It was announced in the previous eZine that the theme of the current issue would be the technical research of artworks. During various activities organized by CODART in recent years, attention has frequently been paid to this subject in lectures and market tables, and on tours of permanent displays, exhibitions and museum restoration studios. These tours were conducted not only by CODART members – curators of Dutch and Flemish art – but also by professionals in other disciplines, since the technical research of art objects takes place at the interface of art history, restoration and science. Each of these disciplines has its own history, methodology and technical jargon. Overstepping the traditional bounds of these fields – an essential part of interdisciplinary research – has proved extremely fruitful. It has yielded many new insights into gestational processes, signs of ageing, and the influence of past treatments on the current appearance of artworks. In addition, it has established new themes, such as studio practices, as facets of art-historical research.

Technical research is not, of course, constrained by national boundaries, yet a remarkable amount of research is done precisely in the field of Dutch and Flemish art. This has provided us with a great deal of information on the working methods and materials used by such artists as Jan van Eyck, Rogier van der Weyden, Lucas van Leyden, Jan van Scorel, Pieter Bruegel, Peter Paul Rubens, Frans Hals, Anthony van Dyck, Rembrandt van Rijn, Johannes Vermeer and many others. Because such research is carried out directly on the objects themselves, it is hardly surprising that much of this work is done in museums, whether or not in conjunction with a restoration. Moreover, the results of such research are frequently presented in a museum context, in exhibitions and the accompanying publications, as well as in collection catalogues. There are even museums that publish magazines devoted exclusively to technical research.

The field of technical research is constantly moving forward. In addition to X-radiography, infrared reflectography, ultraviolet imaging, dendrochronological research and paint sample analysis – all of which have been in use for decades – new research techniques are being developed that exploit to the full the possibilities offered by computer-aided imaging.

From its beginnings in the first decades of the twentieth century, technical research has been an international concern. The exchange of data occurred – as it still does today – not only on an individual basis, through contact between researchers in different countries, but also during conferences. It is highly appropriate, therefore, to devote an entire issue of the eZine – CODART’s digital magazine – to technical research and to include contributions from specialists in widely divergent fields.
After all, CODART aims to provide in various ways a platform for the exchange of knowledge that is the prime goal of our worldwide network of curators of Dutch and Flemish art.

Michiel Franken is Curator Technical Documentation/ Rembrandt and Rembrandt School at the RKD (Netherlands Institute for Art History). He has been a member of CODART since 2007.
Somewhere between Toledo and Oberlin, about seven miles south of Interstate 90, lies the town of Winesburg, Ohio. Its fame is due to Sherwood Anderson’s eponymous cult novel, a book that is not really a novel at all, but a series of sketches about various personages living in the town. Anderson, born in 1876, came from a family of seven children and worked at various jobs until he began to concentrate on his literary career in 1912. His slow-moving short stories and his focus on rural life influenced such writers as Ernest Hemingway and William Faulkner. Examples of his sparse yet splendid sentences are “The story of Wing Biddelbaum’s hands is worth a book in itself” and “Doctor Parcival had been in Winesburg for five years. He came from Chicago and when he arrived was drunk and got into a fight with Albert Longworth, the baggageman.”

Anderson’s work abounds with sentences written in such a plain but poignant style – enough to fill an entire eZine.

Winesburg, Ohio is, however, a figment of the author’s imagination. It’s a pseudonym for his home town – Clyde, Ohio – which has no book store but boasts an Ohio Historical Marker commemorating the great writer. There is also the Clyde Historical Museum, but I’m in the midst of preparations for the CODART study trip to the Midwest, so I don’t have time to visit it now. In fact, with the magnificent
collection in the Toledo Museum of Art – and the private tour to which Larry Nichols treated us – still fresh in my mind, I’m now on my way to Oberlin, the next stop on our itinerary.

A study trip to the Midwest has been on CODART’s wish list for years. Last week, we were proud to open registration for this wonderful event. “This tour focuses on the near Midwest – the agricultural and industrial heartland of the United States,” wrote Georges Keyes – de spiritus movens of this trip – on our website. “Following the Civil War (1861-1865) new cities sprang up throughout the Midwest. Their prosperity derived principally from agricultural produce, milling, meat packing and later through the production of steel and the rise of the automotive industry. Huge fortunes were made and each of the leading cities expressed civic pride through the creation of free public libraries, museums, symphony orchestras, and world renowned institutions of higher learning among other attractions. One result is a roster of art museums that rank among the best in the nation and whose collections are known throughout the world.”

Never before have I visited, in the space of one week, a series of museums that differ so much from one another – varying from small collections in museums that function as an important cultural center of their respective cities (Oberlin, Dayton) to the large, comprehensive collections displayed in a spectacular architectural setting (Cleveland, Chicago). And then there are the museums in Detroit (where we also plan to visit the conservation studios and view the prints and drawings) and Toledo (with is unique Glass Pavilion and educational wing designed by Frank Gehry), as well as those in Cincinnati and Indianapolis.

Indeed, our study trip will resemble a patchwork such as that comprising the tales in Winesburg, Ohio. In similar fashion, this eZine is a patchwork of very diverse stories, all focusing on the theme of technical research. And just as in Winesburg, Ohio, you’ll come across wonderful sentences in this eZine. “A synchrotron facility is a particle accelerator that generates intense radiation with specific characteristics by bending the path of accelerated electrons” – that would make a great opening for a novel! As Michiel Franken writes in his editorial, this type of research is done at – or in close collaboration with – museums, whether or not in conjunction with restoration projects. Often the results of such research are also presented in a museum context – in exhibitions and their accompanying publications. An example of such a presentation is spotlighted in this eZine by Emilie Gordenker: the research carried out at the Mauritshuis on Rembrandt’s Saul and David will be presented to the public this summer. On 31 August our CODART focus meeting at the Mauritshuis will concentrate on how to make the complicated results of technical research palatable to the public. Will the “crime scene investigation”
method adopted by the Mauritshuis prove successful? Stein Berre, the CODART Patron interviewed in this issue, asks a similar question. How can we curators reach out to the public? How can we convince them that the Old Masters are part of our common cultural heritage? According to Berre, it’s a story that must be told again and again in different ways to get the message across: “These wonderful things belong to you, and to all of us.”

This issue of the eZine was made possible by the efforts of all the authors and members of the editorial board, consisting of Yao-Fen You, Vanessa Paumen, Tico Seifert and Erik Löffler. In May, two people left the editorial board: Tico Seifert, because he has become a member of the program committee, and Erik Löffler, owing to other time-consuming activities. We are happy to welcome their successors: Victoria Sancho Lobis and Michiel Franken.
Technical Research on the Old Master Collection of the Städel Museum, Frankfurt
Jochen Sander

Infrared reflectography, X-radiography and dendrochronology – these are part of the standard arsenal of analytical methods that have long been used to carry out technical research on the paintings listed in the scholarly collection catalogues of the Städel Museum. In exceptional cases, of course, additional – sometimes even invasive – research methods may prove necessary in order to answer particular questions. Intensive research on our own Old Master holdings was begun more than twenty-five years ago.

Thanks in large part to the generous financial support of a whole string of institutions – such as the Getty Grant Program, the Deutsche Forschungsgemeinschaft, the Fritz Thyssen-Stiftung and the Städelischer Museums-Verein – we have meanwhile succeeded in publishing ten volumes that present the Städel’s complete holdings of early Netherlandish (1993), early German (2002, 2005) and early Italian painting (2004), as well as Dutch (2005, 2010) and Flemish Baroque painting (2009). At present, concrete preparations are underway for the collection catalogue of German Baroque painting, and the catalogue of Romanesque Baroque painting is in the planning stage. The publication of these two volumes of the Städel’s Old Masters will bring to a successful conclusion the cataloguing of our entire holdings of paintings produced before 1800 – nearly 1,000 works altogether. Also in preparation is the digitized version of the updated collection catalogue of early Netherlandish paintings, which are unquestionably the “crown jewels” of the Städel’s Old Master holdings and formed the subject of the first volume in the series of scholarly collection catalogues that was launched in 1993.

