forger in 1967, he continued until his death in 1976 to paint the same subjects (in the style of different artists) as before. However, the paintings had a slightly different approach in the final touches: the signature was not Matisse or Modigliani, it was Elmyr. As long as it did not exist any extradition agreement between Spain and France, he could not be put to trial. The paintings by the legendary art forger were popular among the art buying public, and in the 1970s, 80s and 90s they were sold both by auction houses and galleries. In the beginning of the 1980s, Sotheby’s in London found that the quality connected to his paintings fluctuated so much that it was difficult to tell whether it was Elmyr’s work or not. In his research to the documentary Almost True. The Noble Art of Forgery, the author found that on a certain point, the market may have been flooded with fake Elmyr’s.

KEYWORDS
Elmyr de Hory, fake forgeries, faking methods

If an art forger becomes famous because of his “dirty” business, his pictures, fake or not, surely attract the art buying public. The quality of the art work itself does not have to be the most important – but rather the story connected to it. For Elmyr de Hory, this was the actual situation at the end of the 1960s. Because of the legendary status he had achieved during his 20 year career as a forger, the market for his pictures as a normal artist was huge. But this was also a situation open for exploitation by other participants in the market.

BACKGROUND
The American oil-millionaire Algur Hurtle Meadows had from the beginning of the 1960s established a collection of more than 60 impressionist and neo-impressionist paintings. Most of them were purchased through the Parisian art dealer Fernand Legros. In 1967 experts from the Art Dealers Association of America (ADAA) evaluated the collection, and the verdict was shocking: 36 of the paintings were fakes (Figure 1).1 This was the incident that revealed one of the most famous art-fraud scandals in the twentieth century, and the involvement of the art dealers Fernand Legros and Real Lessard, and the art forger Elmyr de Hory or Elmyr von Houri, Elmyr Herzog, Elmyr Cassou, Elmyr Hoffman, Elmyr Raynal, Elmyr Dory-Boutin, Elemer Horthy as he also called himself. The forgeries were executed as pastiches, a principle Elmyr stuck to during his criminal career, he never copied master-paintings.

After the revelation, the trial was going to be held in France the following year with the 36 confiscated paintings as evidence. But an extradition agreement did not exist between France and Spain at that time, so consequently, as long as he stayed inside Spain, Elmyr could go on with his life in freedom. The sudden death of Hurtle Meadows lead to a postponement of the trial, and Legros and Lessard got small sentences some years later. In his studio in Ibiza, however, Elmyr continued to paint pastiches as before – but with a slightly different finishing touch: he signed Elmyr. Until his death in 1976, this was his only occupation. The pastiches were popular among the public, and several galleries in Spain had them for sale the 1970s. In the 1980s, Sotheby’s and Christie’s in London put quite a few Elmyrs on auction2, and in 1983, the estimates from Sotheby’s on each painting went from £ 500 up to £5,000, and they were sold from £800 up to $3,000.3 In the late 80s and beginning of the 90s

1 Irving, Clifford: Fake, N.Y. 1969, p. 35. According to lists from the Tribunal de Grande Instance de Paris, December 1996, there were 36 fake paintings in the collection.
2 From 1980-84 Sotheby’s in London sold more that 25 paintings signed Elmyr.

SAMMENDRAG

NØKKELORD
Elmyr de Hory, falske forfalskninger, forfalskningsmetoder
the situation for works connected to Elmyr changed. First there was a profound increase in pastiches signed Elmyr on the market and secondly, quite a few forgeries signed Matisse, Modigliani, van Dogen etc. supposedly by Elmyr de Hory were put into the market. Sotheby’s in New York had to withdraw the painting *Woman in an Interior* signed Matisse 1943, because it was suspected to have been painted by Elmyr de Hory in the 1950s. The painting *Woman with Pearl Necklace* signed van Dogen and painted by Elmyr in the 1960s was exhibited as a genuine painting in the Fauvism exhibition held in the Tel Aviv Museum of Art in 1996.

**THE NEW MARKET SITUATION**

According to Sotheby’s in London, the auction firm stopped selling pastiches signed Elmyr in the early 1990s because the quality fluctuated so much – it was difficult to tell whether it was Elmyr’s work or not. The Galeria Es Moli in Ibiza reported the same chaotic situation for Elmyr’s work there. From the mid 80s until the early 90s, the average artistic quality for pictures connected to Elmyr de Hory had changed. In other words, it was difficult to tell whether a picture signed Elmyr was actually executed by Elmyr or not. It was difficult to tell whether a supposedly true forgery by Elmyr (painted before the revelation) actually was done by Elmyr de Hory. The only trustworthy reference material (36 fake paintings from the Algur Hurtle Meadows collection) were stored behind iron doors in the Palais de Justice in Paris. To make the situation even more complicated, the two art-dealers, Real Lessard and Fernand Legros, had their own versions of the art faking business they were a part of in the 1950’s and 60’s. In his book *L’amour du Faux* Lessard claimed that he was the artist behind the forgeries, and that Elmyr de Hory only made the fake signatures. In the book *Tableaux de Chasse* Legros claimed that Elmyr de Hory was a Hungarian art critic he met on Ibiza in 1963, and not a painter.

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Monet, estimate £500/700 – sold for £850. Sotheby’s, London, 28.05.86, no.184: Portrait de Femme apres Modigliani, estimate £2.000/3.000 – sold for £2.200. Sotheby’s Tel Aviv, 20.10.92, no. 90: Nude after Modigliani, estimate $1,500/2,000 – sold for $1,800.

4 The New York Times, 15.04.94.


7 In an interview session for the documentary Almost True. The Noble Art of Forgery, 1996.

8 Algur Hurtle Meadows died soon after the scandal broke in 1967; Elmyr de Hory committed suicide in December 1976 after he was ordered to meet for trial in Paris; Fernand Legros got a short sentence in prison and died some years later and Real Lessard got a short sentence.

9 Lessard, Real: L’amour du Faux. La Vérité sur L’affaire Legros, Paris 1988, p. 82.

ELMYR DE HORY’S FAKING METHODS

According to his biographer, Elmyr practiced several different faking methods in the 1950s and 60s. A potential sale was of course first and foremost dependent of the quality of the artwork itself, secondly how convincing a provenance he could make, and thirdly his own appearance. With his natural talent as an actor he presented himself as a distinguished European gentleman, dressed in tailor-made suits with a golden watch on a golden chain hanging from his waistcoat and with a characteristic hungarian accent. This striking person who sold pictures from the remnants of the family collection that he managed to take out of Hungary before the communists invaded the country fooled a lot of people. When it came to the presentation of the actual ‘work of art’, an important element was the artificial patina: If the painting was supposed to be painted in 1915, the material structure had to look like it. With the paintings in the Algur Hurtle Meadows collection this was partly done by a relining (if a painting is relined it looks more ‘authentic’), and partly by using the right sort of materials (french type canvas and stretchers for the french paintings) patinated to give the illusion of age.

But one of the most successful methods, according to Elmyr, was to use old art books with folio photographs. Carefully the original photo was cut out and Elmyr produced a painting in the same style and with a similar representation as the original. Then Elmyr’s painting was photographed and carefully the new photo was glued into the book as a substitution for the original one. With the actual painting in one hand and the art book in the other – very few art dealers, according to Elmyr, hesitated to buy the fake painting if the price was good.

THE KEN TALBOT AFFAIR

In the beginning of the 1980’s, when paintings connected with Elmyr de Hory gradually became more frequently found in auction-houses, galleries and art dealer’s stores, the situation was difficult for both dealers and buyers. The quality of the paintings varied, and it was hard to tell whether it was one of Elmyr’s or an artwork made by another person in the name of Elmyr (a faked Elmyr). The following note in Time Magazine illustrates the situation:

“... take a look at this rare collection of 100 paintings. Yessir, these are real beauts, all of them done in the inimitable styles of Picasso, Matisse, Modigliani and other early modern masters. Well, to be honest, not quite inimitable styles. The paintings are actually by a clever Hungarian counterfeiter, Elmyr de Hory. Considered the world’s premier art forger before his death in 1976 ... Eventually de Hory was so famous that he began signing his ‘fakes’, and many of them had found their way into the hands of John Connally. Now in partnership with Forrest Fenn, owner of a gallery in Santa Fe, New Mexico, the onetime Governor of Texas

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11 This information is taken from Clifford Irvings book Fake.
12 The research was done by the author in connection with the documentary Almost True. The Noble Art of Forgery in Paris, 1996.
and presidential hopeful wants to sell off some of his acquisitions. Price $12,000 to $15,000 a piece. After all, argues Fenn, "If they are as good as real, then what the hell are we talking about? I mean, what is art?"

The Connally collection of 100 paintings was bought from a former English bookmaker, Ken Talbot, in 1983 for $225,000. Talbot claimed he bought 400 paintings from Elmyr de Hory in the 1970s for $350,000, and he described his relationship to art with the words: "I wouldn't have known a painting at the time if it fell on me head."

In 1991, a new revised edition of Clifford Irving's book Fake from 1969 was published by a private publishing firm in London (Ken Talbot's own firm): Enigma! The New Story of Elmyr de Hory, The Greatest Art Forger of our Time. Retold and presented by Ken Talbot (Figure 5). Irving confirms in an interview in 1996 that he had sold the rights to reissue his book to Ken Talbot: "But I have never met him and I have never written any note to the new edition as it is printed in the book. It's a literary fake." The book has 10 new colour reproductions of paintings supposedly done by Elmyr as true fakes (prior to 1967). Six of them were present in the huge presentation of Elmyr de Hory in the gallery of the Tokyo newspaper Sankai Shim bun in 1994. The catalogue from this exhibition presents 70 forgeries by Elmyr de Hory from the collection of Ken Talbot. But the paintings however, are mostly badly executed copies of famous impressionistic and neo-impressionistic paintings, and some of the figures in the compositions also have prominent Asian features (Figures 2, 3 and 4). None of the 70 paintings have the slightest resemblance to the reference material in the former Meadows collection (Figure 1). Nor do they represent the level of quality typical of Elmyr's work between 1967 and 1976. According to his flatmate on Ibiza from 1971-76, Mark Forgy, Elmyr never copied any particular painting, he painted in the style of other artists. Still more strange is it to read the preface to the catalogue from the Tokyo exhibition:

"We are exhibiting paintings done by Elmyr de Hory, a genius we will not like to be confronted with again. ... The exhibition, for the first time in Japan, consists of more than 70 fakes of modernistic paintings among others masters such as van Gogh, Picasso, Matisse and Renoir. 'I am always painting in the style of other artists, I never copy [my italicize]. The only fake in my pictures are the signatures', de Hory says."  

It is likely that none of the paintings in the ownership of Connally, Forrest or Talbot were truly fakes by Elmyr de Hory: None of them were painted with the intention of being an original masterpiece and signed as such: the pictures were all badly executed copies or pastiches. A question to ask is if they were painted by Elmyr at all? Both Clifford Irving and Elmyr's closest friends in Ibiza express their profound doubts. Vicente Ribas, attorney and close friend of Elmyr, claims that Elmyr only did as much painting in the 1970s as he found necessary for a comfortable life. He was mostly interested in socialising and going to parties, and did not paint much.

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16 In an interview session for the documentary Almost True. The Noble Art of Forgery, 1996.  
17 In an interview session for the documentary Almost True. The Noble Art of Forgery, 1996.  
19 In an interview session for the documentary Almost True. The Noble Art of Forgery, 1996.  
20 Mark Forgy, Edith Sommer, Vicente Ribas, Sandy Pratt, G. Jooris in an interview session for the documentary Almost True, 1996. They also claim they have never heard of Ken Talbot, and he was certainly not a close friend or important business partner in the 1970s.  
21 In an interview session for the documentary Almost True. The Noble Art of Forgery, 1996.
THEORY OF MODUS OPERANDI: THE KEN TALBOT AFFAIR

The findings and the information in this affair are quite contradictory and confusing. First and foremost, Elmyr de Hory’s closest friends on Ibiza claim that he could not have painted what Talbot claims he had, and certainly not such a great number.²⁰ Sotheby’s David Breuer-Wild supports their view in connection with the quality of the Talbot paintings and refers to what he has seen by Elmyr de Hory on the art-market.²¹ My research on the paintings from the Meadows collection reinforces his view. The preface to the catalogue from the Tokyo-exhibition quotes Elmyr saying he never copied; nevertheless the exhibition itself is full of poorly painted copies. The Asian “look” in the Matisse and Modiglianis (Figures 2 and 4) also provides circumstantial evidence that the paintings were manufactured geographically far from Ibiza.

In conclusion my theory of Ken Talbot’s modus operandi is that he exploited the market to sell cheaply produced (may be painted in an Asian country) copies and pastiches as paintings done by Elmyr de Hory. These paintings were not individually very expensive to buy (about £800-£5,000), but in large numbers the business generated must have been quite prosperous. With the reissue of Clifford Irving’s book with 10 new colour reproductions and with the 70 works in the catalogue from the Tokyo-exhibition, he might have tried to “authorize” paintings in his ownership as “genuine forgeries” done by de Hory. In this way he might have “produced” fake fakes using the same method of presentation in art books as Legros, Lessard and de Hory used when they produced and sold fakes in the 1960s.

Everything connected to Elmyr de Hory involves an element of fiction. One can never tell what is actually true and what is not: he faked his own date of birth, he faked his family background in Hungary, his biographer Clifford Irving was sent to prison for trying to write a false biography of Howard Hughes – and after his death Elmyr’s oeuvre is growing bigger and bigger.

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DECEPTIVE FLUORESCENT VARNISHES: A COMPARATIVE STUDY OF THE UV LUMINESCENCE OF A FRESH APPLIED VARNISHES PRODUCED USING FLUORESCENT COATING MATERIALS

TOMAS MARKEVICIUS

ABSTRACT

Alterations and additions supply an important category of art forgeries. Examinations and evaluation of paintings authenticity and integrity using UV radiation was started as soon as the first UV lamps became available in 1925 and still is one of the most common methods to examine surface authenticity and integrity. The UV lamp is probably the best-known “gadget” in art world and due to its fast and simple applications is as likely to be found in art dealer’s hand as those of a scientist. The following research focuses on the formulation and examination of freshly applied fluorescent varnishes, which could be intentionally employed to mask reworked areas and simulate appearance of the aged varnishes.

KEYWORDS

forgery, UV, fluorescence, varnishes, masking

INTRODUCTION

To pretend is not so uncommon indeed. Forgery can be considered a way of pretending by having a fraudulent intent. Art makes no exception from the other spheres of life, and art forgeries have existed as long as art itself. The history of art forgeries show that original fakes ex novo are quite rare, and it is more common to make a pastiche or rework an existing less saleable, less appreciated or less valuable artifact. Salome with a Head of St. John the Baptist appears too shocking? Some think so, and the painting can be cut down to a fragment and the rest overpainted: and here we have a charming 16th-century lady 1 (Figure 1). The skull in a Vanitas still life looks too depressing? It can be buried under a layer of overpaint too.2 Unknown or less saleable master? An important signature or inscription is what the painting needs to become a better deal, even if the date is two years after the artists’ death.3 Alterations and additions, which change a true identity of the artwork supply a rich category of art forgeries: signatures, inscriptions, changes in composition by adding new figures or removing less attractive objects, cutting a fragment and making it an independent piece can be just few examples. However, sometimes alterations and additions are preferred to huge losses, which appear too distracting for the legibility of the painting 4. Certainly, the scandals of big time art forgeries receive a lot of attention in the press. For the art world the actual state of the artwork may be an even more important daily issue, however. Deception is the biggest concern for people purchasing art too. It is not surprising that attempts to identify what is genuine in the artwork have such a long history, and today for this purpose a number of sophisticated analytical and instrumental techniques have been used along with art historical and formal analysis.

EXAMINATION OF PAINTINGS USING UV LIGHT

Examinations of paintings using ultra-violet light was started as soon as the first UV lamps became available around 1925 and still remains one of the most common methods among art conservators in their everyday practice. The UV lamp is probably the best-known “gadget” in art world and due to its fast and simple applications is as

1 Bernardino Luini (1460-1520) Salome (oil on canvas, 40, 3 X 38.2 cm.) from the Ball State University Art Museum appears to be fragment from a bigger composition, possibly Herodias (tempera on wood, 51 X 88 cm) which appears to was cut down in the past and extensively overpainted, to cover design elements around the edges. Another version of Herodias (dated 1454) is at the Ufizzi Gallery in Florence, Italy.
2 A skull in Pieter Claesz (1597-1660) Vanitas still life was overpainted in some time, probably because was found to be too gloomy and depressive. True condition of the painting was revealed after conservation treatment. J.Guillerme “L’atelier du temps”, Hermann Paris 1964 p. 194
3 W. Partridge “Recovery of a Dutch Landscape”; ICA News No. 4; 2002
4 I have particularly in mind Cavenaghi’s restoration of Carlo Crivelli Pieta, Fogg Art Museum at Harvard University.
5 The irradiation source used is ultraviolet light, which represents a section of the overall electromagnetic spectrum extending from the blue end of the visible (400 nm) to the x-ray region (100 nm). The excitation energy provided by the UV photons is much higher than the energy of the thermal motions of the molecules at physiological temperatures. Thus the absorbing molecules temporarily assume energy levels that otherwise they would never attain and thus acquire properties differing considerably from those effective in normal conditions. The lifetime of a molecule in its excited state is very short and lasts from 10^-10 to 10^-8 seconds and as an exited electron returns to a lower energetic state, its excess energy can be emitted as a photon, resulting in fluorescence.

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likely to be found in an art dealer’s hand as those of a scientist. Since the principle of UV test is well known to art conservators and museum professionals, I will discuss it briefly in the endnotes and I will not stop here on this topic more.

Various materials have different fluorescent properties and this helps to identify a number of substances, which appear alike to an unaided eye and today it is commonly recognized that ultraviolet light can be successfully used studying painting materials. UV test can be very helpful examining surface integrity, because in most cases relatively fresh natural resin varnishes and painting media do not fluoresce, while aged varnishes result strongly fluorescence under UV light and for this reason inpainting or overpaint appears as dark figures on a fluorescent background (Figure 2). From conservation practice we know that varnishes become more fluorescent and opaque with time and reworked areas may gradually become less visible or invisible completely under UV light. Apparently, the masking varnishes can do so as well.

ALLORI CASE: MASKING VARNISH USED

In the summer of 1999 in Florence a 16th century copy of a celebrated painting from the Galeria Palatina Judith with the Head of Holofernes by Cristofano Allori (1577 – 1621) was brought for examination to a respected private art conservation studio in Florence, Italy, where I was working at this time. Examination was requested by the Tribunale Civile e Penale di Firenze where the Florentine art dealer
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The response to the above painting was by an inappropriate conservation treatment. In the response to the painting, the restorer accused the art dealer in turn with slander. Paintings conservator N. Olsson was called to examine the painting. UV examination, which is so helpful in similar cases, was useless since every-thing was sprayed with the masking fluorescent varnish. The overpaint was visible with an unaided eye but was virtually invisible under UV light. It was clear to the conservator that a varnish was applied seeking to conceal the actual condition after treatment. While the restorer never admitted his intentions, he had a lack of concern for the results of his work, which blurred the boundaries between his work and the original. The restorer did not deny that he had applied a masking varnish though. This case inspired me to do more research into the published articles on art forgeries and particularly those on the examination of paintings under UV light, but I did not find more substantial information on the use of masking varnishes. Absence of published case studies and analytical articles on the subject encouraged me to start experimenting with various materials, searching for coatings, which could produce masking varnishes. What do the masking varnishes do and how do they work?

EXPERIMENTAL PROCEDURE: TESTING MASKING VARNISHES

Looking from the forger’s point of view, masking the actual condition of a reworked piece creates certain technical problems. Taking into account that in a conventional UV examination, inpainting and later additions do not fluo-resce or fluoresce much more weakly it was decided to search for specific coating materials, which could create an opaque fluorescent “screen”. First, the experimental procedure aimed to determine, which of the freshly applied coatings could simulate luminescent properties similar to those of the aged varnishes. Secondly, it was important to determine, whether and if yes, which of the tested materials were sufficiently opaque to mask completely non-fluorescing areas, such as retouching, over-paint, or later additions. The light source used was a long wave UV light (Spectroline B-100 A), which irradiated ultraviolet light in the range of 320 – 400 nm. Results were examined visually and documented with 58 mm Sony Cyber-Shot 5.0 Mega Pixels Digital Camera with Carl Zeis Vario-Sonar Lenses and CC40 R filter. Certainly visual observations are subjective to a certain degree and digital images are less accurate than the UV spectroscopy, which in this research would have been very useful indeed. However, it was not available at our lab and I hope to expand this work in the near future when I have access to more advanced equipment.

In the course of testing I examined materials, which have been historically used to make varnishes. Research was limited to 20 samples focusing on materials, which are readily available to artists, restorers or art conservators today. It must be noted, however, that the number of fluorescent materials, which could be employed for the masking varnishes is higher. For this research I explored fresh films attained from the recently prepared solutions with the bulk hard resins (such as copals and amber) and relatively young soft resins (such as mastic, damar, sandarac and rosin) as well as some balsams (such as Venice Turpentine and Canadian Balsam) dating from 1950 up to a present day and stored at the Intermuseum Laboratory (ICA) in Cleveland, USA. Several resins, such as sandarac, manila copal, rosin, damar and Canadian balsam were compared with the same material of 2003 from Zecchi Colori Belli Arti in Florence, Italy. Several recent synthetic low molecular weight resins and some of the popular J.G. Vibert varnishes such as Vernis à Retoucher and Vernis à Tableaux (composition is not specified) by Lefranc & Bourgeois were examined too. Some miscellaneous materials, which could be employed for masking purposes, such as drying oils, alkyd resin, proteinaceous materials and polysaccharide gums were explored as well. Where available, the materials were examined under UV light as bulks pieces or powder. A number of solvent and oil-based varnishes were then prepared. The varnishes were applied to rectangular pieces of a white and dark brown primed linen canvas. A thin stripe in the right corner of the sample was left unvarnished, which helped better to observe the final result (Figure 3). It was noted that most of tested resins had various and sometimes distinctive fluorescent properties similar to those of aged varnishes.

Positively tested samples retained fluorescent qualities in all physical states: as solid pieces, solutions, and thin films (Figure 4). It was found that the color of the ground was an important factor for the intensity of the fluorescence. Samples with the white ground appeared to be more fluorescent. This can be explained with intense reflection of the blue part of the UV light from the white ground, which increased the brightness of the observed color. Therefore it very likely that to mask overpaint on a dark background would be relatively easier than to mask the same overpaint on the light background. This can be explained by the much lower contrast between the fluorescent base paint and the overpaint on the samples with a dark background. From here it follows that masking additions or overpaint on “dark” baroque paintings, for example, might be somewhat easier than masking the overpaint on paintings with a light ground and where the light tones are dominant.

Interestingly, the sandarac of 1972 and 2003 under UV light showed subtle color variations when the resin was solid (yellowish), in solution (bluish white), and as a thin film (milky white with yellow haze), which is apparently related to a change of the crystalline structure of the substance. As can be seen from the samples, fresh varnishes if applied on a non-fluorescent surface can produce fluorescent coatings. In practice, for the masking purposes this might work only when the entire surface has even fluorescence or is not fluorescent at all. Since the color of the

8 I received some information from Some information from several art conservators in the United States and Italy on cases where masking varnish has been used, but I could not find published examples.

9 The ICA is the oldest regional conservation center in the United States. Richard Buck who was founder and the first director of the ICA was passionately interested in historical painting materials and researched historical paintings techniques. Thanks to his input ICA now has a rich collection of historical pigments and resins, which include the E.W. Forbes collection.
Fig. 3. Freshly applied sandarac varnish. Resin of 2003 and 1972.

Fig. 4. Bulk sandarac resin of 2003 and solution in ethanol under normal and UV light.

Fig. 5. Test panel with the “overpaint” under normal light.

Fig. 6. Test panel with the “overpaint” under UV light. The overpaint does not fluoresce and appears as a dark figure.

Fig. 7a. Test panel with freshly applied varnishes under normal light.
Fig. 7b. Test panel with freshly applied varnishes under UV light.

Varnishes, which are more opaque leave a dark “figure” of “overpaint” less visible or invisible.
fluorescence is strongly influenced by another fluorescent layer below, the situation becomes quite different when masking the overpaint, which appears as a black spot on a fluorescent background. Considering this, an ideal masking varnish should be considerably opaque too.

To explore this hypothesis, a test panel was created to simulate the reworked and afterward masked area. A piece of linen canvas from 1999 was prepared in the traditional way and primed with calcium sulfate and rabbit skin glue gesso. A layer of lead white was ground in linseed oil and applied on the surface. The surface of the test panel was divided into 20 squares. Each of the squares was then coated with the irregular stripe of white acrylic paint (Liquitex Titanium White), which did not fluoresce and aimed to simulate conventional overpaint (Figure 5). The overpainted areas showed up as irregular non-fluorescent dark figures under UV light (Figure 6). Tested coatings were then brush applied onto each of the squares (Figure 7a), and the results were examined under UV light (Figure 7b). Results are presented in the following table, where samples are placed in the same order as they appear on the test panel. (Table 1)

Table 1: During this test a number of coating materials were tested for opacity under the UV light. Strongly opaque coatings could produce most efficient masking varnishes. Tested samples are placed in the same order as they appear on a test panel. (Figure 7a, b)

<table>
<thead>
<tr>
<th>Sample and date</th>
<th>Type of Material</th>
<th>State and Condition prior to application</th>
<th>Visually observed color</th>
<th>Fluorescent qualities and opacity under UV light</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Dammar 1972</td>
<td>Terpenoid resin</td>
<td>Bulk resin of 1972</td>
<td>Slightly yellow</td>
<td>Little opaque; Fluoresces bluish milky white color.</td>
</tr>
<tr>
<td>2. Dammar 1957</td>
<td>Terpenoid resin</td>
<td>Bulk resin of 1957</td>
<td>Slightly yellow</td>
<td>Little opaque; Fluoresces bluish milky white color.</td>
</tr>
<tr>
<td>3. Canadian Balsam 1965</td>
<td>Mono-, Sesqui- and Diterpenoid balsam</td>
<td>Solution of 1965</td>
<td>Slightly yellow</td>
<td>Strongly opaque; Fluoresces milky white color with yellow haze.</td>
</tr>
<tr>
<td>4. Stand Oi 2003</td>
<td>Drying oil</td>
<td>Liquid</td>
<td>Slightly yellow</td>
<td>Little opaque; Fluoresces bluish milky white color.</td>
</tr>
<tr>
<td>5. Amber Oil Varnish</td>
<td>Fossil resin + drying oil</td>
<td>Bulk fossil resin Varnish prepared in 2001</td>
<td>Slightly yellow brownish</td>
<td>Fairly opaque; Fluoresces milky yellow/green color.</td>
</tr>
<tr>
<td>7. Gum Arabic 1957</td>
<td>Polyaccharide gum</td>
<td>Bulk gum of 1957</td>
<td>Brown</td>
<td>Little opaque; Fluoresces bluish milky white color.</td>
</tr>
<tr>
<td>9. Mastic 1957</td>
<td>Terpenoid resin</td>
<td>Bulk resin of 1957</td>
<td>Slightly yellow</td>
<td>Strongly opaque; Fluoresces milky white color with bluish haze.</td>
</tr>
<tr>
<td>10. Mastic 1985</td>
<td>Terpenoid resin</td>
<td>Solution of 1985</td>
<td>Slightly yellow</td>
<td>Strongly opaque; Fluoresces milky white color with bluish haze.</td>
</tr>
<tr>
<td>15. Copal Picture Varnish; Lebanc &amp; Bourgeois 1989</td>
<td>Composition not declared</td>
<td>Solution of 1999</td>
<td>Dark brownish with orange hue</td>
<td>Very opaque; Fluoresces Milky brownish orange color. Composition is not declared but the color of the fluorescence is more typical to shellac, than to fossil resins.</td>
</tr>
<tr>
<td>16. Alphacopal (?)</td>
<td>Fossil resin</td>
<td>Bulk resin of 1972</td>
<td>Slightly yellow</td>
<td>Very opaque; Fluoresces milky white color with yellow haze.</td>
</tr>
<tr>
<td>17. Manila copal</td>
<td>Fossil resin</td>
<td>Bulk resin of 1972</td>
<td>Slightly yellow</td>
<td>Little opaque; Fluoresces milky white color with bluish haze.</td>
</tr>
<tr>
<td>19. Alydy Resin</td>
<td>Modified oil</td>
<td>Solution prepared 1999</td>
<td>Slightly yellow</td>
<td>Moderately opaque; Fluoresces milky white color with greyish hue.</td>
</tr>
<tr>
<td>20. Hide Glue</td>
<td>Proteinaceous material</td>
<td>Solution prepared 2003</td>
<td>Brownish yellow</td>
<td>Fairly opaque; Fluoresces intensive milky white color</td>
</tr>
</tbody>
</table>

RESULTS AND DISCUSSION

Experimental testing explored the possibility of formulating fresh fluorescent varnishes, which could be employed to mask retouching and additions or could be used to imitate fluorescent properties of the coatings, which we usually find on aged painted surfaces. All tested samples, except two synthetic varnishes, were found to be fluorescent as bulk pieces, in solution, and as freshly applied films. Certainly, most of the tested resins were naturally aged materials. The increase of the UV luminescence is related to the degradation and particularly to the auto-oxidation of the material and it was expected that aged samples would be fluorescent. It is also very likely that the fluorescence of the amber varnish is an intrinsic quality of the material, and considering the age of the resin apparently amber varnish cannot be non fluorescent. On the other hand, it was interesting to discover that some resins, such as sandarac 2003, rosin 2003, Manila copal 2003, and Canadian Balsam 2003 were strongly fluorescent too and appeared very alike to the aged samples of 1965 and 1972 (Figure 8). This can be explained by the fast degradation and oxidation of the above resins, which influence the augmentation of the fluorescence. However, it was difficult to notice a difference in the fluorescence of the sandarac, rosin, and manila

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10 Amber is a fossil resin found in the deposits dating from Cretaceous period to the Pleistocene (60-70 million years before present). Amber is found in Lithuania, North America, Eastern part of Russia (Kaliningrad), Sicily and several other places worldwide.
copal of 1972 and 2003. This suggests that increasing of the fluorescence probably does not continue indefinitely and stops at some point. It still remains unclear at which point sandarac or rosin becomes fluorescent and most importantly if they can even be non fluorescent. It was quite surprising to discover a strong fluorescence in the popular J.G. Vibert varnishes by Lefranc & Bourgeois (Figure 9). Since the composition of J.G. Vibert varnishes is not specified it is difficult to explain why they have such properties, which are quite atypical of other commonly used fresh synthetic and soft resin varnishes. The tested samples had variable opaqueness under UV light, and only 6 of 20 tested samples were opaque enough to mask completely a non-fluorescent retouching. The following samples test positively: Amber’ Sandarac 1972, 2003; Rosin 1972, 2003; Mastic 1965; Kauri Copal 1972; Copal Picture Varnish of Lefranc & Bourgeois 2001 and Hyde Glue 2003.

During this testing it was discovered that sandarac varnish had the ability to create an impressive pattern of cracks in a short time after drying (Figure 10). Similar crack patterns were observed on two samples: one primed with acrylic, another with oil paint. Interestingly, the cracking of sandarac produced quite a credible pattern, similar to that which can be found on naturally aged paintings.

Summarizing my results, probably the most plausible candidate, for a masking varnish could be sandarac. Other freshly applied fluorescent films, prepared with soft or fossil resins could give analogous results.

CONCLUSIONS

The results of this research prove that masking inpainting is possible and what is more alarming rather simple. It raises the issue of a cautious interpretation of UV fluorescence. Certainly, there are other ways to reveal the actual condition of the artwork and a number of techniques can be employed. Still, masking varnishes can deceptive to a certain degree. This is particularly relevant in non-museum environment where other more sophisticated and more expensive methods are less often applied. The presence of the fluorescent coatings should be viewed cautiously, it should be remembered that certain varnishes, such as amber or sandarac are probably fluorescent all the time. While other resins can become fluorescent and opaque in just a few decades. Attention should be drawn other possible materials that could be employed for masking purposes such as synthetic fluorescent varnishes, inks and fluorescent additives, which are used in security papers, as tracers or for a number of other purposes in various fields, such as medicine, electronics etc. Fluorescent additives presumably could modify solvent or water based coatings enough to make them become perfect masking varnishes. It may sound alarming, but it is very likely that quite a wide range of fluorescent materials can be rather easily employed for fraudulent purposes today and further research on masking techniques is needed.
Tomas Markevicius (1972) received a MA in Fine Arts from the Academy of Fine Arts (VAFA) in Vilnius, Lithuania in 1996. He received a scholarship from the Ministry of Foreign Affairs of Italy and G. Soros Fund and studied the conservation of easel paintings at Istituto per l’Arte e il Restauro Palazzo Spinelli in Florence, where he also worked in the private Florentine studio of N. Olsson and L. Amorosi. He was awarded a postgraduate diploma in 1998 and from 1998 was a Ph. D. student in Art History at the Academy of Fine Arts in Vilnius. In 2000 he was awarded with a Fulbright Fellowship and was a Visiting Researcher at the Intermuseum Conservation Association in Cleveland, Ohio, where from 2002 he has continued as Advanced Fellow supported by the Getty Conservation Institute.

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INTRODUCTION

Forgeries have existed as long as the works of individual famous artists have been especially valued (Columbia Encyclopedia, 2001). Forgeries of paintings are produced with a deceptive purpose (Lindberg, 1988). As far back as in ancient Egypt and Rome it was not unusual to fake the works of masters. During the Middle Ages works of art were primarily valued as religious symbols and consequently the individuality and originality of the artists where not as important (Meyer, 1983). Art forgeries were uncommon during the Middle Ages while religious documents and relics were forged (Norée, 2002). There has been an increase of forgeries since the Renaissance, the western culture valuing originality while repetition is considered wasteful and unproductive (Meyer, 1983). In the 19th century the occurrence of art forgeries increased as it following the industrial revolution became financially possible for the general public to acquire works of art (Rød, 2000).

Forgeries include both the complete production of a painting and the false attribution of a painting to a more renowned artist. The attribution is often made by replacing the artist's signature with the signature of a financially higher valued artist. Frequently, copies, made for purposes of study, are passed as originals by removing the sign “copy and the name of the copier”. Complete productions are made with the purpose of imitating a particular artist’s painting or personal style and signed with that artist’s name.

A SWEDISH PERSPECTIVE ON FORGERIES

The usual motive for forgery is financial gain, but in some instances there are psychological motives such as ambition when the artist does not feel he receives the appreciation he deserves (Cole, 1955). Art fraud concerns both quality and more popular art (Carlsson, 1999).

A SWEDISH PERSPECTIVE ON FORGERIES

The signing of a work of art is regulated by the Law of Copyright, (The Statute Book of Sweden) making it a crime to alter the signature. To alter the signature or to produce a complete forgery is punishable by the Penal Code (The Statute Book of Sweden) 14th Chapter, §5, which concerns the forger. The sale of forgeries is punishable by the Penal Code 14th Chapter, §9. According to The National Council for Crime Prevention legal proceedings were taken in only 3 cases under §5, but in 142 cases under §9 during the years 1997-2002. These statistics include all types of forgery and it was not possible to discriminate how many cases that concern art forgery. Evidently, the statistics demonstrate that forgeries are mainly revealed at the time of sale and the forger himself is seldom prosecuted.

Copiers and artists making deliberate forgeries imitating another artist are comparatively rare, owing to difficulties to dispose of the forgeries, often requiring several middlemen’s hands. It is more common with faked signatures, where a painting’s signature is altered. Forgery of signatures does not demand such artistic skill but is possible for anyone skilled in the art of salesmanship.

ABSTRACT

Art forgeries forfeited by a court order in Sweden are returned to the investigating police department, which decides what is to be done with the paintings. Usually, the forgeries are destroyed, but some regional police departments keep collections open to the public. The police museum in Jönköping is described, a collection of 120 paintings of varying quality, all confiscated at the same occasion. A brief overview of the police museum in Stockholm that holds a large collection of interesting objects related to police activity, including 300 specially selected art forgeries, as well as the museum in Göteborg with ten paintings. The matter of dispute whether art forgeries should be destroyed or saved is discussed.

KEYWORDS

Art forgeries, forfeiture, police museums.

ABSTRAKT


NYCKELORD

Konstförfalskningar, förverkande, polismuseer.
Concerning complete forgeries it is usually difficult to discover the artist who made it. The provenance is hard to follow, but it is a signal of danger indicating possible forgery when a salesman has difficulties to account for previous owners. In Sweden a couple of forgers with regular production have been exposed. At the present time many forgeries originate from St Petersburg, where artists produce custom-made forgeries. Amongst those artists that are frequently forged are the Swedish artists Carl Larsson and Jenny Nyström as well as internationally renowned artists and lately also Russian artists. At present there is an ongoing investigation concerning forged works by the Chilean artist Roberto Matta. Circumstances indicate that the Matta forgeries originate from Iran (personal communication, police Stockholm).