The special strength of the scientific research undertaken at the museum is its proximity to the objects of study. Provided that all of the study material belongs to the institution carrying out the research – as is the case with a scholarly collection catalogue – the intensity of examination is limited only by issues of content and/or financial considerations. In 1987, just after completing my doctoral dissertation at the Ruhr-Universität Bochum on the work of Hugo van der Goes (published in book form in 1992), I was given the opportunity to develop the conceptual framework for the collection catalogue of early Netherlandish painting in the Städel Museum and finally to bring it to fruition. At the time, there were neither substantive nor financial obstacles, which in retrospect I can hardly believe. With the natural naivety of someone new at the job, who at the time was – and actually still is – firmly convinced that a museum can also be a top-class place of research, I proceeded to conceive a catalogue for Frankfurt that was patterned, in particular, after the Early Netherlandish Corpus series published by the research center in Brussels that was then still called the Centre national de recherches “Primitifs flamands” at the Royal Institute for Cultural Heritage (Koninklijk Instituut voor het Kunstpatrimonium/Institut royal du Patrimoine artistique [KIK/IRPA]). It was here that I discovered the importance of scrutinizing the genesis and usage history of the works in question, through both personal observation and, in particular, the systematic application of modern methods of technical research. In contrast to the approach customary in those Corpus volumes, the Frankfurt collection catalogue of early Netherlandish painting strove to complement a completely neutral account of the findings (not only the results of technical research but also the history of that research) with a clear, concluding statement in which the researcher treats all the relevant questions raised by the work under study.

When the catalogue – cast in this mold – of early Netherlandish painting in the Städel Museum was published in 1993, its nearly five hundred pages included twenty-nine catalogue entries that had grown into substantial essays, which was certainly not excessive, considering that Frankfurt’s stock of paintings by such artists as Jan van Eyck, the Master of Flémalle, Rogier van der Weyden, Petrus Christus, Dieric Bouts, Hugo van der Goes, Hans Memling, Gerard David, Hieronymus Bosch, Joos van Cleve and Quentin Massys had never been subjected to systematic technical research. In fact, the collection catalogue of the early Netherlandish paintings in the Städel was received very positively and even became – until the appearance of the more recent Corpus volumes – a highly respected standard reference work. For that matter, the digitized version of the 1993 collection catalogue will be available from the summer of 2015 on the Städel’s home page, in connection with
the virtual reconstruction of the nineteenth-century presentation of the paintings in the museum.

I readily confess that if I had known in 1988 that I would be working on a permanent basis at the Städel until the completion of the catalogue of early Netherlandish painting and would also take responsibility for the following collection catalogues of Old Masters as author and/or co-editor, I might have devised less ambitious plans for these publications. However, the catalogue conceived in the late 1980s was adopted, with only minor changes, as the definitive example for Frankfurt’s entire series of collection catalogues of Old Master paintings. The invariably high quality of the Städel’s holdings – which are, at the same time, manageable in number – made this endeavor both meaningful and feasible.

Particularly in the sphere of research conducted with X-radiography and infrared reflectography, the Städel Museum, too, has repeatedly updated its equipment – progressing from analogue (fig. 1) to digital X-radiography and photographically documented infrared reflectography carried out with a Hamamatsu camera (figs. 2-3) to the digital recording and processing of Hamamatsu signals and the use of OSIRIS-A1. Comparison of the infrared reflectograms (consisting of an assemblage of numerous photographic images) published in the 1993 collection catalogue of early Netherlandish paintings with the current high-resolution digital photographs shows that technological advancements have not only reduced the time needed for research and made the collection catalogue much more comprehensible to its users, but have also considerably improved the quality and therefore the informative value of the visual documentation. This is one reason why, in this jubilee year (the Städel is celebrating its 200th anniversary), the museum will launch digitized versions of its out-of-print Old Master collection catalogues (beginning with early Netherlandish painting).
A glance at the documentation of the technical research carried out on Jan van Eyck’s “Lucca Madonna” – cf. the high-resolution reproduction in the Google Art Project and, very soon, on “Closer to Van Eyck” – elucidates not only this technological success story but also the great gains in knowledge conveyed by these imaging methods with regard to both the genesis of the painting and our understanding of its meaning. Older studies repeatedly emphasized the
thoroughgoing integration of the viewer into the pictorial space of the “Lucca Madonna.” Yet it was not until the infrared reflectograms and X-radiographs were made in conjunction with the collection catalogue of early Netherlandish paintings that it became clear how Jan van Eyck went about structuring the composition (figs. 1-3) and how he devised this clever connection between the pictorial space and the sphere inhabited by the viewer. Initially, the painting had shown a simple box-like space, into which the viewer looked, much as one peers into a doll’s house. The painter adhered to this idea in his first layer of paint.

It was not until the further execution of the painting that a modification – as simple in conception as it was far-reaching in its consequences – was made to the space surrounding the enthroned Madonna and Child. The room’s previously flat ceiling was replaced by a ribbed vault, only half of which is visible; the wall, hitherto articulated only by a simple arched window or corresponding niche, was almost quantifiably extended into the viewer’s space by the addition of a round window cut off by the edge of the picture; and instead of two steps leading up to the throne, a carpet, seemingly arbitrarily truncated by the lower edge of the picture, lies on the blue-and-white tiled floor. Whereas Jan van Eyck initially intended to give us a glimpse of a dollhouse-like interior, his composition now allows the Madonna’s throne room to continue onto this side of the picture plane by defining it as part of the viewer’s space. And as though Jan van Eyck himself wished to allay all doubts as to the correctness of this interpretation, he painted the tiny but razor-sharp reflection of the double window on the surface of the glass carafe on the shelf at the right. Here the reflection of the double window shows not only the half visible in the painting, but also the undepicted half, which appears to be in front of the picture plane and thus already part of the viewer’s space: the viewer is literally put in the picture.

Whereas the infrared assemblages of 1993 could only reproduce either the figural group or the space surrounding them, owing to the great differences in contrast of the individual passages, the high-resolution infrared reflectogram produced by the OSIRIS-A1 shows the aggregate findings in all their detail. This image finally revealed a detail that was first pointed out by Hugh Hudson in 2003 (Hugh Hudson, “Shedding Light on an Eyckian Virgin and Child: The Infrared Reflectography of the Ince Hall Virgin and Child,” in Helene Verougstraete, Roger van Schoute [eds.], Jérôme Bosch et son entourage et autres études, Leuven 2003, p. 263), namely the overpainted figure of a bearded man on the left-hand side of the throne’s backrest, immediately below the upper lion. In fact, this figure has become visible to the naked eye when seen in the high-resolution image in the above-mentioned Google Art Project, owing to the age-related loss of opacity of the paint layer. The figure is only fragmentarily visible,
because the man seems to be peering out from behind the cloth of honor that obscures the rest of his body. Because the cloth of honor and the entire area around the back of the throne were originally narrower, the figure was apparently not part of Van Eyck’s first concept, but was introduced only after he had decided on the wider version of the cloth of honor. No comparable \textit{pentimento} can be detected on the opposite side of the throne, so it seems that the decoration of the left-hand side was a short-lived experiment, which Van Eyck rejected in the subsequent execution of the painting.

This is why it is all the more remarkable that the decoration on the upper right-hand side of the throne in Petrus Christus’s \textit{Madonna and Child Enthroned with Saints Jerome and Francis} of 1475, likewise in the Städel Museum (fig. 4), is the figure of a bearded man whose pose and attire display close similarities to the bearded figure of the “Lucca Madonna.” Both paintings may well portray prophets, intended to clarify these figures’ typological reference to the Old Testament. In the painting by Petrus Christus, this is emphasized by the sculptures of Adam and Eve set in niches carved into the front ends of the sides of the throne; in Jan van Eyck’s painting this function is fulfilled by the lions, who allude to the throne of Solomon (1 Kings 10:19-20).

The dependence of Petrus Christus’s Frankfurt Madonna on Jan van Eyck’s “Lucca Madonna” has been postulated repeatedly; however, the overpainted figure of the prophet in the “Lucca Madonna” makes the connection between these two works even more complex.
Petrus Christus arrived in Bruges only in 1444, by which time Jan van Eyck was long dead and the “Lucca Madonna” was in its present state, i.e. the bearded man had already been overpainted. It seems, therefore, that Petrus Christus had access to preparatory drawings by Jan van Eyck, which showed the “Lucca Madonna” – or another, closely related Madonna picture – with the planned figure of the prophet. Happily, the “Lucca Madonna” is in better-than-average condition; the slightly yellowed varnish lends it a patina that is not aesthetically disturbing.

Unfortunately, this does not hold true for all the early Netherlandish paintings in the Städel. Indeed, measures have been
implemented in recent years in the paintings conservation workshop of the museum. For example, since the cautious cleaning several years ago of Rogier van der Weyden’s “Medici Madonna” (fig. 5), the painting’s excellent state of preservation again shows to best advantage. Moreover, the painting from which the Master of the Tiburtine Sibyl took his name (fig. 6) has improved considerably in appearance since its recent restoration. The fragment of the right wing – depicting the Bad Thief crucified on Christ’s left – of the Master of Flémalle’s large Deposition altarpiece is currently in the restoration workshop. Not only will restorers remove the remnants of black overpainting applied to what was formerly the exterior of the wing – this was inadequately dealt with during a previous conservation treatment – but they will also clean the heavily damaged pressed brocade, which has been very unevenly handled in the past. The rehanging of the picture in the gallery, planned to take place in early 2016, will be accompanied by the posting on our home page of the documentation specifying the measures taken to conserve the painting.