The amount of forgeries in Sweden is hard to estimate. The old tradition of house-to-house peddling in Sweden, has been one of the most frequent methods of putting art forgeries on the market (Bergmark, 1988). Therefore it is probable that many forgeries can be found in ordinary Swedish homes, but the owners are rarely interested in finding out that they have been deceived. At times, an expensive work of art is revealed as a forgery at an attempted sale, but the owner may still refrain from reporting the matter to the police. Investment in art might have been a way of laundering black money and the owner does not want to explain his finances to the police (personal communication, police).

The market of forgeries follows the general state of the market. In the 1970's and 80's the value of paintings increased as well as the number of forgeries, whereas both decreased during the recession of the 90's. The restructure of police departments, for instance in Göteborg, where there no longer is a police officer specialized in art forgeries, may also have contributed to the discovery of fewer forgeries (personal communication, police and auctioneer).

Many forgeries are unveiled when being valued or sold. The disclosure is sometimes done at a pawnshop, but more often at an auctioneer's office at the sale of the estate of a deceased person or after bankruptcy. In most cases these forgeries are reported to the police in order to get the paintings off the market (personal communication, auctioneer). Many forgeries are also discovered in connection with other police investigations (personal communication, fraud squad).

The price range for most art forgeries is between 20,000 and 500,000 Swedish Crowns, water-colour paintings about 25,000 Skr. The turnover is high, forgeries being bought and sold for many millions Skr annually. In 2001 the Stockholm Police Department investigated 38 forged paintings at a market value of at least 5 million Skr. When the turnover of authentic art increases, there is a tendency of an increasing number of forgeries and the amount of money involved (personal communication, Stockholm police department).

The police investigate art that presumably has been manipulated. The investigation typically includes contact with the artist or his relatives, special art experts at the auctioneer's offices, museums and official valuers authorized by the Swedish Chamber of Commerce. In more complicated cases, technical analyses are performed by a conservator (personal communication, police officers and conservator; Steenberg, 1988).

Following examinations and certificates, by history of art and technical experts, the case is submitted to the District Court. If the defence can present a certificate of authenticity issued by a reliable person, a complicated situation arises. The court gives judgement based on all the presented facts and also decides what will happen with the work of art. If the signature is forged, the court can judge the signature to be removed by a conservator; subsequently the painting will be returned to the owner. Complete forgeries are normally judged to be forfeited to prevent future crimes involving the painting (Penal Code, 36th Chapter).

Forfeiture is a legal term signifying that ownership is lost owing to breaching of an agreement. When the District Court judges that a painting should be forfeited, i.e. belongs to the state, the painting is returned to the investigating police department. According to police regulations, most paintings are destroyed, i.e. burnt, but the police may also decide that the painting be preserved at a police-station or a police museum (RPSFS 2000:56, the Code of Statutes of the National Police Board, Chapter 1, §1). If it is to be kept, it shall be registered and numbered to a collection and noted where, in which room, the painting is kept. If the forgery is not destroyed it has to be distinctly marked forgery, usually marked/stamped on the back. In some cases the painting is returned to the owner, providing it has been clearly marked as a forgery (RPSFS 2000:56, Chapter 6).

According to Bo Ossian Lindberg, Professor of Art History at the Åbo Academi, the police in many countries do not have the possibility to keep and exhibit art forgeries (Lindberg, 1988). In some countries the law requires that art forgeries are destroyed in order to protect the national cultural heritage. In other countries, there are no legal grounds for forfeiture so the forgeries continue to circulate on the market (personal communication, police). The well-known van Meegeren scandal illustrates possible problems connected with the destruction of paintings, although established as forgeries. Several art critics still considered one painting, the Disciples, to be an authentic Vermeer and argued to stop the destruction (Lessing, 1983).

In an effort to reduce the difficulties of tracing stolen art an Interpol (ICPO – International Criminal Police Organization) register of all stolen art has been established. The International General Secretariat, of ICPO, continually brings the register up to date by issuing and distributing new CD-ROM. ICOM – the International Council of Museums issues the publication “One Hundred Missing Objects” from different parts of the world. There is no international register of art forgeries. In Stockholm there is a register of the forgeries investigated by the Stockholm police department since the 1970's (personal communication, police).
THE POLICE DEPARTMENT IN JÖNKÖPING STORES A LARGE COLLECTION OF ART FORGERIES

Jönköping is situated in Småland, a province noted for many art forgeries. The old tradition with travelling salesmen, peddlers, was particularly suited for this region with large forests, desolate areas with small farms and small-scale production of goods. This door-to-door sale, with peddlers being only temporary in the area, has facilitated the sale of many different types of forgeries. (Nationalencyklopedin, 1995; Bergmark & Hallström, 1987).

In the late 1970’s the police in Jönköping, by accident, discovered the possession of about 240 paintings when searching a house during the investigation of other crimes. The paintings were taken in safe keeping, as some past criminal action concerning them could not be excluded. The works of art were examined through contacts with artists, their families and different art experts. In roughly half the paintings irregularities were established and these were forfeited according to the sentence of the District Court. The forfeiture included both the frames and genuine works of art with a forged signature, since the whole painting was judged as an attempted fraud. As the court estimated the risk of future fraud, connected with the paintings, to be considerable, they were forfeited in order to prevent crime. The remaining 120 paintings were returned to the owner (the sentenced swindler) since nothing illegal about them was proven.

The convicted, belonged to one of the vagrant families in Jönköping. Vagrants (tattare), who prefer to call themselves travellers, is a group living on the fringe of society and discriminated much the same way as the gypsies. The families have a strong feeling of solidarity although they may live scattered throughout the country. They used to travel around the countryside as peddlers, or involved in other activities of bad repute, such as horse slaughter and begging (Nationalencyklopedin, 1995). Later generations included art fraud in their repertoire, and the families have great knowledge in art. A couple of these families have regularly been represented in the Jönköping area (personal communication, police).

The police department decided to keep the forfeited paintings as a collection for educational purpose, according to the Swedish Code of statutes, (SFS: nr 1974:1066). The paintings vary a lot, being from different ages, of varying quality, some being complete forged productions, some having altered signatures. Totalling 120 paintings it is an unusually large collection of art forgeries.

Many of the paintings with altered signatures are old paintings of good quality. The collection includes several 17th century paintings, for instance one signed PE PA RVBENS in capital letters. Its authenticity is debated; an almost identical, but reversed portrait exists in Windsor Castle. Rubens mainly painted portraits the last years of his life, but he stopped signing his production earlier. This portrait may be authentic, but it is also possible that it was painted by a pupil in his workshop or signed by someone contemporary and familiar with the fact that it was painted by Rubens himself, or it may be a complete forgery produced in the 17th or 18th century. There are several layers of varnish and it has not been established under which layer the signature is. The complete forgery, Veronica’s sudarium (Figure 1) is a 20th century Rembrandt, probably produced in the 1950’s. It was varnished with fast drying varnish, then aged in oven, and finally craquelure and dirt was added to the surface.

There are several forgeries of Bruno Liljefors, both one painting by Henning Hovgaard (Figure 2) now with the fake signature of Bruno Liljefors. Two paintings by Ivan Konstantinovich Aivazovskii, a famous Russian artist, especially renowned for his seascapes, have been signed Axel Nordgren and Pehr Hörberg respectively. Aivazovskii’s painting, the Shipwreck, now signed Axel Nordgren, has a very well painted water surface. There is
another old painting of good quality with the fake signature Axel Nordgren (Figure 4). A self portrait by Awa de Lagerkrantz is resigned Carl Larsson (Figure 5).

Interestingly, in the collection, there are several paintings where the new signature has resulted in a decreased value, the original artist being higher valued. The forger either did not have this knowledge or the forgery was made before the original artist was recognized. The legal status of such a painting presents a dilemma, can it be restored to authenticity? There have also been instances when works of art by famous artists have been consciously resigned with less renowned artist's signatures. There are rumours that, in the turmoil following the Russian revolution and during the Stalin era, stolen art was sold in this way to Western Europe.

In one painting the forger has joined 1/3 from one painting and 2/3 from another by Olle Olsson “Hagalund”, thereby reproducing his characteristic naïvist style of the picturesque shanty-town architecture (Figure 6). There are four forgeries of Ragnar Persson, his expressionistic manner being comparatively easy to forge. The motives of his paintings are often recollections of the industrious people of Småland of his childhood, a very popular motive in the region. The collection also contains forgeries of Harald Wiberg, renowned for technically skilled animal paintings in the forest; the forgeries though are two poor water-colour paintings. Of conspicuously poor quality is a forgery of Gauguin, a very clumsy Venus.
Anders Zorn was very clever technically, and succeeded with technical ease to achieve a depth in the paintings, which makes his manner hard to forge. Unfortunately there is a market also for poor forgeries, since his name is known and famous, among persons with little knowledge of art. To an even greater extent this is true for the paintings of internationally famous artists like Monet that command an even higher price. One of the Monet forgeries (Figure 7a), as well as one Chagall forgery (Figure 7b) in the collection, is conspicuously poor. Some of the forgeries, for instance one Monet, one Van Gogh and one Pissarro, are of somewhat better quality.

The collection also includes two portraits of a girl, attributed to Tolstoy. These are performed in very different styles, probably by different forgers. One painting of uncertain status is signed Fogelberg, this may be a forgery or one of his poorer works that he does not want to acknowledge. The painting however, being of inferior quality, does not command a high price.

THE POLICE MUSEUM IN STOCKHOLM

The collection of art forgeries at the Police Museum in Stockholm is selected for different purposes, for instance that a forgery has an exciting history, is particularly well made or valuable as reference material. The police officers who investigate art forgeries decide which works of art they consider worth keeping in the museum. Apart from facilitating police investigations, the museum serves the purpose of informing and warning the general public of art forgeries. By using the collection as reference material, other forgeries by the same forger may be easier to discover. Often a long time passes before the unveiling of a forgery; therefore it may be necessary to keep a reference collection for a longer period of time.

The collection includes about 300 paintings, water-colour paintings and graphic art, though only a small part is open to the public. The documentation of the collection is extensive, the preliminary investigation, including ownership and reports from different experts, usually also the judgement. Unfortunately, the technical analysis that the reports are based upon are not included. The documentation at the Police Museum in Jönköping is not as extensive.

The art forgeries in the Stockholm museum are 20th century, the oldest dating from the 1920's and 1930's. The collection includes examples of fake signatures, with for instance the signature of Hanna Pauli, as well as copies made for study purposes, where the name of the copier has been removed. The majority of the paintings are complete forgeries. Two Swedish forgers have been unveiled depending on their large production of forgeries of Nils Nilsson Skum and Jenny Nyström. The collection includes forgeries of many famous artists, such as Albin Amelin, Anders Zorn, Lennart Jirlow and Carl Larsson.

THE POLICE MUSEUM IN GÖTEBORG

The Museum in Göteborg, the display open only on advance booking, includes, amongst other objects, about ten art forgeries. One painting is a loan from the Art Museum in Göteborg. It is a still life of flowers by Albert Amelin, similar to the forgery in the Stockholm Police Museum. There is still a debate whether these two paintings are forgeries or authentic.

DISCUSSION

The museums mentioned above are all run by the police. The purposes accounted for are to facilitate the disclosure of forgeries in the future as well as educating the general public, as a means of crime prevention. It is reasonable to assume that forgers may also use the collection as a means of learning how to avoid being revealed. Probably, at present, it is mainly as a collection of curios the museums have their greatest value.

The collection could also be valuable in the education of conservators. The selection of works should be made for the purpose of education, and it is reasonable that the police are guided in their decisions by art experts. Economically, the
museums are costly for the police, expenses for premises, personnel and the preservation of the works of art.

There are also other reasons to keep art forgeries. In some instances, the believed forgery may even prove to be authentic at a later examination. Particularly early forgeries may have a culture-historical value, forgeries may also be of such high artistic value that they ought to be kept. Are forgeries to be kept in regular museums instead of in police museums, since the police lack sufficient funding for this purpose? Following the unveiling of forgery a painting that was once considered a masterpiece is suddenly worthless. How is the value of the forgeries in a collection to be determined? In keeping the forgeries in a museum, there is also a risk of theft and repeated art fraud. Is it possible to insure the forgeries?

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References

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Personal Communication:
In my paper I treat the most complicated question of icon forgeries. In other art, in an ordinary modern case, there is usually an original painting and then the forgery with the forged signature. In old times, for example in the art of the 16th century, we have different kinds of authentic original paintings. For instance, Lucas Cranach signed his works in different ways, depending on if the paintings were painted by himself, painted by his pupils with his own final touch, painted only by his pupils yet approved by him, etc. With icons, the case is still much more complicated. Usually Russian icons were not signed at all. Through the centuries, icons were occasionally restored, overpainted or reconstructed. J.G.Bobrov has made a profound study on the history of the conservation of icons in Russia. We know, for instance, that an old Byzantine icon of the Mother of God Hodigitria in the Monastery of Ascension in Moscow was damaged by fire, and the famous Russian icon painter Dionisi, in the very beginning of the 16th century, reconstructed the icon by re-painting it on the original panel. About Greek conservation of icons, we find examples from Dionysios of Fourn (born about 1670). In his Painter’s Manual, he explains how to repair an old and decayed icon:

“When you want to repair an old and decayed icon, do thus; if the back of it is rotted and worm-eaten, first clean off the rotten parts thoroughly and shake off the dust. Then soak it in glue so that the panel is well impregnated and put it in the sun to dry; only be careful not to let the glue go through the other side and ruin the painting. Next take some sawdust and mix it with glue and fill the holes with it; when it is dry either give it a gesso covering or strengthen it by gluing some cloth on to the back. If the gesso background of the front of the icon is damaged, but the image of the saint remains intact, first scrape away the old gesso from the surrounding area of the background, and then soak the area in glue, as before, and put on the sawdust; lay fresh gesso on it, apply gold and colours to touch it up and then varnish it and it will be renovated.”

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**ABSTRACT**

There are fake icons painted in any style of whatever school or time. In a traditional icon usually a piece of cloth, so called pavoloka, was glued on the panel before giving the gesso layer. The forger can paint a traditional icon painting on canvas and creates the cracks in it by passing the loose canvas over sharp edges. After creating “old cracks” the forger glues the painting on an old panel. Still, in the field of icon forgeries there have been numerous misunderstandings: there are icons which imitate the old ones and which are not forgeries. These are the so called “podstarinynia” icons which were produced in great numbers in old-believers’ workshops all over Russia. In the forgery of icons there is an unique technique characteristic only for icons: to transform icons from 18th and 19th centuries resemble medieval paintings with worn-out golden backrounds by carving away the coloured backround down to the gesso.

**KEYWORDS**

Russian-Orthodox, icon, pavoloka - cloth, old-believers

**SUOMEKSI**

Ikonien väärentäminen suuressa mittakaavassa alkaa samaan aikaan 1900-luvulla kun ikonien kerrannäisestä tuli muodikasta. Ikonen väärennettiin samalla lailla kuin muutakin puulemaattua, otettiin pala vanhaa puuta huonekalusta tai rakennustasiasta ja maalattiin sille. Ikoniväärentäjällä on vielä sellainen erityinen erityys, että perinteellisessä teknikassa puun päälle liimattiin ensin kankaalle, luoda sitten haluamansa krakelluun aiheuttamalla maalauksen halkemaa ensin taittamalla pelkää kangasta ja sitten vasta liimata maalaus vanhalle laudalle. Ikonen väärentämisessä on piirre jota ei tavata missään muussa taiteessa: 1700, 1800-l ikonien muuntaminen ”keskiaikaiseksi” veistämällä pois värillä maalattu tausta valkeaan pohjustukseen saakka. Kun 1900-l alussa onnistuttiin poistamaan päälämälaukset ja saamaan helettä keskiaikaiset kuvat esiin, usein vesiliukoinen kallattu tausta oli niin kärkänty, että jäljellä oli vain pohjustus. Siksi ihmisten mieliö syöpää, että vanhan ikonin tausta on kulunut poistettua, ja niinpä hahmon aarivivaa myöten leikattiin maalaus pois. Onko ikoneita olut toisiaan niin paljon, että ihmisten mielipiteen vaikuttaa kohdella näin pyhää taideteoksia? Oma lukuna on vanhauskoisten lahon vanhan ikonin kappale säilyttettiin upottamalla se uuteen laudalle.

**AVAINSANAT**

Ortodoksinen, ikoni, pavoloka-kangas, vanhauskoisten laho
In the field of icon forgeries, there have been numerous misunderstandings. Painters with pure religious hearts have tried to copy old icons for pious use in order to be true to tradition, and it was not their intention if later the icons have been found on commercial markets with incorrect dates. These are the so called ‘podstarinnyi’ icons which were produced in great numbers in Old-Believer’s workshops all over Russia but mostly around Moscow and in Mstera or Palekh. There are two kinds of icons among them: completely newly made and previously restored icons in which some ancient fragments were still preserved.

Religious Russian icon painters usually did not sign their works. The icons were their prayers to praise the Lord, and the name of the author was not important. What was important was that it was a picture of Christ, etc. This fact gives free hands for forgers and those who sell them to date an icon executed in the style and tradition of the 17th century to the 17th century although it had been painted, perhaps in the beginning of the 20th century, in the icon painting school in Borisovka in 1902. Sometimes it is really difficult to determine if an old looking icon has been painted for religious or commercial motives. The same can be said about the conservation of icons, too. There are deceptive or fake icons painted in any style of whatever school or time. They can be completely newly made with artificial aging or made on the base of an old cracked ground or on a new or old panel. The suspicion of forgery has sometimes made people blind and consider very religious icons to be fakes which were not such. One must keep in mind the deep veneration of icons. If there was even a fragment of a holy icon remaining, it could be fitted into a new panel by Old-Believers. Then the icon was repainted. This was not forgery, this was conservation of holy images (Figures 1 and 2). It is difficult to understand that at the same time, when on the one hand icons were considered very holy and were very deeply venerated, on the other hand, the icon painters and icon restorers considered themselves to be free to treat and intervene on them as they wanted. Icons were not considered works of art in the meaning we understand the word: they were not signed in Russia. The large amount of icons perhaps also influenced the free way in which they were renovated. The painting itself was not appreciated and could be even covered with an oklad, a metal cover which leaves exposed the head, hand and feet of the persons depicted on icon. Prince Trubetskoï writes in his book Icons: Theology in Color:

“We looked at the icon without seeing it......At bottom, imprisoning the icon in metal was unconscious iconoclasm, a denial of the painting itself...How would we feel if we saw a Raphael or Botticelli Madonna encased in gold and studded with precious stones? The outrage perpetrated on the great works of old-Russian icon painting is as much of a crime.”

The forgery of icons goes hand in hand with the beginning of icon collections. The first serious collections got started in the 19th century but the real production of professional forgeries began only in the beginning of the 20th century, when the restorers had succeeded in taking away the later overpaintings which, as a rule, covered the underlying masterpieces. For example in 1904, the Troitse-Sergiev Lavra entrusted the icons of the Cathedral of the Holy Trinity to the workshop of V.P. Gurjanov, and perhaps the most famous Russian icon, Andrej Rublev’s Holy Trinity, was found among the icons of that cathedral. After the restoration, the Holy Trinity returned to its original place and was covered with the riza again. If people had considered icons to be

![Fig. 1](St.John the Baptist, 31.2 cm x 26.5 cm. The Joensuu Art Museum. Photo: Petter Martiskainen)

![Fig. 2](St.John the Baptist, The Joensuu Art Museum, x-ray. A fragment of old icon has been fitted into a new panel, probably by old-believers. Photo: Petter Martiskainen)
some blackened cult objects which were used in churches, they now had to change their views of how an original old icon was supposed to look and that they could be most beautiful masterpieces also from an art historical point of view. There was no longer any need to make icons which were damaged and blackened as one had in the middle of the nineteenth century. If a collector gave a darkened icon to a good restorer, he expected it to be returned with bright colours. Restorers of the early 20th century cleaned a tremendous amount of icons. From the very beginning of the 20th century, we must make a distinction between scientific restoration done in the museums and commercial restoration. Sometimes the restoration was barbaric. Having removed most of the original paint, they had to repaint them. In many icons there are difficulties to say how much of the paint is original.

There are numerous fake icons which were made in the same way as any other forged panel painting; you take a piece of old panel, a piece of furniture, a detail from construction of old building, etc., and execute a painting “in old style” on it. If the painting was completed with earth pigments and made from local minerals, which have been used for centuries, one is not able to reveal a forgery on the basis of pigment analysis. But there is a certain element in traditional icon painting which must be especially underlined. In a traditional icon, there is usually a piece of cloth, the so-called ‘pavoloka’, which was glued on the panel before applying the gesso layer. It is a kind of cushioning, preventing the paint layer from cracking in the changes of relative humidity. For a forger, that fact gives an ideal opportunity to create wonderful cracks in the paint layer, cracks which reveal the icon to be a very old one. The forger paints a traditional icon painting on canvas and creates the cracks on it by passing the loose canvas over sharp edges (for instance on a table or door), moulding the canvas to his wishes. After creating the cracks, the forger glues the painting on an old panel. If needed, one can add some confusing details on it to finish the work. This method was used before and also today. We have a description of this method written by D.A. Rovinski, in the year 1903:

“A piece of canvas is stretched over a board, nailed down and covered with ground. Then one paints an icon on this ground just as one would on wood. The canvas is removed from the board, bent in one’s hands; entire pieces of ground are gouged out, smoked, soiled – in a word, everything to make the picture look old. Afterwards the canvas is glued onto a board and the painting restored, that is, the blistered spots closed up, just as one would restore an authentic icon”.

Collecting icons became a popular hobby and excellent investment. In Russia Abroad, A Cultural History of the Russian Emigration, 1919-1939. Mark Ráev briefly comments on the trade of old icons, on public sales, private collectors and on the reception of icons by the Western public. It is interesting to note that Ráev actually criticises émigrés who regarded icons as the epitome of the Russian “soul”. Vladimir Tétrjatnikov’s book, “Icons & Fakes, notes on the George R. Hann Collection ” (1981) was probably the start of the decline in the icon market. His claim that most of the icons in the collection were fakes had a disastrous effect. The collectors who had believed they possessed original medieval icon painting masterpieces became very suspicious towards all the icons. Kari Kottavaara writes in his Progeny of the Icon:

“In 1987 J.G. Bobrov published “The History of the Restoration of Old-Russian Painting”, Istórija restavrácii drevnerússkoj zivopisi. Also V.V. Tétrjatnikov, a former employee of the Tretyakov Gallery who now resides in New York, has contributed to our knowledge of fakes through his work of falsified icons. Yet in contrast to Bobrov whose discussion on the diverse policies of restoration is dispassionate, Tétrjatnikov’s approach to the same questions betrays a sensationalist mentality.”

After Tétrjatnikov had published his sensationalist work, some of the collections were sold or broken up and prices dropped dramatically. Of course in those collections, there have been also very good genuine icons, too. In his book on the Hann Collection, Tétrjatnikov had proved that the patina of many icons was just a certain colour of paint the icons had been covered with to imitate a patina. As Tétrjatnikov points out, the forgers usually imitated the methods of restoration common in their time for the simple reason that they wanted the public to think that they had been restored. About such restoration additions we have also the description by Rovinski, too, mentioned before. According to Tétrjatnikov the forgers could create “old cracks” by leaving remains of the ground of an 18th century icon and the new ground would exactly follow the pattern of the cracks in the original ground, sandwiched between the board and the new layer.

I have entertained myself by trying to do some fakes, just for fun, as an experiment. I succeeded in creating beautiful “old cracks” just by poorly preparing the board; either spreading the gesso in thicker layers (it is usually applied in very thin layers), or by heating the gesso in between applying the layers so that the proportion of glue in the layers varies – sometimes it is weaker, sometimes harder.

When one studies icon conservation in Russia, one is supposed to do copies of icons during his studies, too, in order to understand the icon painting technique. Then there are people, who do the copies, not only to study the technique but actually create a forgery, and still, there are people who are interested in buying copies as works of art in their own right. The actual living tradition of icon painting is not supposed to be copying, although for the non-Orthodox, icon painting in general seems to be such.

However the word “copy” has a different meaning in Russian icon painting than in Western European art. Although every Russian church contains a “copy” of the icon of the Vladimir Mother of God painted in the twelfth century, not one is an exact reproduction. Icon painters were exclusively interested in preserving the same relationship between the faces, the hands and the feet, but not in imitating the artistic impact of the work as a whole. Juri Bobrov has written in an article “A Copy and Its Perception”:
During the early 17th century Muscovian icon painters (among them Prokopij Cirin) created a new, refined and ornamental style, “the Stroganov style”. The Stroganov style had enjoyed lasting popularity, and above all they were cherished by the Old-Believers. This became obvious in the 1980s when they prepared an exhibition of the Stroganov style icons in the Russian Museum in Leningrad. The Stroganov school icons which had been, with great confidence, dated to the 17th century were brought into question: were they painted then or perhaps much later? G.N.Popova and A.T.Dednenkov have written an article on this problem, and the most well known example they bring out is a certain icon of St. John the Soldier. This work of art, which without question had been dated to the 17th century and considered to be painted by Prokopij Cirin, turned out, after technical analysis, to be painted in the 19th century.

Since the 17th century the Western influence in the icon painting techniques (oil instead of egg tempera) and style of painting had grown more and more powerful. But there were those who could not approve the Western influence. For example, the editors of the 1869 edition of Stróganov Manual declared: “The aim of the present issue is to make artists and icon painters familiar with one of the most outstanding monuments of national Russian culture and further to contribute to a correction of the present, unsatisfactory icon painting, and as much as possible, a rebirth of the Stroganov style of late sixteenth and early seventeenth centuries.” By 1890, many antiquarians continued to preoccupy themselves with the rebirth of “authentic” religious art. Their society also published pamphlets about ecclesiastical art. Since 1883, the St. Aleksandr Nevskij Brotherhood in Vladimir had run a school for icon painters in Chóluj. In the summer of 1902, “The Most Highly Bestowed Committee for guardianship of Russian Icon Painting” had founded a school in the villages of Mstjora, Palekh and Borisovka.

When did the forgers start to create fakes resembling medieval bright icons as those of the 15th century? It is only possible to say, that there are as many copies as copiers.....There could be several main reasons for copying, such as the studying of a masterpiece, skill training, an artistic reconstruction of the image, facsimile documentation, deception and so on. The first one should be more technological, the others more artistic or illusionistic.

Another traditional trick, Tetériotnikov continues, employed by these “old masters” is the use of an old board with original ground. Only the difficulty and expense of obtaining original, old wood explains of “fifteenth” century paintings on eighteenth and early nineteenth century boards. “This is a twentieth century icon painted on an eighteenth century panel in the style of the fifteenth century.” Tetériotnikov’s conclusion is that it must be a forgery. In some of these cases Tetériotnikov may be right but, in general, I strongly disagree with him.

If the panel was in good condition, it could be re-used many times for religious purposes without any intention of creating fakes. We have an eye-witness account of this is being done even in our own time. Presumably, the most well known iconographer of the present day is the Russian Archimandrite Zinon, who, in the 1980’s, lived in the Cave monastery in Petcher, by Pskov. Our Finnish Archimandrite Arseni, the Vice-leader of the Valamo Monastery and an iconographer himself, visited him and saw how Zinon planed away the paintings from several 19th century icons and reused the good dry panels for his own purposes. When Fr. Arseni asked why he destroyed the 19th century icons, he answered that there are so many of them and that they were in bad condition. According to Fr. Arseni, all of them had only some minor damage which in any other country would have been restored. Fr. Zinon, a great admirer of the “ancient Byzantine style”, executed then his own paintings on those panels in the same style. Here we see a purely religious attitude to an icon: the icon is valuable because of what it represents, hopefully in the most traditional way, Christ or the Mother of God, etc... Its value does not depend of its age. Here, the motivation of Archimandrite Zinon is all but commercial.

Tetériotnikov writes, “Another old trick is to divide pieces of original, old ground among several new works, using them like pieces of a mosaic. It is important to note that identical paint can be seen on the surface of the original ground and the restored portion.” Also here I cannot helping commenting against Tetériotnikov. We must keep in mind how holy sanctified and blessed icons were considered. Of course, there were different honourable ways of disposing of the broken icons: to burn them, to put them in the river with a burning candle on them, to bury them in a little coffin under the church es. But there was also a method to conserve the holy pieces of icons by inserting the rest of the old icon into the new panel. This was practiced especially by so called Old-Believers and when we meet such an icon it is quite possible that the motives were very religious, and not at all commercial.

As mentioned before, Tetériotnikov writes that several “masterpieces” of the 15th and 16th centuries are painted on panels from the 18th through the 19th centuries. Actually, I am convinced, that if the Hann collection icons could be studied dendrochronologically, one could add many serious arguments which could clarify allegations presented by Tetériotnikov. Tetériotnikov writes:

“Russian icon collectors began to require a white background only as a result of the enthusiasm surrounding...
French painting at the end of the nineteenth century and the beginning of the twentieth century. In other words it was the school of Montmartre which transformed the white ground on canvas into a color used in painting. Obliging restorers began to clean icons of their golden or colored backgrounds, so that they would conform to the latest fashion in color.

I would like to add to that suggestion that, as mentioned before, it was only in the beginning of the 20th century the cleaning techniques in restoration had been developed to the point that it was “possible to restore the icons to their original glory”. It is a fact that conservation methods are developing so fast that every single generation of restorers regrets the damage done by the previous generation of restorers. That is also true with the first “discoveries” in the beginning of the century. From our point of view, very rough methods were used and many such details which could be conserved today vanished during the interventions. For instance, water soluble gilded backgrounds in the medieval icons, such as in the famous Trinity by Andrej Rublev, were mostly demolished and the illusion was created of a medieval icon painted with a white background, which actually was the gesso layer now become visible. What followed was a destructive cleaning of icons which was all the more catastrophic because restorers in that period did not have the organically mild solvents which we have today. The forgers made medieval icons by carving off the coloured background down to the gesso, not in order to resemble French paintings to my mind, but the image of medieval icons in the people’s mind. Sometimes the cutting of the background was made in a very brutal way (Figure 3), not very carefully following the outlines of the composition. Sometimes the person executing the carving was more careful (Figure 4). On the icons restored in this manner, figures will stand out in high relief against the depressed background, since a layer of paint has been removed. If the cleaning is not performed with particular care, traces of the original gold or painted background can be seen around the contours of the figures. The icons of the Archangels Michael and Gabriel are described by Tetériatnikov: “The boards are from the 18th or early 19th centuries. At some point the background around the archangels was blue in colour, but it has been cleaned down to the chalk ground. This is a typical method of falsification which was popular in the early 20th century.” But it would be too easy if it was all the truth with the icons with white backgrounds. I must quote Tetériatnikov again:

“If we examine the icons of the Hann Collection … we note that in an entire series of large icons the central figures are not raised from the white chalk ground. What does this mean? This can only signify that these figures were painted directly on the chalk ground. In other words, there never was a painted or gilt background on these icons.”

In other words, they were from the very beginning made by forgers; an icon painter would not create such pictures. And also here we have a very complicated situation. If there have been very religious persons who have used old panels not for commercial reasons, also carving the coloured background down to the chalk gesso was practised, not only by forgers, but also by the most religious Orthodox restorers. I have seen that done with my own eyes in the 1970’s and early 1980’s and the argument was that the colour of the background did not fit the painting and that it would be much easier to concentrate on prayer in front of the icon.

Fig. 3

Fig. 4
with a peaceful chalk gesso background. Although the
restorer venerated the icon, he did not feel anything doubt-
ful in this intervention; he considered it his duty to give to
the icon as pious an outlook as it was possible (Figure 5).

The most elementary method of determining if a painting be
genuine is to test the hardness and solubility of the colors,
since any type of paint requires decades to dry completely.
This problem is well known to forgers. As far as Russian
icons are concerned, the paint which is several centuries
old becomes hard as ivory.

We must keep in mind that the tradition of icon painting con-
tinued its religious life in the church. Especially the sect of
Old Believers were very true to the traditional methods of
icon painting. Not only forgers but artists who created orig-
inal, 19th century works, executed them with the methods of
their predecessors: when the icon painters created their
icons, the motives were purely religious, they were not
painting fakes. In his book, Tetériatnikov addresses this fact:

"One problem which continues to disturb me, howev-
er, is that several of the icons in the Hann Collection
clearly could not have been made for the purpose of
deceiving buyers......these objects could not have been
made as fakes. They only became fakes several
decades later, when somebody sold them as genuine
fifteenth and sixteenth century icons......it is often dif-
ficult to make a clear distinction between an unsuccess-
ful forgery and a successful imitation of a new
icon in the medieval style...."

and about Our Lady Smolenskaya:

"This is a standard painting of the late nineteenth cen-
tury, executed in the traditional style of the seven-
teenth century. Icons such as this are generally not
fakes painted with the intent to deceive, but were fre-
quently commissioned by Old-Believers for devotion
and prayer at home..."

In the Orthodox Church in the 19th century, the main stream
of icons were paintings fashionably copied from the Western
paintings by Guido Reni, Sebastiano del Piombo, Raphael
etc., although at the same time, strictly traditional icons
were also painted. K. Kotkavaara, in his Progeny of the Icon,
writes about Old-Believer commissioners: "We know that
the nineteenth-century and early-twentieth-century, Old-
Believers adored "dark and lifeless" hues which they asso-
ciated with "Rublevian Manner" and "Byzantine Manner".
To them an air of austerity and remoteness was really a
great merit."

In conclusion, it can only be said that there is still much to
study in the field of icon forgery. We need to be able to
identify them as forgeries, or focus on possible efforts to
conserve tradition.

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References

Filatov,V.V., Russkaja stankovaja tempernaja zivopis, "Iskusstvo", Moscow,1961.
Pinder, Hilary, Conservation of Icons in Britain and the influence of the art market, Icon conservation in Europe, Frankfurt am Main 1999, The Valamo Art Conservation Institute, supported by the European Commission as a part of The Raphael Programme, 1999.
Rovinski,D.A. Obozrenie ikonopisaniya v Rossii do konca XVIIogo veka.St.Petersburg ,1903
Tetériatnikov, Vladimir, Icons & Fakes, Notes on the George Hann Collection, a three volume xerocopied issue distributed by the Teteriatnikov Art Expertise (1981 ).
ABSTRACT

Technical investigations at SVK (Studio of the Western Sweden Conservators) show that the dates of many southern Swedish painted wall-hangings, “bonader”, from the 18-19th century have been manipulated. This article describes two examples of manipulated and falsified painted wall hangings. One is quite obvious, the other is more difficult to reveal by the naked eye. With technical equipment however, it is possible to see the manipulation of the dates. Therefore, it is argued that the research by art historians and ethnologists should be supplemented by technical analysis in order to correctly date the artist’s active period. The article ends with a short ethical discussion of how to handle falsifications in the conservation of this kind of objects.

KEYWORDS


BACKGROUND – PAINTED WALL HANGINGS FROM SOUTHERN SWEDEN.

During the 18th century painted interior decoration became popular amongst Swedish peasants. Over the years two different traditions developed within this style of painting. The pictures were either painted directly on the wood inside the house or on detachable canvas support, which was then mounted on the walls and ceilings of the cottage. (Jacobsson, 1983). The tradition, where the pictures were initially painted on the wall and later on paper, is known mainly from the regions of Dalarna and Hälsingland, while the other tradition is known from the southern part of Sweden. Both traditions were influenced by medieval gothic mural paintings and woven tapestries in the churches. Although the motifs are dominated by biblical scenes, motifs showing the life of the people also exist. The biblical scenes depict stories from both the Old and New Testaments, while the profane pictures show wedding processions, craft- and hunting scenes. Quotations from the bible were often painted on the wall hangings along with the date of the origin.

The painted wall hangings of southern Sweden had there era of greatness from the middle of the 18th to the middle of the 19th century. Geographically the painted wall hangings can be found from Skåne and Blekinge in the south, via Småländ and Halland, with the southern part of Västergötland as a northerly border. In this region the houses were normally low, constructed of timber and open to the roof. The external walls were seldom more than 1.5 to 1.8 meters high. This limited space affected the size as well as the format of the wall hangings. Thus they were individually shaped to fit walls and ceilings.

Normally the wall hangings were painted with glue paint on reused textiles sewn together and nailed to the wall.