Prof. Dr. Jochen Sander is Adjunct Director and Curator of German, Dutch and Flemish Paintings before 1800 at the Städel Museum, Frankfurt am Main, Germany. He has been a member of CODART since 1998.
The Patrimonio Nacional tapestry collection is comprised of 3,000 pieces, ranging from Flemish tapestries treasured by the Hapsburg monarchs and Spanish tapestries made for the House of Bourbon, to preserved collections from the Royal Monasteries and Palaces of Las Huelgas (Burgos), Las Descalzas (Madrid), and the Colegio de Doncellas Nobles (Toledo).

Since the nineteenth century, scholars and historians have considered this collection to be the most representative of Flemish production in the whole of Europe. It includes more than five hundred masterpieces from the main workshops in the Netherlands: Brussels, Bruges and Antwerp. It also includes works from French factories in Paris and Beauvais, the Arazzeria Medicea in Florence and the factory at the St. Michael’s hospital in Rome.

The Hapsburg and Bourbon monarchs who ruled Spain considered the tapestries to be treasures representing royal authority, and saved them from being dispersed in the regular sales that took place during the execution of wills. The tapestries from the Renaissance period date from the reigns of Isabella I of Castile (1451-1504), Joanna of Castile (1470-1555), Holy Roman Emperor Charles V (1500-1558) and Philip II (1527-1598). These monarchs enlarged the collection with the celebrated devotional pieces known as the Golden Tapestries, and with monumental series such as The Honours, The Conquest of Tunis and The Apocalypse – tapestries more than five by ten metres in size. These tapestries have historical and allegorical subjects, based on iconography catalogued by humanists, historians and painters of the Court, and were conceived of as reflections of princes and chronicles of their conquests.

The Royal Collection was continuously enriched through inheritance and commissions. Its unity was maintained thanks to legal provisions established by Philip II who linked the Collection to the Crown. The tapestry series added during the reigns of his successors Philip III (1578-1621), Isabella Clara Eugenia (1566-1633) and Philip IV...
(1605-1665), show the Baroque style of the Counter-Reformation. They include *The Triumph of the Eucharist*, demonstrating the change in taste and the introduction of new techniques associated with the tapestries designed by Rubens.

The second large group, comparable to the Flemish collection, consists of 800 pieces produced in Spain itself. The tapestries woven at the Royal Tapestry Factory in Madrid, founded by Philip V (1683-1700), were to become part of the decorations of the royal living quarters in the Royal Palace in Madrid and in the seasonal palaces at La Granja de San Ildefonso, Aranjuez, El Escorial and El Pardo. Francisco de Goya’s continued work as a painter between 1775 and 1792 nationalised the Factory’s work and highlighted the importance of its contribution in relation to that of other factories in the eighteenth century. This eighteenth century collection also includes woven carpets made for Charles III (1716-1788), Charles IV (1748-1819) and Ferdinand VII (1784-1833) to cover the marble floors of the royal family’s seasonal palaces at Aranjuez, El Pardo and El Escorial.

The tapestries played an important role in the decoration of the court in various displays of public life and royal etiquette. The tapestries were essential to a wide variety of ceremonies and festivals, from triumphal entrances and coronations to banquets, tournaments, canonisations, baptisms and royal betrothals. They also enjoyed a special status both in public and private spheres, which has endured to this day.

From the sixteenth century onward, special conservation measures were taken in order to protect this precious collection from the deterioration it suffered as a result of ageing and the continuous use in royal and liturgical ceremonies. According to Burgundian etiquette, the cleaning, beating, lining and repair of the tapestries were the responsibilities of the Real Oficio de la Tapicería (Royal Wardrobe). This Office was charged with keeping the tapestries. It hung and took down the tapestries...
in the royal chambers according to the change of the seasons, transported them when the court left for other palaces and hung them on the façades for events such as the Corpus Christi procession.

From the eighteenth century up to the middle of the twentieth, these important tasks were executed by the Royal Tapestry Factory, which was in turn replaced in 1941 by the Fundación Generalísimo Franco-Industrias Artísticas Agrupadas (General Franco Foundation-Unified Artistic Industries), later known as the Fundación de Gremios-Industrias Artísticas Agrupadas (Guilds Foundation-Unified Artistic Industries). This situation meant that Patrimonio Nacional did not have its own tapestry restoration workshops, so since the transformation and eventual disappearance of these institutions in 1995, the restoration of the Royal Tapestry Collection has been carried out by private businesses under the supervision of Patrimonio Nacional.

The quality and resilience of the wool and silk fibres, the purity and structure of the metallic threads and the solidity and boldness of the dyes used are important characteristics of this collection, as they are the principal reason for its durability and resistance to ageing. Nevertheless, some deterioration (currently irreversible) can clearly be observed and has been caused by the use and treatment of the tapestries. This deterioration includes some fading of the colours on the front of the tapestries, due to exposure to daylight for generations, and the oxidation of silver alloys and metallic threats woven into the works. The structures of the textiles are slightly deformed due to the way in which they used to be, which also perforated the fabric. They have also been warped and creased as a result of the old storage system which was in use until 1986.

Recent years have seen more efficient conservation methods come into use, such as the creation of a Tapestry Warehouse at the Royal Palace with compact storage cases made up of anti-tilt cylinders and drawers designed to ensure risk-free storage. The reinstitution of the permanent exhibition spaces at the Museo de Tapices at La Granja de San Ildefonso, the Salas de Honor at the San Lorenzo del Escorial monastery and the Salón de Tapices at the Descalzas Reales monastery have been designed for both educational exhibition and conservation purpose. Furthermore the participation in international, interdisciplinary research projects like Monitoring of Damage to Historic Tapestries and Effects of LED Illumination on Decorations in the Royal Palace. These projects have highlighted the artistic and material quality of the Spanish Crown’s tapestry collection, while developing protocols and have obtained results which can be applied to monitoring deterioration of the fabric and colours of these celebrated works of art.

This collaboration has promoted the presence of Patrimonio Nacional’s tapestries at international exhibitions among which we can mention: Resplendence of the Spanish Monarchy: Renaissance Tapestries and Armor from the Patrimonio Nacional (The Metropolitan Museum of Art, New York, 1991-92); Los Honores, Flemish tapestries for the Emperor Charles V (Antoon Spinoy Cultural Centre, Mechelen, 2000);

The tapestries included in these exhibitions are first-rate cultural documents and true masterpieces. Patrimonio Nacional will give them pride of place in El Museo de las Colecciones Reales (the Royal Collections Museum), which is currently under construction. It was designed by architects Emilio Tuñón and Luis Mansilla, and will be located in the Campo del Moro park, the gardens of the Madrid Royal Palace. It is expected to be opened in the autumn of 2016.

Concha Herrero Carretero is Curator of Tapestries at the Patrimonio Nacional, Madrid. She has been a member of CODART since 2000.
Background
The painting of Saul and David shows two figures against a dark background. At left is Saul, seated, holding a spear and wiping his eye on a curtain. David, playing his harp, kneels before him at right. The subject is usually considered the moment before the frenzy of King Saul, which twice caused him to hurl his spear at David (I Samuel 18:9-11). This was an unconventional choice of subject, as most other artists opted to show Saul’s fury (fig. 1).

We can trace the provenance of Saul and David to 1830, when it was sold as a painting by Rembrandt from the collection of the Austrian Duke of Caraman in Paris. It remained in Paris, sold on through various auctions, until it ended up with the dealer Durand-Ruel in 1869. It then passed from collection to collection, until it was back with Durand-Ruel between 1891 and 1898. The dealer apparently had trouble selling the painting, and in his search for a buyer, he even took it to the United States, where it was exhibited in New York and Chicago in 1893. It was not until 1898 that Abraham Bredius, then director of the Mauritshuis, bought Saul and David and immediately placed it on loan to “his” museum, which received it by bequest upon his death in 1946.