It was during feasts such as weddings, baptisms and Christmas that the farmer had his house decorated, literally from floor to ceiling, with wall hangings. The aim was to make the otherwise rather draughty and gloomy cottage warm and cosy1. Often the painted wall hangings were wedding presents that later could be inherited. Although those who first could afford these wall decorations were naturally the wealthy farmers, around the beginning of the 19th century painted wall hangings also became common amongst the less well off. Towards the middle of the 19th century however they had become cheap-line articles. From 1850 to 1870 production of painted wall hangings changed, with the motifs now printed with stencils on industrially produced paper – the art had become secondary. The popularity of the wall hangings soon came to an end, with German printed illustrations and printed wallpaper coming into fashion (Bringéus, 1992).

During the period from late 19th to early 20th century, Sweden was influenced by the national romanticism, and the old wall hangings became popular again. This time it was mainly the cultural elite of the time that developed a craze for the naive peasant art, for anything that was traditionally Swedish. This was in line with the thinking of the time – Sweden was to be Swedish and the roots and culture of the nation were to be understood and clarified. It became more and more important to have a common history and cultural heritage. During the last part of the 19th century a market for antique traditional peasant objects was established. A contributing factor for this was the collecting of artefacts for different homesteads.

1 The Swedish word for cosy is “ombonad” which literally means surrounded by wall hangings i.e. “bonader” (Bringéus, 1987).
museums. The older the objects were, including wall hangings, the more valuable they were considered to be. The older wall hangings made on canvas were generally considered more genuine than those made on paper, since the latter were produced using less traditional techniques.

The strong interest for the cultural heritage resulted in the birth of national museums as well as local homestead museums. Some examples are the establishment of the Nordic Museum and Skansen in Stockholm and Slottskogen in Göteborg. Several houses, all belonging to the 18th to 19th century, but from different parts of Sweden, like Småland, Halland and Dalsland, were moved to Slottskogen. The cottage from Småland was erected in 1904 due to the efforts of Abraham Sjögren, a private collector and member of the Guild of Småland. Sjögren had collected wall hangings and peasant artefacts from Småland from the late 1870's. Despite its size the collection was not big enough to fill the whole cottage and additional objects with connection to Småland had to be collected (Hernroth, 1974). Most of the wall hangings that belong to the Guild of Småland were collected during the period 1905 to 1911 by August Jonsson from Saxhult in Småland. These wall hangings became expensive for the Guild because of the booming market for peasant antiquities.

The increased interest and the market that had developed for peasant art were the reasons behind the frequently manipulated dates of the wall hangings. A trained eye can many times make out the distortion relatively easy. It may even be revealed by the mere shape of the figure (Bringēus, 1982, 1990). Often the over-painting has darkened with time, which also makes it more apparent. In addition, initials which show the original owner of the wall hanging are sometimes changed. This type of change though, was carried out while the wall hanging was still in use, for example when a wall hanging was given as a wedding present or inherited. This therefore has nothing to do with manipulation for economic profit, but is rather a part of the history of the object. It is possible to think that also the dates of a wall hanging could have been changed when handed over to a new owner, but in that case the wall hanging should be older than the dating of it. The wall hangings mentioned in this article are all younger than indicated by their dates.

**PROBLEMS AND OBJECTIVES**

Until now research of Swedish painted wall hangings has only been undertaken by ethnologists and art historians. The conservator’s knowledge of material and the possibility to technically investigate an object have therefore not been used to their full extent. Dating can easily be wrong and facts can be lost. Another problem is how to deal with dating manipulation. Should an over-painted date be removed or not? The manipulation of the date can be seen as a part of the history of the object, not the history from when it was used, but from the history of the object as an antiquity (that is older than 100 years). Manipulation can also be seen as an addition that distorts the original and affects the authenticity of the object. Depending on the angle from which you consider the object there will be reasons to either keep or remove the over-painting. Ethnologists and conservators consider all the phases in the history of an object as interesting and important, while art historians emphasize the importance of the original. A third problem with manipulated dates is that some groups of professionals, such as antique dealers, may profit from it. In such cases manipulation becomes forgery and is a criminal act.

This article will present two examples of manipulated dates. In one case the distortion is obvious, while the manipulation in the other case is not immediately evident. One purpose is to show the importance of collaboration between different professions, so that information gained through the work of the conservator can be added to the knowledge produced by art historians and ethnologists. Another aim is to illustrate the ethical problem concerning the handling and conservation of painted wall hangings, where dates are falsified.

**DISTORTION OR FALSIFICATION – TWO EXAMPLES OF REVEALED MANIPULATION**

The first example of a distorted or even falsified wall hanging belongs to the Guild of Småland, Slottskogen, Göteborg. The wall hanging was made by Per Svensson from Duvhult (1787-1862). It represents the teaching of Christ and the wise men in the burning furnace (see figure 1). The wall hanging has a dating of 1803 written on it and comes from Saxhult in southern Unnaryd in Småland. The motif is relatively plain and the figures are rather carelessly made compared to other wall hangings attributed to Per Svensson.

As a conservator suspicions about the correctness of the dates arise, partly because the over-painting and the relief of the original date is visible, and partly because the yellow paint appears synthetic and should not exist on a wall hanging from that period. When the wall hanging was taken down, to be conserved during 2000, it could be seen that the date had been questioned before. A typewritten label glued to the back of the wall hanging said that the wall hanging had been at the police force in 1974 for its date to be checked (see figure 2). According to Ingemar Edström, caretaker of the cottage of the Guild of Småland, a former caretaker (Per Bladh) used to work at the police force. This would explain why the wall hanging was taken to the police to certify its authenticity.

What is it that makes the date of the wall hanging so obviously wrong? The conservator’s suspicions have already been mentioned, but how would an art historian and an ethnologist see that the date on the wall hanging is incorrect. They would probably become sceptical because of the atypical way in which the wall hanging is painted. The figurative motifs and all of the decorations are very plain, indicating a wall hanging of Per Svensson with a later date. The characters are also relatively badly executed, indicating that the artist is very old, possibly with bad sight or even with shaky hands. The art historian and the ethnologist also know when Per Svensson was active as a painter. It is unbelievable that he was active in 1803, when he was only 16 years old. According to Elisabeth Berglin, PhD in ethnology and an expert on Johannes Nilsson’s wall hangings, Per Svensson starts as an apprentice to Johannes Nilsson about 1808. He could have painted wall hangings before that, but unlikely before 1805 (Berlin, 2000). Pablo Viking-Faria, curator at the Museum in Varberg and a specialist in agricultural history, states that Per Svensson painted wall hangings during the period between 1810 and
1860. This assumption is based on studies of the Strömbom collection² (Viking-Faria, 2001).

The wall hanging was thoroughly examined and the yellow paint was sampled. An examination with a Scanning Electrical Microscope (SEM) showed that the pigment is a kind of chrome yellow (see figure 3). Chrome yellow was not sold on the market until between 1815 and 1820. (R.D. Harley, 1982). Using infrared photography the original date, 1853, could be seen (Figure 4). The original date of the painting was indicated on the label on the back and was also visible using raking light. The style of the painting and material used is in accordance with the original date.

² The Strömbom collection contains 125 numbers of wall hangings from southern Sweden. Nils Strömbom was one of the first who, during the 1930’s, started to take an interest in the painted wall hangings, their history, iconography and above all their attribution. The collection is now in the museum of Varberg in Halland, Sweden.
The second example concerns a less obvious dating manipulation. This wall hanging was also painted by Per Svensson, was originally from Saxhult in Småland and is now the property of the Guild of Småland. It is a very typical Svensson wall hanging and it portrays the three wise men worshipping Jesus and the five wise and the five foolish virgins (Figure 5). The complete surface is more or less filled with characters and details. According to its date, 1805, the wall hanging is from his very early period. This is indicated not only by the date but also by the style and materials used.

If the wall hanging was from 1805 it would be one of the very first made by Per Svensson and thereby somewhat of a sensation. At first sight no over-painting is evident, but with a closer examination and a trained eye it is possible to spot that the third figure is over-painted, since it is somewhat darker. Infrared photography shows that the original date of the wall hanging is 1845 (Figure 6).

As shown in the first case manipulated dating can be unveiled if the date is not in accordance with the history or style of the object or with the materials used. In the second case presented here there was no suspicion of faked dating. Despite that, a technical examination showed that the dating was not correct. More of the wall hangings from the early period of Per Svensson have been examined at SVK and was found incorrectly dated. Could this even imply that Per Svensson started to paint wall hangings somewhat later than 1805-1808, which is a period favoured by the art historians?

Over the last ten years SVK has conserved most of the 50 wall hangings belonging to the Guild of Småland and found that more than 12 % have manipulated dates. It is rather unusual that so many wall hangings from one collection are manipulated, creating the suspicion that someone close to the Guild distorted or faked the dates. Could it be August Jonsson, who sold most of the wall hangings to the Guild, who changed the dates with the aim of making some more money from them? The fact that most of the manipulated wall hangings came from Saxhult, where Jonsson lived and also purchased many wall hangings, supports this theory.

**DISCUSSION**

The aim of this article is not to investigate who is guilty or not of falsification, but to shed some light on the problems of dating and to point out the importance of having conservators, with their more scientific background, taking part in research concerning painted wall hangings. Cooperation between different disciplines is necessary if the research is to be as factual as possible. Otherwise there is always a risk that some aspects are forgotten, are not considered important or are overlooked. It is vital to realise that stated facts can even turn out to be wrong if there is a lack of coopera-
tion. Hopefully the future will see a change in the direction of research in this field.

How are we then to handle this type of manipulated dating and what do we do when conserving this kind of object? Should the over-painting be removed or only documented and filed? In the case when the dates have been changed for over a hundred years, is it then a part of the history of the object or should it be looked upon as a falsification and treated jurisdictionally? Misleading manipulation with the intent to increase the economical value of an object can be seen as falsification, can it not? The problems may arise if the wall hanging in the future is to be sold. The owner may not necessarily be interested in giving a buyer all the facts about the original dating. The Guild of Småland or other homestead museums or museums in general are unlikely to sell their objects, but what if the wall hanging belongs to a private person or an antique dealer?

The answers to these questions are neither simple nor unambiguous and would probably vary from which point of view you look upon the object. From the viewpoint of the conservator and the ethnologist, whatever happened to an object after it was taken out of use is also part of its history. To remove later additions can therefore be looked upon as unethical. So despite not belonging to the original painting the manipulated date should be left unchanged, since otherwise part of the context of the objects will be lost. It is important though that all information about additions and changes are thoroughly documented. The art historian and the restorer are more inclined to see the original as the most important however and would prefer that the over-painting be removed. Also from the perspective of jurisdiction a falsification should be removed so that no one in the future will be mislead again. A label with information on the back of the wall hanging, as in the first case presented here, is not enough to stop future crimes.

My personal opinion is that if an object is found to be falsified and furthermore this has been well documented, it gives an extra dimension to the object and its history. This in turn ought to make it more interesting and spectacular, which may influence the price in a positive way. These factors support the retention of manipulated dates, as long as all additions are recorded and that the documentation follows the object wherever it goes.

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References


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ABSTRACT

The United States Holocaust Memorial Museum in Washington D.C., is dedicated to the preservation of the memory of the victims and the study of the historical period. Even before the Museum opened, a small group of so-called historians and others denied the basic facts of the Holocaust. Therefore the Museum has to be scrupulous in applying rigorous standards to test the authenticity of its artifacts. Donations of artifacts come primarily from survivors and liberators. Occasionally collectors offer the Museum artifacts without provenance. In order to protect the Museum, a protocol for examining these artifacts was developed.

KEYWORDS
Forgery, prisoner uniform, Star of David, Holocaust.

INTRODUCTION

Most of the artifacts in our collection come from donors, the majority of whom are survivors of the Holocaust and liberators who fought in the armies that ended the nightmare. Collectors of Nazi-era memorabilia also contributed items, but unfortunately some of their artifacts lack provenance. These artifacts can only be traced to a dealer or an auction house, or more recently to an online trading site. Over the last ten years several such donations were offered to the museum. Researching the artifacts that lack provenance led us to a surprising discovery: there now exists a cottage industry in several countries that turn out large numbers of Star of David badges, armbands of all kinds and various pieces of striped prisoner uniforms.

Most of the textile artifacts connected with the Holocaust fall in four categories: Star of David badges used to identify Jews in occupied territories, armbands used in ghettos and camps, prisoner identification badges and prisoner uniforms used in Nazi concentration camps.

Before we attempt to identify forgeries, we must understand the historical context of the originals.

STAR OF DAVID BADGES

The yellow six-pointed star badge is one of the most familiar symbols of the Holocaust era. It is also the item that figures most often in forgeries. The star badge was designed to make Jews instantly identifiable. It was an easy way to brand the Jewish population in Germany and in all occupied territories. Wherever these ominous stars appeared, the creation of ghettos began, followed with the deportations to transit camps, labor camps and then to the extermination camps in the east.

The Nazi Government’s decree on the wearing of the star badge was issued in September 1941, and in the spring of 1942 the star was also made compulsory in Nazi occupied France, Belgium and the Netherlands. This decree specified that the star had to be at least 10 cm from point to point, made of yellow fabric with printed black outline and lettering. It was to be stitched to the outer garment on the left side of the chest. One and a half million stars were printed in Germany. In the middle of the star was the German word “Jude” in stylized letters. They were distributed in Germany, Austria, the Czech Protectorate and parts of occupied Poland.

To separate the Jewish population, different countries had different badges with different designs and inscriptions. In Nazi occupied Western Europe (Germany, France, Belgium and the Netherlands) four similar star badges were issued. In Eastern Europe there was more variety in the style of the star badges. Some badges were home made, some were made in small workshops and others were centrally manufactured and distributed. For example in the part of Poland administered by the so-called General Government, Jews had to wear a blue star armband instead of the yellow star badge. Some of these blue star armbands were hand embroidered, while others were printed and machine stitched in small workshops.

In France the star was manufactured, based on the orders of Captain Danneker, SS (Schutzstaffel, the elite guard of the Third Reich) chief of Paris. The star and the lettering were printed on yellow cotton fabric in a small printing shop on industrial roller printers. The star design and the lettering were etched into rollers and the fabric was fed through the etched rollers. It was a fast process. A total of 400,000 star badges were printed. All aspects of the manufacture of the star badge are well-documented: the name and location of the printer, the name of the supplier of the yellow cotton, the price per meter, the type of fabric (sateen), and even the exact shade of yellow (old gold). The French police were in charge of distribution. Jews had to line up at the police station with their identity cards and their textile ration coupons and were given up to three star badges per person. Since many Jews decided to go into hiding, rather than claim their star badges, only 83,000 of these stars were distributed according to a German survey in September 1942.

The printing process was essentially the same in Germany, the Netherlands and Belgium. Each country produced printed yellow yardage, and the star badges were cut from this fabric at the time of distribution. In Belgium the star was printed with only the letter “J” and a period, so that it could serve to mark the Flemish speaking as well as the French speaking Jews of Belgium. In April 1942, 500,000 stars...
were printed in the Netherlands; they had the word for Jew in Dutch, “Jood”, in stylized letters.  

**ARMBANDS**

In the ghettos, not only did everybody wear a yellow star badge but many people had special armbands as well. The armband usually had to do with the individual’s work or assignment. Those whose work was important either for the day-to-day running of the ghetto or for the German war effort were temporarily spared deportation to the camps. It became a matter of life and death to create work assignments for every resident of the ghetto and to show the importance of his or her work with a special armband. The wearer of the armband “Organization Tod” was clearly identified as working for the German war effort because the organization was building roads and bridges. In the ghettos there were armbands for sanitation workers, messengers, firemen, policemen, doctors and many other assignments.  

In the Warsaw ghetto, at one point there were as many as 19 different armbands used. This practice proved to be confusing for the Germans, so later most of these armbands were outlawed and only the police had a special armband in addition to the blue star armband everybody was required to wear.  

From the ghettos people were transported to the camps. There were hundreds of camps in German occupied Europe, extending from Norway to Serbia. Some of the camps are well known, like Auschwitz, others are less known transit camps, labor camps and sub-camps.  

The concentration camps had their own system of badges and armbands identifying different categories of prisoners, and they were different from the ones used in the ghettos. The identification badge system of the camps is illustrated on German posters. Each prisoner had a number and a combination of triangles and letters on the left side of the chest and on the side of the right leg. The triangles were color-coded. A yellow triangle pointing upward marked Jewish prisoners. All other triangles were pointing down: red for political, green for criminal, blue for immigrant, purple for Jehovah’s Witness, pink for homosexual, and black for Gypsy or vagrant prisoners. A small circle was used for prisoners from a penal battalion; a large circle for repeat offenders, and the letters referred to the prisoner’s nationality, such as “P” for Polish or “F” for French. All of the prisoners wore these identification patches, but some prisoners had special assignments as well and wore armbands accordingly. For example doctors, medics, or capos had special armbands.  

**CONCENTRATION CAMP PRISONER UNIFORMS**

Another Holocaust artifact that shows up often at auctions and is seldom authentic is the striped prisoner uniform. Most prisoner uniforms were made of cotton or a blend of cotton and wool and had vertical blue stripes on a gray background. The stripes were about 2.4 cm wide and printed on both sides of the fabric. The weave structure of the fabric was balanced twill, broken twill or plain weave. The coarse yarn was spun of short staple cotton sometimes around a rayon core. Some camps had summer uniforms
as well, made of blue and white striped linen, with the stripes woven rather than printed.

The jacket was tailored in a work-shirt style, with metal or plastic buttons in front; the pants were made to be worn with suspenders and had buckles on both sides of the waistband for size adjustment. The uniforms were not identical since they were not all made in the same factory from the same pattern, but in small workshops from similar fabrics and using similar patterns. Besides the well known striped uniforms there were other uniforms in use. In the early years of the Dachau camp, prisoners wore white uniforms and later striped pants with a navy jacket before they switched to striped uniforms. When camps ran out of uniforms they used civilian clothes marked with oil paint. One of the last major transports to Auschwitz, in the summer of 1944, consisted of Hungarian Jews. The women of that transport were given gray cotton dresses as uniforms.

**AUTHENTICATION**

**Provenance**

With so many different badges, armbands and uniforms coming from many different sources, distinguishing between an authentic artifact and forgery can be difficult.

Documentation and provenance have to be considered first. If an artifact has a well-documented provenance, its authenticity is rarely questioned. If the artifact cannot be traced to a reliable source, it is compared to other known and well-documented examples of the same type. In figure 4, two French Stars of David are compared. The one on the left does not have good provenance and does not compare well with the other that has good provenance (Figure 4). On the left the lettering is almost childish, the fabric is pale yellow, not “old gold” as in the original stars, and the weave structure is not satin but plain weave. Since it lacks the known and well-documented characteristics of French Star of David badges, the star on the left is not authentic.

**Materials, manufacturing and condition**

The investigation of questionable artifacts begins with the testing of the materials and an examination of the condition. However, factory-produced fabrics of 60 years ago are not always distinguishable from more recent machine made fabrics. Since most synthetic fibers were developed after World War Two, fiber analysis can prove helpful for establishing approximate dates. Fiber analysis of a star badge belonging to a collector revealed that the fiber in the backing is actually Olefin, which was only developed in 1957 as a textile fiber. Olefin fabric was used to make heavy-duty sacks and carpet padding, as a kind of synthetic replacement for hemp or sisal. The outline of this star is not printed but machine zigzag stitched. There is no evidence that the zigzag stitching method was ever used in the manufacturing of the real star badges. On this same star the word “JUDE” is stamped rather than printed, and stamps were not used in the original manufacture of these stars.

Sometimes magnification reveals details that help decide an artifact’s authenticity. In the case of a star badge that came to the Holocaust Museum from a German auction house, the lettering seems to have water damage (Figure 5). This would be unusual because the star badges were made to be washable, and the printing was not normally damaged by water. The star seems to be soiled in the upper right area. However under magnification the dirt turned out to be airbrushed red pigment and the water damage was in fact gray paint. Looking at the cut outline of the star under magnification, it seemed fresh, the threads were not worn, the ends of the threads are not tapered as we would expect from a fabric that was cut, used and damaged in the rain over 60 years ago. No needle holes could be found anywhere on the star to indicate that it had been sewn to a garment at one time.

**Ultra violet light test**

Antique dealers often claim that their merchandise has “passed the black light test” and therefore it is authentic. In fact black light is ultra violet light, and it is sometimes used in the examination of artifacts. It can help to detect the presence of different materials that may have been added as part of the repair or restoration work and may only be visible in ultra violet light. For this kind of examination, long or medium wave ultra violet light is used, with wavelength of 280 nm to 320 nm. In examining textiles, ultra violet light can be useful to detect the presence of optical brighteners. Optical brighteners are colorless dyes that are added as a finish to white textiles because their blue fluorescence cancels out the yellowing that occurs in the aging of white fabrics. In 1941, the I.G. Farbenindustrie in Germany patented the use of a fluorescent whitening agent under the name...
Blankophor B, for use in whitening cotton fabric and as an additive in detergents. Blankophor B was not added to the manufacturing process of white cotton until after World War Two, and it was only added to detergents in 1949. Because optical brighteners for textile whitening were used only after World War Two, it seems that their presence or absence may be helpful in establishing approximate dates. There are however a few drawbacks in relying on optical brighteners for dating. One problem is that optical brighteners can only be detected on white fabric; another problem is that like most other dyes optical brighteners are subject to fading. But the biggest problem is that since they have been added to many laundry detergents since 1949, the possibility of contamination by washing exists. Keeping this in mind we examined many of the white armbands in our collection and found that none of them exhibited the characteristic blue glow of optical brighteners under ultra violet light. However some of the questionable armbands did. Two armbands, purchased by a donor, show the characteristic bluish glow of optical brighteners under ultra violet light. Since the possibility exists that the presence of optical brighteners is due to contamination by laundering, it is important to apply other criteria as well, to judge authenticity. The amount of soil and the distribution of soil on the armbands look suspicious (Figure 6). It seems that most of the dirt was applied to the front of the armband, and it was applied to the folded armband. That is why there is such a marked difference between the front and the back of the armband. This armband did not get dirty while in use. The reverse of the same armband is clean and new looking but the folded edges are sloppy. Real armbands have carefully stitched double folded hemmed edges; they were made to last, even when worn every day.

Another armband we examined is supposedly from Denmark was made of off-white cotton, so only the white cotton thread shows the presence of optical brighteners. It has another problem as well, which has to do with curatorial content. The stamp in the corner indicates that it is from a Danish camp: Danemark. But there were no camps of this type in Denmark where this star could have been used.

Such errors in content are frequent in forgeries. For example one of the collectors’ armband had a label inside indicating that it came from Dachau with a date of 1942. None of the authentic armbands were labeled. But had they been labeled, the label would not say “KL Lager Dachau”, because that is redundant. The person making the label probably did not know that the abbreviation KL stands for Konzentrations Lager and thus the label reads: “Konzentrations Lager Lager.”

A prisoner cap was recently brought to the museum for authentication. The cap is cut the same way as an authentic cap but it is made of mattress ticking, a striped fabric that may remind the buyer of the stripes of prisoner uniforms, but was never used to make uniforms. The cap has been dyed with a pinkish dye and distressed to give it a dingy, worn look. The two colors on the badge, the black triangle with the yellow star suggests that the inmate was a Jewish Gypsy. Although this is theoretically possible, it is unlikely, because the Nazis used the racial definition of Jewish, not the religious one.

Another cap bought online was made of a white and light blue striped lightweight cotton fabric (overdyed and distressed again), a color combination and a type of fabric that was not used for prisoner uniforms. The prisoner number on the cap is 3,557,129, which means that in the camp where this cap came from there would have been more than 3 million prisoners at a time. In fact the highest number of prisoners at any camp at one time was in the hundreds of thousands, not millions.

The collector who wanted to donate a prisoner uniform felt very good about his online purchase because it was accompanied by a Certificate of Authenticity (Figure 7). When read carefully it is clear that the certificate does not claim that the uniform is authentic. It only says that the uniform was bought in Poland. The striped pants are in fact a vintage version of the fashionable Capri pants (in the 50’s they were called pedal pushers). The waistline of the pants is shaped with darts. But authentic prisoner pants don’t have darts around the waist, for shaping they rely only on buckles and straps on the sides of the waistband. The pants
were originally blue and white striped, but were dyed with gray. The gray dye not only changed the white stripes to gray but also toned down the blue stripes to make them faded and old looking. Because it was dyed with gray, the pockets and even the little twill tape loop inside the waist match the gray of the pants perfectly. In the authentic prisoner uniform the pockets are made of khaki or white cotton fabric. Matching colors was not a priority for the makers of prisoner uniforms. Looking at the hem at the bottom of the legs we can see from the wrinkles that at one time they were gathered with elastic or a drawstring. Prisoner pants legs were never gathered at the hem. The two patches in the front are randomly stitched; there is no hole behind them.

We received a complete prisoner outfit from a donor who purchased it at an auction in Germany. The collection contains a dress, a jacket, a pair of pants and a cap. What is most striking about this set is the fabric. Only the face of the fabric has printed stripes; the reverse is gray without stripes. No uniform was made of this kind of fabric because this would have allowed the prisoner to hide the stripes identifying him as a prisoner, by simply turning the uniform inside out. There are also major differences in tailoring. An authentic prisoner dress is made all in one piece, whereas this dress was cut at the waist.

The jacket in this collection is made to be almost attractive with a rounded collar and rounded pockets; neither of these features appears on an authentic jacket. There is an unusual hole in the chest area that seems to have been cut on purpose. It is a straight, horizontal cut; the vertical threads have been loosened above and below the cut while horizontal threads are untouched. There is no sign of abrasion or tearing around this cut. None of the uniform pieces in this collection show any of the usual wear damage or wear pattern. On the jacket the elbows are not stretched out, the buttonholes are not worn, the inside of the collar is not abraded, and the shoulder area does not look as if it had been exposed to sun and rain.

The pants from the same collection are unusual because they are unfinished (Figure 8). They could not have been worn as they are. There is an opening in the front but no fly, there is no real waistband with a closure, no buckles, no pockets. It seems they were not made to be worn. The question is, who made them and for what purpose? These pants may have been props or costumes for a theater or movie production. On the right leg the red identification patch is made of wool felt, another unlikely fabric, and under the patch there is a smaller cotton patch. If these pants were costumes in a movie production, it is

Fig. 8
Unfinished prisoner costume.

Fig. 9
Alteration in the seat area of the pants.
possible that the small patch did not show up through the camera lens, so a larger, more visible patch was sewn on top of it. While there is no way to prove this theory, we know that in the past 60 years hundreds of movies were made about World War Two, and many of those movies had concentration camp scenes with prisoner uniforms. It may be that some of the props and costumes found their way to flea markets, and from there to antique dealers. Soon after the end of World War Two, Nazi memorabilia became collectible and in the last 15 years Holocaust memorabilia has started showing up at auctions. Since the Holocaust Museum opened in 1993, collectors in large numbers began to look for Holocaust related items. We all know that if there is a demand the market will provide to meet that demand.

I made inquiries to find out what happened to the uniforms from the well-known movie “Schindler’s List”. I found out that when a Hollywood studio produces a movie in a foreign country, it does not ship the props and costumes back to the studio because shipping costs too much. So the props and costumes are left behind. In the case of “Schindler’s List”, everything was left in a warehouse in the outskirts of Krakow, Poland. A recent check of the inventory revealed that some uniforms have “walked away” from the warehouse.

Gray area

Occasionally a uniform surfaces that challenges us to reexamine well-established notions about these artifacts. A pair of pants was donated to the museum that has a triangular addition in the back from the waistband to the seat (Figure 9). This suggests that the prisoner gained weight during his stay at the camp, which made the alteration necessary; a very unusual circumstance. Normally, as prisoners lost weight they tightened the buckles on the sides of the waistbands, and sometimes even used pieces of string as belts in an effort to keep their pants from falling. It was discovered that the alteration was made after liberation when the former prisoner wore his uniform in a memorial parade. This uniform became the starting point of research that led to the discovery of prisoner uniforms made after liberation for commemorative purposes. In the first few years after the war there were yearly gatherings of survivors where most of the participants appeared in their striped uniforms.

One of the most interesting examples of commemorative use of striped clothing is the story of the St. Ottilien orchestra. St. Ottilien is the name of the hospital where some of the camp survivors were taken after liberation. This is where recuperating Jewish musicians formed an orchestra that later performed all over Germany in reproduction prisoner uniforms (Figure 10). A tailor, from the vicinity of the hospital, made the uniforms of heavy cotton fabric according to Henny Durmaszkin-Gurko, the only member of the orchestra still alive today. From the photographs of these concerts it seems that the striped suits were tailored like fashionable men’s suits with lapels and shoulder pads.

In 1987, former prisoners requested help from the camp at Sachsenhausen in obtaining uniforms to wear on commemorative occasions. The camp ordered striped fabric and made it available to former prisoners, to other former camps, and to DDR (East German) television. There are still 19 bolts of this fabric left in storage in Sachsenhausen together with 15 complete prisoner uniforms made from it. The tailoring of these copies is simplified compared to the originals. The darts that serve to shape the garment are omitted, the sleeves are not tailored, instead they are cut in one tubular piece. The fabric is a poor copy of the original; it is 100% wool (none of the original uniforms was made of pure wool), and the blue stripes are somewhat narrower than on the authentic fabric.

On at least one occasion, a former prisoner is known to have traded his worn uniform for a brand new copy. The old uniform is now in storage at the memorial site. In this instance, the copy served to prolong the life of an authentic camp uniform.

Many of these copy uniforms are displayed at former camps that have become memorials. Their use on exhibit can only be justified if the accompanying label clearly identifies them as copies. However, in an exhibit on the subject of how the Holocaust is memorialized, these copies would find their proper context as artifacts.

The U.S. Holocaust Memorial Museum’s collection and permanent exhibit relate to the time period of the Holocaust and in that historical context these post-Holocaust copies cannot be considered authentic.

Some of the copies are being displayed and sold as authentic, and in that context they become forgeries.

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References

Books:
Berben, Paul

Doctoral dissertation:

Telephone interview:
Berger-Schunn, Anni 1999 (retired German color scientist).
Durmaszkin-Gurko, Henny 1999 (musician from the St. Ottilien orchestra).

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METALLURGICAL AND ANALYTICAL METHODS IN THE REVEALING OF ART FALSIFICATION

ARNE JOUTTIJÄRVI

ABSTRACT

This paper deals with the scientific methods which, combined with art historical or archaeological evidence, can be used for disclosing fake objects of art. Judgement should always be based on a number of different characteristics including production technologies, alloy, contents of impurities and trace elements and corrosion. In evaluating technological traditions and chemical analyses, it is extremely important that the assessment is based on a sufficiently large data base of earlier investigations. Published analyses, especially non-destructive, should be used with caution as the results could be erroneous due to surface corrosion.

KEYWORDS

Fakes, scientific methods, technology, metallography, alloy, impurities, corrosion, databases.

When planning the investigation of an art object, it must first be considered which properties might yield clues as to its origin. Often the judgement of genuineness will be based on a sum of different archaeological, art historical and technical aspects.

The simplest way of trying to determine if a certain art object is a fake, is to establish its age. This can be done by well established methods for wood (and other carbon containing materials) and for ceramics, but for metals and glass there are no such methods. There are however other means, by which an approximate date of an object can be assessed. For metals this will be the techniques used for production of the object, the alloy and the degree of corrosion. For glass objects the assessment will mainly be based on the chemical composition.

TECHNOLOGY

The first approach when dealing with a possible fake art object should be a physical examination.

Normally a lot of information about the production techniques used can be deduced just from careful examination with the naked eye or using a magnifying glass. Often forgers have used modern techniques and modern tools, or have worked in technological traditions not typical of the pretended age and date. It should on the other hand be emphasised, that the use of ancient techniques is not a proof of antiquity.

Some surface details are not visible to the naked eye, in which case it will be necessary to use optical microscopy or SEM (scanning electron microscopy). Normally the SEM will accommodate only small objects, but in case of larger objects copies of areas of interest can be made using silicone rubber. As casts can be made from inaccessible places, for example the inside of cavities, this method can also yield information otherwise unattainable.

The technical processes available to various civilisations throughout history have been documented through a large number of investigations, but even if comprehensive publications can be found on specific materials and technologies, most information must be gathered from papers scattered in a wide variety of periodicals. In the following only a few examples of this type of investigations used will be given. It must be remembered, that even if quite a substantial amount of research has been done, our knowledge of past technologies is still far from complete, and controversies can still be seen in the literature.

Objects with incised design were produced from the Bronze Age onwards. I dealing with such an object it is important to determine whether the design was made with the aid of a tracer or by cutting with a graver or a scorper. The tracer is a small chisel-like tool which is hammered in to the surface with a series of light blows. If held in the correct angle, it will leave an incised line in the metal. No metal is removed, and there will be a small mound on each side of the line. The graver and the scorper, on the other hand, make a line by cutting away metal leaving no mounds.

The cutting edge of graver and the scorper can only be made from a metal of great hardness and toughness, and were therefore not used before the advent of steel just around 1000 B.C. The presence of cut lines will therefore be a proof of a date not older than Iron Age. The tracer on the other hand can be made from a bronze with a relatively high content of tin, hardened by cold deformation.
Since items bearing inscriptions have always attracted more interest by collectors, the identification of an inscription made by cutting on an older item does not necessarily mean that the item itself is a fake. It could be a genuine object that was “improved” to raise its value. Of course Iron Age objects can also be furnished with fake inscriptions. In this case, the best indicator of antiquity in the case of inscriptions will be that the corrosion layer is well developed down in the incised lines.

Casting technology can also be indicative as to the age of an object. Cast bronze objects whether being Greek, Etruscan or Roman was normally cast by the cire-perdu method. This means, that objects having mould marks as if they were cast in a piece-mould are liable to be fakes. It is also important to pay attention to fractures, as there are examples of fractures made in the casting of an object (Young). The same will apply to repairs, if a forgery is made in a mould taken from an original object repairs and fillings will still superficially look authentic, but closer examination will reveal that they are an integrated part of the casting.

A third example could be the use of drawn wire. Even if tools resembling drawplates are known from around 1000 B.C., there is no evidence of the use of drawn wire before the 6th or 7th century A.D.

Before the medieval period, wire could be made by twisting strips of metal cut from the edge of a sheet of metal, followed by rolling between two plane slabs of stone. This type of wire is called “block-twisted” or “strip-twisted”, and is easily recognised by its helical seams (Figure 1).

Wire could also be made by forging, and there is evidence, that swages have been used from the Bronze Age (Oddly 1980).

A third method, the strip drawing will leave only one fine line running lengthwise, and can show a superficial resemblance to drawn wire (Carroll 1970). The wire is made by drawing a narrow ribbon, cut from a thin sheet, through holes in a “drawplate”. The “drawing” serves to roll the strip up into a long scroll, and no great force needs to be exercised. The method is best known from Egyptian jewellery, but similar methods in use in Europe could explain the early finds of “drawplates”.

The appearance of drawn wire in a seemingly ancient object will prove it to be a fake, but unfortunately, in most cases; it is not possible to prove the genuineness of an object. As knowledge of ancient techniques becomes more widespread, the art forgers will try to deceive collectors and art historians by copying the visible characteristics of past technologies. The spiral seams of strip-twisted wire are known to have been copied on fake jewellery, but sometimes this has been seen to be accompanied by other unauthentic technologies like for example electrogilding seen on fake “Greek” jewellery (Ogden). Taking only one technology used in the production of an art object as proof of age, must therefore be considered inadequate.

The evaluation of technology can often be aided by metallurgical investigation. This will normally mean that a sample will have to be taken from the object, a fact that often discourages the conservator or art historian from this kind of examination. The sampling however does not need to be clearly visible to the naked eye. First of all, the samples can often be taken in places not easily visible, and the amount of material needed can be very small.

How small the metallurgical samples might be can be illustrated by the recent examination of the Gundestrup Cauldron on the National Museum of Denmark. Samples for metallurgical examination were taken from the edges of the silver plates. The sampling was done using a jeweller’s hacksaw with the thinnest possible saw blades (8/0). The weight of the samples was only 1 to 4 mg, and the size around 2 mm, but this proved to be sufficient for making a polished cross-section.

Examination of polished and etched metallurgical samples will reveal more detailed information about the type of alloy and its mechanical and heat treatment history. A detailed study of welding, brazing and soldering techniques can be done as well as of surface treatments (gilding, tinning etc.) and corrosion.

Metallographic examination will normally be done using optical microscopy, but can often be aided by the use of SEM. In that way the microstructural information can be complemented by chemical analyses of selected structural elements, and the distribution of elements in the various microstructural components can be mapped.

Fig. 1
Strip twisted wire showing the typical helical seam.

Fig. 2
The development of copper alloys. Arsenic bronze=Cu+As; Tinbronze=Cu+Sn; Brass=Cu+Zn; Gunmetal=Cu+Sn+Zn+(Pb)
CHEMICAL COMPOSITION

Both metals and glass are man made materials, and as such dependant on developments in smelting and production methods, technological traditions and accessibility of raw materials. A simple analysis of the alloy content of a metallic item can therefore often be a valuable aid in determining its age. This can be illustrated by looking at the development of copper alloys (Figure 2).