The authorship of Saul and David was a bone of contention before it entered the collection of the Mauritshuis, but it became one of Rembrandt’s most admired works, mainly because Abraham Bredius championed it. The bubble burst in 1969, when Horst Gerson de-attributed the work. To no small extent, this assessment was due to the painting’s condition. Although structurally sound, it looked the worse for wear. As is well known, at some point in the past the figures of Saul and David had been cut apart and rejoined, and a large piece of canvas had been added above the head of David. The picture was dark and uneven in texture.
Saul and David was studied thoroughly in the 1970s, and much valuable technical information appeared in a book titled Rembrandt in the Mauritshuis. In 2007, the Mauritshuis initiated a new scientific examination of Saul and David in order to understand the true condition of the painting before embarking on conservation treatment. The museum assembled an international committee of experts to provide advice. Petria Noble – formerly Head of Conservation at the Mauritshuis, who initially led the research project – started the conservation treatment. Carol Pottasch and Susan Smelt took over when Petria assumed her current position at the Rijksmuseum in September 2014. Much of the research described below was conducted as part of an NWO-funded project on non-invasive imaging techniques used to examine late Rembrandt paintings (“ReVis Rembrandt”).

Original Format
We now know that the format of Saul and David was originally different from what it is today, but reconstructing it proved to be a challenge. Discrepancies in the measurements of the paintings listed in auction records tell us that the picture must have been fashioned into its current format at some point between 1830 and 1869.

Re-examination of X-radiographs taken in the 1970s revealed that the painting currently consists of no fewer than fourteen separate pieces of canvas. When the figures of Saul and David were rejoined, a large square measuring 53 x 52/51 cm was added above David's head in order to replace the lost piece. Gregor Weber of the Rijksmuseum identified this canvas, which had clearly been cut from an old painting, as a piece – turned upside down – of an early copy after Anthony van Dyck's Portrait of the Archduchess Isabella Clara Eugenia, Regent of the Netherlands, Dressed in the Habit of the Poor Clares. The three pieces were assembled using a very unusual notched join that is, so far as we know, unique in the history of restoration. Narrow strips of canvas – added to the upper, lower and right edges in order to enlarge the picture – are held in place by the lining. An original horizontal seam, clearly visible in the X-radiograph, runs through the figures of both Saul and David, indicating that the two parts of the painting were properly aligned when the pieces were assembled (figs. 2 and 3).
The X-radiograph also reveals on three sides substantial deformations known as “cusping,” caused by the initial stretching of the linen support on a frame. Computer analysis – using “false-color weave angle maps,” which graph the deviation of the angle of the warp and weft threads in the linen support respective to the true vertical and horizontal – indicates that the bottom of the canvas was cut down by at least 10 cm, but that only a few centimeters were trimmed from the top edge. A comparison of the pitch of the cusping at the left and right edges of the weave angle map of the weft threads suggests that about 5 cm has been lost at the left and that the original right edge of the David segment is intact (fig. 4).

The height of the upper piece of canvas without the added strip measures 71 cm, corresponding to a standard loom width of one ell, whereas the lower piece measures 55 cm. This makes it likely that the painting originally consisted of two pieces of linen, each one ell in width, joined by a horizontal seam, and that most of the missing canvas was at the bottom. It was previously assumed that anywhere from 10 to 15 cm were missing between the two pieces of canvas, but close examination of the vertical seam revealed that the brushstrokes over the join are almost continuous, leading to the conclusion that approximately 2 to 5 cm are missing ? a result of dividing the figures and later rejoining them. At the time of writing, we are still working on a plausible reconstruction of the original format. This, in turn, will have a significant impact on our perception of the figures of Saul and David and their spatial orientation in the composition (fig. 5).

Curtain – Using Science and Technology to Examine Pictures
Horst Gerson, who de-attributed *Saul and David* in 1969, was particularly critical of the curtain between the two figures. Rembrandt scholar [Volker Manuth](#) initially doubted
the authenticity of the curtain on iconographic grounds. Two investigative techniques proved useful in assessing this issue. First, paint sample analysis demonstrated that the ground characteristic of paintings produced in Rembrandt's studio in the 1650s and 1660s and the build-up of the paint – containing smalt, red lake and earth pigments – were the same in the entire area of the curtain. Secondly, macro X-ray fluorescence analysis (MA-XRF), carried out with a mobile device developed by the universities of Antwerp and Delft, provided elemental distribution maps of the curtain area. Distribution maps of the elements cobalt, nickel and arsenic – present in smalt – were particularly effective in providing an image of the curtain that is literally hidden below the overpaint and discolored varnish. The results exceeded all expectations.

They established that a curtain is part of the original design and, except for a few scattered losses at top and bottom, is still largely intact. Since cleaning, the curtain is very much visible (fig. 6).

**Authorship & Exhibition**

In 1969, many eminent scholars, including Jakob Rosenberg, criticized Gerson's rejection of the painting. In 1978, De Vries, Tóth-Ubbens and Froentjes argued that the stylistic inconsistencies in the picture could be explained by the fact that Rembrandt painted it in two phases, in the mid-1650s and the mid-1660s. Yet weaknesses in the painting convinced other scholars that it could not have been painted by Rembrandt. Given the results of paint sample analysis, we can be certain that the picture waspainted in Rembrandt's workshop, since the ground and composition of the paint are consistent with other works by Rembrandt and his workshop. Ernst van de Wetering, a member of the international advisory committee for *Saul and David*
, has published the work as entirely by Rembrandt, executed in ca. 1646 and ca. 1652, in the most recent volume of *A Corpus of Rembrandt Paintings.*

There are, however, still some unanswered questions concerning the dating and the authorship of the second campaign. We know of several collaborative paintings or paintings retouched by the master, and this idea has increasingly gained acceptance among Rembrandt experts. Ongoing research is intended to address the possibility that *Saul and David* was finished in the workshop by a pupil. The results of all the conservation treatment and the research, including the authorship question, will be made known in an engaging, interactive exhibition that will make use of new media technologies. The story will be presented as an exciting “crime scene investigation” that is intended not only to unveil the newly conserved painting, but also to engage a broad public with the latest in investigative techniques in our field. “Rembrandt? The case of *Saul and David*” will take place at the Mauritshuis from 11 June to 13 September 2015.

Emilie Gordenker is Director of the Mauritshuis. She has been a member of CODART since 2003.

**Notes**

2. Members of the committee: Ernst van de Wetering, Frits Duparc, Volker Manuth, Blaise Ducos, Michiel Franken, Martin Bijl, the late Karin Groen and Melanie Gifford.
5. New research conducted with Jaap Boon in December 2014.
The long-awaited exhibition that will open this autumn at the British Museum is remarkable for its focus on a particular drawing technique rather than on one specific artist or period. It is the first exhibition to examine comprehensively the history of metalpoint – a technique whereby a metal stylus is used on a prepared ground – and to explore the evolution of metalpoint and its different functions in different schools.

In the technique of metalpoint, a metal stylus is used to draw on a sheet of prepared paper. Wood, as well as vellum or parchment, were mainly used as supports in the fourteenth century but were replaced by paper in the fifteenth century. The paper was prepared with a ground of bone ash (made of burnt animal bones ground into powder), mixed with a glue made of animal skin. Whereas Italian artists often used a wide variety of colors – such as pink, green and blue – most Netherlandish artists preferred pale preparations, undoubtedly to enhance the clarity of the lines.

Once a prepared sheet has dried, it is possible to draw on it with a point of gold, silver, copper or other metal. Any metal object will do, even silver coins or cutlery. The rough texture of the ground microscopically abrades the metal, so that small particles are deposited where the stylus is dragged over the surface, creating a visible mark or trace.

Metalpoint lines initially appear lighter to the draughtsman but eventually grow darker as they undergo a process that can take months or even years. The lines display a range of colors, which can be explained not only by the different metal alloys used but also by environmental conditions that can cause the metal to tarnish in different ways. Silver, the most commonly used metal, appears as brown, purple, green or sometimes even orange-brown. A gold stylus is a much more stable drawing tool, as the lines retain the same gray color they display when first applied. The fact that goldpoint is much rarer than silverpoint can be explained by the high cost of the metal.

Metalpoint is a demanding and time-consuming technique that requires the draughtsman’s painstaking attention. Unwanted lines are difficult to erase, and excessive pressure can damage the ground. It is very useful in rendering subjects in great detail, such as portrait studies or small elements – heads and hands, for example – taken from larger compositions. Metalpoint therefore became part of an artist’s training, since it required preparation and careful consideration.

The main advantages of the metalpoint technique are the meticulous precision and high degree of finish that can be achieved by using a metal stylus to produce very fine lines.
Other drawing techniques available at that time – such as chalk, or pen and ink – are easier to use but do not allow for such accuracy. Graphite, which can even be sharpened and is easier to correct, did not come into use until the mid-sixteenth century.

Metalpoint also has the advantage of being a dry technique, which makes it highly suitable for use in sketchbooks, since there is no chance of mishaps, such as smudging or spilling ink. Few sketchbooks survive intact, however. Indeed, many of the surviving metalpoint sheets were most likely removed from these volumes.
Drawing in metalpoint was practiced in Europe from the late fourteenth century onward, although most surviving sheets date from the second half of the fifteenth century. These include drawings from Italian workshops run by the likes of Leonardo da Vinci and Raphael: they are either preparatory sketches or copies made by pupils or assistants. In the first two decades of the sixteenth century, German artists, such as Hans Holbein the Elder and Albrecht Dürer, seem to have preferred this exacting technique for making portrait studies and recording their travels in sketchbooks.

Metalpoint was used longest, however, in the Netherlands. Early metalpoint drawings on paper date from around 1400-20 and seem to be linked to manuscript illuminators working for the Burgundian court (figure 1).

The best-known silverpoint drawing from the fifteenth century is undoubtedly the so-called Portrait of Cardinal Niccolò Albergati, made by Jan van Eyck in preparation for his painting of the same subject of around 1432. (figure 2; unfortunately, this sheet is considered too fragile to travel and will not be part of the exhibition.) Although this is a rare study for another work, most fifteenth-century metalpoint drawings can be described as workshop copies, either produced by the master himself in order to document existing artworks or made by his pupils to improve their drawing skills.

Another silverpoint sheet, datable to 1435-40, is now accepted as the only surviving drawing by Rogier van der Weyden. The stunning Head of an Unknown Woman Wearing a Veil, previously considered a portrait drawn from life, might in fact be an idealized female head, used repeatedly by Van der Weyden and his workshop (figure 3). The fine cross-hatching and shading, which is almost invisible to the naked eye, lends depth and tangibility to the layers of fabric in the veil. The pearl hairpin is so realistic that it looks three-dimensional.
A drawing datable to the 1460s or 1470s can also be linked to Rogier van der Weyden (figure 4). Its similarity to representations of Mary in other works by Van der Weyden strongly suggests that it is a workshop drawing of the Virgin.
This sheet is remarkable in that the anonymous draughtsman scratched the prepared ground to depict highlights in the hair and facial features. This technique, which has been detected only in Netherlandish drawings, seems never to have been practiced by, for instance, Italian or German artists.
From around the beginning of the sixteenth century, Netherlandish artists such as Gerard David began to use metalpoint for more spontaneous sketches: female heads drawn from life, for example, which were probably removed from sketchbooks (figure 5). By contrast, Lucas van Leyden made, around 1515, an elaborate silverpoint drawing of an allegorical scene whose meaning is still unclear (figure 6).

Metalpoint seemed to die out in the 1520s, but around 1579 it experienced a revival, particularly in the Northern Netherlands. Dutch printmakers, such as Hendrick Goltzius and Jacques de Gheyn II, produced small studies in preparation for their oval portrait prints.

Goltzius was by far the most prolific user of silverpoint; almost one hundred silverpoint tafeletten (tablets) survive. He drew on sturdy sheets of vellum, which were coated with a thick ground and often a light yellow wash. These highly detailed portrait studies were minutely hatched or
stippled, creating blended areas of shading. In addition to making these small portraits, Goltzius also recorded his private life in silverpoint, making portraits of himself and members of his family, a pet dog and even the plants in his garden (figure 7). In a stunning, early self-portrait of around 1589, he presented himself as a successful engraver, holding a burin and a copper plate, wearing sumptuous clothing and looking confidently at the viewer.

Around the same time, other artists in the Low Countries were using metalpoint to record their travels in sketchbooks. The Protestant miniature artist Hans Bol drew views of the towns and countryside he saw after being forced to flee from his native Flanders to the North in about 1584 (figure 8).

Surviving seventeenth-century examples date mainly from the 1630s; they include portrait studies by printmakers and, unusually, peasant studies by Andries Both. The last major artist to use the technique in the Netherlands was Rembrandt, who briefly carried a silverpoint sketchbook on his trip to Friesland in 1633. This double-sided tafelet displays some studies of cottages and a study sheet of heads (figure 9).
The technique of metalpoint subsequently died out across continental Europe but experienced a revival in nineteenth-century England in the work of William Holman Hunt and other artists who emulated Italian Old Masters.

Metalpoint was still practiced sporadically in the twentieth century by such artists as Otto Dix, who used the technique to make some large portraits. A few contemporary artists – especially Americans, such as Jasper Johns and Bruce Nauman – have occasionally explored the possibilities (and limitations) of this graphic technique. The forthcoming exhibition in Washington and London will include the most interesting examples of this magnificent technique in about one hundred sheets dating from the late Middle Ages to the present. Most of these works come from the British Museum and will be complemented by major loans from other institutions in Europe and the United States.

An Van Camp is Curator of Dutch and Flemish drawings and prints at the British Museum. She has been a member of CODART since 2010.
CURATOR'S INTERVIEW
Geert van der Snickt Interviewed by Vanessa Paumen

This eZine, which is wholly dedicated to material and technical research, would not be complete without Dr. Geert van der Snickt’s report on Macro XRF scanning. Geert, a cultural heritage scientist at the University of Antwerp, recently acquired a professorship sponsored by the Inbev-Baillet Latour (IBL) fund.

Dr. Van der Snickt was interviewed at the Groeningemuseum in Bruges, where he was scanning one of the highlights of the museum’s collection. For the occasion, Jan van Eyck’s Madonna with Canon Joris van der Paele was in the depot, standing on an easel, without its usual protective glass – a rare sight even for the staff members of the Groeningemuseum.

Geert, how nice to meet you in our museum, working on one of our most treasured pieces no less. How would you describe your current work at the Groeningemuseum?

I’ve come here at the behest of the Belspo VERONA project, set up jointly by Bart Fransen and the Royal Institute for Cultural Heritage (KIKIRPA), which is currently using assorted imaging techniques to make a systematic study of the undisputed paintings by Van Eyck that are to be found in Europe. To this end, the Royal Institute for Cultural Heritage (KIKIRPA) is applying all the traditional imaging techniques, including digital photography, infrared reflectography and X-radiography, as well as the latest development: MA-XRF scanning.

MA-XRF stands for Macro X-Ray Fluorescence. What is that exactly?

MA-XRF scanning is an analytical imaging technique, whereby the visual aspect of traditional imaging techniques is accompanied by chemical analyses. The added value of this technique lies in the fact that a great deal of surface area can be analyzed, after which the results are converted into visual images that can easily be interpreted by art historians, restorers and cultural heritage scientists. You don’t necessarily have to have studied chemistry to begin analyzing the data, whereas that was previously the casewith pure chemical analyses. Instead of producing graphs and spectrums that are difficult to interpret, scanning produces a legible image.

How does this work in practice?

The machine scans the surface of the painting and takes measurements. This data is then converted by specially designed software into an image that somewhat resembles the image of an X-radiograph. Like X-radiography, Macro XRF scanning works with X-rays that penetrate the paint layer, but the big difference is that it produces not one image but a series of
images, each of which shows the distribution over the surface of the painting of a specific element (e.g. lead, silver, iron, copper, etc.). Macro XRF scanning also differs from normal X-radiography in that XRF detects radiation in reflection and not in transmission. In X-radiography, the X-rays penetrate all the layers and materials of a painting, so that both the front and back of the panel – and the wood and nails too, for example – are reproduced in a single image. Macro XRF, on the other hand, is applied much more selectively, and only the uppermost millimeters of the painting’s surface are scanned, i.e. only the paint and priming layers.

Just now I’ve set up the scanner to scan a surface area measuring 50 by 50 centimeters, which will take approximately twenty-four hours. It takes a long time because the scanner makes measurements constantly, rather than simply recording a single image.

Interpreting the images is done together with the art historians, and this collaborative element is the big advantage of this technique. Previously the chemist sent the “dry” results of chemical analysis to the museum staff and that was that, whereas now there is much more interaction and the results are discussed together. We give the images to researchers, but we ask to be mentioned as co-authors of their publications.

You also do another kind of research, namely synchrotron radiation-based analysis. Would you mind telling us what this is?

A synchrotron facility is a particle accelerator that generates intense radiation with specific characteristics by bending the path of accelerated electrons. This technique is used primarily to examine degraded material, such as discolored pigments, to explain complex chemical changes in the paint layers.

Often the point is to study one very specific process, such as the discoloration of vermilion, which was the subject of a colleague’s doctoral dissertation last year. Recently, another colleague published an article on the degradation of Van Gogh’s red lead, and in my own dissertation I explained the change in cadmium yellow.

Can you also determine when the discoloration took place?

No, not exactly. In paint cross-sections, you can see that the discolored layer is often only a thousandth of a millimeter thick, and yet a painting can look completely different owing to the optical effect created by such a thin layer.