The earliest coppers were usually native, or unsmelted, and typically contain low amounts of impurities. With the development of the smelting process came the arsenic containing bronze which was later replaced by tin-bronze. Before roman times the use of tin-bronze had dominated for almost two millennia, although the alloying of bronze with lead was introduced in the beginning of the first millennium B.C. In the beginning of the imperial period, the Romans adopted a new alloy from the areas to the north of the black sea. This alloy was brass, the alloy of copper and Zink, but the Zink itself was not known as a metal until much later time.

The Zink evaporates at 907°C, and can only be produced by distillation, a process not invented in Europe before the beginning of the 18th century. The Roman brass was made by heating Zink ore and copper filings with charcoal in a closed crucible.

The production of brass was much centralised, and an important production area seems to have been situated in the surroundings of Aachen.

It seems that forgers, not having detailed knowledge of the use of alloys in antiquity, have often used modern Zink containing alloys instead of tin-bronze when imitating Bronze Age and early Iron Age objects. This is known from a long series of fake Sardinian bronze figurines (“bronzetti”) produced in the 19th century (Atzeni et. al. 1992), and from a number of other objects of which a few will be mentioned.

In the exhibition: “Fake-the art of deception” at the British museum in 1990, two Etruscan statuettes were presented (Jones 1990). Although fairly similar, one of them was shown to contain copper with some tin and a little lead, typical of early Etruscan bronzes, but the other was made from copper with Zink, i.e. a brass. This was of course not possible for an object of Etrurian origin, and the statuette had to be a later copy.

When analysing a number of Luristan bronzes, the same discrepancy was seen (Moorey 1964). Some objects, already for other reasons considered to be of dubious authenticity, turned out to be made from brass containing 14 to 18 % of Zink. The Luristan bronzes dates from the middle of the third to the middle of the first century B.C.

A third example of the use of brass instead of bronze is found in Germany. A lockmaker by the name of K. Sioli (1848-1913) who lived in Halle a. d. Saale, seems to have specialised in producing copies of bronze age axes and daggers, which found their way to German museums, one of them even with an apparently documented find spot (Bemmam 1983).

Later investigations have shown that the forgeries were produced in series by casting in the same mould. At least one of the moulds was taken from an original, known bronze. The castings were all made with a rather heavily leaded brass, and could therefore be easily disclosed by metal analysis.

The roman method of producing brass had one very important limitation. Due to chemical causes, the resulting percentage of Zink in the alloy could not exceed 28-30 %. This fact has also been unknown to some modern forgers, and for instance fake roman brass coins have been identified by excessive contents of Zink.

The use of alloy as an indicator of age is not limited to copper alloys. Even if gold is normally only alloyed with silver and copper, the absence of these elements can in certain circumstances be used a guide as to the genuineness of an art object. This was the case with two Mycenaean gold plates made from almost pure gold with just traces of silver and copper (Buchholz 1970). This is very unlikely since in Mycenaean times the technique of parting gold from silver was not yet developed. Gold objects produced before the middle of the 1st century B.B. usually has a silver content in excess of 5 %.

Apart from the overall alloy types, the analyses of impurities and minor trace elements can also be of great importance in the disclosure of a fake, or the dating of an object.

A simple ring, thought to be a bangle, was found at the surface in the near vicinity of an iron-age dig-site. The aim of the analysis was to establish or refute a connection between the object and the site.

Analyses showed that the ring was made from brass with a Zink content of approximately 19 %, meaning that it could very well be of roman iron-age date. However, it had a relatively high content of antimony (0,8 %) and arsenic (2,5 %). This is very unusual for roman copper alloys, since they are generally made from copper of a purity not seen in any other period.

The early medieval period was a period of repeated remelting of roman bronzes, and it is not easy to define any consistent groups of alloys until the 10th century. By the 9th century Europe was beginning to see a new primary production of metals, after a period of stagnation introduced by the collapse of the Western Roman Empire. When mining was resumed, new ore bodies were exploited some of which contained rather large amounts of impurities like arsenic and antimony as it can be seen from figures 3 and 4.

The content of arsenic and antimony in the ring is marked by a grey line, and from the diagrams, a dating between 1300 and 1600 A.D, seems to be most likely. The ring could perhaps be part of a late medieval bridle lost in the field.

In the1970’s three apparently Mesopotamian bronze heads appeared on the art market. One of them was acquired by the Museum für Vor- und Frühgeschichte in Berlin. On the basis of archaeological arguments it was published as an authentic sculpture from around 2000 B.C.
All three of the heads were examined by Rathgen-Forschungs-labor in Berlin (Riederer 1991), and the conclusion of the analyses was that they were all relatively modern fakes.

The conclusion was based on an evaluation of both chemical analysis, casting technique and patina.

The alloy consisted only of copper and 6-17% of lead, with just minor amounts of tin. As mentioned before lead is very unusual as deliberate alloying element before the first millennium B.C. In addition to this, the content of trace elements as silver, nickel and arsenic was lower than should be expected from a second-third millennium B.C. bronze.

The patina was identified by X-ray diffraction, and consisted of copper sulphide, basic copper chloride and basic copper-sulphate-nitrates. These compounds are generally accepted as products of artificial patination. Moreover a metallographic section of the patina and metal showed the patina to form a well defined layer on top of the metal, with no traces of corrosive penetration of the metal.

The third parameter used in the evaluation was the casting technique. The heads should be expected to be cast by the normal lost wax process, where a wax model is build over a core. This would give a more or less even thickness of the cast. By computer tomography of one of the heads, it was shown, that the thickness of the wall was rather uneven, being thicker at protruding parts such as the nose. It is argued, that this distribution of metal is characteristic for the indirect lost wax process where a positive model is prepared. From this a negative mould is taken, and the inner wall of the mould is covered with a thin layer of wax applied in the molten state. This technique was not known before the 6th or 5th century B.C.

That the results of scientific analyses are not always unambiguous is very obvious from the published discussions. In 1993 a fitting and four fibulas dating to the 5th to 7th century was published as fakes on the grounds of metal analyses and typological studies (Hoffmann 1993). The analyses were however only compared to 51 analysed objects from Spain.

Three years later these statements was contradicted, again on the basis of the same metal analysis (Born & Neumayer 1996). An argument against genuineness was the very low amount of impurities in the metal of the pseudo bird-fitting. This could very well have been true, but examination of the corrosion proved it to be natural, strongly indicating that the fitting was indeed ancient. The arguments against the four fibulas were primarily a high Zink content (16-20%) and a relatively high content of silver and arsenic compared to the reference material used does not seem to be tenable in the light of a broader reference material.

Even though the production of copper and brass in Western Europe had ceased with the fall of the Western Roman Empire, a limited number of brass items can still be found in the period from the 5th to the 9th century. The alloys of this period however are generally not well defined; most of them being a mixture of copper and both tin, Zink and lead, indicating a predominant remelting and mixing of older roman objects. Perhaps a limited production still took place where Zink ores was available.

This last example clearly illustrates the necessity of very large reference databases when working with interpretation of artefact analyses. The interpretations can only be as good as the present data allows, and one must always be open to re-evaluating previous statements in the light of new data.

Maybe a total of around 50,000 analyses have been made of European artefacts, some 15,000 of these have been compiled in the authors data bases, serving as the basis of interpretations of analyses concerning technological traditions, provenance and genuineness.

There is however reasons to be cautious when using published analyses, as these have been made by a spectrum of different methods, some more suitable for art objects than others. There has naturally always been a wish from curators and art historians to minimise the damage done on the art objects during sampling, and hence a strong tendency towards the use of “non destructive” analytic methods.

Amongst these the most prominent has been XRF. One of the main problems with this method is that it is often used in an uncritical manner. Using the method as a strictly non-destructive technique, i.e. without removing the outermost corroded layer of the object, will nearly always lead to erroneous results and hence to unsustainable conclusions.

The reason for this is that every historical object, whether being of iron, bronze, gold or glass, will have suffered...
from some degree of corrosion, thereby ending up with a surface that might only bear a limited resemblance to the material in the interior of the object.

An obvious example is the corrosion of copper-alloy artefacts. Buried in the ground, the corrosion will under normal circumstances result in a surface depleted of copper, but containing large amounts of stable tin oxide. If, on the other hand the alloy contained zinc, this would corrode out before the copper.

Thus analyses performed on an untreated surface will, even if the surface looks uncorroded, inevitably lead to excessive values for tin and diminished values for copper and zinc (figure 5). Unfortunately such results are too often seen in the literature, even in connection with larger scientific research projects.

In most cases the abrading of a 1x1 mm area will be sufficient for reliable analyses using SEM; this can hardly be termed “destructive”. If it is not possible to fit the object into the probe chamber on the SEM, a small chip can be removed from a secluded spot using a scalpel.

CORROSION

The corrosion, although rendering a non-destructive analysis impossible, is another important factor in disclosing a fake art object.

In order to appear genuine, faked art objects will usually have some form of patina applied. Identifying the patina as a natural corrosion, will be a proof of genuineness.

Natural corrosion is a complex process comprising oxidation, dilution and often reprecipitation of metals or metal compounds. Furthermore buried objects will often have incorporated particles of the surrounding material in the patina. If the sample contains deep intergranular, transgranular or interdendritic corrosion, then it will most probably be ancient. Remnants of corrosion products in the incised lines of an inscription are an indication of antiquity.

Artificial patination on the other hand will be the result of a much more rapid chemical process. Although it might consist of the same minerals as the natural corrosion, it will be lying as a more even layer at the top of the bronze.

It must be born in mind, that in certain periods it was quite normal to remove the natural patina from metallic objects. When this practice later became obsolete, the natural patination would often be replaced by an artificial. When genuine patinas began to be admired, art objects with an original, but ugly looking patinas could be stripped an repatinated to give the desired impression of a beautifully developed natural corrosion.

Sometimes artificial patinas on fake objects have been seen to consist of pigments applied by an organic binder. Although such a patination can appear quite convincing at first glance, it can be easily disclosed as it fluoresces under ultra-violet radiation.

References


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INTRODUCTION

Background

The aim of this paper is to discuss the role of the conservator and analytical methods that can be used in authenticity investigations of painted enamels. To illustrate the discussion a technical investigation of a group of painted Limoges enamels will be presented. In 1988, a series of twelve painted Limoges School enamels, depicting scenes from the Passion of Christ, was acquired by the J. Paul Getty Museum. The iconographical sources for these scenes were found to be 16th century German prints, mainly engravings by Lucas Cranach. A Pénicaud workshop-stamp, i.e. poinçon, is present on the reverse of each of the plaques. The stamp is punched in to the copper plaque and visible Beneath the counter-enamels. At the time the group was acquired, authenticity problems with Renaissance enamels had not to any great extent been addressed and few technical studies had been published. No immediate questions arose concerning the authenticity of the series, although several visiting scholars expressed their suspicions regarding the authenticity of the Passion series during the following years. The depiction was said to be too refined, the gilded applications were considered to be incorrect, in particular the use of fleur-de-lis in the haloes, the colours were wrong and above all the absence of any provenance prior to 1884 was assumed to be highly suspicious. The first provenance was established, by Fogelman, to the Castellani sale in Rome 1884. The series of enamelled plaques is mentioned in the sales catalogue of this sale, where it is attributed to Jean II Pénicaud. Thereafter the Passion series passed into the Mante Collection in Paris, from which it was lent to the Exposition Universelle at the Trocadero in the same city. The Passion enamels series then descended in the Mante family until they were acquired by the Parisian dealer, Alain Moatti, from whom the J. Paul Getty Museum purchased them in 1988.

AN ANALYTICAL APPROACH TO THE AUTHENTICITY PROBLEMS OF PAINTED LIMOGES ENAMELS

MARIA FRANZON

ABSTRACT

The paper aims to contribute to the discussion on the role of the conservator in revealing art falsifications in art. For this purpose a case study is presented of a series of twelve painted enamel plaques in the collection of the J. Paul Getty Museum collection, whose authenticity is being questioned. During 2000/2001 an extensive research project was initiated. Numerous scientific analyses were carried out: non-destructive surface analysis (micro-XRF) and cross-section analysis of micro-samples (SEM-EDS), as well as comparative art historical research of the enamels. On the basis of these results, the authenticity was discussed in a comparative context of both 16th century Renaissance painted enamels from Limoges and 19th century Renaissance revival work.

KEYWORDS

Painted Limoges enamels, authenticity, Micro-XRF, SEM-EDS

ABSTRAKT


INTRODUCTION

Background

Background

Renaissance or Revival?

Painted enamels were in high demand during the 19th century and at least a few pieces of painted Limoges enamels were included in any Renaissance collection. When the demand became greater than the supply, less scrupulous dealers did not hesitate to fill the gap with new copies, replicas or falsifications. Due to the high demand on painted enamels it became such a profitable business, that even reproductions and replicas were sold with as much ease as authentic pieces. Damaged Renaissance enamels or fragments were also sometimes cleverly soldered together and restored to resemble complete pieces, which were sold at equally high prices. Three degrees of falsifications can therefore be distinguished.

- Enamels might have been sold as reproductions, replicas or copies, but at a later stage came to be considered authentic Renaissance enamels.
- Unsigned authentic Renaissance enamels might have been given signatures.
- An enamel might intentionally have been made and sold as genuine Renaissance enamel.

Due to these arguments a technical investigation of the Passion series in the J. Paul Getty Museum was initiated during 2000, more than a decade after the acquisition.\(^2\) The aim with of this investigation was to study different methods and approaches of provenance and authenticity of painted enamels from Limoges. One of the major limitations in the discussion of 16th century compared to 19th century enamels was the lack of comparative analytical data. The objective of the study therefore became also to contribute to the present research on painted Limoges School enamels with the provision of technical data. In addition the study also aimed to present an outline of a systematic and scientific approach and method for authenticity investigations of painted enamels. In order to address these issues, both art historical research and analytical work were carried out.


Fig. 1
A series of twelve painted Limoges enamels depicting the Passion of Christ. Previously attributed to Jean II Pénicaud, France, active 1531-1549. Enamel on copper, 9.4 x 7.3 cm. (JPGM 88.SE.4-1-12, photo: Louis Meluso 2000)
can be assumed to have been hammered into shape, as no rolling machines were in use at that time. The radiographs of the Passion series unfortunately did not enable any conclusions regarding the manufacturing techniques used in the copper plaques. The copper substrate was very thin in comparison to the enamel glass, which was unevenly applied and contained various amounts of lead. Although, no indication of rolled metal sheets were observed and the occurrences of unevenness in the copper plaque were likely to be the results of hammering rather than rolling the metal (Figure 4).

The investigation evolved in several stages. The initial stage was a thorough visual examination of the plaques. Microscopy provided an excellent method for the examination of enamel surfaces and cross-sections. A high-resolution microscope with a photo-attachment allowed observations to be recorded. The structure of the enamel and techniques for the layering and application could be studied along break edges and old physical damages. The technique also allowed careful observation of the condition of the enamel glass, such as the degree of opacity and presence of impurities or bubbles, as well as the application of gilding.

The enamel technique on the Passion series was examined with the aid of a binocular microscope. This revealed several features not previously discussed in the literature, for example a layering technique employed to achieve mixed colours such as purple and different hues of green and blue (Figures 2 and 3).

X-radiography was used to study the copper substrate. Generally, hammering of a copper substrate tends to give an uneven thickness, which may be visible in a radiograph as concentric rings. Early rolling machines would instead lend a rippling effect to the copper plaque, showing as parallel undulations in radiographs. A copper plaque from the Renaissance
Surface examination under ultra violet light, both long wave and short wave, is commonly used in conservation to identify the presence of organic materials. These examinations are often used to distinguish restored areas from original surfaces. Secondary materials, such as organic resins used for restoration work or application of gilded details, may emit distinctive fluorescences. Regarding enamel glass, certain inorganic compounds may also be visible in UV-light, such as some metal oxides occurring in modern enamel compositions. Fluorescence of uranium in enamel glasses and a green fluorescence visible in some 19th century black enamels have been mentioned in the literature. 1 No fluorescence in the Passion series occurred to indicate a 19th century enamel glass composition.

Analytical methods

Three analytical techniques were used for the technical investigation: air-path micro-X-ray-Fluorescence spectrometer, Scanning Electron Microscopy with energy dispersive spectrometer and a helium-path micro-X-ray-Fluorescence spectrometer. The air-path micro-XRF was used initially to obtain an overall picture of the plaques; to detect and identify fluxes, stabilisers, colorants, opacifying agents and trace elements in order to determine if they constitute a homogeneous group and also, if possible, to compare the composition and elemental ratios of the group with other 16th and 19th C: enamels. Simple qualitative results from the enamel glass on the Passion series were achieved by an air-path micro-XRF. The analyses were carried out by the author at the Museum Research Laboratories of the Getty Conservation Institute in July 2001, under the supervision of Dr. David Scott. 2 The detection limits of XRF analysis in general is said to be approximately ±1%. Unfortunately this method provided very limited readings of the light elements essential for characterisation of glass materials, such as Na, Si, Al and Mg. 3 Quantification of the results was run with different glass standards, although it was not possible to retrieve any direct or accurate quantitative data of the results. To ensure reproducibility of the micro-XRF analysis and to achieve a reasonable statistical spread, six different enamel colours were targeted on each plaque: translucent blue, green, black, opaque white and red and also the clear counter-enamel on the reverse. Two locations were used on each plaque for the analyses, with the exception of the counter-enamel and opaque red, for which only one location was targeted. Locations were chosen where the enamel layers were as thick as possible, as this would provide a more reliable result of the analysis. Quantification of the results was run with the several glass standards. However, only the quantifications with the glass standard Corning A were used for further comparative studies, since these proved to fall closest to the more accurate quantitative SEM-EDS results (see extrapolation below). 4

Scanning Electron Microscopy with energy dispersive analysis (SEM-EDS) is a destructive method, involving sampling of the material. The sample size needed is less than one cubic millimetre, almost invisible to the naked eye, and it has therefore often been considered a non-destructive method for art. The detection limits of SEM-EDS analysis for glass materials are similar to the XRF techniques, approximately as low as ±0.1 wt% depending on the element and matrix. Sampling of the Passion series was limited to already damaged areas, minimizing interference with the original material. Where possible, the samples were mounted as a cross-section. All the SEM-EDS analysis for this study was carried out in August 2001 by Dr. Mark Wypyski at the Metropolitan Museum Research Laboratories. From these results a semi-quantitative picture of the enamel compositions could be extrapolated for the series, based on the previously semi-quantifications of the XRF analyses. The indirect quantified results allowed preliminary comparisons with other painted enamels.

The final part of the technical analysis of the Passion series was carried out after the main investigation was completed. In March 2002 a mobile, energy-dispersive Micro-XRF with a helium path (ArtTax) was employed for the purposes of achieving reliable quantitative data of the enamel compositions for further comparisons. The analyses were run by Dr. Heike Bronk and Stefan Röhrs, with the ArtTax equipment temporarily set up at the Victoria & Albert Museum Scientific department. The set up enabled the analysis to be run with a lower voltage and beam size than the initial micro-XRF analysis, furthermore the use of a helium-path allowed better quantitative reading for the lighter elements. 5 The detection limit with this micro-XRF set-up is good for the heavier elements, it can be as low as ±0.01wt%, but for potassium and the lighter elements the detection limit is higher. The method had been used by Bronk and Röhrs, in their research on the major German enamel collections. Therefore the new results would be comparable with an extensive and consistent database of Renaissance and Revival painted enamels, and in particular with a similar Passion series in the Kunstgewerbemuseum in Berlin.

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2 The Kevek Omicron X-ray spectrometer used for the analysis has an x-ray beam size of approximately 0.1 microns, the x-ray tube using a Mo target. It was operated at 1 mA, between 30-50 kV. An air path under atmospheric conditions in the chamber was used, point mode analysis. The spectrum was acquired for 200 s.
4 The Kevek Omicron X-ray spectrometer used for the analysis has an x-ray beam size of approximately 0.1 microns, the x-ray tube using a Mo target. It was operated at 1 mA, between 30-50 kV. An air path under atmospheric conditions in the chamber was used, point mode analysis. The spectrum was acquired for 200 s.
6 Corning A (sodium glass, low lead), Corning D (potassium glass, low lead), SGT 9- (potassium, high lead). SGT 11 (unleaded chromium glass, 0.2wt% Cr) was used only for the green enamels.
Art historical studies

The iconography of the Passion series closely follows the tradition of early 16th century German prints. The main source consisted of engravings by Cranach, which were used for nine plaques: The Agony in the Garden, The Betrayal, Christ Before Caliphas, Christ Before Herod, The Crown of Thorns, Ecce Homo, The Bearing of the Cross, The Entombment, The Resurrection. Dürer and Schongauer were used for some of the scenes that for which Cranach's Passion did not provide an image. Dürer's The Entry of Christ into Jerusalem and Noli Me Tangere were used. For the scene Christ in Limbo, elements from both Schongauer's and Dürer's prints were combined. The use of several sources in a single scene in this manner was not uncommon in the 16th century. This liberal use of printed models is evident in Pénicaud enamels; sources were not usually included in database by Bronk and Röhrs. The watercolour appearance, light washes of coloured enamels and the finely outlined drawing on a white ground is generally not evident in enamels of the early 16th century. Similar pastel hues may be noted in the late 16th and early 17th century polychrome enamels. The techniques used for depicting marble and stone in the J. Paul Getty Museum series was regarded as strange, the colouring being bright turquoise, green and pink. However similar colouring was observed in many late Limoges Painted enamels, from the late 16th and 17th century.

In the 16th century, Dürer's and Schongauer's Passion series appear to be two of the most commonly used sources for enamels depicting the Passion of Christ. Other common print sources used during the early 16th century were those of van der Leyden and Master of the Die. References to Cranach's engraved Passion as a source model were not found in this study. Towards the mid-16th century, Italian sources became popular and the stylistic changes of the Renaissance became apparent in the rejection of late gothic imagery. In enamelled plaques from the Pénicaud workshop included in the study:

- The sources used by the early Pénicaud enamellers, Nardon and Jean I, appear to be mainly 15th century woodcuts, such as Books of Hours and contemporary works. Schongauer's prints have occasionally been mentioned as an iconographic source, while Dürer's prints seem only to have been used by Jean I Pénicaud.

- The later enamellers in the Pénicaud family used mainly Italian sources or other contemporary works. Only one plaque by Jean II Pénicaud included in this study was found to have a direct relation to a northern European source, a print by Lucas van der Leyden from 1517-1518 depicting Samson and Delilah.9

The overall appearance of the Passion series is of Northern European and late gothic origin, similar to the enamels by Nardon and Jean I Pénicaud. As Fogelman argues, the overabundance of architectural details, a hallmark of Jean I Pénicaud, is not present in the Passion series in the J. Paul Getty Collection. The simplified black backgrounds have instead a closer resemblance to the polychrome grisaille enamels from the end of the 16th century. The work of the later Pénicaud enamellers, Jean II, Jean III and Pierre Pénicaud, all show strong influences from the Italian Renaissance and the School of Fontainebleau. Only a few plaques in this study include late gothic imagery, they all have a less linear aspect, and appear more like painted works of art. Several works by the KIP master, which were previously attributed to the Pénicaud enamellers, have similarities to the J. Paul Getty Passion series. Comparing the colours used in polychrome enamels it can be stated that very few enamels presented a similar colour palette with light and cold pastel hues. Two exceptions are the Passion series from the Kunstgewerbemuseum in Berlin and the Crucifixion in the Victoria & Albert Museum, both which were included in database by Bronk and Röhrs. Gilded decorations are mostly added in the final stages, applied with a brush and fused to the glass in a final low temperature firing. In some cases it is added without being fired, occasionally gilded decorations have been applied at a later date. Several features of the gilding applied in the Passion series were questioned, such as the extensive gilding and the fleur-de-lis in the haloes (Figure 5). A halo in one plaque included in the comparative study contained fleur-de-lis, a Crucifixion scene attributed to Jean II Pénicaud. Other painted enamels show gilded fleur-de-lis as a repeated decorative element on the background sky or as pattern on fabric. Gilded decorations may also have been added as highlights in the hair, radiating haloes, decorative patterns or also dots applied in a cross hatching manner to highlight drapery and folds. Further, the presence of the gilded line framing the scenes was questioned on the Passion series. However the same kind of gilded lines framing the oval, circular and rectangular plaque proved to be present on several 16th century pieces, Pénicaud works as well as other 16th century enamels.

During the Renaissance, cross-hatching was commonly used on enamels, in a similar manner to prints, to achieve deep shadows. The techniques only occur in two minor areas of the J. Paul Getty Museum Passion series.

8 Fogelman 1990, p 132-139.
10 Fogelman 1990, p 131.
shadows are instead obtained with several layers of transparent polychrome of enamel in various thicknesses, sometimes with white highlights beneath the top layer of transparent enamel to enhance a highlighted area. When considering the authenticity and the possibilities of a 19th century origin of the series, this technique was regarded as one of the most difficult features.

Results and comparative studies

The initial micro-XRF and SEM-EDS techniques showed the transparent polychrome enamel glasses to be a generally low leaded sodium glass. The main colorants added were Fe, Cu, Co and Mn. Compared to vessel glass or architectural glasses, very small amounts of colorants are needed to provide a deep rich hue in the thin layers of enamel glasses. The opaque white enamel and the clear counter-enamel proved to be high leaded glasses, as is the case for most Renaissance painted enamels. The opacifier appeared to be a crystalline tin oxide. No distinctive 19th century compositions were detected.

The Passion series from the Berlin Kunstsverbemuseum was among the enamels studied by Bronk and Röhrs. The series showed some similarities to the Passion series in the J. Paul Getty Museum, such as the unusual colour scheme, the distinct linear drawing and late gothic imagery. Several enameled plaques from the collection of the Victoria & Albert Museum were included in the technical analysis, which was carried out in March 2002. Among these were two Passion scenes very similar to the Berlin Passion and some Péncioud workshop enamels. The results of these analyses were interpreted by Bronk and Röhrs. They place the Passion series either before the mid-16th or after the mid-18th century. Their first thought was to group the Passion series in the J. Paul Getty Museum collection with the one in the Berlin Kunstgewerbemuseum, due to the black enamel glass composition and the absence of typical mid- and late-19th century features. Due to the enamel composition and presence of certain trace elements Bronk and Röhrs definitely exclude dating the Passion series to the 2nd half of the 16th and the 17th century. A dating before the mid-16th century could however be possible, based on an enamel plaque with a similar appearance in the Victoria and Albert Museum collection. This framed Crucifixion-scene has previously been dated to 1545, but is unattributed. In particular, powerful similarities were found regarding the composition of the blue and black enamel glasses.

Unfortunately the dating of the piece in the Victoria & Albert Museum is unsecured and the piece has a suspicious provenance from the renowned Spitzer collection.

The authenticity of the Passion Series in the J. Paul Getty Museum was questioned on several stylistic grounds: the unusual colours; the fine drawing and outlines; the occurrence of gilded details, such as fleur-de-lis in the halos and the gilded frame; the Northern European and Germanic fashion of slashing in the clothing. However, the art historical investigation, which is part of this study, found no immediate reason to doubt some of these claims. Gilded frames are present on several well-established 16th century enamels. Contemporary Spanish and English fashion details were found depicted on a few works dated to the 1530’s and onwards, although German fashion was found to be rarely depicted on reliable Renaissance enamels. In an enamel attributed to Jean II Pénicaud a floriated halo did occur, on the other hand gilded details such as this could easily have been added at a later date. The analytical results proved to be consistent with the art historical studies. No clear 19th century markers were found by either method. Technical analysis showed a diversion from both the main 16th century Renaissance-group as well as well known late-19th century Revival enamels. Although, put together, the overall atypical features might be said to support the possibility of a manufacture date after the mid-17th century.

APPROACHING THE QUESTION OF AUTHENTICITY

As seen above, a definite final verdict on authenticity of the Passion series within the frame of this investigation was not possible, but the results of the study did allow us to draw some important conclusions. From the studies, five possible attributions could be extracted which will be explored below, some of them appearing more likely than others.

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• 16th century, from the Pénicaud workshop, possibly by Nardon, Jean I, Jean II, Pierre or Jean III Pénicaud.
• 16th century, by an enameller imitating the Pénicaud workshop.
• After the 16th century but before the mid-19th century, from a Pénicaud workshop.
• Early revival, after 16th century but before mid-19th century, by an enameller imitating works from the Pénicaud workshop.
• Late revival, after the mid 19th century, by an enameller imitating works from the Pénicaud workshop.

16th century origin

The previous attribution of the Passion series in the J. Paul Getty Museum was based on the presence of the poinçons on the reverse, and stylistic comparisons with works by Jean II Pénicaud. In this study, no works by Jean II Pénicaud, or by other Pénicaud family members, were really found to be convincingly similar to the Getty Passion.

The technical investigation revealed a structure that had not to date been reported on established 16th century enamels, incorporating several very thin layers of coloured transparent enamel glasses. Elemental analysis on the other hand did not detect any compositions that vary greatly from 16th century enamel compositions, although they do seem to indicate some significant differences on a quantitative level. From a comparison with the Crucifixion-scene in the Victoria & Albert Museum collection, comparative mid-16th century enamel compositions could be possible. A better database for comparison is needed to further confirm these indications.

The technical and stylistic evidence, presented above, together appear to suggest:
• The stylistic features indicate that an attribution to either Nardon or Jean I Pénicaud is very unlikely, to Jean II Pénicaud is doubtful, to Jean III Pénicaud not impossible but not very likely and to Pierre Pénicaud also unlikely.
• The technical data suggests a dating before mid-16th century, thus excluding an attribution to either Jean III Pénicaud or Pierre Pénicaud.

There is also the possibility that painted enamels from the Pénicaud workshop were already imitated as early as the 16th century, by other skilled enamel painters in a Renaissance workshop. There is not however, any evidence making such a practice very likely. The present research on the 16th century enamel workshops in Limoges does, on the contrary, show us a specialised and very restricted practice with a high level of control by the guild as the master workshops appear to have paid an annual fee to be allowed to continue to practise as masters of their art. Also family dynasties were well maintained, intermarriages between enamelling families were not unheard of and apprentices were trained by the masters in Limoges. As a result of this, the workshops themselves seem to have remained unchanged with little external influence and the artistic tradition continued to be conservative for some time.

After 16th century, before mid-19th century

At present, knowledge of Limoges School enamels after the first decades of the 17th century is not very extensive. There are indications that skills and techniques were passed down in the remaining enamel families in an unbroken line, but there are no known records of any Pénicaud workshop still in practice after the first decade of the 17th century. There are no known attributed works of art with a Pénicaud poinçon dated later than the 1570's. A Passion Series with a genuine Pénicaud poinçon originating after the 16th century thus do not appear to be likely. Although similarities were found between the colour scheme in the Passion series and the late 16th century enamels, the general style and iconography of the Passion series would be very out of fashion after the mid-16th century in addition, the results of the technical analysis by Bronk and Röhrs excluded a date after the mid-16th century up to the mid-18th century.

The possibility of an early revival and production of Limoges School enamels has not yet been fully explored. It has generally been believed that the revival and production of Limoges enamels started in the mid-19th century, with the height of its glory towards the end of the century. Recent research has, such as the recent re-attribution of some pieces with a provenance from before the 1830's, indicated a revival earlier than the second half of the 19th century. There are several reasons for dating the Passion Series to an early revival period. The main reason for this is the difference in the enamel compositions from the late 19th century group and the inconsistencies, both stylistic and technical, from the Renaissance enamels. Although the quantitative enamel composition is far closer to the 16th century enamels, there are indications of the presence of sufficient quantitative differences from this group. The structure and layering of the polychrome enamel also appear to differ from the main 16th century enamels. Unfortunately very few similar investigations of 16th or 19th century enamels had yet been published to allow for any further comparisons in the study.

After mid-19th century

The technical analysis established that it is difficult to place the Passion series among the known late-19th century Revival enamels. Even though the absence of any 19th century markers does not exclude such an origin, the overall quantitative differences suggests this a highly unlikely possibility. The present knowledge of Revival enamels does not enable us to distinguish stylistically between early and late Revival work.

SUMMARY AND CONCLUSIONS

Authenticity

Stylistic studies, visual examination and technical analysis combined presented a comprehensive picture of the Passion Series. The main features of interest were:

• There are **stylistic features** that do not seem to have any apparent relation to 16th century enamels from the Pénicaud workshop, for example the fleur-de-lis in the halos, the colour scheme, the Germanic fashion and the close modelling after the printed sources.

• The **structure and layering** of enamels, which do not conform to 16th century enamels.

• The **quantitative results** fall very far from 19th century enamel compositions. There are some indications of quantitative differences compared with 16th century compositions.

• The **lead content** is significantly different from known 19th century revival enamels.

• **Trace elements** are present in a sufficient quantity not to raise an immediate suspicion of a 19th century origin, but are however in the lower range compared to most 16th century enamels.

As argued above the compositions seemed to be far closer to the 16th century compositions than those from the late 19th century, moreover no known 19th century elements were detected in the quantitative results. Bronk and Röhrs clearly excluded a dating between the end of the 16th century and the mid-18th century. Based on these results it appeared possible that the Passion series was not of 16th century origin, despite a possible comparable piece found in the Victoria & Albert Museum collection that dated to 1545, as a secure provenance of this plaque before the 19th century has not been established. An origin prior to the mid-19th century origin could explain the large differences in the enamel composition compared with the main 19th century group. This assumes that basic enamel recipes and techniques were handed down in a more or less continuous line from the 16th century, with only marginal modifications of compositions or changes in sources of materials.

The above explains why the presence of the Pénicaud poinçon is crucial concerning the authenticity, as it with question indicate a piece either by the Pénicaud workshop or intentionally intended to imitate Pénicaud workshop enamels. If there were no enamellers from the Pénicaud workshop active after the end of the 16th century as historical research implies, and the Passion series do not have a 16th century origin, from where do the poinçons on the reverses of all the plaques originate? For what reason would they be used in a later context? Concerning these issues, the study suggests that the presence of the Pénicaud poinçon only presents two possibilities. Either they were produced in a 16th century Pénicaud workshop, in which case the series are to be authentic 16th century enamels, or they are of a later date and also intentionally made to imitate enamels from the Pénicaud workshop, thus not authentic. Without the presence of these poinçons, the authenticity would be more difficult to pinpoint, as several more options would be open for discussion. Now the investigation was limited to only Pénicaud workshop enamels. Without the poinçons the Passion series it would not be possible to say if the series had been produced by an anonymous enameller from the Renaissance. Or even if the series had been intentionally made been to falsely imitate a Renaissance enamel or not. These unanswered questions would complicate the discussion of authenticity.

Unfortunately, because of the questioned Crucifixion piece in the Victoria & Albert Museum, this investigation was not able to present a clear answer to the authenticity. Even though several strong indices did point towards a probable date between the mid-18th century and mid-19th century, the crucifixion scene presented a possibility, however slight it might seem today, of an authentic 16th century origin.

**The role of the conservator**

This case study clearly illustrates that further research is needed, focusing on Renaissance enamel workshops as well as the 19th century Revival work, and was intended to present a successful collaboration between art history research and material science. It is to the author’s belief that the research on the Limoges enamels is a very good example on an ongoing and successful interaction between scholars from all fields: Art historians, Scientists and Conservators, where each field contributes with equally important information and necessary skills. The investigation confirmed the importance of further collaboration between technical and art historical studies in the field. When combining results from art historical and scientific investigations it is important to understand and be open in both fields, which place the conservator in a unique position. Because the conservator often work close up to the object during long periods, focusing on minute details in technical matters and material science, observations may be noted on issues overlooked by others. Standing with one leg in both worlds the conservator may also well act as a bridge between scientists and art historians. A profound understanding of both the material per se and the cultural values of the objects are indispensable when considering conservation treatments, important ethical issues for any future preservation of our cultural heritage.
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PHOTOMECHANICAL REPRODUCTION PROCESSES

Following the invention of photography, a whole range of photography-based reproduction processes were born: Woodburytype, collotype, halftone screen, gum dichromate print, just to mention a few of the many variations on the theme of photomechanical reproductions. All of these methods are based on the fact that certain chemicals are sensitive to light. If added to a water-soluble substance such as egg white (albumen) or gelatine, the sensitized emulsion hardens when exposed to light.

The term “photo-mechanical” implies that there is a both a photographic as well as a craftsmanship aspect to the technique. Indeed, some of these reproduction techniques were very sophisticated and required good skills of the printer. As a result, specialized photomechanical printing houses were established. The collotypes were ideal for the reproduction of drawings and lithographies, being a planar printing technique. Heliogravure, as the term implies, is a planar technique, and was therefore superbly suited to reproduce intaglio prints. Since the image in a heliogravure is etched into the copper plate, it is particularly deceptive when reproducing line etchings. By learning the process of heliogravure reproduction step by step, the conservator might become aware of the possible errors and flaws inherent to the technique, and might be better equipped to recognize it.