The only way to analyze this affected layer selectively – separate from the rest of the underlying, unimpaired paint – is with submicron synchrotron beams. Our research using Macro XRF scanning has its origins in the particle accelerator as well. We scanned the very first painting with synchrotron radiation because it creates optimal conditions for measurement. That experiment was so successful that we asked my colleague Matthias Alfeld to build a handheld device that could be used to make approximately the same kind of scans as those made in a synchrotron. We didn’t know beforehand if it would be possible, but, amazingly enough, he succeeded in making a mobile XRF scanner.

And that is the instrument you now use in museums. How do you handle museums’ requests to come and scan their paintings?

There is indeed a great demand for such scans. The instrument has meanwhile been commercialized and put on the market by a German firm that specializes in XRF equipment. The scanner is still rather expensive, however, and you need a scientist who knows how to use it. A large museum with a scientific department can buy such an instrument. The Metropolitan Museum has just ordered a scanner and the National Gallery in Washington, D.C. is building its own. So there are more and more scanners around, but there is still great demand for ours. When our instrument was still being developed, we usually examined only the most interesting cases. Now we work more systematically by scanning, for instance, the work of specific artists.
We are currently collaborating on the Dutch NWO project on the late Rembrandt. I personally have a strong interest in Memling, so I have undertaken a systematic analysis of his works, including the Moreel Triptych here in Bruges.

Are the results available to the public? In other words, is there a portal where the scans can be seen?
Yes and no, we don’t hold the copyright to the images. The museums decide what they want to do with the data. We are, however, very much in favor of Open Access and strive for dissemination of the images, rather than merely having them circulate among a limited number of experts. In fact, I’m considering setting up a portal for our images, to make them available to researchers and even to the general public. I’m also thinking of developing an app that would make it possible for museum visitors to study the images while viewing the painting. Something like this should actually be undertaken by the museums themselves, but we would be happy to collaborate.

Does this mean that future art historians will have to study the exact sciences too, or will technical research remain a special branch in the field of art history?
Technical art history will play an increasingly important role, I think, if what I see happening around me is anything to go by. Whenever I travel and visit exhibitions, I see that the material and technical side of painting is receiving more and more attention. Of course, art historians and curators don’t have to become scientists as well, but they should have some insight into the possibilities offered by technical research.

As an art historian you owe it to yourself to follow the developments in your field. The material and technical aspect can lend your art-historical story an added dimension – a dimension that museum visitors find tremendously interesting, I’ve noticed. It’s up to the museums to capitalize on that interest.

You are a “cultural heritage scientist” – a new profession – what exactly do you do? What course of study did you follow?
It is the task of the “cultural heritage scientist” – an intermediary who understands the jargon and the priorities of both worlds – to map out a course of scientific research based on the questions asked by conservators and art historians. The fact is that there are dozens of scientific techniques that can be used in the conservation and preservation of our cultural heritage (even though they were not specifically designed for this purpose), and each method has its advantages and disadvantages. It is impossible for
those who are not specialized in this field to know which technique is required in a given situation.

Two kinds of people become cultural heritage scientists: scientists who specialize in cultural heritage, and those working in the cultural heritage sector who become fascinated by science. I belong to the second category, having studied restoration in Antwerp. Almost from the beginning of my training, I was particularly interested in scientific research. I ended up in the Department of Chemistry at the University of Antwerp with Professor Koen Janssens. I started researching paintings as part of my doctorate, and subsequently earned the first PhD in Conservation-Restoration to be awarded in Belgium. At the beginning I had to find my own way to some extent, but the professorship I recently acquired will make it possible to carry out more systematic research. I’ll also be teaching at the universities of Antwerp and Leuven (Louvain), so that this kind of research can flow, via students of restoration and art history, into the sphere of work.

What aspect of the job do you find the most fascinating?
The fact that I can discover completely new information about iconic paintings that are known the world over and have already been studied intensively – that is the most fascinating part of my job.

This new information often surprises art historians. Could you give a specific example?
Last summer I was invited by Professor Katlijne Van der Stighelen of the Catholic University of Leuven to come to the Kunsthistorisches Museum in Vienna, where Rubens’s painting Het Pelsken was taken off the wall for the first time in fifty years. After scanning, it appeared that Rubens’s second wife was not originally standing in front of a neutral, brown background, but against an elaborate fountain with a lion’s head spouting water and a puer mingens, a little boy peeing. This surprised everyone. Naturally these results have a great influence on the iconography of the painting, which must now be reinterpreted.

That sends you back to traditional art history, so we have come full circle. Does your research often confirm art historians’ suspicions or hypotheses?
Yes indeed, usually we are asked to do a scan because someone suspects something or wants to study a certain aspect in more detail. In many cases, we can confirm their suspicions and even provide them with information that is completely new to them. Scanning is frequently of great value to restoration treatments. A good example is, of course, the Lamb of God, where our scanner visualized the underlying paint layers and their condition, thereby supporting the restorers’ decision to remove the overpainting.

Can you still enjoy paintings on a purely aesthetic level, or does it remain strictly professional?
I must admit that it has to rain long and hard before I’ll go to a museum while on holiday. I can still enjoy museums, of course, but I confess that I first look at the works in a completely different way, and it is only the second time around that I’m able to admire the work as a whole. First I go in search of degradations, discolorations or traces of overpainting – this is certainly an occupational hazard.

Many thanks, Geert. I wish you much success in your new professorial post.
Vanessa Paumen is Coordinator of the Flemish Research Center for the Arts in the Burgundian Netherlands at the Groeningemuseum, Musea Brugge. She has been a member of CODART since 2010.
In January 2005, after fifteen years at the Mauritshuis in The Hague, I began my current job as head of conservation, the registrar’s office and the photographic department at the Statens Museum for Kunst (SMK), the national gallery of Denmark. I had to plunge right in, since the museum was in the midst of preparations for a number of upcoming exhibitions, including Rembrandt? The Master and his Workshop, scheduled for the spring of 2006. In addition, my new job entailed not only the supervision of a large department but also the daily challenge of introducing new documentation and research practices and being part of the museum’s management team.

The SMK has a large collection of Dutch and Flemish drawings, prints and paintings from the sixteenth and seventeenth centuries, which forms the nucleus of the Old Master collection. Inspired by the public restoration of the Vermeers at the Mauritshuis in 1994, we at SMK initiated in 2007, with the help of a generous grant from The Getty Foundation, a public treatment – a so-called Open Studio –

of the huge painting The Tribute Money: Peter Finding the Silver Coin in the Mouth of the Fish (“The Ferry Boat to Antwerp”), painted by Jacob Jordaens (1593-1678) between 1616 and 1634. Our aim was to invite the public to view the complex treatment of the large painting by carrying it out in a publicly accessible conservation studio. By displaying the conservation and restoration treatment, we hoped to promote the idea of the conservator as a facilitator who offers well-considered evaluations of our material culture and our efforts to care for our cultural resources. Since that time we have frequently staged Open Studios (most recently starring a huge masterpiece by Albrecht Dürer, The Triumphal Arch of Emperor Maximilian I, which had been tucked away in storage for years), where the examination and preventive treatment of pieces from our collection takes place in the galleries, to enable direct engagement with the public. The staging of an Open Studio requires intensive collaboration with both the curatorial and the educational departments, in an effort to offer our public an explanation of the many pitfalls to be avoided and actions to be considered when preserving paintings, drawings and prints from the past, and how such artworks can be shown to best advantage by giving due consideration to their age and appearance, and to the natural changes undergone by the materials of which they are made.

Directing the Conservation Department requires close collaboration with the section heads of Conservation, Registration and Photography. In consultation with these three colleagues, the ambitions of the department are set and orchestrated according to the vision of the SMK, which aims to redefine the role of the museum in the twenty-first century under the credo: Art Sparks New Perspectives.
The appearance of artworks is connected with the question of authenticity. Do we see the visual effect intended by the artist or an altered, perhaps weakened version? This is a constant concern of mine, and has led to my engagement with issues related to technical art history studies. In 2011, therefore, when the opportunity arose to establish the externally funded Centre for Art Technological Studies and Conservation (CATS) – a strategic research cooperation between the SMK, the Nationalmuseet (the National Museum of Denmark) and the Royal Academy’s School of Conservation – my dream of working in the multidisciplinary field of technical art history came true. As the director of CATS, I’m also extremely pleased to report that in 2014 we became part of the recently funded European research infrastructure called IPERION_CH, an Integrated Platform for the European Research Infrastructure ON Cultural Heritage. This consortium – which includes the most distinguished European institutions engaging in cultural heritage research, as well as the Getty Conservation Institute in the United States – intends to study the material aspects of our European cultural heritage and coordinate its examination, preservation and dissemination. My current research and teaching activities are closely linked to my BA in Art History (1980) and my master’s thesis on conservation-restoration (1987), the latter focusing on the examination of seventy-five early-seventeenth-century Flemish panel paintings built into the wall-paneling of the Winter Room at Rosenborg Castle, Copenhagen. This examination – which entailed the close study of the paintings, their setting, details of manufacture from timber to final paint layer, archival research on the trade in artists’ materials, and the inspection of comparable paintings in several European collections – laid the foundation for my interest in technical art history. This multidisciplinary approach involving art history and hard-core science can give us an in-depth understanding of the making of complex artworks, which may in turn form the basis of our appreciation and understanding of artistic endeavor.