ABSTRACT

Following the invention of photography, a wide range of so-called photo-mechanical reproduction methods were born. The common principle for all these reproduction methods was the use of a photo to transfer the image to the printing medium. Heliogravure is an intaglio technique, and was therefore superbly suited to reproduce intaglio prints. Since the image in a heliogravure is etched into the copper plate, it is particularly deceptive when reproducing line etchings. By learning the process of heliogravure reproduction step by step, the conservator might become aware of the possible errors and flaws inherent to the technique, and might be better equipped to recognize it.

KEYWORDS

Heliogravure, photogravure, photomechanical reproductions

books from the turn of the 19th century are a veritable treasure chest for those with an appreciative eye for reproductions — the collotypes and the heliogravures are invariably of a quality rarely encountered today.

The term heliogravure is sometimes used synonymously with aquatinto heliogravure. In this variety of the technique, the copper plate is covered with aquatinto grain in order to reproduce the wide tonal range of the original. The aquatinto grain is fairly easy to observe under magnification, and this reproduction method therefore does not usually cause any identification problems. As the line heliogravure is more difficult to identify, this article will focus on the line heliogravure and its possible detection. I will henceforth use the term “heliogravure” synonymously with “line heliogravure”.

To recognize a heliogravure, a thorough understanding of its technique is necessary. This article is an attempt to clarify the process of making a heliogravure, in the hope that this eventually may help us to recognize it.

THE HELIOGRAVURE TECHNIQUE

The first step towards a heliogravure was to obtain a good quality photo of the object to be reproduced. (Figure 1) Collodion wet plate was recommended instead of gelatine dry plate both for the negative and the positive transparency, because of the sharper image obtained by the former process. The photographic image had to be a transparency;
a positive on a transparent base, such as a glass plate. In the early experimenting stages, the copper plate itself was covered with a light sensitive substance. To improve the contact between the photographic image and the printing plate, a middle step was introduced in the shape of a so-called pigment paper or carbon paper. This paper, invented in 1853, was covered on one side with a light sensitive gelatine emulsion. When exposed to light, the sensitized gelatine would harden and become water resistant. The transparency was placed with the pigment paper in a contact frame, and exposed to light (step 2). Wherever the gelatine coating was exposed to light, the gelatine hardened and became insoluble in water. Under the dark parts of the positive, where light did not penetrate, the gelatine of the pigment paper remained water soluble. The exposed pigment paper was then moistened, and the gelatine layer transferred to a copper plate, face down with the motif backwards (step 3). The plate was soaked in warm water until the paper support had loosened sufficiently to be gently pulled off without damaging the gelatine layer.

The gelatine layer was washed in hot water, which caused the unexposed – and therefore still water soluble – gelatine to dissolve (step 4). The remaining gelatine now covered the plate in all the areas that were white in the original, and the black lines in the original were exposed. Now the copper plate was placed in an iron chloride bath. After sufficient etching, the gelatine layer was removed (step 5). The plate was covered with ink in the usual fashion, wiped and printed (step 6 & 7).

The heliogravure process was a difficult and time consuming task, and the reproduction speed of the copper printing press was far less than what might be obtained from the colotype press and later the autotype press. Subsequently, the heliogravure was almost exclusively reserved for the reproduction of art works. The photographers choose well known and popular prints that were bound to sell well as reproductions, such as the ones by Dürer, Rembrandt or Goya (Figures 2 and 3). Among the Nordic artists, Anders Zorn’s etchings have been reproduced as heliogravures.

THE HISTORY OF HELIOGRAVURE

The first experiments with the precursors of the heliogravure technique were made by Joseph Nicéphore Niépce himself, one of the fathers of photography. These experiments took place as early as 1826.3 Niépce found that bitumen, if exposed to light, would turn white and insoluble. He made a "transparency" by dipping an original print in a wax solution. If paper is covered with oil or melted wax, it becomes translucent, a principle that was used in the early manufacture of tracing paper. The translucent original print was placed face up on a pewter plate covered with bitumen. After ten hours exposure to sunlight, the exposed bitumen had turned white and insoluble, whereas the unexposed parts were rinsed off with mineral oil. In this way he made a positive reproduction of a print, where the white bitumen corresponded to the white parts of the original print and the exposed pewter rendered the black lines in the original. However impressive the reproduction may have been, the heliography, as Niépce called his method, never really became a success, no doubt due to the disturbing fact that you had to virtually destroy an original in order to make a reproduction of it.

Monsieur Niépce’s cousin, Claude Felix Abel Niépce de Saint-Victor, who continued his uncle’s photographic research, took the heliography one step further. He made a positive transparency of the original on a glass plate with a collodion emulsion layer, placed it on a pewter plate covered with bitumen varnish and exposed it ten minutes in the sun. Because of the greater transparency of the positive, the exposure time could be greatly reduced. After rinsing off the unexposed bitumen, the pewter plate was now put in an acid bath and etched, inked and printed.

A. Bonnardot 4, who gives a glowing and patriotically biased account of the Niépce method, ends his description by stating that these methods, “in use last year, may already be surpassed by other methods, because each photographer who uses them will add to the perfection by his own research.” 5 The method invented by Niépce Saint-Victor seems to have served the purpose of print reproduction very well. “Monsieur Benjamin Delessert seems to have used this method to reproduce the engravings of Albert Dürr. Mmes Mantes et Riffaut have been busy reproducing Rembrandt’s oeuvre, and they have in the course of this work made some modifications to the system, which they keep secret. I have read, however, that they use collodion glass negatives developed in dark chambers.” 6

Despite this successful work with early heliogravures, it was not until Fox Talbot introduced potassium dichromate in gelatine on copper plates that the heliogravure technique as we know it was born. Potassium dichromate was a cheap product and its light sensitivity made it possible to significantly shorten the exposure time. Fox Talbot also introduced ferric acid for the etching bath, substituting the much more aggressive and highly toxic nitric acid used in earlier experiments. He also made the first attempts at screen printing, first by superimposing images of finely woven gauze onto his motif, later by experimenting with aquatint grain. 7

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4 One of the earliest authors to describe the heliogravure process was A. Bonnardot, who in 1846-48 published “Essai sur l’Art de Restaurer les Estampes et les Livres”. This book is also one the earliest paper conservation hand books. The second edition of this book, from 1858, contains a whole chapter on reproduction methods of old prints. A. Bonnardot: Essai sur l’Art de restaurer les Estampes et les Livres, 2. ed. Paris 1858, reprinted in: Burt Franklin: Bibliography and Reference Series #126, New York 1967

5 Indeed, there were developed many other techniques. One of the lesser known, which is not based on photography, but which yielded reproductions of outstanding quality, was the electrotyping process, invented in 1839. In this process, an original copper printing plate is pressed into a layer of beeswax. The surface is then covered with blacklead and put in a bath of copper sulfate. Electrolytically, copper would deposit on the surface of the mould until the layer was thick enough to be removed. The thin copper plate was then covered with a thicker metal plate and could be printed, the lines exact replicas of the original plate. The disadvantage of the technique was the time consuming electrolysis, which might take days.

6 Bonnardot, A., p. 317 (the author’s translation) The collodion wet plate negative which was utilized by Niépce Saint-Victor, had been invented in 1851 by Frederick Scott Archer.

7 The Czech painter Karel Klíč improved the aquatint heliogravure technique in the late 1870s, and the details of this technique were published in several articles in the early 1880s. Since this article focuses on the line heliogravure, the development of the half-tone reproduction will not be outlined here. For further reading, I refer to M. Hepher: The photo-resist story - from Niépce to the modern polymer chemist, in: Journal of Photographic Science vol. 12, London 1964, and Eugene Ostroff: Photography and Photogravure: History of Photomechanical reproduction, in: Journal of Photographic Science vol. 17, London 1969.
HELIOGRAVURE AND THE INTAGLIO PRINT

Intaglio is a common denomination for all the printing techniques where the image itself is engraved, etched or cut into the plate, as opposed to the relief print, where the image is formed by the raised parts of the printing block, the surrounding area having been carved away. The printed image of an intaglio print is produced by the ink held by the grooves in the copper plate, being pressed onto the soft, slightly humid paper in the rolling press. The copper plate itself also leaves a trace in the paper; the so-called "plate mark", where the edges of the plate are pressed into the paper.

The lines in an intaglio print may be produced by making grooves in the surface with a v-shaped burin (copper engraving), by 'scratching' the surface of the plate with a drypoint needle (drypoint), or by letting acid etch the surface of the copper plate (line etching). The character of these lines is clearly different, corresponding to how they were produced. The lines of a copper engraving are produced by a v-shaped tool, and consequently the end of each printed line is pointed. The needle-shaped burin creates a characteristic "burr" when it scratches into the copper plate. Compared to the lines in a heliogravure, both these techniques are easily identifiable.

The lines in a heliogravure print are neither scratched nor cut into the copper plate. They are etched into the plate. So are the lines in an original line etching. The character of the line in these two techniques is identical; since both heliogravures and line etchings are produced in the same way. Where the heliogravure differ from the line etching is in the creation of the picture on the copper plate. The heliogravure reproduces, and the image therefore has to be transferred to the plate by a photograph, not by an artist’s hands and creative imagination. This step in the making of a print is the only step where the making of a heliogravure differ from the making of an original line etching. The heliogravure – which denotes both the technique and the resulting image – is therefore one of the most deceptive reproduction methods ever invented, if reproducing line etchings.

THE HELIOGRAVURE PROCESS – LOOKING FOR THE WEAK POINTS

The size of the print

If we analyze the process of heliogravure as described above, we recognize separate steps which each demand precision and professionalism to achieve a perfect result.

First, there is the basis for the whole process; a good quality photography of the original. If making a facsimile reproduction, this photo had to be exactly 1:1, something which demanded great accuracy on the part of the photographer. If there are discrepancies from the measurements of the original, the photographer has not been accurate enough, and the reproduction has revealed itself. The measurements listed in the ōevre-catalogues are usually fairly accurate, but may differ by a millimeter or two from the measurements of the print, and so a small deviance from the listed measurements cannot be viewed as conclusive. However, if there is a consistent discrepancy between the listed and the actual measurements of the print, there is good reason to be suspicious.

The quality of the positive transparency

If the transparency itself is of less than perfect quality, it will show in the resulting print. If, for instance, the photo is not perfectly focused, the corresponding lines in the heliogravure will be blurred. In the manuals for early heliogravure printing, great weight is placed upon the quality of the negative and the resulting transparency. The collodion wet plate is recommended for this use by all authors, because of its greater sharpness in rendering the details. Wilkinson, the author of a manual of different photomechanical reproduction methods, describes the desired quality of the transparency in this way: "The transparency for printing upon a copper plate must, when laid upon a piece of white paper, allow every detail, however minute, to be perfectly distinct by reflected light. If this is not so it will be impossible to get a good engraving on a copper plate." 8

Light diffraction

The glass plate carrying the photographic image was placed in a contact frame, pressed against the sensitized copper plate itself, as in the early stages of the process, or against a pigment paper, as became the standard method as the method developed. The close contact between the glass plate and the paper was vital to avoid blurred areas in the photographic image. Blurred areas or double lines in a print may point to uneven contact in the contact frame, thus identifying the print as a heliogravure. Even though prints from worn original plates may also show blurred areas, the occurrence of "shadowy" lines in an otherwise good quality print would seem to identify the print as a heliogravure.

Loss of thin lines

The thinnest and weakest lines in the original print will often suffer the most during the transfer journey from negative to positive transparency, to pigment paper, copper plate and finally to paper. Often, the finest and thinnest lines in the print do not make it over to the finished print. Sometimes, the conscientious heliogravure printer would rework the copper plate with a burin to strengthen the weakest lines, but more often they simply are very weak or altogether gone in the heliogravure print. (Figures 4 and 5) Consequently, this is always a checkmark. If the fine lines are missing or if they are very weak or rendered incoherently, it may be a sign of a heliogravure. However, this might also be a characteristic of a late print from the original plate. As the copper plate wears down, the fine lines are the first to weaken and almost disappear. If the print bears other traces of wear, such as worn,

8 Wilkinson, W.T.: Photo-engraving, photo-etching, and photo-lithography in line and half-tone; also, collotype and heliotype. 3rd ed., New York 1888, p. 120.
greyish areas in the dark parts, it probably is a print from the original plate and not a heliogravure. If, however, the print otherwise seems to be in pristine condition, then missing thin lines may give cause to some suspicion.

**The etching**

The ink in a heliogravure is evenly deposited and gives a somewhat "flat" impression when viewed under magnification. The lines are also often slightly wider than in the original. In the dark areas of cross-hatching, the combination of slightly wider lines and evenly deposited ink sometimes makes it difficult to distinguish the separate lines (Figures 6 and 7). However, the phenomena of "flat" and evenly deposited ink and density in the darker areas of a print are also similar to what you may observe in a late print from the original plate.

**Heliogravure – Examination of the Paper Itself**

We have been focusing on the possible recognition of a heliogravure, based on properties of the printed line alone. As the majority of heliogravures will have been made as honest reproductions and not as deliberate fakes, the paper itself may in most cases provide the necessary information. Every paper conservator will probably observe the paper first when examining a print, and work through the mental check list: Is the paper laid or wove? Is the paper hand made? Is it made on a double faced mould? Is there a water mark? Which fibers have been used? Does the paper contain wood? Other conservators may have still other questions on their check list. The answers to some – or even just one – of these questions may be so conclusive that further investigations are unnecessary. To put it simply: If the Rembrandt in question is printed on a late 19th century paper containing wood, the paper conservator needs to spend no more time at the microscope. The issue of the dating of paper and paper analysis is an intriguing one, but it is not within the scope of the present article.

**Heliogravure – Finding the Flaw**

Every curator in every major print department will probably have their own stories to tell about heliogravures, rising suspicions and eventual detections. Most – if not every – major collection will have its share of heliogravures, acquired by collectors or curators in more innocent times as Dürrers or Rembrandts. The following story illustrates two points; firstly, that expertly made heliogravures still are on the market, and secondly, that there is always a flaw to be detected. The story unfolds in the print department of National Gallery, Washington, and its chief curator Andrew...
Robison is its protagonist. The department had been offered a particularly fine Rembrandt print, which seemed to be in pristine condition. In fact, its flawless appearance created in itself some initial suspicion; this was too good to be true. The paper was analyzed and turned out to be a bona fide 17th century Dutch paper, with a correct water mark and collector’s stamps on the verso. Despite this very convincing circumstantial evidence, the experienced curator had an uneasy feeling about the print. The way the ink was deposited seemed a little flat, compared to the otherwise seemingly excellent state of the print. He wanted some time to think it over, and meanwhile kept the print in the Department. One day, he took a closer look at the verso, where there were two small collector’s stamps. Many of these stamps are very well known to the experts, and they can tell a lot about the print’s provenance and earlier story. In this case, the juxtaposition of two stamps particularly caught the curator’s attention. He had never seen these two collector’s stamps together on a Rembrandt print before, and found it odd. Upon closer examination, the stamps turned out to be slightly larger than they should have been; i.e. they were heliogravures, too, as was indeed also the print itself. The otherwise meticulously accurate forger – for this was no doubt more a fake than a reproduction – had not been as precise on the verso work as he had been on the motif on the recto. Eyes and experience were the key tools in this case, as indeed in most forgery detection cases. To those of us with less experience and less expertise, the following conclusion may nevertheless be of some comfort: If there’s a heliogravure, there is always a flaw to be detected.

Acknowledgements

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9 This story was communicated to me by Sidsel Helliesen, the former head of the Department for Prints and Drawings, National Gallery, Oslo.
ANALYSIS OF THE PAPER MATERIAL ITSELF
A NON-DESTRUCTIVE METHOD TO DISTINGUISH GENUINE DOCUMENTS FROM FORGERIES

ANNA-GRETHE RISCHEL

ABSTRACT

Non-destructive macroscopic and microscopic analysis of paper contributes to new knowledge about the close correlation between quality, treatment and condition of the fibres. Only a tiny sample of test material is necessary for the microscopic analysis. It is therefore fit for examination of works of art on paper and of unique manuscripts.

Recent analysis of East Turkestan documents and suspected forgeries resulted in observations, specific for the manuscripts under suspicion. Most likely this group was local forgeries from the 20th century because of many points of resemblances to a reference material of new handmade paper of the same provenance and very different from the ancient genuine documents.

The combination of paper history and analysis of paper of known origin furnishes precise information about the development of paper technology and choice of fibre materials. A reference material of such data can help in deciding whether the combinations of details found in a particular sample corresponds to the expected characteristics of the period or not.

KEYWORDS
Non-destructive analysis, paper technology, condition of fibre materials

Recent Danish analysis of paper technology has as its focus the material itself. This approach was originally inspired by the presence of unique specimens of Japanese paper at the Ethnographic Collection of the National Museum in Copenhagen. It was observed that there is considerable variation in the paper qualities in these specimens, and that motivated a series of study tours to paper makers’ workshops in the Far East where classical methods of traditional paper production by hand still exist in remote areas. 1

First-hand study of contemporary, hand-made paper revealed that even small variations in the choice and treatment of the fibre materials, the sheet formation, the drying process, and the after-treatment result in a great variety of paper qualities. The visual impressions from these field studies, together with field notes that described the technologies used by the paper makers, formed the basis for a pilot project: a comparative study of a variety of paper qualities with the purpose of developing a non-destructive analysis of the paper material itself which would identify and describe the technology used in each case. As reference material for the project a number of different-looking paper qualities were selected from recently collected specimens of known provenance and technology from Nepal, Thailand and Japan 2.

The first important step in the pilot project of the present author was, of course, to supplement the already available knowledge by scrutinizing the literature on Oriental paper history and technology. The sources that were most immediately valuable were first-hand “field observations” of the paper makers’ preparation of fibre materials and of the paper production itself 3. Botanical reference works constituted

another important source of information. The pioneer of microscopic analysis of plant fibres is the Austrian botanist Julius von Wiesner. His analysis of Central Asian manuscripts from East Turkestan (Wiesner 1902) concentrates on the identification of paper fibre materials, supported by a reference material of local plants used for papermaking. Wiesner's scientific method and his results were a source of inspiration to the Danish pilot project reported here, but there is a fundamental difference in that the reference material is now constituted by paper specimens of known origin instead of specimens of plant material, the project aiming at a combined analysis of the origins of the fibre material and of the technology used in paper production.

In the descriptive phase of the pilot study a detailed checklist served as an important tool in the systematic documentation of each paper. The list was divided into (A) field note observations, (B) macroscopic observations, and (C) microscopic observations with the use of various kinds of microscopes. The field notes (A) included observation of the paper production in each workshop, documented with photos and information from the paper maker about his choice and preparation of plant material. Next came the macroscopic observation (B): a detailed description of each sheet of paper as examined with the naked eye, with information on the dimensions and traces of the paper maker’s mould, the fibre distribution and direction, and the structure, density and sheet formation. Finally came the microscopic approach (C), which was designed so that it required only a tiny piece of each paper specimen. The Scanning Electron Microscope (SEM) was used to show (i) the undisturbed structure of the paper and its fibre distribution and (ii) the presence of specific chemical elements, which might stem from additives during paper production or from water and soil (Figure 1). The condition and morphology of fibres after separation were studied in the Differential Interference Contrast Microscope (DIC) and the Polarisation Microscope (POL); this gave detailed information on the fibres used in the production of the paper and the effect of the preparation of the fibre material. Only a drop of water was used to dissolve the tiny paper specimen on the microscope slide and no chemicals or colouring added, so as to interfere as little as possible with the original composition of the paper and also to avoid spoiling hidden traces of the underlying paper technology (Figures 2 and 3).

The optical analysis and detailed description of the paper itself and of its individual fibres resulted in the discovery of characteristic, diagnostic features giving evidence of the preparation of the fibres, the sheet formation, the type of paper mould, and the drying process, all reflecting the technology used by the paper maker. The fibre distribution and fibre direction gave evidence of the sheet formation process, and the paper surface often showed traces of brush strokes from the flattening of the wet sheet before the drying process.

For centuries, inner bark materials from the Moraceae family and the Thymelaeaceae family, as originally used by Chinese papermakers, have been used for paper making

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Catling, D., Grayson, J. 1982. Identification of Vegetable Fibres
also in Nepal, Thailand and Japan. The reference material consisted of pure paper mulberry or kozo fibres (Moraceae), as well as pure gampi fibres, pure mitsumata fibres and pure lockta fibres of the Thymelaeaceae family. The microscopic study of the individual fibres therefore gave useful information on the diagnostic features left after the preparation of the various plant materials. It is apparent that the condition of the processed fibres found in paper differs in important ways from the botanical descriptions of raw inner bark fibres and the presence of chemical compounds such as calcium oxalate crystals known to be characteristic for each plant; accordingly, such botanical information is difficult to use in the identification of fibre material of unknown origin (henceforth referred to as anonymous fibre material). The morphology of the fibres has undergone a change (which one might a priori ascribe both to the processing happening during paper production and to ageing and wear) but the proportions of individual fibres can still be of some help. It is, however, an additional complication that several features are common to inner bark fibres from different plants. Since the information yielded by the physical appearance of the fibres is limited, a search for characteristic elements not destroyed by the treatment of the plant material was found crucial for the identification of anonymous fibre material.

The Japanese sheet formation aid, a solution added to the pulp by Japanese paper makers in order to obtain an even fibre distribution by delaying the drainage, had hitherto been regarded as invisible in the finished sheet of paper. Microscopic analysis of individual, separated fibres, however, revealed the presence of the mucilage in the form of a raw amorphous substance. The hemicellulose was still present among the fibres as an amorphous substance.

The microscopic analysis threw interesting light on observed differences in the degree of fibrillation in different paper qualities. It was shown that such variation is due to differences among the plant species used for paper production and reflects the different sensibilities of the plant material; it is not caused by the mechanical treatment with hand pounding or electric stamping mill, as had been assumed before the analysis.

The value of the detailed optical findings from the reference material was subsequently tested in identifying fibre material and technology used in older anonymous Japanese paper qualities from the National Museum in Copenhagen. The analysis resulted in rather precise descriptions that were later confirmed by the fortunate discovery of written information on the technology and provenance of these very paper samples, collected 1871 in Japan by a Swiss Silk dealer. Thus it might be concluded from the Danish pilot project that this analysis identifies the raw material and technology used by the paper maker, be it in ancient or in recent time. The approach turned out to be remarkably robust also in the presence of differences due to ageing of the paper sample: there was no deviation from the traditional selection of fibres between the new fibres of the reference material and the older ones and no difference in fibre condition except for those of the old paper qualities where it could be shown that recycled fibres had been used.

In 1994 the method developed in the pilot project was used in a comparative analysis of archaeological Central Asian paper documents and suspected forgeries kept in the Ethnographic Museum in Stockholm. This was the first time the new method was applied to the ancient written documents; in fact, it was the first time detailed analysis of the paper material itself was used in attempts to provide evidence as to whether certain documents were genuine ancient manuscripts or forgeries from the twentieth century. Unlike the pilot project where there had been numbers of new sheets of each paper quality and no limitation of test material for the microscopic analysis it was now crucial to use as small paper samples as possible so as not to damage the manuscripts. As stated above, the pilot project had shown remarkable similarities between old and recent Japanese paper qualities. The archaeological material of the 1994 study, however, showed many differences from the reference material of known origin. Before going into details with the selection of paper specimens and their test results it is necessary to briefly outline the research history behind their presence in Stockholm.

At the end of the nineteenth century and the beginning of the twentieth century European archaeological expeditions had started intensive excavations in East Turkestan and adjacent regions of Asia. The discovery of written information about lost civilisations and languages hitherto unknown aroused a huge interest in antiquities and especially in manuscripts. Only a few of the members of the expeditions had expertise in the traditional languages and scripts of Central and East Asia, so local people soon dis-
covered a market for forgeries. These forgeries had naturally not been excavated by the archaeologists but were sold by local people in the Khotan area to foreigners as genuine specimens. Mixed with genuine manuscripts and artefacts these forgeries were brought back to museums and archives in Europe as well as in China and Japan.

East Turkestan and the Taklamakan and Gobi deserts had hitherto been white spots on the maps. The Swedish geographer and explorer Sven Hedin was a pioneer in his mapping of the course of the Tarim River, which crosses the Taklamakan desert, and in solving the mystery of the moving salt lakes. During an expedition in 1901 Sven Hedin discovered the oldest hitherto known written texts on paper and on wood in Lou-lan, a Chinese military station along the Silk Road.

On the following expeditions to East Turkestan and China under the leadership of Sven Hedin more manuscripts and archaeological items were collected and brought back to Sweden where they are now kept in the Sven Hedin Collection at the Ethnographic Museum in Stockholm.

As material for the study reported here a number of both genuine manuscripts and suspected forgeries from the Sven Hedin Collection were chosen by the Swedish curator Håkan Wahlquist and professor Staffan Rosén. The 66 specimens included 37 ancient paper of Chinese, Tibetan and Turkish/Uighur origin and 29 suspected forgeries. Their texts were written with black ink in Chinese, Saka, or other characters in horizontal or vertical lines, sometimes with embossed blind parallel lines (Figure 5).

There is very little information in ancient sources about the origin of the Chinese invention of paper making; that complicates the study of early paper but adds to its intrinsic interest: analysis of Chinese paper from this period might reveal hidden traces of the actual technology used in the 7th century when the Chinese secret of paper-making spread via Buddhism to countries outside the Chinese empire.

The macroscopic examination and description of each document from the Sven Hedin Collection took place in close cooperation between Wahlquist and Rosén in Stockholm and the present author in Copenhagen. The ancient paper of these specimens was less transparent and darker than the reference material (moreover, some of the manuscripts were still partly covered with a layer of clay and sand from the desert where they had been found). Impressions of laid lines and chain lines and lack of impressions and patchy fibre distribution indicated that both the floating mould and the dipping mould had been in use, taking the specimens as a whole (including suspected forgeries). The manuscripts were more or less fragmentary, with various mechanical damages; a number of documents had been restored in 1934 with new Japanese paper or laminated with silk at the Record Office in Stockholm. Apart from the tears and lacunae they were in much better condition than expected, however. The archaeological paper fragments covered by sand

Fig. 5
SEM of the undisturbed structure of a suspected forgery illustrates how the fibres are embedded and covered with clay and sand particles, much different compared to the structure of the genuine paper in Figure 1.

Fig. 6
The Nepalese papermakers still use the oldest type of mould with a fixed mat of woven textile. The Nepalese girl pours the pulp of lockta fibres between her fingers into the floating mould, while the woven mat is covered by water.

Fig. 7
The pulp is mixed and diluted with water in the floating mould and spread as even as possible by movements of the hands; the mould is lifted horizontally and the new sheet of paper stays in the mould until dry.

9 Stein, M.A. London 1933. On Ancient Central-Asian Tracks
6 Hedin, S. Kristiania 1903. Tusen Mil paa ukjendte Veie gjennem det inderste Asien og Tibet.
and clay in deserted trading stations along the Silk Road had been protected for centuries against mechanical damage, light and humidity - the three main causes of degradation in organic material.

It was obvious that these paper qualities were very different from the reference material from Japan, Nepal and Thailand, all of which stemmed from a much later time than the archaeological material from East Turkestan. This is in itself not unexpected considering that the paper technology had developed over many centuries, but it meant that the checklist had to be adapted to the archaeological paper. The modified checklist used for the total procedure looks as follows:

**Macroscopic observation, checklist**

<table>
<thead>
<tr>
<th>Genuine documents &amp; suspected forgeries</th>
<th>Sven Hedin Collection</th>
<th>The Ethnographic Museum, Sweden</th>
</tr>
</thead>
</table>

**Size, look and character of paper**

- Width of document: 25 - 85 mm
- Width of document: 86 - 135 mm
- Width of document: 136 - 650 mm
- Height of document: 50 - 120 mm
- Height of document: 121 - 184 mm
- Height of document: 185 - 335 mm
- Sheet untrimmed
- Height of document intact
- All edges trimmed or torn
- Imprint of coarsely woven material
- Shadow lines from laid streaks
- Imprint of bamboo needles/straw/reed mat
- Distance between chain lines: 23 - 36 mm
- Distance between chain lines: 37 - 75 mm
- Distance between double chain lines: 7 - 20 mm
- Distance between laid streaks: 65 - 80 mm
- Distance between laid streaks: 81 - 125 mm
- Bamboo/straw/reed laid lines: 11 - 17/3 cm
- Bamboo/straw/reed laid lines: 18 - 23/3 cm
- Bamboo/straw/reed laid lines: 24 - 30/3 cm
- Lustrous paper surface
- Matt paper surface
- Smooth paper surface
- Rough paper surface
- Irregular paper surface
- Flexibility stiff
- Flexibility soft
- Flexibility pliable
- Single rough fibres not separated
- Homogeneous fibre distribution
- Slightly patchy fibre distribution
- Irregular fibre distribution
- Dominant fibre direction
- Random fibre direction
- Traces/striation of brush strokes
- Impression of wood/wall structure
- Pale yellow colour of paper
- Curry yellow colour of paper
- Yellow brown colour of paper
- Sandy grey colour of paper
- Clay brown colour of paper
- White colour of paper
- Restored

**Microscopic observation, checklist**

<table>
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<th>The Ethnographic Museum, Sweden</th>
</tr>
</thead>
</table>

**Fibre material**

- Average fibre width: 11 - 13 mm
- Average fibre width: 14 - 20 mm
- Average fibre width: 21 - 26 mm
- Minimum fibre width: 4 - 6 mm
- Minimum fibre width: 7 - 8 mm
- Minimum fibre width: 9 - 17 mm
- Maximum fibre width: 18 - 29 mm
- Maximum fibre width: 30 - 39 mm
- Maximum fibre width: 40 - 70 mm
- Average fibre length: 1.2 - 3.5 mm
- Average fibre length: 3.6 - 5.5 mm
- Average fibre length: 5.6 - 8.9 mm
- Minimum fibre length: 0.4 - 1.9 mm
- Minimum fibre length: 2.0 - 4.0 mm
- Minimum fibre length: 4.1 - 6.7 mm
- Maximum fibre length: 2.5 - 7.0 mm
- Maximum fibre length: 7.1 - 13.0 mm
- Maximum fibre length: 3.1 - 14.5 mm
- Fibre ends tapering and pointed
- Fibre ends rounded
- Fibre ends ramified
- Fibre surface smooth
- Fibre surface veined/long, striated
- Dislocations
- Diagonal cross marks
- Horizontal cross marks
- Half cross marks
- Swelling of fibres
- Constriction of fibres
- Loose primary wall
- Amorphous substance present
- Sporadic amorphous substance present
- Fibre material fibrillated
- Fibre material heavy fibrillated
- Individual cluster crystals
- Several cluster crystals
- Single prismatic crystals
- Several prismatic crystals
- Single raw starch grains
- Cluster of raw starch grains
- Particles of fillers/soil
- Narrow lumen
- Broad lumen
Inspection of the paper sheets showed a consistent difference between the suspected forgeries and the supposedly genuine samples. The paper of the former was mostly rather dark in shade with a felt surface and no impressions of laid lines or chain lines indicating that the paper maker had used a floating mould. This simple type of mould was considered as the first type of mould used in Chinese paper making; the ancient technology is still in use in Nepal, Thailand, the Shan States of Burma and China. Typical for the Nepalese sheet formation is the patchy distribution of the fibres which are poured into the floating mould and spread by hand whipping (Figure 6 and 7).

All the other documents had impressions of laid lines of a mould mat, typical for the dipping mould, and the fibre distribution was less patchy and more even, with a difference in smoothness between the front and reverse sides of the paper. Ink bleeding and smudging occurred in some manuscripts caused by a weak or missing sizing of the paper or a poor ink quality.

For the microscopic analysis a very tiny piece of test material was selected from each manuscript without causing visible harm, being taken from the edge or from already damaged area with tears. The original edges of the archaeological material were only sparsely preserved and therefore the exact size of the papermaker’s mould could not be ascertained but only the structures of the woven mould mat and the density of visible chain lines and laid lines.

An important issue in the identification of the raw material and/or the manufacturing process is the presence of certain chemical elements and compounds. Microscopic analysis of the archaeological paper revealed, as expected, a high content of clay and sand particles in all documents as well as salt crystals, and in some of them the Scanning Electron Microscope showed presence of calcium and sodium, without any clear difference between the genuine documents and the suspected forgeries. As for the texture of the plant material, the microscopic analysis of the individual fibres revealed a mixture of well-preserved raw plant fibres and more fibrillated recycled fibres of varying origin. It was very difficult to try to identify such a complex blend of fibres both because the occurrences of the few useful diagnostic features were spread and because fibre materials not known from the reference material had been used in the ancient documents. Recycled textile fibres from hemp, linen and ramie turned out to be mixed with recycled and new fibres from paper mulberry and daphne/gampi fibres. It was obvious from the condition of the fibres that both mechanical treatment and chemical maceration of the fibre material had been developed and used (Figures 8 and 9).

According to Wiesners analysis of Central Asian manuscripts (Wiesner 1902) this blend of several types of recycled fibres was characteristic for the ancient East Turkestan manuscripts, and he found that one single type of macerated fibres of paper mulberry was distinctive for the suspected forgeries. The data collected in the analysis in Copenhagen proved that all the documents from the Hedin collection that consisted of pure paper mulberry fibres exhibited the suspected group of documents, and that the technology used was similar to the local paper technology found in the Khotan region of East Turkestan and still used by papermakers there today. The following combination of macroscopic and microscopic observations constitutes features that are distinctive for all but three of the suspected forgeries (Figure 10).
It had already been observed by the Swedish scholars in Stockholm that some documents stand out as forgeries by exhibiting written characters imitating the Saka script without being linguistically meaningful. The Danish analysis of the paper technology and of the fibre materials of the selected specimens confirmed that a number of distinctive features are characteristic of the paper used in the forgeries. The dominant use of only one type of macerated raw fibres, combined with the use of a floating mould, is the most marked difference between genuine ancient paper and paper from the twentieth century paper. A combination of a smooth surface and a more felted surface with impressions of a woven structure is characteristic for paper formed in a floating mould, but the double-felted surface known from the suspected forgeries is considered indicative of a forgery.

A definite criterion for distinguishing between forged and genuine documents is not attainable using this non-destructive method, but the results show trends that are small steps in the right direction. The limited test material selected in 1994 may not be truly representative of Central Asian paper of the period it stems from. It may, therefore, be of limited value as evidence for distinguishing forgeries. Some observations may be typical and others atypical for the material. Nonetheless, they all provide data about paper technology using a non-destructive method. Non-destructive methods of analysis are vital because test material is normally only available in very limited amounts, if at all, from original genuine material.

More recent analyses by the author of early Central Asian documents from Lou-lan clearly document the technological
development that took place in Chinese papermaking from the second and third to the fifth and seventh century. They also reveal the variations in the choice of fibre materials and technology that happened along with the spread of papermaking to other areas and cultures outside the Chinese empire. Such knowledge is of importance in dealing with paper of unknown age and provenance. Findings that are characteristic and more or less diagnostic for each period and each location can be combined with the philological information furnished by the writing on the documents, these two kinds of evidence serving jointly to determine the provenance of a particular paper specimen. This may be a powerful tool in future attempts to distinguish between genuine documents and forgeries in paper, lacking other distinctive features (such as the manufacturer’s watermark in European paper).

ABOUT THE AUTHOR

Anna-Grethe Rischel became a member of the Conservation Department staff at the National Museum of Denmark 1980. She was head of Textiles, Paper and Leather Section and member of the Conservation Department Board from 1993-2001. Her employment as a paper conservator has been concentrated since 2001 in paper conservation; she finished her research project of analysis of Central Asian paper technology in 2002 and continued 2003 with a two-years study project in European paper history.

Her educational background includes four years at the Technical School of Arts and Crafts, ten years as a private textile designer and three years training in paper conservation at the Royal Academy of Fine Arts, the School of Conservation. She gained her diploma as paper conservator in 1991 from the School of Conservation with an analytical project on Oriental paper and has continued with research projects in analysis of the paper material.

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INVESTIGATION OF METHODS USED TO MISREPRESENT THE CONDITIONS AND THE AGE OF PHOTOGRAPHS

JENS GOLD

ABSTRACT


Due to recent increased valuations in the fine art photography market, questions have arisen about ways of faking photographs; i.e. making them look like older materials. Certain methods have been postulated, such as the use of old papers, or the ageing of new papers.

Through a series of experiments and research into the most common postulations in order to show the possibility and manifestations of these methods, means have been provided to detect such impositions. A body of information is rendered, which extends the knowledge of the field in regard to paper types and characteristics. The investigations are limited to silver gelatin DOP, the most common photographic paper used between the wars and represented in the fine art photography production of this period, in which we have had impositions.

KEYWORDS
Fake photographs, chemistry, techniques

INTRODUCTION

The following have been identified as the most common and likely methods used for the recent incidents (with regards to Lewis Hine and Man Ray (Figure 1 and 2), which provoked much speculation in the minds of curators, collectors, art dealers and conservators:
— the use of outdated paper stock;
— the use of papers manufactured in Eastern Europe that resemble papers of the period 1920 – 1950;
— the use of chemistry to produce prints with aged characteristics;
— the use of copy negatives (negative from a print) and duplicate negatives (negative from a original negative) for print production.

This paper will therefore give answers to the following questions:

- Is it possible to make paper prints on very old gelatin developing-out paper (gelatin - DOP) [60 years and older]?

- The Eastern European Countries have not changed the production methods of fiber-based developing-out papers over a long period of time. Is it possible to make artificially aged prints on newer fiber-based DOP from sources in the former German Democratic Republic [East Germany], the Czech Republic, Russia, Hungary and other states of Eastern Europe?

- Do these photographic papers behave like old materials?

- Is the use of copy and duplicate negatives for printing visible/ detectable?

PROJECT DESIGN ELEMENTS

The investigations are limited to silver gelatin DOP, the most common photographic paper used between the wars and represented in the fine art photography production of this period, in which we have had impositions.

During the course of this project, the first question, above, could clearly be answered, with yes (Figure 3). This interesting fact, and the fact that contemporary papers are relatively easy detectable, caused most of this part of the work to shift to research on the use of outdated gelatin DOP. The next two questions, however, are also investigated and can be answered affirmatively. But there is still room for more research in the direction of altering contemporary gelatin DOP. Because of the great variety of literature, web sites and manuals for the work with contemporary gelatin DOP, this has not been described very deeply in this project.

For the last question there are two answers. The use of copy negatives is to a certain degree detectable but this will probably change, with the aid of digital tools, in the near future. The use of duplicate negatives is almost not, or not visible/ detectable, naturally depending on the quality of the darkroom work.
SOMETHING ABOUT THE USE OF OUTDATED PAPER STOCK

There is nothing new about the use of outdated gelatin developing-out paper stock (gelatin - DOP). The use of outdated papers (Figure 4) is a tradition almost as old as the production of the material itself. Photographers had, and have, different reasons for using outdated material. It could, at times, be a matter of having difficulties finding the right materials (like after World War II); old black-and-white papers could sometimes be of greater variety, and the properties of aged materials could be interesting in the production of facsimile prints from originals.

The degree of difficulty in working with these materials depends on the condition of the photographic paper and the skill of the photographer. The possibilities with old materials are quite amazing when optimal circumstances are found. It is possible to make very good prints from outdated papers that match the print quality of originals.

A majority of the material for this project was found in old literature and in interviewing photographers in Germany, the Czech Republic and the USA. The interviewed photographers had been working extensively with outdated materials. The research of one person in particular has been essential for the success of this project. In 1951 the Czech photo chemist Premysl Koblic published a book entitled: "Vyuzití Vadného Fotografického Materiálu" or in English: "Exploiting Defective Photographic Materials".

This book was only published in the former Peoples Republic of Czechoslovakia and was never translated from Czech into another language. The information about this book originated from Ivan Lutterer + photographer from Prague. A specialist in Slavic languages including Czech, Kristín Dittrich-Kahl has been very helpful in getting the major part of this book translated into German. This has enabled the author to work with it and utilize much of the information in this paper. This information is now 50 years old, and the photographic papers that it describes are even older, i.e. 60 – 80 years (see list of outdated papers in the end of this article). This book has been a great help and the formulae's in it have usually needed only small changes depending on the working material.

In the following, information about the work with outdated developing-out papers are given. The materials worked with in this project are way past the expiration date. Some of these developing-out papers are 60-80 years old. Common problems with outdated gelatin DOP are outlined together with information on how to achieve the best results with such problematic papers. The focus is on the practical issues of working with these materials, and gives no philosophical discussion about forgery.

DIFFICULTIES OF WORKING WITH OUTDATED PAPER STOCK

The fogging problem

The major problem, fog, is a product of a process that starts with the beginning of the emulsion production, and continues until the photographic material is developed. The correct term for the process is ripening. During the ripening, sensitivity centers are formed on the surface of the silver halide crystal. These sensitivity centers are very small specks of sulfur on the silver halide crystal surface. The whole process is not completely understood, but sulfur seems to be essential for that process. Sulfur comes out of the photographic gelatin or is also added, together with several other compounds, to the emulsion during production. The sensitivity centers can become a development center when the silver halide crystal is hit by a light wave. Then electrons, which were knocked from a bromide (or other halogen) by the light wave, wander to the sensitivity center in the crystal and here reduce silver ions to a small number of silver atoms. Four or more silver atoms must be present in a silver halide crystal in order for it to be developed, and they must be collected together in a single group. The whole theory, from 1938, is named after the two scientists Gurney and Mott who first described it (Bunting, R.K. 1987, Jungle/ Hübner 1989, Krafft/ Steiner 1978, Stroebel/ Compton/ Current/ Zakia 1989).

It is known that heat, moisture and certain gases in the environment, over a longer period of time also can help to
build development centers in an emulsion. This phenomenon is known as "fog" or non-image silver (Figure 5). It is called fog because it builds a kind of even exposure over the whole image surface. Since the "ripening process" continues over time, photographic paper manufacturers cannot guarantee that an emulsion after a certain time, under normal conditions, does not develop non-image silver. That is why all these materials have an expiration date. To slow down this process, photographers often store their materials in freezers or at least in a cold and dry room (Kobic 1951).

**Bubble development on the gelatin**

Bubbles in the gelatin emulsion layer (Figure 6) appear quite often on outdated material during processing. It is associated with the deterioration processes of the gelatin. It happens most frequently when strong alkaline developers and strong ammonium thiosulfate fixers are used. It is often connected to a prolonged stay in warm developer and fixing bath. A good way to avoid the "bubble problem" is to use a tanning developer or a pre-wash in a tanning bath. The use of a 10% sodium thiosulfate fixer is also recommended. The temperature of the developer and fixer should, in this case, be lower than normally recommended.

It should be noted that gelatin on very old papers has often hardened, something that works against the formation of bubbles. However, this hardened gelatin can pose other problems in processing.

**Hardened gelatin**

It is known that over time and in poor storage conditions (dry air, pressure from storing the papers in piles, change from moist conditions to dry conditions, air pollution, etc.) the gelatin on photographic papers hardens and changes, thereby changing its behavior in the processing solutions. The liquid cannot absorb evenly into the emulsion (Figure 7), and that can make it difficult to develop an even picture on an outdated paper. Stripes and spots (pressure marks) of under-developed areas may appear. In most circumstances it is possible to avoid such problems. If the paper also has a fogging problem, it may be treated with a potassium permanganate bath, which removes the non-image silver and additionally softens the gelatin. Other means of soften the gelatin is to add more Sodium carbonate [Soda] or Potassium carbonate [Potash] to the developer, or generally raise the pH of the developing solution.

**Yellowing of the photographic paper**

There is a multitude of reasons why yellowing of developing-out paper occurs, but in most cases there are two major ones. One is the age of the paper compared with the access of air to the material, and the other are mistakes made during the processing of the old photographic material.

The mistakes made during processing of the papers include: use of old developer, old fixer, polluted processing baths (fixer in developer and developer in fixer) which cause the so-called dichroic fog, over-development, or in general the wrong processing times and temperatures, exhausted stop bath, and unclean and warm hands used to handle the paper during processing. Papers with the lowest sensitivity (portrait paper and contact paper) often have a higher tendency for yellowing or getting colored fog than papers with a higher sensitivity (bromide paper).

A frequent reason for yellowing is colloidal silver, which develops in the print because of too much sulfite in a contemporary developer. In that case it is better to use the old recipe, which is often found in the original paper package. Too much sulfite works for some of these old papers like fixer in the developer. It is also recommended to use about 50% more potassium bromide and 25% more potassium carbonate or sodium carbonate.

**Mold on photographic papers**

Mold and other "little creatures" which like to digest gelatin and paper are frequently a problem for very old outdated gelatin DOP. It is possible to use attacked papers if the material is only contaminated on the edges. If the mold is
already in the center of the paper it is impossible to print on it in sufficient quality. When the mold has digested the gelatin (and some times parts of the paper too) it will show big spots over the whole surface of the print after development (Figure 8). Sometimes it is already visible in the darkroom light. An obvious sign for mold is the typical smell when opening the paper box the first time and handling the materials. People with allergies should stay away from these materials. It is favorable to have a fume hood when working with molded papers.

Differences in single and double weight papers

Another observation made during the work with the outdated papers was the difference between double and single weight papers. It was quite common to have fogging problems with both types of paper. However, the single weight paper (from the same time and even the same type and brand) had a much greater tendency to develop non-image silver than the double weight paper.

PRINTING WITH OLD GELATIN DEVELOPING-OUT PAPERS

For work with outdated papers it is beneficial to know how chemical development works, and what the compounds of a developing agent are good for. A general understanding of the chemistry helps when working with and adjusting the different compounds to the old material.

The constitution of a developer

“The most important ingredient in a chemical developer is the developing agent or chemical reducer that converts the exposed silver halide to metallic silver. Most developing agents require a pH higher than 7 to function, and for this reason the developer also contains an alkali, sometimes referred to as the accelerator. In order to minimize oxidation of the developing agent by oxygen in the air, the solution also usually contains a preservative, most often a sulfite. A restrainer, usually a bromide, is also part of most developers. The restrainer has the effect of slowing the rate of development, but this effect is greater in the unexposed areas of the emulsion, thereby limiting spontaneous development, or chemical fog. The presence of restrainer in the developer formula also tends to minimize variations due to the release of halide ions during development, which would themselves act as restrainers. Bromides or other halides are also sometimes referred to as antifoggants, but this term is usually applied to a number of organic compounds that are used at much lower concentration than bromide. A developer formula may also include other compounds that accelerate development, provide more even development, prevent the formation of insoluble compounds, etc.”(Stroebel/ Compton/ Current/ Zakia 1989).

Note: Since this paper should not be a manual for the production of forged prints, the organizing board of the 16th conference of the Nordisk Konservator Forbund has agreed that the details of printing with outdated photographic papers should be left out. The reader is however welcome to contact the author for further information.

CHANGING THE PROPERTIES OF CONTEMPORARY GELATIN DOP

(removal of optical brighteners in modern materials)

There are many ways to change the properties of contemporary photographic paper in order to make it look old. For example the application of minor chemical and mechanical damages like stains, fading, scratches, losses, repairs … and even silver mirroring. During the work with this project it was demonstrated that these things are achievable, mostly without great difficulties. Many of the high priced photographs on today’s art market are however printed on photographic paper produced before and during the introduction of optical brighteners (in the end of 1950’s beginning of the 1960’s) in the paper support. Papers with optical brighteners are relatively easy to detect, and it would therefore be desirable for a forger to remove them from the paper support and baryta layer (Figure 9). This is not an easy task though, because the molecule of an optical brightening agent is quite long. It also ties itself very well to the paper fibers and baryta layer. These chemicals are made to be very light fast, inert to a lot of chemicals and difficult to wash out. Experiments with removal of optical brighteners using agents from the paper industry were not very successful. The reason for this is the fact that the so-called optical brightener quenchers [cationic water-soluble polymers recommended for the efficient neutralization of the optical brightening effect of fluorescent whitening agents] are designed to remove optical brighteners in the stage of papermaking when recycled paper fibers are washed in the pulp.
The same “washing” obviously does not work with the kind of paper-sheet like a print. Another way to remove a good amount of optical brightener would be to wash the prints extensively for several hours (Nishimura 2000). In order to protect the gelatin during such a harsh treatment, it is beneficial to have the print for about 10 minutes in a hardening bath prior to the washing process.

Extensive exposure to ultra violet light can also reduce the optical brightener compounds, but it will harm the rest of the print as well (Messier 2001). Another (well known) way to suppress the optical brighteners is to dye the prints with certain colorants like the ones from tea or coffee or similar substances. This is simply done by immersing the prints in a bath made from tea or coffee mixtures etc. The way of getting the right tonality in the photographic paper is a question of experimenting.

CONCLUSIONS, AND WHAT TO EXPECT IN THE FUTURE

During this project it has become clear that the use of outdated and contemporary gelatin DOP in potential forgery can make authentication a difficult challenge for the investigator. The use of outdated material is particularly hard to detect. However, to produce a good “facsimile” print of an original photographic artwork requires a level of advanced skill and experience in addition to having the access to an original that can be copied. Another problem is that access to original photographic material is limited.

There are methods of analysis, which make it possible to recognize certain paper types, years of production etc. of a print. Two methods to identify paper types and time of production are worth mentioning here:

• A very successful method to identify paper types is a paper fiber analysis, in use for some years now by paper and photograph conservator Paul Messier, together with FBI-scientist and paper specialist Walter Rantanen. The method allows identification of the specific properties of a paper type by examination of a very small paper sample under a microscope and comparing the extracted information with earlier collected information kept in a database. This makes it possible to get a link to a certain brand name, paper type and year of production of a photographic paper.

• A very new method that is still on an experimental stage is the “Edge Reflection Analysis” (ERA). This method was developed in 2002 in the Mellon Advanced Residency Program in Photograph Conservation by German photo engineer Klaus Pollmeier in cooperation with the Rochester Institute of Technology. The ERA records digitally the surface structure of the photographic paper and compares the information with data previously fed into a computer.

Both methods look for the typical “finger print” (property) of a photographic material and are successful in revealing whether new or outdated photographic papers, but papers unusual for a certain artist/photographer, are used. The methods reach their limitations when, for example, a right paper of the right time period is used and the artists way of printing also is taken into consideration and applied (Figure 10). There is no way of detecting whether such a print is genuine or false. A “successful” forger therefore, must produce a work that fits into a certain pattern, not only the quality and signs of age but also the photographic material and the years of production. This means that it is possible to a certain degree for such works to appear on the market, but production of such photographic work is difficult and complex. Assistance in getting into the infrastructure of the art market is also needed, because without provenience even a high quality forgery has no market.

Like already said in the beginning, the market for pho-
ography grows, and today photographs are obviously included in the high prized art market. The temptation for some to forge such objects and bring them on the market might be high. It has to be expected that all kinds of photographic materials from today already have been stored to produce the “right print” tomorrow. What does this mean for the investigator? Over the course of this project it became clear that existing methods of identifying photographic materials should be extended by a method which allows the detection of the actual developing time / production time of a print (time between printing of the image and possible analyses). This will be a difficult challenge but it should be done.

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**List of outdated gelatin developing-out papers used in this project**

**Agfa AnSCO – USA**
- Ansco India tone, co 419, porcelain white, d. w., expiration date: 1940s?
- Convira B – 2, medium soft, contact printing paper, white, glossy, s. w. 1 7/8 x 2 3/4, expiration date: 1/1942
- Cykon 2, contact printing paper, normal, royal white, d. w. 8 x 10, expiration date: 10/1946
- Convira B, normal, contact printing paper, white, glossy, s. w. 1 7/8 x 2 3/4, expiration date: 7/1948
- Convira B, medium, contact printing paper, normal, white, glossy, s. w. 8 x 10, expiration date: 9/1948
- Convira B – 3, contact printing paper, normal, white, glossy, s. w. 8 x 10, expiration date: 10/1949
- Jet, d. w., 8 x 10, expiration date: 5/1964

**Defender - Du Pont USA**
- Veltura, normal, smooth, buff-matt, d. w., 8 x 10, expiration date: 6/1932
- S Velour Black 11, soft, white, glossy, s. w., 5 x 7, expiration date: 1/1941
- S Velour Black 22, normal, white, glossy, s. w., 5 x 7, expiration date: 2/1941
- S Velour Black 33, medium hart, white, glossy, s. w., 5 x 7, expiration date: 2/1941
- Velour Black R – 3, medium hard, blue white, glossy, s. w., 4 x 5, expiration date: 8/1943
- Y Velour Black 2, normal, white, silk, d. w., 8 x 10, expiration date: 7/1944
- Y Velour Black 2, normal, white, silk, d. w., 8 x 10, expiration date: 5/1944
- Velour Black R – 2, normal, white, glossy, s. w., 4 x 5, expiration date: 7/1947
- Velour Black B – 3, medium hard, white, semi-matt, d. w., 5 x 7, expiration date: 7/1947
- Velour Black B – 2, normal, white, semi-matt, d. w., 5 x 7, expiration date: 7/1947
- Velour Black R – 2, normal, white, glossy, s. w., 5 x 7, expiration date: 9/1947
- Velour Black DL – 3, medium hard, natural white, velvet grain, luster, d. w., 5 x 7, expiration date: 7/1951
- Y Velour Black 2, normal, cream white, silk, d. w., 8 x 10, expiration date: 1/1955
- Varigam DL, variable contrast, velvet grain, natural white, luster, d. w., 8 x 10, expiration date: 7/1958

**Eastman Kodak Co. USA**
- Velvet Velox, normal, velvet, s. w., 3 ? x 5 ?, expiration date: 1/1915
- Vitava Athena A, white, smooth, semi-matt, s. w., 8 x 10, expiration date: 6/1927
- AZO F – 2, normal, white, glossy, smooth, s. w., 5 x 7, expiration date: 8/1928
- Vitava Projection F – 2, white, glossy, d. w., 8 x 10, expiration date: 6/1939
- Velvet Velox E – 2, normal, velvet, s. w., 3 ? x 5 ?, expiration date: 6/1939
- P.M.C. No. 2, normal, bromide paper, smooth, s. w., 8 x 10, expiration date: 11/1937
- Kodabromide F – 3, white, glossy, smooth, s. w., 5 x 7, expiration date: 4/19 40
- Chloride 2, glossy, s. w., type 1, for US-Army, 10 x 10, expires: 1940s
- Velox F – 2, normal, white, glossy, smooth, s. w., 4 x 5, expiration date: 7/1942
- Kodabromide F – 2, normal, white, glossy, smooth, s. w., 5 x 7, expiration date: 7/1943
- Vitava Opal, cream white, smooth, lustre, d. w., 8 x 10, expiration date: 7/1943
- Velox F – 4, hart, white, glossy, smooth, s. w., 4 x 5, expiration date: 10/1944
- Vitava Projection Y 3, cream white, silk, lustre, d. w., 8 x 10, expiration date: 10/1944
- Velox F – 2, normal, white, glossy, smooth, s. w., 10 x 10, expiration date: 11/1944
- AZO F – 2, normal, white, glossy, smooth, s. w., 4 x 5, expiration date: 7/1945
- Velox F – 2, normal, white, glossy, smooth, s. w., expiration date: 7/1947
- Opal 2, lustre, d.w., 8 x 10, expires: 1951
- Opal P, warm black, old ivory, lustre, fine grained, d. w., 8 x 10, expiration date: 8/1951
References

Articles and Internet pages


Photographs/ Figures

Figure 1: Sotheby's Catalog 28. April 1999.
Figures 4 – 9: are copyright „ Jens Gold, 2001. The reproductions and facsimile of the George Eastman House Nickolas Muray prints (Figures 3 & 10) were made (with the friendly permission of the Curator) in the conservation lab at the George Eastman House – International Museum of Photography and Film.

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Jens Gold, photo-conservator and photographer, graduated from the University of Applied Science in Berlin with a degree in photography conservation in 1998. He has worked for the German Center for Crafts and Preservation of Historic Monuments, the Museum of Near Eastern Art - Berlin, the Museum of European Cultures - Berlin and for the Conservation Lab of the George Eastman House - International Museum of Photography and Film, Rochester NY at which place he also had a two-year fellowship in the Andrew W. Mellon Advanced Residency Program in Photograph Conservation. He has published several articles on the preservation of daguerreotypes and altered photographic material. At present he works for the Norsk museum for fotografi - Preus fotomuseum.

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FORGERIES IN PHOTOGRAPHY

INTRODUCTION

Photography was officially invented in 1839 by Daguerre. Its status and rôle have changed both throughout history and in present times – is photography art, science, craft or documentation?

All four aspects are reflected in the museum collections where you sometimes find photos together with prints, drawings and paintings, at other times together with catalogues and paper archival materials, but seldom alone except at museums dedicated to photography.

The collecting of photographs occurred at the same time as its invention. The carte-de-visites made from 1860 was a popular item of collection. People exchanged cartes with their friends and family and put them into albums. Cartes of celebrities of that time (actors, writers) were also purchased. Travel photographs were another popular collection item. Photographs of exotic places could be purchased as souvenirs and proof of the visit.

Photographic materials have in recent years become worthy of investment, a status which paintings and other traditional art objects formerly have monopolized. As prices at auction have increased, so have the number of forgeries in photography. Photographic materials, being a copying media, offer inherent possibilities for “making new copies in the old way”.

At workshops all over the world you can learn how to produce photographs, using old recipes and the same type of paper and processing chemicals available at that time. Forgery is even easier when the negative is contemporary and all materials needed can be obtained at the nearest photo store. Terminology in photography can also be confusing because an artist can make several copies all of which are originals.

This paper will show how forgeries in photography can be made, and how different analytical methods can sometimes reveal forgeries. Examples of photographs that have been revealed as forgeries are described as well as some cases which are less clear.

KEYWORDS

Authenticity, photographic evidence, photomontage, X-ray, UV-light.

ABSTRACT

Photographic materials have in recent years become worthy of investment, a status which paintings and other traditional art objects formerly have monopolized. As prices at auction have increased, so have the number of forgeries in photography. Photographic materials, being a copying media, offer inherent possibilities for “making new copies in the old way”.

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ABSTRACT


KEYWORDS

Authenticitet, fotografisk bevismateriale, fotomontage, røntgen, UV-lys.

INTRODUCTION

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All four aspects are reflected in the museum collections where you sometimes find photos together with prints, drawings and paintings, at other times together with catalogues and paper archival materials, but seldom alone except at museums dedicated to photography.

The collecting of photographs occurred at the same time as its invention. The carte-de-visites made from 1860 was a popular item of collection. People exchanged cartes with their friends and family and put them into albums. Cartes of celebrities of that time (actors, writers) were also purchased. Travel photographs were another popular collection item. Photographs of exotic places could be purchased as souvenirs and proof of the visit.

Photographic materials have in recent years become worthy of investment, a status which paintings and other traditional art objects formerly have monopolized. As prices at auction have increased, so have the number of forgeries in photography. Photographic materials, being a copying media, offer inherent possibilities for “making new copies in the old way”.

At workshops all over the world you can learn how to produce photographs, using old recipes and the same type of paper and processing chemicals available at that time. Forgery is even easier when the negative is contemporary and all materials needed can be obtained at the nearest photo store. Terminology in photography can also be confusing because an artist can make several copies all of which are originals.

This paper will show how forgeries in photography can be made, and how different analytical methods can sometimes reveal forgeries. Examples of photographs that have been revealed as forgeries are described as well as some cases which are less clear.

KEYWORDS

Authenticity, photographic evidence, photomontage, X-ray, UV-light.

ABSTRACT

Photographic materials have in recent years become worthy of investment, a status which paintings and other traditional art objects formerly have monopolized. As prices at auction have increased, so have the number of forgeries in photography. Photographic materials, being a copying media, offer inherent possibilities for “making new copies in the old way”.

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ABSTRACT

Fotografier har i de senere år fået status som investeringsobjekter, en status som før var forbeholdt malerier og andre traditionelle kunstgenstande. Efterhånden som priserne er stigende på auktioner, er antallet af falsknerier stigende. Da fotografiet er et kopiemedium, er der utallige muligheder for at lave nye kopier på gammeldags facon.


Foredraget viser hvordan forfalskninger kan laves, og hvordan forskellige analysemetoder kan afsløre en forfalskning. Der gives eksempler på forfalskede fotografier og fotografier hvis status, der stadig er uenighed om.

KEYWORDS

Autenticitet, fotografisk bevismateriale, fotomontage, røntgen, UV-lys.

REFERENCES

1 http://www.city-gallery.com/learning/types/carte_de_visite/index.php Date 10.03.2003
2 http://www.afterimagegallery.com/dixon.htm Date 10.03.2003
3 http://www.maineantiquedigest.com/articles/phot0998.htm Date 10.03.2003
4 http://www.artnet.com/Magazine/news/robinson/robinson4-26-01.asp Date 10.03.2003
5 http://www.christies.com/departments/overview.asp?DID=72 Date 10.03.2003
WHAT IS FORGERY?

A forgery is an intention to deceive so a forged photograph is a photo that claims to tell the truth when it does not or a photo that claims to show an unaltered version of reality when it is actually altered.

These alterations can have many faces as shown later.

When is a photo a forgery? Is a landscape where you remove certain objects before shooting a forgery? Only if you claim that the picture is a true rendering of the landscape. It is acceptable to change and remove or retouch, as long as this information is documented.

But when you define forgery you must also define photography. The saying that a photograph is showing the truth itself – "Photographs don’t lie", is problematic.

When you take any picture you have already selected what to show, even if you are not removing any objects from your landscape. You choose when, and where and how by the choice of lens and perspective, film and camera.

Different lenses can produce very different results, whether you use telephoto lenses or wide angle lenses. Obviously lighting can make a subject appear lighter or darker than in reality, and it may also make differences in dimension or depth.

In the darkroom you can choose different exposure times for different parts of the same negative – exaggerating or eliminating critical items.

In colour photography, a filter can also change the image – It “may be used to bring out blood stains on a green carpet – or darken the sky so a clear day looks stormy”. So any photograph is a selection of reality. It is showing how some part of a scene appeared at a certain time.

How many of these choices from the photographer and printer will you allow in a photograph before you pronounce it a manipulated photograph?

The military has an answer to that because they, if any, have a strong interest in photos that are not misleading, if they use photos to make decisions. Some photos could result in war. A memorandum from 1994 defines exactly how much retouching is allowed before it is manipulation.

For instance changing the size, shape or physical appearance of an element, adding or removing elements in images, changing spatial relationships or colours in an image are considered unacceptable.

In court cases the authentication of photographs is crucial. In the United States photographic evidence has been estimated to be used in half the trials.

To admit a photograph as evidence The Federal Rules of Evidence requires authentication or identification as a condition precedent to admissibility. The testimony of the photographer is not necessary; all that is required is “1) Testimony of witness with knowledge. Testimony that a matter is what it is claimed to be.”

In the OJ Simpson case a photograph was used by the prosecution. Simpson was accused of murdering his wife and her friend, and the picture showed Simpson at a sport event wearing a special pair of shoes that matched footprints found at the murder scene.

The defence claimed the photo was a fake. A photographic expert testified that the frame of the Simpson image was longer than any others on the film roll and that it was the first picture on the roll - the most convenient place to try to place a forgery. The prosecutor countered that the "anomalies" described were innocent imperfections that occur in most rolls of film.

In the end other pictures were found showing Simpson at the sport event wearing the same pair of shoes.

In other court cases, photographs that were intentionally manipulated have been used as evidence.

In one example digital technology was used to enhance an image of a set of fingerprints that were difficult to evaluate through conventional methods. In another a suspect set of palm prints were digitally enhanced.

REASONS FOR FORGERIES

Alterations and manipulations in photography have always existed though for various reasons. Some alterations are
easy to detect but with increasingly more sophisticated tools alterations can be difficult to discover on modern computer generated photographs.

There are practical reasons for making a photomontage of different family members that could not be brought together for a photograph.

Financial reasons lie behind the attempt to fake an old photograph which could yield good money at auctions. Faking new photographs that show a special event at the right time and place could also fetch a good price when sold to newspapers or television companies.

More humorous examples are the Danish politician Pia Kjærsgård advocating against the admission of immigrants, with dark skin, or George Bush wearing the Ring from Tolkien’s “Lord of the Rings” (Figure 1).

There are political reasons to remove Trotsky from photographs of Stalin and Lenin or to release a photo of a Palestinian Baby “Bomber”. The photo was released by the Israeli army who claimed it to be discovered in a Palestinian militant’s house in the West Bank city of Hebron. The photograph shows a baby dressed as a suicide bomber. The authenticity of the photograph could not be verified, but its publication in Israeli newspapers triggered a new war of words between Israel and the Palestinian Authority 16.

TYPES OF ALTERATIONS

Alterations of photographs can be done in many ways. They can be done by using scalpels, pencils, brushes or computers. Whether by hand or computer there are some defined categories of alterations and forgery.

Removing elements from a photograph can be done to elements like unwanted hairs on a portrait or the removal of persons best known from propaganda pictures from the former Soviet Republic.

Adding elements can magnify the message of the picture whether this message is political or artistic.

The photomontage creates a new image from different parts. This can be done simply by placing the parts side by side, placing one part on top of another image or exposing more negatives together on one print.

Examples of photomontage are portraits by William Mummler from 1861, which were made to appear more ghostly by sandwiching two glass negatives together 17.

Julia Margaret Cameron also used photomontage deliberately in some of her portraits incorporating several persons and landscapes from different negatives in one print.

Photomontages used in politics are numerous for instance from 1950, where political opponents placed the picture of Senator Millard Tidings alongside the picture of the former member of the U.S. Communist Party. The senator lost his seat 18.

Nowadays digital montages are the most common. After the destruction of the World Trade Center on the 11th September 2001 a photograph emerged claiming to show a tourist posing on the roof of the Center with a plane steering towards him a split second before it struck the Center. It was revealed that an image of the plane was added to the tourist photo after a cut and paste using image software (Figure 2) 19.


17 http://www.nzghosts.co.nz/Fakes.htm Date 10.03.2003

18 “When Seeing is Not Believing” by Jeff Greenfield http://more.abcnews.go.com/sections/scitech/revolution2/ Date 10.03.2003

19 See more details with clues to the lack of authenticity of this photo http://www.blueartharts.com/uhoh.htm Date 10.03.2003
A different type of forgery is that the image itself is true but it shows another thing than the one claimed, or it is faked. An example is the famous image by Robert Capa showing the Spanish soldier that is falling on one picture after a fatal bullet but on later frames on the film roll is falling at another angle 20.

Photography can also be used to forge other works of art for instance paintings or drawings. An example from an auction house was a painting by Yitzhak Levitan which turned out to be a black and white photograph of the original painting printed directly onto a board’s surface. The photograph was covered with oil colours imitating the colours of the original painting. An examination under a special magnifying glass (used primarily for the inspection of diamonds) revealed small margins in which the paint was loose and where traces of the photograph could be detected 21.

CONSEQUENCE OF FORGERIES

Forgery has always existed but more than ever is the contemporary person aware of the possibility of forged photographs. We are all used to and actually expect touch-ups in advertising and fashion photography done to the faces, teeth and bust lines. The result nowadays is that the authenticity of the photograph can always be questioned and the photographs themselves are now the core of the true/false debate.

For instance the authenticity of the pictures taken on the moon during the Apollo missions has been questioned. Are the pictures that we see from the moon real or fake 22?

The risk of forgeries have provided companies with a new field for earning money. One example of a company that sells authentic a- tion along with their digital photographs is VeriPic® with the slogan “Others Only Secure...VeriPic(R) Secures and Authenticates.”

Other companies claim that you can “Win more cases - Authentication protects against court challenge of photos” (Figure 3) 25.

Forgeries are not always thought of as decreasing the value of an object, but may have their own independent value. There are a lot of examples of forged stamps for sale at auction houses sold as forgeries, for example a sheet of 40 different forgeries of the Switzerland Federal Administration issue of 1852. Every stamp on the sheet is different in details and background lines, suggesting individual clichés were all assembled by hand onto the printing plate 26.

Also faked photographs can be sold as fakes. On one of the electronic auction sites was offered a “Fake Tintype of FANTASTIC Indian image.” The buyer bought it because he found the image so interesting. The image raised $18.51.

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Authentication...Because photos, pictures and images are too easy to fake...

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- **Save time and labor** - Powerful quick search and storage features.
- **Reduce costs** - Send password protected photos by email instead of by courier.
- **Prevent Mistakes** - Easy to learn interface. Minimum training needed.
- **Win more cases** - Authentication protects against court challenge of photos.
- **Track Activities** - Audit trail functions and tamperproof Authentic Clock™ hardware verifies case activity and time better than systems based on easily tampered with computer clock.
- **Solve crimes faster** - Portable Photo Slide Show allows collaboration between investigators in different locations.

**VeriPic(R)** does the whole job in processing digital photos!

Fig.3

The risk of forgeries have provided companies with a new field for earning money. One example of a company that sells authentication along with their digital photographs is VeriPic® with the slogan “Others Only Secure...VeriPic(R) Secures and Authenticates” http://www.veripic.com/law_enforce.htm

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20 From HAMMERSITE.COM Newsletter #2 http://www.hammersite.com/hammersite/Newsletter/Newsletter2 Date 10.03.2003
21 See more questions and answers about the authenticity of the photographs taken at the moon in “Who Mourns For Apollo? Or Was It Really Only a Paper Moon?” By Mike Bara With Steve Troy and Richard C. Hoagland in http://www.lunaranomalies.com/fake-moon.htm Date 10.03.2003 and “Photography & Film - Why there’s nothing faked about the lunar photographs.” By Mike Bara With Steve Troy and Richard C. Hoagland in http://www.lunaranomalies.com/fake-moon.htm Date 10.03.2003
22 More see questions and answers about the authenticity of the photographs taken at the moon in “Who Mourns For Apollo? Or Was It Really Only a Paper Moon?” By Mike Bara With Steve Troy and Richard C. Hoagland in http://www.lunaranomalies.com/fake-moon.htm Date 10.03.2003 and “Photography & Film - Why there’s nothing faked about the lunar photographs.” By Mike Bara With Steve Troy and Richard C. Hoagland in http://www.lunaranomalies.com/fake-moon.htm Date 10.03.2003
23 See more about the autopsy photographs and x-rays of the President John F. Kennedy assassination autopsy that show Kennedy to have been hit from behind by two bullets. Those believing in a conspiracy theory insist that the photos have somehow been forged, faked, or tampered with 23.
24 Forgeries are not always thought of as decreasing the value of an object, but may have their own independent value. There are a lot of examples of forged stamps for sale at auction houses sold as forgeries, for example a sheet of 40 different forgeries of the Switzerland Federal Administration issue of 1852. Every stamp on the sheet is different in details and background lines, suggesting individual clichés were all assembled by hand onto the printing plate 26.
25 Also faked photographs can be sold as fakes. On one of the electronic auction sites was offered a “Fake Tintype of FANTASTIC Indian image.” The buyer bought it because he found the image so interesting. The image raised $18.51.
VINTAGE PRINTS

Because photography is a copy medium you can make as many prints as you want from a negative. These are not considered fakes but are all considered original if they are produced by the artist. These so-called vintage prints are made at the time or close to the time when the original negatives are produced. They are considered original because it is assumed that the intent of the photographer and the subjective impressions which still live in the photographer’s memory, influence his or her way of copying the print.

If the artist prints his negatives again at a later time, one talks about later printed prints. If the photographer is elderly and still produces prints from his own negatives one calls these photographs modern prints.27

An example is Berenice Abbott from New York: her vintage prints date from the 1930’s and are mostly contact copies in the negative format. Later she produced prints which she had enlarged to a completely other format and which had a totally different effect on more modern paper.

Edward Weston’s photographs come in four varieties: 1. true vintage prints; 2. prints made later by himself in the 1930s from 1920s negatives and in the 1940s from 1930s negatives; 3. “project prints” made under his supervision by his son Brett in the 1950s when Weston developed Parkinson’s disease and 4. posthumous prints by his son Cole.28

All this information should be written on photographs to establish their origin. An example is a print made by Irving Penn followed by the text: “Chanel Sequined Suit (1974/1979)

Multiple printed platinum/palladium on Rives paper, hand-coated by Penn; mounted to aluminum. Signed and numbered on the print, recto & verso, with annotations.

Negative date 1974, print date June 1979. Image size 20-1/2 x 18-3/4". In Penn’s original frame, 33 x 31". This image edition was limited to 40 in silver gelatin and 29 in platinum metals; this example is #5/29.” 29

HOW TO MAKE FORGERIES

Forgeries can be made of both new and old prints.

If you want to make a fake of a new print and you have the negative you can just make a new print from it. If you do not have the negative you can photograph the image and make a new print from the new negative. The printing paper should of course be same size and type as the original one or as close as possible.

An example of a faked photograph is one of the American astronaut Neil Armstrong standing next to the Supermarine Spitfire. The picture was for sale on an online auction site.