The intensive study of the creation of panel paintings by Northern and Southern Netherlandish artists, combined with research into the techniques used by seventeenth-century painters, therefore became the subject of my dissertation “Technical art history: painters’ supports and studio practices of Rembrandt, Dou and Vermeer” (2009) at the University of Amsterdam. The combination of these two subjects – painters’ supports and painting techniques – has resulted in several articles and, more recently, a substantial contribution of data to the RKD Gerson Digital Project. The Gerson Denmark chapter, appeared May 2015, will bring me full circle: from my initial studies in the 1980s, via fifteen years at the Mauritshuis, and back to Copenhagen, where I work in the midst of our large collection of Dutch and Flemish paintings.
paintings, many of which can be traced to royal acquisitions made directly from artists’ studios in the Netherlands in the early seventeenth century.

The backs of the panels and copper plates used as supports for paintings contain much significant information that merits documentation. Since my first exhibition of “reversed” paintings in 1987, a handful of presentations – including the exhibition Copper as Canvas – Two Centuries of Masterpiece Paintings on Copper 1525-1775 at the Phoenix Art Museum (Arizona) – have revealed a wealth of information. Studying the reverse side of paintings and their labels, stickers and inscriptions, as well as the tool marks and personal stamps of the original manufacturers and the assay masters’ branding of high-quality panels and copper plates has clarified much new data on the making, provenance and significance of objects. Having studied panel makers’ marks for more than thirty years, I share my expertise on the subject on an almost weekly basis with art historians and conservators in museums around the world, as well as with auction houses and art dealers. Differing interpretations of the Antwerp Brand and the house marks of individual panel makers were presented in Looking through Paintings, but it is our ambition to make this vast amount of material available digitally, to enable future researchers to study panel marks via an online database. Furthermore, research into the “signing” of panels on the back – which was also practiced by Dutch panel makers of the seventeenth century – is a branch of study that is still in its infancy.

My research – from “The Structural Conservation of Panel Paintings” (1998), a symposium on the making of panel paintings held at the J. Paul Getty Museum, to their recent Panel Paintings Initiative – has led to my active involvement in the education of a new generation of conservators, who must be trained to carry out complex structural conservation treatments on fragile panel paintings. As co-chair, with my colleague George Bisacca of the Metropolitan Museum of Art, of
the advisory committee of the Panel Paintings Initiative, I have been able to help instigate training programs for young conservators, which goes hand in hand with my ambition to teach MA and PhD students at the Department of Conservation & Restoration at the University of Amsterdam.

My previous working environment at the Mauritshuis thus offered ample opportunity to collaborate with professionals – including many unaffiliated with the museum – to advance the understanding and preservation of Old Master paintings. But it is, above all, the Open Studio treatment of Johannes Vermeer’s *Girl with a Pearl Earring* and *View of Delft* – undertaken with a view to sharing the conservation activities with the public while keeping these two icons on display – which has yielded the new information on Vermeer’s painting technique that now forms the basis of new research initiatives, such as exploring the development of the colored ground in European paintings, one of CATS’s new strands of research within the European IPERION_CH consortium. Also the examination, conservation and

restoration of Rembrandt’s great *Anatomy Lesson of Dr. Nicolaes Tulp* of 1632, which was carried out in close collaboration with Petria Noble, then conservator at the Mauritshuis (now Head of Paintings Conservation at the Rijksmuseum), not only provided fresh insights into the splendor of the painting and the artist’s technique, but also marked the beginning of important – and eventually formalized – scientific collaboration with Prof. Jaap Boon and his research team at the FOM-Amolf Institute in Amsterdam. Certain phenomena in the paint structure of Rembrandt’s picture became the focus of intensive research: minute holes (100 microns in diameter) in the paint surface were examined for the first time, revealing extensive molecular movement in Old Master paintings, such as lead soaps that protrude through the paint surface. Numerous paintings display this phenomenon, so discovering its cause and tracing its development might help us – and future keepers of our collections – to care for the objects.

Through my current directorships of the conservation department of the SMK and the research infrastructure of CATS, as
well as my professorship at the University of Amsterdam, I wish to initiate and engage in multidisciplinary collaboration that will give the younger generation of conservators and researchers an opportunity to pursue their own avenues of research. The inauguration in September 2015 of a two-year master’s course in Technical Art History at the University of Amsterdam will do a great deal to further interdisciplinary research. Only by sharing ideas and information on the making and meaning of artworks can we reach an understanding of the past that will benefit present and future generations.

Jørgen Wadum is Keeper of conservation at the Statens Museum for Kunst (SMK), National Gallery of Denmark, Copenhagen and Professor of Conservation and Restoration at the University of Amsterdam. He has been a member of CODART since 2007.
Stein Berre, who became a Patron of CODART in 2013, studied public policy at Princeton and received a master’s degree in history from Harvard. Currently, Mr. Berre is Vice President at the Federal Reserve Bank of New York. He also serves as a board member of the Royal Oak Foundation, which is the American partner of the National Trust of England, Wales and Northern Ireland. Although he started out as a collector of contemporary art, Mr. Berre purchased his first Old Master painting in 2000 and never looked back. His collection of Old Masters includes the likes of Jacob van Ruisdael, Willem Claesz Heda, Salomon Koninck, Nicholaes Berchem, Jan van Goyen and Hendrik van Vliet.

You studied public policy analysis at Princeton and received a master’s degree in history from Harvard. Would you please tell us when you became interested in art in general, and in Old Masters in particular?

I’ve had a lifelong love of art, and while I have never worked in the arts per se, I have been fortunate in always being around people who did.

My interest in Old Master paintings has always been equal parts historical and aesthetic. History has always been my favorite subject. And after completing my degree in economics, I decided, out of love for the subject matter, that I would try my hand at a PhD in history at Harvard, where Simon Schama was one of my professors. Our seminar was involved in some of the initial ideas for his book *Landscape and Memory* (1995). I also worked with other professors on various aspects of European cultural history from the sixteenth to the nineteenth centuries. Though I never finished my doctorate, I am very grateful to have been able to study both the field in which I make my living and a field I love.

My interest in the arts extends to the applied arts and architecture as well. As a board member of the [Royal Oak Foundation](https://www.royal-oak-foundation.org), I see many challenges to the future of both fine art and architecture, which are fields that require wide-ranging expertise and skills, as well as constant engagement with the public to ensure their long-term survival. Whereas interest in our architectural heritage is experiencing a resurgence, Old Master pictures seem to behaving a hard time, particularly those not painted by “blockbuster” names.

A “hard time” for Old Master pictures, you say. Could you suggest a way for museum curators to turn the tide?

Unfortunately, I do not have a simple answer to this question. There is a genuine love for the Old Masters in the public sphere, but it is love from a distance. Many people are intimidated by the Old Masters; others find them too far away in culture and time to make a personal connection. While I think there is a broad public that is generally supportive of outstanding museum collections of Old Masters, their engagement does not easily translate into more than an engagement...
with the few well-known names. A sizeable portion of the art-viewing public sees Old Masters primarily as the tradition against which modern artists rebelled.

Part of the solution might be to broaden the range of “stories” that museums tell to reach different audiences. In addition to the “big” museum shows, I find smaller and more focused exhibitions equally important, including those organized on the scale seen at the [Morgan Library](https://www.library.morgan.edu). Smaller places such as the Morgan often have no more than one room dedicated to one exhibit and one story. A recent show consisted of nothing but a series of exquisite cloud studies.

It is also difficult to convince the public that the Old Masters belong to our common cultural heritage, and I think it is part of the curator’s job to help make that connection. In Europe, of course, there is a more direct narrative link between museum collections and national or civic history. In a country like the United States, that story is harder to tell, but telling the story of the creation of great museum collections and the (unvarnished) stories of the great collectors is another way to make that engagement happen.

I am optimistic, however. As a board member of the Royal Oak Foundation, I observe that the National Trust has the largest membership and the greatest number of visitors in years, so that is good news. I think part of their success is very much linked to engaging with the public through various media, and reaching out to people on all levels of knowledge about the arts, to convey the message: “These wonderful things belong to you, and to all of us”.