The ease with which new prints may be faked makes confidence between seller and buyer vital. Lack or violence of this confidence, may result in blacklists on the internet with warnings whom not to buy prints from and examples of the faked prints for sale. A photo of actress Elizabeth Taylor with an autograph was on sale (Figure 4). It appears to be a duplicate print from an original with the autograph written over. Under the microscope you can see the shadows where the faker has not hit the slopes of the handwriting right.31 Due to the risk of forgery some autographs sold on the internet are sold with a document claiming its authentication.32

Some Man Ray Photographs from a specific collection have also been identified as fakes. In 1998 The Agfa-Gevaert photographic company identified one of these Man Ray prints as made on its recent paper—the paper was of course not available to Man Ray in the 1920’s and ’30’s when he made his early prints. Someone has apparently been feeding fakes into the market since perhaps 1983, and many have bought them.33

Faking old photographic processes is of course much more laborious but maybe also more fun if you like to experiment with old photographic processes. The crucial point here is getting exactly the same chemicals and material as the original print. But identical materials are not essential because a full scale examination of a photograph is not always possible.

Faked ferrotypes are often found on sale in auctions. Popular subjects are the Indian Geronimo, Black Mammys

References:

27 “About Collecting Photographs” by Kaspar M.Fleischmann http://www.phototrends.net/for_sale/im5ab.html Date 11.03.2003
28 http://www.afterimagegallery.com/dixon.htm Date 11.03.2003
29 http://www.johnstevenson-gallery.com/Penn_Chanel.html Date 10.03.2003
32 Example of an “authentication document” as well as “Suggestions and guidelines for protecting yourself from fraud and forgeries! “ http://www.mraksports.com/Forgery.htm Date 10.03.2003
33 The Werner Bokelberg “Man Ray” collection, see http://www.maineantiquedigest.com/articles/avan0498.htm Date 10.03.2003
holding white babies, or Civil War Soldiers or African-American Union soldiers.

They are usually made by photographing the image from a book or another photograph. If the source is from printed material, a halftone screen is present in the image which is visible under a 10X magnifying glass. This can often be seen in eye or nose areas.

If the source is a photograph you will have to look for indications that you have a newly-made ferrotype instead of an old one. A ferrotype is made by varnishing a metal plate with black lacquer or asphalt, pouring a collodion emulsion on it, exposing, developing and fixing, and finally varnishing it again to protect the image.

New plates are usually made of thicker metal. The plates are usually dipped rather than brushed with the asphalt solution, making a plate with the same coating on both sides.

The final varnish used for ferrotypes is made with oil of lavender. For a few years it remains active and you can smell it if you rub the varnish with a soft cloth several times.

The old ferrotypes in the most common size were made as four from one plate cut in four pieces. The drip line that occurs when you pour the excess collodion or varnish from the plate into a bottle will form only on the two lower edges which meet where the solutions fall from that corner (Figure 5). Once the plate is cut into four images, these original drip lines occur on different parts of three of the images (part 2, 3 and 4). Any new copy is going to be made with a single lens onto one plate resulting in one image. That image will have the complete double drip line like part 4 or will be trimmed to show none, but it will never have only one drip line 34.

The establishment of the authenticity of a photograph is illustrated by the story of the picture claimed to be the oldest portrait in the world taken by Daguerre (Figure 6). The daguerreotype was found by a French photographic expert at a flea market. The image represents the naturalist painter Nicolas Huet. The frame bore the name of Daguerre and was dated 1837, which is two years before the official announcement of the daguerreotype 35.

Together with another Daguerrean specialist in France, the authenticity was confirmed. Various elements contributed to this:
1. The inscription “M. Huet/1837” under the frame was established to be Daguerre’s own handwriting.
2. Huet was a known friend of Daguerre.
3. Daguerre made an official announcement of his invention of the daguerreotype in 1839, but in a letter of 1837 Daguerre mentions he had made some portrait experiments. This letter however was not published until 1949.
4. Comparing the plate with another later portrait, signed by Daguerre, it was confirmed they had identical formats and that both pictures were made with the same lens.

Several critics have objected that the written sources seem very inconsistent.

Daguerre comments about his hopes and experiments with portraiture in his letters to colleague Niépce in 1835. He makes a statement in February 1838 where he declares: “I have produced some portraits as part of my tests including one, which is quite successful”.

34 Private notes from History of Photography Mailing List
35 The story was told in Études photographiques http://www.etudes.photographie.com/divers/portrait.html (Date 10.03.2003) and discussed at the History of Photography Mailing List
But both Daguerre and his friend Arago report in 1838 and 1839 that portraits made by the daguerrean process are not yet possible, and may even never be possible. Why would they say so if Daguerre had already produced one?

Why would Daguerre hide the fact from his most powerful and influential advocate, Arago, who publicly declared in his report on Daguerre’s invention to the Academie des Sciences that the process was not yet suited for portraiture.

Records from 1841 of Daguerre taking the portrait of King Louis-Philippe seem to support this as the result was reported to be “disastrous” 36.

Some explain this inconsistency by the 1837’s portrait being taken with a lens well adapted to portrait (with a shorter focal length), while the other lens sold in 1839 with Giroux’ Daguerreotype outfit being unsuitable for portraiture. So Daguerre did this to prevent other photographers exploring the field of portrait before he himself could present an improved device for that purpose.

Others find it unconvincing that he did not wish to sell the equipment with two lenses, because he would never miss the opportunity to increase the impact of his invention or enlarging its market.

Some think that the disclaimers can be explained by different standards for portraiture. Maybe Daguerre compared the Huet portrait to contemporary portraits which at that time would be paintings which were large, sharp, and in full colours. In this light the Huet portrait must have been considered unsuccessful 37.

On the other hand the ability to capture a likeness ‘from life’ was considered the major challenge facing photography in 1839 - the ‘quality’ of the portrait was not yet an issue. If Daguerre made a successful portrait in 1837 – even if he could not repeat his results – it would certainly have been among the specimens he showed to win the support of the French government supporting his invention.

Others suggest that the disclaimer was due to his inability to repeat his results, that he somehow succeeded with one plate but was not able to repeat the results.

Others report that the man Nicolas Huet was reported to have been born in 1770 and died in 1830. The portrait could certainly not be taken in 1830 38.

Finally the exposure time is debated. The portrait suggests that the exposure time did not exceed more than two or three minutes - much shorter that the reported five minutes 5 years later at the attempt of royal portraiture in 1841. Some find it inconsistent that Daguerre two years before he presents his technique to the world had apparently already obtained an image by an exposure short enough to take a likeness of a living man. If this is true why did he not release his invention earlier?

Further investigation of the plate is awaited. Meanwhile the portrait is now estimated to be valued between $ 500,000 and $ 1,000,000 39.

**METHODS OF DETECTION**

There are various ways to examine the authenticity of a photograph.

You can look at the image itself, you can investigate whatever literature you can find to confirm the authenticity of the photograph, you can use tools like a microscope which can show what is not obvious to the naked eye and you can investigate the physical and chemical properties of the photograph.

When ascertaining whether an image has been manipulated or altered there are several clues to follow. These have to do with uniformity – an image where one or more parts are from another image might not fit in subtle ways. Shadows, lighting, perspective, focus and tones should be investigated.

Are the shadows falling in the same direction, do their shape and size fit with the objects they belong to? If not this could be an indication that something in the image has been manipulated, for instance if an object has been removed but its shadow is still there. Likewise shiny surfaces should show correct reflections, objects should be lit uniformly.

The relation between different objects in the image, their scale and the perspective should be correct. If faces appearing to stand the same distance from the camera have a different scale it is an indication of manipulation. A good hint to check perspective is to imagine where the camera is standing and relate all objects to this point.

The focus on the objects should be correct, if focus is clear both on foreground and background there is an inconsistency.

Texture and tone of objects, should be the same. Pencil marks and paint dabs may stand out against surrounding textures or colours may not match. The background should be uniform - discontinuities in the background might suggest deletions from the foreground. If printing masks or knife cuts have been used this may produce sharp edges in the image 40.

Photographs claiming to be from a specific period can be checked against the fashion or style of the age it is claiming. Here a lack of deterioration might be indicative of forgery. The style of the image mounting or materials chosen for mounting could also be checked.

If the story behind the photograph shows inconsistency, this can also be indicative of forgery.

If there is doubt concerning the authenticity of an image one can try and find other images showing the same event. This

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36 Exposure time was reported to be five minutes in bright sunlight at 11 a.m., 6th March 1841
37 Same as note 34
38 [http://www.marilier.nom.fr/collodions/dwHuetUk.html](http://www.marilier.nom.fr/collodions/dwHuetUk.html) Date 10.03.2003
39 [http://www.artcult.com/daguer.htm](http://www.artcult.com/daguer.htm) Date 10.03.2003
was done as mentioned in the OJ Simpson case, where the picture with Simpson wearing the incriminating shoes was claimed to be a fake. Other pictures were found showing him wearing the same shoes that very same day.

When investigating the photograph further a very helpful tool is the microscope.

Many fakes and reprints are not photographs but lithographs, computer prints or other mechanical prints. A microscope will reveal a dot pattern instead of the continuous tone of a photograph (Figure 7).

If there is any manipulation a microscope can also reveal joints, indicating photomontage or other alterations.

A difference in grain size and grain distribution can also be seen in microscope, indicating parts from other images.

A phase contrast microscope can reveal very subtle differences in the thickness of a negative, for instance if the negative has been exposed to scraping or something has been applied to it.

Also digital image processing can be used to show the picture in a new light.

The image can be converted to a digital image and be analysed by special software tools. The computer can find edges, lines or pixel anomalies that indicate forgery and show blurring or differences in focus.

Other scientific methods to investigate the materials of the photograph are X-ray, UV- and infrared light, SEM, paper- and film analysis.

X-ray fluorescence (XRF) can reveal the elements of a photograph, for instance sulphur, and identify toners, developers, dyes and pigments such as bone black in carbon prints, thereby identifying the process. Thus you can compare a photograph claimed to be from a certain artist with other photographs from that artist.

Ultra violet (UV) radiation can reveal otherwise invisible retouching, and identify many modern paper and cardboard stocks.

Starting in the late 1940s, paper manufacturers began adding “optical brighteners” to many, though not all, of their white papers stocks.

Under a source of UV, optical brighteners will usually fluoresce a very bright light blue or bright white or purple. A genuine print remains black and white.

If paper stock fluoresces very brightly, it is almost certainly made after the mid-1940s. It is important to note that not all modern papers will fluoresce this way, as optical brighteners are not added to all modern paper stocks. This means that if a paper does not fluoresce brightly, this does not mean it is necessarily old.

The UV-light was used by the FBI during an investigation of prints taken in 1930-31 and attributed to the American photographer Lewis W. Hine. Tests carried out on the prints revealed that they were printed on paper that was not available until more than a decade after Hine’s death.

Infrared (IR) spectroscopy can identify organic binders in the paper, thereby identifying a specific paper used by a photographer.

IR photography can reveal otherwise invisible retouching.

The Scanning Electron Microscope (SEM) can identify the elements of a photograph and show the structure of the surface.

Apart from using the investigation methods previously mentioned, a photographic paper can be analysed regarding its physical properties, optical properties, the chemical composition of the fibres and watermarks. The result can be compared with its claimed age, provenance etc.

Most early photographic paper was of paper fiber and single weight. This type is still available today, though the modern photographic paper is coated with a glossy substance and has a distinct plastic feel. Today’s heavier double weight wasn’t introduced until about 1940. This paper will usually now have toning and aging noticeable on the back.

Some printing papers like Polaroid or Kodak instant photographs have a code on the reverse which contains the year of production.

Also films can be analysed to find out chemicals used in processing, type of antihalation layer and much more. Also grain size has diminished during time, this can also indicate the true age of a film.

CONCLUSION

Forgery in photography exists in many varieties. The photograph that claims it is an old and genuine image of someone or something, a new one claiming it is made by a certain artist or a manipulated one claiming that what the image shows is the truth are examples.

Fig. 7
The patterned image grain reveals that the image is of a mechanical printed material (left) compared to the continuous image tone of a photograph (right).

41 http://www.auctionbytes.com/pages/abu/y201/m11/abu0053/s02 Date 10.03.2003
42 Same as note 40 page 96.
44 ALPS EVIDENCE & PHOTO assists in decoding these photographs http://www.alpslabs.com/ALPS-ARTICLES-GSP/photo-forga-B.htm Date 10.03.2003
Forgery defined as alteration or manipulation has always existed for various reasons. Photography being a copy medium makes photographs easy to fake. However there are different methods by which a forgery can be revealed, although it gets harder and harder as the digital technology becomes more sophisticated.

Maybe the conclusion is that you can never establish the authentication of a photograph conclusively. You can establish that an image is false if you find certain conclusive indications of forgery, but can you ever verify a photograph except by saying that you have not (yet) found any indication of forgery?

References


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References


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RAMAN MICROSCOPY AND THE IDENTIFICATION OF ART FORGERIES

LUCIA BURGIO

ABSTRACT

Recent developments in conservation science have shown that, coupled with adequate knowledge of art history, Raman microscopy can assist in the routine authentication and dating of art objects. The technique can reveal quickly and efficiently the presence or absence of date-marker compounds. As a consequence, Raman microscopy may be able to indicate if the whole object is a forgery, or whether it has been modified or partially restored at different stages of its history. This technique is particularly suited to the analysis of museum objects as it can be performed in situ, eliminating the need to sample and consequently the possibility of damage to the object under examination. Raman microscopy also combines non-destructiveness with high sensitivity and spatial resolution. The case studies described here include some Egyptian papyri, a 16th century book of frames, a Chinese bronze vase and a box of watercolours.

APPLICATIONS

Egyptian papyri

Six Egyptian papyri (Figure 1) were recently brought to London from Egypt to be auctioned. The owner declared that five of the papyri were from the period of Ramses II (who reigned in Egypt in the 13th century B.C.) and that the sixth papyrus was the contemporary portrait of the Egyptian Queen Cleopatra (1st century B.C.).

Fig. 1
A supposedly 13th century B.C. papyrus, “Lotus flower”.

Part of the authentication procedure required before the auction was to establish the palette on each papyrus and verify whether any modern pigments were present. The pigments on each papyrus were therefore analysed in situ by Raman microscopy. For comparison, an authentic papyrus made available by the Petrie Museum and dating from the 13th century was also studied. This would be expected to be illuminated with a restricted range of pigments.4-6

Most of the pigments identified on the papyri were modern. They included phthalocyanine blue and green,

anatase, Prussian blue, a Hansa yellow, a β-naphthol red and ultramarine blue. The synthesis or refinement process of these materials were not known to the ancient Egyptians. Phthalocyanine blue and green for example were first made available as pigments only in 1936. The first Hansa Yellow pigment was synthesised only in 1909 and the β-naphthol red detected on the papyri (Pigment Red 112) was first made in 1939. The Raman spectra of these pigments are shown in Figure 2.

Anatase is one of the crystalline forms of titanium dioxide TiO$_2$. This material was identified on some of the papyri (see Figure 3c), but to the author’s knowledge anatase has never been detected on any ancient Egyptian artefacts. Although anatase can be found in nature as a mineral, it is very rare and always contains some inclusions which give it a very dark colour. In contrast with the appearance of natural anatase, the particles found on the papyri were flawlessly white in colour, and uniform in size and shape (round particles with a diameter of less than 1 mm). These characteristics correspond to those of the synthetic variety of anatase first obtained in 1923. As recent studies on the Vinland map demonstrated, the identification of white titanium dioxide on an artefact suggests a 20th century intervention.

Prussian blue was another modern pigment identified on the papyri. This pigment was first made in 1704 and became available in England in 1724. Therefore Prussian blue should not be present on a genuine work of art made before the beginning of the 18th century.

The Raman spectrum of another blue pigment found on the papyri corresponds to that of both the synthetic and the natural forms of the semi-precious stone lapis lazuli (ultramarine blue and lazurite, respectively). Although Raman microscopy alone is not able to discriminate between two materials that have identical molecular composition, because they give rise to identical Raman spectra, the examination of the shape of the blue particles on the papyri confirmed that the pigment was ultramarine blue, a material first synthesised in 1828. The particles observed on the papyri were uniform in size, colour and shape, whilst particles of natural lazurite are usually irregular in shape and size, and show sharp edges. Moreover, natural lazurite is associated with mineral impurities such as calcite and pyrites, which are easily recognisable under a microscope and give unique Raman spectra.

By request of the owner small samples from the papyri were removed and mounted as a cross sections. No trace of any other layers (possibly original) was detected between the papyri fibers and the modern pigments, which had been applied directly onto the papyri. This evidence supported the conclusion that the papyri are not original, and that they were painted sometime after the 1939, which is the date of first manufacture of Pigment Red 112, the most recent among the modern pigments detected.
Ghent/Bruges scatter borders

Mr J.B. Jarman was a 19th century manuscript collector. After his collection was severely damaged in a flood in 1846, Mr Jarman employed a Mr W.C. Wing to conserve and restore the manuscripts needing repairs. Wing was later employed also to produce copies of some miniatures, which were then inserted into pre-existing manuscripts or bound in new books, all part of Mr Jarman's collection. After Mr Jarman's death his manuscripts was auctioned by Sotheby's, but Wing's reproduction work had been carried out so skilfully that many of his miniatures were not identified as copies.

The book analysed in this study was originally part of Mr Jarman's collection and its authenticity was not certain. The book comprised of eight Ghent/Bruges scatter borders on parchment, a style of decoration very popular in the mid-sixteenth century, containing flowers, birds and fruit, allegedly cut from an original manuscript and bound together. A note on the first page ('Jarman's sale January 3, 1864. Cut from old manuscript and mounted') suggested that the borders were original.

The Raman analysis of the borders allowed the identification of several pigments, including azurite (2CuCO3.Cu(OH)2), vermilion (HgS), massicot (PbO), red lead (Pb3O4), lead white (2PbCO3.Pb(OH)2), ultramarine blue (Na8[Al6Si6O24]S1) and chrome yellow (PbCrO4). All except chrome yellow are consistent with a sixteenth century work. Therefore, the presence of this pigment on this work suggests that either the borders are fakes and the forger used mineral pigments well known in medieval times along with a modern compound, lead chromate; or the borders are genuine, but they have been restored sometime in the nineteenth century, probably after the flood in 1846, using a modern pigment. After evaluating the scientific evidence presented here, an art specialist could help deciding between the two options by analysing the style and the artistic characteristics of the borders.

Chinese bronze vase

A painted bronze vase with lid, made during the western Han dynasty (206 BC - 8 AD), was purchased by the Bath Museum of East Asian Art in 1993 in Hong Kong. The Museum's curators suspected that the vase might have been retouched recently, and asked for the paint to be analysed by Raman microscopy.

The pigments basic lead chromate and phthalocyanine blue were identified (Figure 3). Both materials are modern. The former was first made commercially available in the 19th century, the latter suggest that the vase was painted after 1936.

English watercolour cakes

A box of watercolour cakes, manufactured by the English company Winsor & Newton, is currently stored at the Victoria and Albert Museum. No official documentation was available about the age of this box and the watercolours therein, and a detailed analysis of all cakes was undertaken to help dating them. Each cake still showed the original name imprinted by the manufacturer, although these names are typically indicative of the colour of the cakes rather than their chemical composition. The Raman examination of the cakes revealed that many contain synthetic components.
such as ultramarine blue, lead chromate, cadmium sulfide and so on. These compositions were in agreement with the names given to the cakes (for example the main component of the cake labelled 'emerald green' was found to be copper arsenate). The names given to other cakes were however misleading. For example a cake labelled "black lead" was made of graphite, and a cake labelled "bronze" was found to be a mixture of several components including Prussian blue, chrome yellow and iron (III) oxide. Two cakes labelled "Indian yellow" were particularly interesting. The history of Indian yellow is peculiar \(^{15}\): probably introduced into India from Persia in the 15\textsuperscript{th} century, it was obtained by evaporating the urine of cows that had been fed exclusively on mango leaves. The resulting precipitate, containing a high concentration of the yellow magnesium salt of euxanthic acid \((C_{19}H_{16}O_{11}Mg.5H_2O)\), was shaped into balls and exported. Some time at the beginning of the 20\textsuperscript{th} century the production of the pigment was discontinued to prevent any further cruel treatment of the cows, whose diet based exclusively on mango leaves was causing them to die of malnutrition. The pigment almost disappeared from artists' palettes although it was not uncommon to find "Indian yellow" cakes in which the original cow-derived ingredient was substituted with other yellow materials, such as chrome yellow. The two cakes analysed in this study yielded the Raman spectrum of Indian yellow \((\text{see Figure 4})\), and therefore must have been manufactured before the original Indian pigment was phased out.

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**ABOUT THE AUTHOR**

Lucia Burgio, PhD, AMRSC, graduated with Hons. in Chemistry at the University of Palermo, Italy, in 1996. In the same year she obtained her chartered chemist status. She was awarded a PhD in Chemistry at University College London in 2000 with a thesis on the analysis of pigments on art objects by Raman microscopy and other techniques. She is currently a conservation scientist at the Victoria and Albert Museum. Her research interests include the analysis of pigments and other artists' materials on museum objects, and the application of scientific techniques to art and cultural heritage issues.

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OPEN-AIR MUSEUM BUILDINGS.
FAKES – OR TELLING A TRUE STORY?

JON BRÆNNE & TONE OLSTAD

ABSTRACT
The topic for this paper are the relocated and restored buildings at open air museums. Moving and maintaining museum buildings imply that they have to be restored and some changes has to be made. This is a problem only when restoration transforms the building so much that it ends up more or less as another house, in some cases even a forgery. Four buildings from Maihaugen museum, Lillehammer, Norway are selected as case studies for the paper. How each building presents itself is studied together with how it is described in the relevant literature. This collected information is compared to the changing presentation over the years of the building to the public, with the aim of looking for a discrepancy between the building’s restoration history and the guide books presentation-history. If the building is regarded a falsification or not, is commented in the conclusion of each building. It is probably not possible to set a distinct border between a restored building and a forgery, but in the final conclusion an attempt is done.

KEYWORDS
Forgery, fake, falsification, building, open air museum, Norway

INTRODUCTION
The topic for this paper is how buildings at open air museums are presented to tell the history of the past. Through the years we have often felt cheated when visiting open air museums; to us a building is more or less a forgery when it is presented as something else than what it really is or was. We are aware of the fact that moving and maintaining museum buildings imply that they have to be restored. This is a problem only when restoration transforms the building so much that it can end up more or less as a forgery. We are also aware of the problem of definitions; it is probably not possible to set a distinct border between a restored building and a forgery.

Our allegation is that buildings often are restored to fit the museum’s need. To say that open air museums willingly sacrifice the authenticity of a building to make it fit into the museum’s overall plan for projecting the past, is maybe to take it a bit too far. But it is so that the real history of each of the buildings at the museum is of lesser interest than the history the museum wants to create through these buildings?

We will in the following present four buildings at the open air museum Maihaugen in Norway which we look upon as possible falsifications, discuss why we have put them into that category, and also try to decide if any of them really should be categorised as falsifications. Please note that the discussion in this paper to a large extent is common to most open-air museums. We have selected buildings from Maihaugen museum, mainly because they are well documented.

BACKGROUND
Open air museums
An open air museum is a museum with a collection of buildings reused as museum buildings to make them available to the public. The traditional, and the most wide-spread kind of open-air museum has buildings which are moved from their original site, and re-erected at the museum site, often in a new context. The more recent type of open-air museums, has buildings preserved in situ and includes the preservation of the cultural landscape around the buildings.

In Scandinavia the collection of buildings as forerunners to open-air museums, dates back to the second part of the 19th century. The very first open-air collection; “Kong Oscar II’s bygningshistoriske samlinger”, was established in Oslo, Norway in 1881. Ten years later, in 1891, the “Skansen” museum was inaugurated in Stockholm, Sweden. In the following years a number of open-air collections or museums was estab-

1 The words forgery, falsification and fake are used with the same meaning in the paper.
3 King Oscar 2.nds. Collection, Bygdøy, Oslo.

SAMMENDRAG
Artikkelen tar for seg de flyttede og gjenreiste bygningene på fri-luftsmeuser.

Det å flytte og det å vedlikeholde museumsbygninger innebærer en viss grad av restaurering og også at endringer gjøres. Restaurering og istandsetting er bare et problem når disse proses- sene er så omfattende at den opprinnelige bygningen nærmest går tapt; det skapes et “nytt” hus, i enkelte tilfeller nærmest en forfal- sking. Fire bygninger på Maihaugen museum, Lillehammer, er valgt som case studies til denne artikkelen. Bygningene, slik de står i dag og relevant informasjon om bygningene er studert. Denne informa- sjøen om selve bygningene er sammenlignet med hvorledes den enkelte bygning over tid er presentert til publikum. Målet med sammenligningen har vært å se om det er avvik mellom hvorledes bygningen presenterer seg og hvorledes den presenteres til publi- kum gjennom guidebøker og annen informasjonslitteratur. Hvorvidt bygningen er vurdert å være en forfalskning eller ikke, er komment- tert i oppsummeringen på hver bygning. Det er vanskelig å sette et skille mellom den restaurerte bygning og den forfalskede, men i den avsluttende konklusjonen har vi forsøkt dette.

NØKKELOORD
Forfalskning, bygning, friluftsmuseum, Norge
Museum-buildings

This paper deals with the relocated buildings at the traditional open-air museum. These buildings are often altered when re-erected at the museum. The alteration may be caused by the condition of the building, by lack of knowledge about the building, or by the purpose of the building in its new context. Not only is alterations made when the building is set up at the museum, but also in the period after the relocation. Museum buildings are part of the history of the museum, and exposed to the changing today's view upon the past. Several museum buildings has therefore been rebuilt, or redecorated or moved within the museum area to tell the "true story" of the past. The museum may have wanted to adjust a building either to illustrate a specific historic period of the building, or the life of a social class of the society, or a famous person's home, or even a historic event connected to the building.

The public

The public visiting an open-air museum, is given a presentation of "their ancestors material life" in the past; how they designed and built their houses, which materials and tools they used, how fixture and furniture were made and placed, and how paint was used in the interiors. The last is a main issue for us as painting conservators. In Norway the use of painted monochrome surfaces and decorative paintings are important factors in the interiors. The painted surfaces are found first and foremost in the upper class homes, but also in more modest buildings made by and for the middle and working class.

The open-air museum is projecting the past through its buildings, as well as via written information sheets and museums guides, and through oral presentations to the visitors. The responsibility of the museum towards the history and towards the public is huge. The information read from the buildings has to give the true history of the building, and even more important; the information from the building has to be in correspondence with the written and oral information given out. This is crucial if the museum has restored the building to fit an edited history of the building.

The open air museum Maihaugen

Maihaugen museum is in the city of Lillehammer, which is located in the inland in the south east of Norway, just where the river Gudbrandsdalslågen, which run through the valley of Gudbrandsdalen, reaches the lake Mjøsa.

The dentist Anders Sandvig was the founder of Maihaugen. He started his collection of movable objects in 1887 and established his first "open-air" museum in his own garden in the centre of Lillehammer in 1895. His total collection of 5 vernacular buildings and one church was bought by the city of Lillehammer in 1901. In 1903 the buildings were dismantled and moved 870 meter, from the garden in the city centre to their present site at Maihaugen. Stored houses were added when this new museum was established, and in 1904, at the opening, Maihaugen had ten buildings from ten different farms in the valley of Gudbrandsdalen. Today the museum has about 170 historic buildings, spread on 369 000 m² which is the enlarged and total area of the open-air museum. Most of the buildings dates from ca. 1200 to ca. 1915 and a few from the 20th century. Maihaugen is one of the very few open air museums which has included more modern buildings in their collection. Maihaugen has a magnificent collection of buildings nicely distributed in the landscape. It has about 108 000 annual visitors.

We might have used other open-air museums in Norway as a source to this paper, but have selected buildings from Maihaugen because the museum is well organised, and it’s buildings are quite well documented. The documentation include a presentation of the museum by Sandvig (Sandvig 1907, 1928 &1934) were his ideas and intentions with the collection are expressed, published discussions of selected buildings at the museum by art historians (among other Hauglid 1956, 1962 & 1964), measurement-drawings and drawings from the beginning of the 20th century, and the many published museum guides.

From the creation of the Maihaugen museum till today, there has been a continuous change in the museum's attitude towards the buildings, and the idea of their role in the museum context. The ideas and intentions of the founder, Anders Sandvig, has continuously been discussed and interpreted, and the presentation and use of the buildings has changed through the history of the museum.

MATERIAL AND METHODS

The material for the presentation

Case studies

The case studies used in this paper are four of the oldest buildings at the museum. They were selected due to their long history at the museum, and their continuous use as “witnesses” of the past in the presentation history at the museum. The tree first buildings in the list below are from the first collection period, 1895-1903, and the last from the second period 1904-1914 (Hegard 1984, p.91).

These buildings will be presented and discussed in the following:

- Årestua (Open hearth house) from Tolstadskriden in Vågå, Gudbrandsdalen. Dated by Sandvig to ca. 1440.

4 Sandvig. 1907. First written as small pamphlets, presenting each building. Then later collected and presented in this book.
Krohg was so impressed by Sandvig’s collection that he presented the collections in 6 articles in one of the at that time important news-8To obtain this he even used the visitors as extras in the scene he had created, when they entered a house or a setting in the museum.

illustrate this evaluation.

The development of the heating source as an important factor in the building history. The interior and the furniture arrangement has through

history been influenced by the way the buildings were heated. Sandvig considered this to be so important that he used his oldest buildings to

museum. Not dated by Sandvig.

Written information
The literature listed below is our main source of information to the presentation and evaluation of the case studies. The literature is, except for no.7 and 9, written information or books which in different periods have been produced to inform the visitors. All the publications on this list has been available to the public and the visitors.

1. 1907A. Sandvig, Anders, De Sandvigske Samlinger. (The part of the book which contains Sandvigs description of the buildings condition, fixture and fittings at its original site, as it appeared when Sandvig bought the house, i.e. before the first dismantling.)
3. 1907B. Sandvig, Anders. De Sandvigske Samlinger. (The part of the book which contains Sandvigs description of the buildings after re-erection at Maihaugen.)
12. 2003. Information signs outside the museum buildings. Date for the display of the signs is not informed to the public by the museum.

Documentation like measurement drawings and other contemporary drawings are also an important part of the information we have used together with information collected when visiting the buildings 5.

Sandvig’s Maihaugen
Sandvig’s presentation of his own museum and collection (Sandvig 1907, 1928 & 1934) is the starting point for comparing the case studies with the written presentation of them. It is essential to know not only what Sandvig’s intentions were, but also how the contemporary society looked upon the museum.

Sandvig’s own written statements and thoughts gives us an idea about his intentions with the collection: “My intention with Maihaugen has not been to create a museum with schematically thematic presentations, or only to create a collection of whatever you by chance may drop into of lost items from the past – a house here, a tool there. Neither do I intend to collect the most valuable items and creations from the past, nor the items which stands out from the average. On the contrary, the way I imagine Maihaugen completely finished, is like a collection of ordinary homes, which you may visit and get an idea of how those who used to live in the houses organised their belongings, their homes, their lives and their work. The building design, the fixture and fittings of a home gives you the idea of the people themselves, and in the old family farms of the Valley it is not the single person’s taste or contribution that is of importance, but the generations’ influence upon the homes and building tradition” (Sandvig 1907. p.1). Sandvig wanted to “tell stories”. One of his main intentions was to give the visitors the feeling that when they entered the museum and the buildings, they should mentally be taken to the past.

Sandvig’s intentions for Maihaugen, is summed up in four major points (Buggeland 187, p.179).

• The buildings should be re-erected at Maihaugen in a landscape very much like the original site. If more houses were moved from the same farm, they should be re-erected with the same distance and angle between each building as at the farm.
• The interiors should be recreated as close as possible to the “original”. The intention was that the visitors should have the feeling that the family left the room a moment ago.
• The building history influenced by the buildings heating source should be told. This he wanted to do through the first houses which were placed around the artificial “Northern Lake”.
• Sandvig wanted to “tell stories”. One of his main intentions was to give the visitors the feeling that when they entered the museum and into the buildings, they should mentally be brought back into the past. 8

How the contemporary regarded Sandvig and his collection is described by Chr. Krohg (1852-1925), a respected and

5 It is important to say that we never have scientifically examined the buildings. We have visited them and in addition been allowed to take photos.
6 The “Valley” is Gudbrandsdal valley. Sandvig collected all his objects from 10 different municipalities in this valley and the municipality of the town Lillehammer.
7 The development of the heating source as an important factor in the building history. The interior and the furniture arrangement has through history been influenced by the way the buildings were heated. Sandvig considered this to be so important that he used his oldest buildings to illustrate this evaluation.
8 To obtain this he even used the visitors as extras in the scene he had created, when they entered a house or a setting in the museum.
9 Krohg was so impressed by Sandvig’s collection that he presented the collections in 6 articles in one of the at that time important newspapers in Norway; ”Verdens Gang”. The quotation is from one of these articles.
well known Norwegian painter and writer. He visited Sandvig and his collections in 1901 and states9: “Sandvig is not an ordinary collector, he has fantasy and passion, he is an artist. He understands how to create, – not only an illusion, because to create an illusion can be learned, that will only claim a skilful theatre producer –, but the charm, – the indescribable which is dependant on the minute details, the minor nuance, the patina, the familiar dust as in most homes –, that is only possible to create when a person has the gift of a fairytale teller who works half unconscious, without allowing the demands of the public to steer his work; neither the main part of the public wanting the “museum-theatre”, nor the more scientific who demands accuracy and correctness. If a scientist, a fanatic well-educated, a so called curator who’s only wish is to overwhelm the public with their huge wisdom and their ever correct geographical and historical knowledge got their hands on this collection, the result would be disastrous”.

Method
The method we have used for the evaluation of the case studies is the following:

The selected building at the museum is studied. The information taken directly from today’s building and from descriptions of the building, is compared with the information in sources written for today’s visitor. Furthermore is the actual building versus the presentation of the building through the decades looked at. The aim for this scrutiny is to find out if changes to the building is reflected in the presentation of the building to the public. Frankly spoken is what we are looking for, a discrepancy between the building’s restoration history and the guide books presentation-history. By carrying out these studies it is possible to separate the buildings which are telling a “true story” from those which are altered to fit the museum’s presentation of the past.

CASE STUDIES; HISTORY AND PRESENTATION

In the following presentation and evaluation, the information found for each of the four buildings is listed with reference to the literature list above.

Årestua (Open hearth house) from Tolstadsriden in Vågå.

Bought by Sandvig in 1896 and re-erected in his garden. Moved to Maihaugen in 1904. Dated by Sandvig to ca. 1440. (Ref. 2 and 8.)

The oldest dwelling houses type of log construction in Norway are the årestuer/open hearth houses. This way of building, and heating houses goes back to pre-historic times in Norway. A traditional open hearth house consists of tree rooms. One large living room, and two smaller rooms at the gable end of the house, one for the entrance and one for sleeping. The house has no windows. The light source is an opening, ljeøre in Norwegian, in the middle of the roof in the large room. The opening could be closed by a frame covered by a transparent membrane made from cow bellies. The heat source is an open fireplace, the åre in Norwegian, in the middle of the stamped earthen floor. The smoke is let out through the same opening as the light comes in.

When Sandvig started his collection of buildings, no known open hearth house was kept in the Gudbrandsdalen valley. To find, restore and exhibit a house of that construction, was therefore a somewhat dubious scoop.

Building- and presentation history of the house.
1. 1907A. Sandvig. “Originally from Tolstad in Vågå, but in 1756 moved to a smaller farm owned by the main farm. There it was, one of the last open hearth house in the valley, badly deteriorated and abandoned, and reused as the first floor in a barn.”
2. 1905. Schou. Not dated in the guide. Described as “Built of enormous sized timber”. The description which in general is coloured by the contemporary national romantic ideas,
includes a presentation of the interior and the use of the building. Year 1756 was this open hearth house moved from the farm Tolstad, to a smaller farm owned by the main farm. There it was, the last open hearth house in the valley, forgotten and abandoned.

3. 1907B. Sandvig. Re-erected at Maihaugen as if it was an original open hearth house. Described as “Yes, this has really been a house for humans, even one of the main living houses on one of the large farms in Gudbrandsdalsalen valley. But that is very long ago. Probably is the house built around 1440.”

4. 1932. Astrup. “The open heart house was built 1440 at the farm Tolstad in Vågå.”

5. 1934. Sandvig. Same as no. 1 and no. 3.

6. 1962. Hauglid. In 1962, Roar Hauglid11 carries out a scientific examination of this building. Which he publishes in an article in the yearbook for The Society for Preservation of Ancient Monuments in Norway. His important conclusions are as follows: “The house from Tolstad in Vågå was, until now taken to be a dwelling house belonging to a farm down in the valley; now it appears that it was an out-farm building from the mountains, which was later taken into use as a barn. The exterior passage which runs along the front of the house is not authentic. Having established this, the author goes to maintain that the house can hardly be much older than from the end of 17th century. In the out-farms in the mountains, the ancient custom of having the hearth in the middle of the floor continued in use until the 18th century.” … “Finally the author states that the ground plan of both these houses12 - in both, the front door opens straight on to the principal room – cannot, as previously been thought, be of medieval origin in Norway; this assumption was partly based on the two houses here discussed.”

7. 1987. Valen-Senstad. “Of medieval type”. “How old this building is, is uncertain. That is also of minor interest. More than the age is it the type of house which have our interest.”

8. 1987. Buggeland. “When Sandvig wanted to re-erec the open hearth house from Tolstad, he asked Nicolaysen10 for advice. Then it was necessary to determine the age of the house. In a mediaeval diploma is was said that in 1437, the buildings at the farm Tolstad was badly deteriorated. Then Sandvig and co. interpreted this into that the new buildings at the farm was built shortly after and could therefore date the house (the årestue) to 1440. When the custom with chimney, a fireplace connected to the chimney and windows came, this old house were superfluous and in the middle of the 18th century it was moved to a smaller farm and reused as a barn. It was this building Sandvig bought. He was very much influ-

enced by the contemporary romantic view on history. He indicated that the fixture and fittings of the house lacked splendour, it was simple and pre-historic as one could expect in a “fearless, tough time in the history of our country”. From a programme like this he could re-erec and fit up the open heart house as a medieval hosc.” Later research has also pointed out that the open hearth house which came from Tolstad is likely to have been an out-farm booth which at the earliest can be from the 17th century. At Maihaugen anyhow, it stands as a representative for the type of buildings people used to live in during the Middle Ages.”

9. 1989. Hauglid. “Sandvig meant that the house had to be medieval, because the building was without windows and had smoke- and light opening in the roof ridge, and a smoke vent. “The house was in a quite derelict state when Sandvig bought it. He therefore had the house restored, and repaired as an open hearth house from the Middle Ages. The house as type is known from the Middle Ages, but the Tolstad house is hardly of that age. A closer look at the historic traces in the building points towards the 17th or 18th century.”


11. 2003. Two separate information signs. No.1. “Dated: ca. 1700. Medieval type”. No. 2. “Age unknown. Ground plan of late medieval type.” “….. In the out-farms were this type of houses in use for a longer period than on the farms”.

Summary. Årestua/the open hearth house, from Tolstadsriden in Vågå.

Sandvig describes the provenience and the condition of the building when he bought the house in 1897. He says that “the last open hearth house in the valley” is “forgotten and abandoned”. Then in 1907 Sandvig describes the house as an authentic, medieval dwelling house on a farm in the valley. And he dates the house to ca. 1440. In 1932, 1440 is confirmed as the exact and correct dating of the building. In the beginning of the 1960’s, Hauglid makes his scientific research in the house. The conclusion of his work is dramatic. He states that the house from Tolstad in Vågå, seems to have been an out-farm building from the mountains, which was later taken into use as a barn. He adds that the exterior passage which runs along the front of the house is not authentic and that the house hardly can be much older than from the end of the 17th century. Valen-Senstad presents the house, which before Hauglid’s article was considered to be very old an interesting, in a new way in 1987. He claims that the age of the house is of minor interest compared to the type. He gives no information of the age, and he informs the visitors that the house is a reconstruction of an earlier state of the same building. The interpretation of Buggeland 1987 is that Sandvig so badly wanted an open hearth house, that he created it from parts of a barn. Both Buggeland, and later Hauglid in 1989 and 1994, dates the building to the 17th or 18th century. Hauglid also indicates that the house is a reconstruction or a replica. Hauglid uses in combination the strange expressions “restored and repaired as an open hearth house”. The building is still named the “Årestue”/Open hearth house. In 2003 it is presented to the public in two different somewhat vague ways. (See 12).

Conclusion

The building Sandvig presented in the collections as a late medieval open hearth house, is due to its present state and the way it is presented to the public, very close to what we would call a forgery. It would have changed the situation if today’s visitors had been told the real story of the building.
Believed by Sandvig to be one of the oldest two-storey buildings in the valley. The original name on the building was Myttingstua, (the dwelling house from Mytting). When Sandvig had reorganised the interior in the house, he renamed it to “The Widowshouse” or “The Captain’s house”. This was done to fit his intentions in using the house to show the living conditions of the official class, or the widower of an officer of the Crown.

Building- and presentation history of the house.

1. 1907A. Sandvig. When the house was bought to the collections in 1897 it was only used in the summertime, and should in a short time be demolished. “It is the only house in the collection which was inhabited when it was bought. The house has been moved once before. Large alterations is not carried out, with the exception that the windows are enlarged a little bit. It is possible that a couple of the doors are from that time.”

2. 1905. Schou. “(17th century)” is written in her guidebook. “The small Windows are found in the gable Walls, and in addition some at the backside of the building.” “From the open Gallery at the Front, we enter directly into the main Living room, which has Wallpaintings by Peder Odnæs, 1739-1792. Through Hadeland14 these paintings reached the Farm Lunde in Vaage15, and then at last ended here”.

3. 1907B. Sandvig. A very thorough description of the exterior and interior is given. In addition some of the ground and first floor, and photos of the interior. “Instead of carpets and other decorations, the main living room has here got a new “dress”. Doors and windows are painted, the ceiling whitewashed with distemper paint and the walls both in the main living room and in the small chamber are covered with solid panels. Only the small kitchen is an exception. The middle and largest panels are adorned with strange paintings, carried out by no less than the well known rural painter from Land, Per Aadnes. The doors and windows in the main living room are almost white. The dado dark blue, and the frames surrounding the large panels a much brighter tone in the same colour. The small low panels along the ceiling has got painted decorations, with sky illusions.” .. “Two of the painted and decorated panels are not of the same quality as the rest in the main living room. This is also the case with the paintings in the chamber.” The dado in the chamber is dark green and the frames surrounding the panels are yellow.”

5. 1932. Astrup. “Myttingstuen is from Ringebu, and was built in 1759.” “… The house is a typical home for an officer of the Crown”, “… Fixtures do not exist, the floor resembles a parquet floor, doors and windows are painted, the ceiling which is flat is painted white with distemper, and the walls are covered with panels, with painted decorations by Peder Aadnes.” “… The chamber has as the main living room painted and decorated panels.”


8. 1987. Valen-Senstad. “Built in the last part of the 17th century.” Then a thorough description of the development of the building tradition in Norway, - and this house in particular. “The Captains farm has got its distinctive character by the painted wall decorations carried out by the well known popular artist Peder Aadnes.”

9. 1987. Buggeland. “Myttingstua from Ringebu is a log timber building, assumed to be from the time around 1650. It is Maihaugen’s oldest two floor building”. “…Sandvig furnished the building as a home for an officer of the Crown, and named the house The Captains House or The Widowers House”. (i.e. The widow of an officer of the Crown.) “…On the ground floor there are painted panels with allegoric motives painted by Peder Aadnes.”

10. 1989. Hauglid. “The house is built after 1650”. “…This house is earlier been named as The Captains House or The Widowers House”. “So far there has not been possible to find statements that the house has been inhabited by officers of the Crown. The house is a beautiful farm house from Gudbrandsdalen, but Sandvig furnished the building as a
house for an officer of the Crown”. “…The painted wall decorations by the well known popular artist Peder Aadnes is a rare kept memory after a painter whom, with his art, served as a model for lots of rural painters”.

12. 2003. Information sign. “One of the oldest two floors buildings in the valley”. “…The wall paintings are painted by the well known rural painter Peder Aadnes 1739-1792”.

Summary. “Myttingstua/Enkesetet/Kapteinsgården” from Mytting in Ringebu.

In his first presentation Sandvig informs of the state of conservation and the alterations he has recorded. In the presentation to the public by in 1905, Ms. Schou informs that the panels and painted decoration in the house originally comes from another part of the country, (not from Gudbrandsdalen), and was bought by a farm in Vågå called Lunde. The panels in Myttingstua was probably bought from Lunde and mounted in Myttingstua.

In Sandvigs presentation in 1907, only two years later, this important information is “forgotten”. He is presenting the panels as if they belong to the house. The polychrome panels are not only in the living room, but also in the small chamber. The contemporary architectural plans and photos of the house, show that Sandvig cut an opening in the wall, and placed a new door between the chamber and kitchen. This was probably done to make the panels fit to the chamber. The introduction of the panels in the house, and the rebuilding of the interiors was probably carried out to fulfil Sandvigs wishes. He wanted the house to appear as a house for officers of the Crown, not as an ordinary, very early two floor rural dwelling house. The door opening between the two rooms is later closed, and the painted panels removed. No date for this work is recorded by the authors.

In 1932 the building is dated for the first time; to 1759. It is presented as a typical house for an officer of the Crown. There are painted panels both in the living room and in the chamber. No information is given concerning the originality of the panels. Valen- Senstad presents the house as built in the last part of the 17th century. He states that the distinctive character of the house comes from the painted panels. No information is given concerning the originality of the panels.

From Buggeland’s presentation in 1967 and onwards, it is given information that the furniture in the house were deliberately organised by Sandvig to make it into a home of an officer of the Crown. No information is given concerning the originality of the panels. The dating of the house after the first dating in 1932, varies from ca. 1650 to ca. 1700. In 1994, in the latest guide, it is said that the house originally was an ordinary farm house.

Conclusion

We consider the presentation of Mytingstua to the public to be insufficient. The signs of alteration in the building are not explained in the information to the public. Even more serious is the lack of information of the provenience and history of the valuable painted panels in the house. The visitors have at least the right to know that the were bought separately and fitted into the house at Maihaugen. General information on the painted panels would have been a nice gesture to the public, since this kind of painted panels are not very common in Norway. Panels painted by the important and well known artist Peder Aadnes, as in this building, are very rare and very valuable in Norway. Since the recent information presented to the public states that the house originally was an ordinary farm house, and was recreated by Sandvig as the house of an officer of the Crown, we will not describe this building as a fake. The interior however, due to the lack of information concerning the panels, fixtures and fittings, is close to being designated a forgery.

Vågå old Vicarage, Vågå.

Bought by Sandvig in 1903.
Re-erected at Maihaugen in 1904.
Assumed by Sandvig “To be built between 1643-1664, but could be older”. (Ref. 1 and 3.)

Building- and presentation history of the house.
1. 1907A. Sandvig. “Four years ago bought for the collections. It was then quite badly deteriorated, windows and doors were destroyed, the chimney fallen down, the floor partly removed and the roof leaked everywhere”. “… What time the vicarage is built, is unknown, but it can with certainty be dated to the middle of the 17th century and is probably even older.”
2. 1905. Schou. Described as “Built of enormous sized timber”. “May have been erected between 1643 and 1667” “….The Walls in the main Living Room is covered with won-
derful old Tapestries with lively Scenes and Persons from the Time of the Wigs. The Tapestries originates from the Vicarage Hedrum in Jarlsberg. 16

3. 1907. Sandvig. A very thorough description of the house is carried out. Plans, photographs and drawings are included. “The walls in the main living room are covered with painted tapestries – a wanted wall decoration in the upper classes in the 16th century. But these tapestries has by no means that age. They have not from the beginning belonged to this living room, but they come from Hedrum old vicarage. The history of the tapestries is mostly unknown, but in 1777 they were bought from Falkensten Manor House near Horten. In accordance with the church register, the vicar Arff in Hedrum should have a wedding with a daughter of the Judge at the County Court Friis in Jarlsberg. To decorate the main living room when the bride arrived, the tapestries were bought by Arff. After Arff’s death the tapestries were bought at an auction by his successor, Schroeder for 36 Rdl. 17 Schroeder gave the tapestries to the vicarage of Vågå, where they probably were stored when the vicarage was bought in 1897. Where they are painted, or who the was artist is not known. (The piece in the corner by the entrance and the little part between the stove and the door to the kitchen, and some small parts over the windows are absolutely new. These pieces are painted by Lars Jorde) Probably they are imported, maybe from Holland. In a corner on the reverse of one of the pieces it was discovered a small lacquer sign of a size of a penny which could be read: “Laurvigs Custom”. 5. 1932. Astrup. “The vicarage is from Vågå, and is built ca. 1650. Both the main living room and the study has bays. This seen in connection with the painted tapestries which covers the main living room. The stove with the white and blue faience tiles, the guilt leather chairs and the other furniture which gives a very solid and stylish impression, gives the main living room a very sophisticated appearance.”

8. 1987. Valen-Sensstad. “Built ca. 1640”. “…The white painted ceiling in the main living room with the pyramidal appearance gives the room a fantastic effect”. “…At least the painted tapestries gives the room a magnificent, distinctive character. They came to the country in 1777, probably from Holland”.
10. 1989. Hauglid. “Built ca. 1640”. “…Main living house at the vicarage in Vågå. The house was bought by Anders Sandvig in 1903 and re-erected at Maihaugen to the opening in 1904”. “…When Sandvig bought the house it had been empty for 100 years”. “…The fixture and fittings of the house is new-fangled as fine urban furniture (from the 18th Century), by the two bays, – one at each side of the exterior passage”. “…The fixtures and fittings of the house is new-fangled as fine urban furniture (from the 18th Century), as a little Dutch wall clock. No heavy, permanent peasant furniture is to be seen, but renaissance chests and regency chairs, tiled stove and painted wallpapers under a white ceiling”.

13. 2003. Internet. “Main living house at the vicarage, Ullinsvin, in Vågå. The timber in the building is dated to 1697. The house was bought by Anders Sandvig in 1903 and re-erected at Maihaugen to the opening in 1904”. “…Even if the vicar built a new main living house at the farm early in 18th century, was the old vicarage maintained and used. When Sandvig bought the old vicarage it had been empty for 100 years”. “…The Vicarage tells about the meeting between the mountain valley Vågå and Europe. Sandvig wished to show how the culture of the official class, the vicar and the vicarage was a contrast to the local peasant culture. The European ideal of style is visible in the architecture, by the two bays, – one at each side of the exterior passage”. “…The fixtures and fittings of the house is new-fangled as fine urban furniture (from the 18th Century), as a little Dutch wall clock. No heavy, permanent peasant furniture is to be seen, but renaissance chests and regency chairs, tiled stove and painted wallpapers under a white ceiling.”

Summary. Vågå old Vicarage, Vågå.
Sandvig presents the provenience of the house and the condition before dismantling. He dates it to the middle of the 17th century, and states that it probably is older. In 1905 the house is presented as probably built between 1643-1667. In addition it is told that the painted tapestries are later than the house, and that they originally are from another building, south in the country. Except for the windows which due to the type, has to be secondary, there are few visible changes in the building.

In 1907 Sandvig gives a very thorough presentation of the house with drawings and photographs. He gives a very accurate description of the provenience and history of the painted tapestries. He also gives his ideas for the presentation of the house. His ideas for the furnishing of the house was based upon a record from a division of an inheritance that was held in the vicarage at Vågå in 1659. Everything which had been in the building in question was recorded. Sandvig used those lists when recreating the interiors in the house, and when collecting objects for the purpose.

In all later presentations earlier than 2003, the house is dated ca. 1640. After 1905, the previous information concerning the painted tapestries seems to have been forgotten, since the provenience and history of the tapestries is not presented after that time. In 2003 Maihaugens homepage on internet says that the timber of the house is dated 1697. In the Norwegian context this means that the house probably is built between 1698 and 1700.

The alterations of the constructive elements of this building are minor. The most important possible change to the interior was done when the house was rebuilt at the museum. We would, as Sandvig did, assume that the tapestries were bought to be used in the vicarage. But the written source does only say that the tapestries was owned by the vicarage, not that they were mounted in the house.

Conclusion
It is a pity that the tapestries’ correct history and provenience not is told to the public, that would have added to the experience. The visitors should have been told that this rare and important part of the interior is 80 years younger than the building itself. We consider this to be a serious lack of information to the public, but is hardly enough to classify the house as a falsification, due to the discrepancy between the building and the information to the public.

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16 Ca. 500 km. Further south in Norway.
17 Contemporary currency in Denmark/Norway.
19 Dating of timber is carried out using Dendrochronological examination.
Årestua (Open hearth house) from Vik in Kvam.

The house is a gift from merchant Einar Lunde (1908-1910) and was re-erected at Maihaugen in 1911. This house is to day a part of the complete farm Bjørnstad from Lalm, which Sandvig bought in 1901. When he bought the farm it consisted of 21 log buildings which were moved to the museum. At the museum the farm has 25 buildings; four buildings had to be added from other sites, because these kind of buildings were not kept at Bjørnstad.

Building- and presentation history of the house.

4. 1928. Sandvig. Sandvig gives an "embroidered" presentation of the house. He does not in fact present this house in detail, but he makes a general presentation of buildings of the same type, and how they were used. “The oldest house at the farm is the open hearth house.” … “Through a little porch which is closed by a half-door, we enter into the house. This door differs a lot from the rest of the doors in the collection. Along the edge of the inside it is covered with a wide list, which at the upper end connects with a carved ornament. This has the double width as the list. The motif of the carving are grapevines and leaves”.” …The house is large, and has a kind of medieval atmosphere. But it can hardly be older than from the last part of the 16th century. The house differs from the open hearth house from Tolstad. This one gives much more the impression of a nobleman than the other”. “…The bakery house and the open hearth house burnt down in 1884. The present bakery house is from Melby in Kvikne. The open heart house is from Vik in Kvam. Both are re-erected at the original sites, and correspond to the two houses that burnt down.”

5. 1932. Astrup. “The open hearth house is the oldest at the farm. The original open hearth house burned down in 1884. The present bakery house is from Melby in Kvikne. The open heart house is from Vik in Kvam. Both are re-erected at the original sites, and correspond to the two houses that burnt down.”

7. In 1962, Roar Hauglid 20 carries out a scientific examination of this building which he publishes in an article in the yearbook of The Society for Preservation of Ancient Monuments in Norway. His conclusions are as follows:

“The other house is from the farm Vik, Kvam, and in the museum it has been reconstructed as a building from the Middle Ages. However, the author shows that the house originally had a fire place and windows as was usual during the 18th century, and he finds that the reasons for reconstructing this building as a medieval house were definitively insufficient. The small exterior passage did not originally belong to the house, nor did the carved grape motif over the door”. “…Finally the author states that the ground plan of both these houses” 21 - in both, the front door opens straight on to the principal room – cannot, as previously been thought, be of medieval origin in Norway; this assumption was partly based on the two houses here discussed”.

8. 1987. Valen – Senstad. “Open hearth house. Put up roughly at the same place where an burnt down chimney house with a partial loft was standing”.” …The open hearth house here at Bjørnstad farm is a reconstruction to an earlier appearance”.

9. 1989. Buggeland. “At Bjørnstad farm there had been an open hearth house, but it burned down in 1886. The merchant Einar Lunde gave the collections an open hearth house which he had bought at Vik in Kvam.”

10. 1989. Hauglid. “This house is put up at the farm, where an earlier chimney house with a partial loft was standing, but this had burnt down before the farm was moved to Maihaugen. The open hearth house shows how the fixtures may have looked.”


12. Information signs. No specific age is of the house is presented. The information sign gives two different informations about the house. The sign in Norwegian says that the house replaces an open hearth house which burned down in the 1884. In the English, French and German presentation, it is told that the house replaces a chimney house with a partial loft.

13. Internet. “The open hearth house is from the farm Vik in Kvam, Nord Fron. This house is put into the farm where it earlier was a house with a partial loft, but that one burned down before the farm was moved to Maihaugen. The open hearth house shows how the fixtures in a simple open hearth house might have been”.

Fig. 7  

Fig. 8  

Dr. Philos. Later General Director of the Directorate of Cultural Heritage of Norway.

Årestua from Tolstad and årestua from Vik.
Summary. The open hearth house from Vik, Kvam.

When the house first is presented, Sandvig either knows little or nothing of its provenience, or he does not tell us because he needs a building to replace the no longer existing building located at the same place at the farm. In his presentation of the building, he says that this open hearth house replaces a previous house of the same type. In later literature presented by the museum, the museum do not agree with itself whether the open hearth house from Vik replaces a similar house, or a house with a partial loft.

The buildings with partial lofts were extremely rare in the beginning of the 20th century. All the existing samples were recorded and well known by the professionals. Our theory is the following: If Sandvig wanted to replace a house of that type, he had to make a new reconstruction, or a falsification which would be discovered by his colleagues. The easiest way to solve the problem was to pretend that the original house on the farm, which burnt down, was an open hearth house, and then “discover” an unknown, rebuilt house of that type. That house could then easily be brought back to its “original state”, and then fit in perfect as a part of the complete farm. In addition Sandvig presents the entrance, the door and the carved parts as if these were parts of the original building, and with particular interest and age.

Hauglid makes his scientific research in the house in the beginning of the 1960’s. The conclusion of his work is dramatic. “The open hearth house at the Bjørnstad farm (the Vik building) was no open hearth house when it came to Maihaugen. With reference to the letter from Mr. Stauri, it was an ordinary dwelling with the usual windows in the gable, flat ceiling open fireplace and the well known wainscot wall between the living room and the sleeping room, all of it typically for a house from the 18th century or even later” . “… When all information now collected is analysed, my conclusion is that the house from Vik in Kvam is an ordinary living house from the 18th century, and the reconstruction as an open hearth house is done on an unsound basis.” Hauglid also stated that the entrance and carvings came from another house.

In 1987 Valen-Senstad presents the house in his guide in only a few lines. He informs the visitors that the house is a reconstruction of an earlier state of the building.

Later and previous information to the public is limited. No further information of the buildings background and history is presented to the public. Due to the lack of information, an ordinary visitor to the museum will probably experience the building as authentic and very old.

Conclusion

Due to the information extracted from the previous presented information, we consider the open hearth building from Vik in Kvam, in its present condition and presentation, a fake.

CONCLUSION

There are no definitions available to define the borders between a restoration, “manipulated restoration”, reconstruction, creation of a replica and a falsification. Even if it had existed, an evaluation like this is subjective and the result depends upon the knowledge and skill of those doing the work.
**References**

**Literature**

Anon. Maihaugen. (No year given) De Sandvigske Samlinger – Lillehammer. 20 p. ill.


Date. 01.03.03


Schou, A. 1905. De Sandvigske Samlinger. Lillehammer. 64 p. ill


**Charters**


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AUTHENTICITY AND ART FORGERIES

ARE BJÆRKE

ABSTRACT

In this paper I raise the issue of art as a source to our understanding of man. The artist is conceived of as a kind of spokesman of authenticity because the making of artworks is a process, which reflects self-discovery and self-fulfilment. The understanding of man is worth striving for because men must live and act like human beings in order to protect humanity. This understanding is based on the knowledge acquired by the human sciences. However, to get acquainted with the history of man is not satisfactorily by itself. Self-definition as reflected in art must be retrieved and carried on in order to encourage ethics of authenticity. Thus, discriminating between genuineness and forgery in art is mandatory, because fake artworks militate against that understanding.

KEYWORDS

The artist, authenticity, self-discovery, self-fulfilment, humanity, genuine art, art forgery, the point of art.

INTRODUCTION

In this paper I raise the issue of art as a source to our understanding of man. It is widely held that artists achieve personality through what they create. The making of artworks is a process of realization in which the artists become what is intended for them. The artworks represent mirrors, so to speak, which reflect self-discovery and self-fulfilment. This outline gives a rough idea of the meaning of 'authenticity'. Authenticity is a crucial moment in our understanding of man. And if the understanding of man is worth striving for, then discriminating between genuineness and forgery in art is mandatory, because fake artworks militate against that understanding.

The 'institutional theory' of art (Dickie) seems to justify discrimination between genuineness and forgery in art. The theory claims that “... works of art are art as the result of the position they occupy within an institutional framework or context”. Thus any object becomes art if that status is conferred upon it by someone with the authority to do that conferring. According to the 'instrumentalist theory' of art (Beardsley), however, “[works of art have] the capacity to produce an aesthetic experience of greater magnitude ... than that produced by [works that are not art]”. Thus any object becomes art, regardless of authority, if it serves the point of art. It follows that genuineness is irrelevant to art, according to the instrumentalist theory, because forgery produced with aesthetic intention can be art.

The institutional theory is interesting because it allows of excluding forgery. I shall derive advantage from the opportunity implied and assert the opinion that forgery, when exposed, should not retain the status of art. However, an important objection is that the theory fails to clear up the point of art (Davies, 45). I shall assume that works of art are products of a self-realization process. Thus, for the sake of the argument I assert that the point of art, i.e. the value of the process of making art, is the qualities which constitute authenticity, like self-definition, self-discovery and self-fulfilment.

ARGUMENT

I am going to present a three-step argument in order to justify the assertion that fake artworks are undesirable because they militate against our understanding of man. The first step rests on the assumption that a falsification is meant to gain value by passing itself off as something which is valuable by authorization. The next step rests on the claim that our understanding of man is based on the knowledge acquired by the human sciences. The last step is to recognize the claim that sources of information must be genuine.

In this step I assert that art forgery implies authorized art. By analogy counterfeit implies authorized currency. National economies are regulated and restricted by national authorities, and so unauthorized duplication of currency is prohibited. The idea is that if something, say A, has the properties of both a status that is conferred upon it and a value that ensued from that conferring and another something, say B, has that same property of status conferred upon it, then, by analogy, B is assumed to have the value that ensued from that conferring as well.

SAMMENDRAG


NØKELORD

Kunstneren, autentisitet, selvforståelse, selvrealisering, det menneskelige, ekte kunst, kunstforfalskning, kunstens hensikt.
We have seen that any object becomes art if that status is conferred upon it. And we know from the art market that a value ensues from that conferring. By analogy fake artworks are introduced in the art market in order to gain value by passing themselves off as genuine artworks, which are valuable by authorization. Further, money becomes legal tender if that status is conferred upon it. And we know from the money market that a value ensues from that conferring. By analogy bad money is introduced in the market in order to gain value by passing itself off as legal tender, which is valuable by authorization. From this we establish the analogy between art forgery and counterfeit. The motivation for introducing fake artworks in the market is identical to that of introducing bad money.

The second step of my argument is based on the idea that we need to understand his products if we want to understand man. This knowledge is acquired through the study of art, for one. The significance of art is that the genuine artwork is the product of a self-realization process whereas fake artworks are not. Let us considered culture as forms and directions of mans spiritual productivity. Art, among others, is a cultural form which leads in a different direction than science. Likewise, science is a cultural form that leads in a different direction than, say, religion. Thus, man has created different areas of meaning. They are ways of reflection in which man articulates himself. These areas of meaning represent reality in addition to the reality which presents an appearance of immediate givenness.

The fact of different areas of meaning goes to show that mans spiritual productivity originates in “a mediated and mediating spiritual organ” (Cassirer 1985, 6). Thus “it becomes obvious that all the various and complex systems of symbols that are contained in language, art, science, and mythical and religious thought are not only accessible to a philosophical analysis, but they call for such an analysis” (Cassirer 1979, 70f.).

The claim that sources of information must be genuine is the starting point in the third step of my argument. The major problem confronting us is why we should select the original work of art in preference to copies and forgeries, when they all look the same in the first place. Is the claim that the artwork must be genuine founded in science or is it just the outright demonstration of some hedonistic cult of the genuine? The answer to that question is, I believe, that the scientist consults art as a source of documentation, whereas the hedonist, as mentioned at the beginning, seeks an aesthetic experience. I suggest that we settle for science. And I suggest that we prefer the genuine work of art because of the energy called forth in creating new symbol constellations. Although forgery may presuppose an inventive mind, inventiveness should not be confused with artistic creativity. In my opinion ‘creative energy’ is the clue. I suppose that it does not take much creative energy to copy a master painter. However, that energy is exactly the hallmark of the artist. The creative energy is the mainspring in the self-realization process.

EXPLANATION

The word ‘authority’ often arouse undesirable associations among liberally minded people. Therefore I hasten to draw the distinction between creditable and dogmatic authority. It is the creditable authority that I have in mind, the authority attained by knowledge and specialization. Not only does the fact of higher education lend weight to the significance of knowledge and specialization. Apart from departmental rivalry the fact that some institutions of education rank above others due to prominent teaching competence proves my point. As in the world of science authority attained by knowledge and specialization plays a major role in the artworld.

What we call art, according to some philosophers, is a certain way of apprehending reality which has become paradigmatic. It makes us see our surroundings differently. It teaches us to see things the way artists see them. These philosophers claim that the work of art is the fruit of a self-realization process that conveys meaning. The process develops ways of grasping the self and reality which become commonly accepted. Thus the individual work of art is the acknowledged embodiment, or a manifestation of general validity if you will, of that apprehension. In other words, the artist is conceived of as a kind of spokesman. If we accept this metaphor, then it seems that the work of art may help to increase knowledge and understanding of man in the past and the present.

Today’s artists other than self-taught artists start their career studying art at university level. They study past and present technologies and absorb the meaning of different styles, i.e. symbol constellations. What is a symbol constellation in art? According to some philosophers symbol constellation in art is the act of transforming “organic beauty” into “aesthetic beauty”. They think of the artist as a person who is exceptionally gifted in viewing reality in an aesthetic frame of mind. Artists do not simply copy a detail of immediate and striking beauty. They suggest, as it were, a way of apprehending that detail. Contrary to transforming perception into feeling, which is void of educational value, the talent of transforming organic beauty into aesthetic beauty is a potential that can be extended. Aesthetic beauty is a constellation of symbols which is constructed in order to convey, not the artist’s states of mind, but the artist’s acts of mind.

Suggesting a way of apprehending reality is obviously were it all starts. Accepting that suggestion is the apparent continuation. The question is whether that continuation is of any significance. I think that it is significant to the artist because his career depends upon it. And it is significant to science because of the evaluation of the energy called forth in creating new symbol constellations. Therefore exquisite competence may be demanded. This is where the connoisseur is needed. Connoisseurship is the authority by which the status of art is conferred upon the object. The point is that it has not merely a baptismal function. It is meant to serve science “as a purely critical procedure, which must precede and prepare the task of the historian.” (Offner, 24).

In my opinion this is the heart of the matter. Once the object has been accepted as a work of art, the procedure changes the work of art from being an aesthetic object into being a historical object. This is the reason why the emotion is subsidiary to the knowledge of the work. According to Offner the linking of a work to its place and period is a primary task of connoisseurship. Attribution of a work to a specific master serves the interests of knowledge
only if it helps us to place it with regard to “where” and “when”. However, works of art often and primarily convey the propagating and glorifying of some idea or doctrine to the public. In order to comprehend the message put into the work it is necessary to interpret the language used by learning its contemporary meanings. Thus, not only the personal genius of the individual artist but also the iconography applied will help to determine the context and environment in which a work of art came into being. Having changed from being an aesthetic object into being a historical object the work of art is no longer an isolated artifact. It has become a component in the history of spiritual and intellectual endeavor.

We then move from the connoisseur to the scientist. The scientific study of cultural objects apply three different approaches. The natural sciences focus on physical and chemical properties. These examinations form the basis of an evaluation of conservation measures. Also they reveal man’s exploitation of the nature of different materials. However, the object is not only a thing among things in the physical world. The cultural sciences concentrate on the problem of the object as a conveyor of meaning. They study symbol systems and aspects related to tradition, spirit and function. These factors have not been the same always and everywhere. This is the background for that analysis which study modes of expression and how they vary from place to place and through the ages. Thus the three approaches give an exposition of technological, geographical and historical traits of character.

The task of the connoisseur, then, is to provide uncontestable evidence for the historiography of man. To get acquainted with the history of man, however, is not satisfactorily by itself. In order to protect humanity, men must live and act like human beings. Therefore history should contribute to the deployment of a theory of man. Thus, it remains an investigation, which rests on the results forwarded by the scientific studies. This investigation presupposes that the relation between what man does and what he is reflects authenticity. The idea is that the authenticity of man and the authenticity of his products fuse to reflect the authenticity of action. Man makes himself known through action. This view can be extended to include the idea that culture is about materializing man’s moral self-control. In the ethics of authenticity the value of self-fulfilment depends on the qualities which make individuals what they are. If the work of art reflects self-definition, then that process of self-fulfilment may be retrieved and carried on, as it were, in order to encourage the ethics of authenticity.

By now it becomes clear why art forgeries are undesirable. It is not the case that art forgeries are art of some secondary importance. On the contrary, By virtue of intention art forgeries have nothing to do with art at all. As stated above, fake artworks are objects which are introduced in the art market in order to gain value by passing themselves off as artworks. Not only are they void of the values that we strive for in the ethics of authenticity. They even militate against our understanding of man. When exposed it becomes evident that they are misleading, because they were never intended to give any information at all. I venture to say that artworks become valuable because the status of art is conferred upon them. Above I have given an explanation of why that status is conferred upon them. Unfortunately, the opportunity to commit crime is offered as well. The Nara-document on Authenticity lucidly illuminates the function of authenticity: “[T]he essential contribution made by the consideration of authenticity in conservation practice is to clarify and illuminate the collective memory of humanity.” (Larsen, xxi).

It follows that all action professing to enhance memory of this kind must proceed without committing artistic forgery or historical falsification.

**DISCUSSION**

I wish to challenge two pertinent assertions. One is the objection that the institutional theory of art identifies “as artworks pieces that are controversial in that they challenge the very point of art” (Davies, 45). We are faced with the dilemma of choosing between evils. On the one hand, to accept the objection would mean that we allow of no divergent opinions. This attitude was taken up by governments of totalitarian regimes. A case in point is the extremely detailed policy of art formulated and applied by Nazi-Germany. On the other hand, ignoring the objection would mean that we allow of the contradiction by introducing pieces that violate the convention established by the theory. Admittedly, politically motivated conflicts do give rise to dilemmas in the artwork.

On second thoughts, however, what appears to be a contradiction may well turn out to be the force of the theory. In this paper culture is thought of as forms and directions in man’s spiritual performance. This performance is a self-realization process in which creative energy is displayed. Although art is a cultural form, the energy called forth in creating new symbol constellations is not exceptional to art. It governs the cultural field as a whole. Since creating new symbol constellations implies challenging old symbol constellations it goes without saying that the constellations are controversial; they always were and always will be. A case in point is the fact that paradigms do change. If we accept this view, then the objection could be cited in support of the institutional theory of art.

Moreover art has not been the same always and everywhere. We approve of ‘ethnographic’ art, i.e. manners of style in alien cultures, irrespective of its relevance to Western measures or artists of today. Interestingly the authorities have not yet conferred the status of art upon cave paintings. They have not even been able to unveil their function. However, hesitating to establish the function of these paintings does not mean that the authorities deny their cultural significance. It means only that the scientific basis for identifying their original function is insufficient.

The other assertions I wish to challenge is the one presented by Venturi (Stanley Price et al., 16). He tells us that the approach suggested by me and others excludes the element of artistic imagination. The idea is that this approach, which dates back to the nineteenth century, reduces works of art to the status of documents. I do not agree upon that objection. Erudition for erudition’s sake does not state the reason for the history of culture. As suggested above historical knowledge should contribute to the deployment of a theory of man. It does not follow...
from this, though, that I am saying that aesthetic value and document value are mutually exclusive. In that connection I would advise the reader that I am not denying that works of art have the capacity to produce an aesthetic experience. Neither am I saying that the the instrumentalist theory of art is wrong. What I am saying is that this theory is too restricted. The institutional theory, on the other hand, allows of a wider range of criteria, including, to be sure, that of the capacity to produce an aesthetic experience.

Also I would like to forestall the possible impression that the analogy between art forgery and counterfeit has reference to authority. An objection may be offered that the authority to confer the status of art upon an object should not be mistaken for the authority to authorize duplication of currency. Whereas the authority to confer the status of art upon an object is based on knowledge, the authority to authorize duplication of currency is politically grounded. Neither should the knowledge required to confer the status of art upon an object be confused with the knowledge required to expose forgery. The authority to confirm the authenticity of an object does not imply the authority to confer the status of art upon that object. Thus, the point of the analogy may not be as obvious as presumed at first. This objection does not apply, however, because the analogy has no reference to authority. The force of the analogy lays in the fact that it refers to forgery.

CONCLUSION

From this I conclude, firstly, that discriminating between genuineness and forgery in art is mandatory, because fake artworks militate against the understanding of man. The understanding of man is worth striving for, because men must live and act like human beings in order to protect humanity. I also conclude that the connoisseur has the authority to confer the status of art upon incontestable evidence for authenticity. Self-discovery and self-fulfilment are crucial moments in our understanding of man. They are evidence for authenticity which is manifest in the system of symbols contained in art. The task of the connoisseur is to provide suchlike evidence. Last but not least: The institutional theory of art should be preferred to the instrumental theory of art, because it allows of a wider range of criteria and because it allows of a definition of art which excludes forgery.

References


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Are Bjærke (1948) was trained as a paper conservator at the National Gallery in Oslo and worked several years at the Munch Museum. Due to illness he had to close down his studio (Artaid) and as a vocational rehabilitation took his main subject in philosophy at the University in Oslo. His philosophical leitmotif is how the cultural heritage becomes important for the philosophy of culture.

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