**Did you deliberately decide at some point to form a collection? When did you start calling yourself a collector?**

My route to collecting Old Masters was an indirect one. Our collection is by no means exclusively seventeenth-century Dutch works, even though that is the main emphasis. We also have twentieth-century works by artists such as Picasso and Motherwell, eighteenth-century French drawings and others from a range of periods. I initially collected contemporary art, as many of my friends did – several of whom have gone on to become quite serious collectors. I also bought post-war British painting. The local galleries in London (where I was living at the time) and fairs such as Art Basel were where I mainly bought art, since these places seemed very accessible to a starting collector. Old Master galleries seemed (and sometimes continue to seem) much more intimidating. In London, I always enjoyed going to the Old Master auction previews, and it gradually dawned on me that good paintings by Old Masters were as affordable as some of the other art I was collecting.

Your first foray into buying Old Masters involves a very real learning curve: developing confidence in your own taste in terms of periods and genres, learning how to assess a painting’s condition, appreciating the role of connoisseurship, and understanding the art market. The first steps are not easy to take, and without good advice, you are likely to make a mistake
When did you decide to buy your first Old Master? Would you please tell us why you chose that particular picture?
The first Old Master painting I bought remains a mystery in terms of its attribution. I purchased it in 2000 through a dealer from the collection of a bank. It’s a half-length portrait of a pretty woman in typical black-and-white seventeenth-century garb. There are some rather dramatic storm clouds in the background. Three versions of this work exist, including the one I own. The other two are in the Art Institute of Chicago and the Fondation Custodia in Paris. Mine may be a later copy, but I enjoy it all the same.

The painting that sparked my recent bout of collecting was purchased in 2010. It’s an Italianate landscape with ruins and shepherds by Jan Baptist Weenix. With its wonderful light and sense of indolent exoticism, it conveys to me a sense of the strangeness and wonder felt by a Northerner traveling to a much older world.

As a former trainee historian, I’ve enjoyed digging into the provenance of the paintings in my collection and discovering when they were “in” or “out” of fashion in the past. Several of the works once belonged to the well-known collections of quite interesting characters: Demidoff, Warburg and Kahn, and such artists as Benjamin West. I have also enjoyed working with art historians to verify (or reject) the attribution of paintings, such as the uncatalogued Allaert van Everdingen I purchased several years ago, which is now on display, along with a couple of other works from my collection, at the Seattle Art Museum.

As Vice President at the Federal Reserve Bank of New York, do you belong to a network of collectors of Dutch and Flemish art?
No, these two worlds are quite separate. Before I became a banker, I knew many people who were interested in art. I even knew an art historian who became a banker.
I know bankers who have significant collections, but they do not buy Old Master paintings.

**Among the collectors of Old Masters who support CODART as Patrons, you are by far the youngest. Is the younger generation of collectors lacking in our network, or do younger curators focus on other schools or periods?**

It's very difficult to get people my age and younger to start collecting Old Masters. There is a widely held (but mistaken) notion that the world of Old Masters is inaccessibile, in terms of both expertise and affordability. Even people with the means and the knowledge to begin collecting Old Masters often feel, for some unknown reason, that Old Master paintings may well be culturally important but are somehow not meant for them. I see many reasons for their hesitation.

The level of information necessary to select an Old Master painting and the care it requires are much greater than that needed for a contemporary artwork. The contemporary market offers not only art, but the whole social world that goes with it, which anyone who has been to one of the big contemporary art fairs will have seen firsthand. There is also the question of access and exposure. Outside a few major centers, there is not much infrastructure for collecting Old Master paintings, even where there is interest. I come from Seattle, which has a lot of culturally sophisticated, wealthy people with an interest in the arts, but the city does not have a tradition of collecting Old Master paintings, nor does it have the dealers and restorers needed to build and maintain a collection.

It would greatly benefit the arts community if the [Friends of CODART](https://www.codartfoundation.org) would do something to help collectors take the first step towards buying Old Masters, such as meeting with budding collectors or with those based outside big centers like Amsterdam, London and New York. The Friends of CODART Foundation could organize discussions, workshops, lectures, social events and access to curators. Many collectors would be happy to learn about provenance, condition, or how to work with an art restorer, and CODART, with its network, could offer a pretty high level of knowledge.

Perhaps part of CODART's mission could be to help in some way to groom the next generation of collectors, to make sure that there is a future generation of collectors who will
care for and cherish our works of art. I think that this is particularly important, in order to ensure that the vast majority of works from the seventeenth century, which are not of museum quality, are looked after.

**Do you see a role for curators here?**
Oh yes, absolutely. Curators can work to foster a collectors’ community in the city where they live. They can inspire, engage and educate collectors and thus become local “cheerleaders,” which will prompt collectors to commit themselves to museums. Having been a starting collector not so long ago, I know I would have benefited enormously from such a community.

**As a collector, do you purchase artworks on your own, or do you cooperate with advisors or other specialists?**
I tend to buy pictures at auction and to rely on art restorers, rather than dealers, to get opinions on works I am thinking about buying. This is partly because I enjoy researching pictures and artists, and I am comfortable reaching out directly to academics or the RKD (Netherlands Institute for Art History) if there are any questions I need to address concerning an attribution or the significance of a work within an artist’s oeuvre. In this respect, CODART has been an immensely valuable resource to me in my collecting. I have always been hugely impressed by how committed CODART members are to their work and how generous they are in providing opinions and contacts. I have made a habit of reaching out to CODART curators whenever I plan a museum visit on my travels. Through CODART I met Chiyo Ishikawa and Amy Walsh – as well as the late Michiel Jonker and Walter Liedtke – and as a result of their warmth and generosity, I wanted to become involved in some small way in helping CODART to fulfill its mission.
The theme of the eighteenth CODART Congress, *Curators and the Art Trade: A Discussion of Opportunities and Dilemmas*, was timely and relevant for those working in the art world, particularly those representing the public sector. The congress, organized in collaboration with the National Gallery and The Wallace Collection, attracted to London over one hundred professionals from around the world.

To welcome delegates arriving in the city on Sunday, 18 January, an optional art dealer tour and city walking tour were offered, followed by a drinks reception hosted by the Old Master paintings dealer Johnny Van Haeften.

The following day the CODART ACHTTIEN Congress program kicked off in fine style with a private view of the *Rembrandt: The Late Works* exhibition in the Sainsbury Wing of the National Gallery. The de-installation was postponed to allow CODART members exclusive access to the exhibition to catch a final glimpse of some of the finest examples of the master’s later period. In the first session of the morning, Betsy Wieseman, Curator of Dutch and Flemish Paintings at the National Gallery and the exhibition’s curator, gave us great insight into the process of curating the exhibition and the challenges she faced in delivering an Old Master exhibition that was relevant and appealing to the general public.

The Congress picked up pace with the first keynote lecture, *The Art Trade and the Department of Prints and Drawings at the British Museum: History and Biography*, delivered by Hugo Chapman, Keeper of Prints and Drawings at the British Museum, who discussed his transition from auction house professional to curator, the shifting boundaries between public institutions and dealers, and the ethical responsibilities of curators today.

Michael Ripps, an independent scholar from Los Angeles, gave the second keynote lecture, *Wilhelm Bode and his Loyal Lieutenants: The Trade in Dutch Pictures, 1879-1914*, and provided an overview of this extraordinary art historian and curator. Focusing on the key Dutch acquisitions made
by Bode for the Gemäldegalerie, Ripps also discussed the dynamics between private collectors, dealers and public institutions in the nineteenth century.

The final keynote lecture, *The Burlington Magazine and the Publication of Works of the Art Trade*, presented by Bart Cornelis, Deputy Editor of *The Burlington Magazine*, gave us an understanding of the changing remit of the journal, from its foundation in 1903 to its present role as an educational charity.

The afternoon session at the National Gallery comprised three speakers providing statements on the Congress theme. Jan Six, Director of Jan Six Fine Art, presented a captivating, object-based paper concerning attributions, focusing on the case of the painting of St. Praxedis, which recently sold at auction as an early work by Johannes Vermeer.

Nanne Dekking, Vice-Chairman and Worldwide Head of Private Sales for Sotheby’s, questioned the role of scholarship and the narrative relating to artworks on the market.

The final statement by Stephanie Tasch, Director of the Kulturstiftung der Länder, Berlin, spoke about the role of funding bodies and foundations that support the acquisition of artworks and objects by public institutions.

The day’s program was stimulating and informative, yet the round-up discussion was less lively than expected and there was a distinct air of caution when debating the challenges faced by curators and art market professionals, with individuals perhaps lacking the confidence to speak up for fear of misrepresenting their museum. Perhaps this could have been remedied by the formation of smaller discussion groups to foster debate on this sensitive subject. On Monday evening CODART hosted a delightful dinner at the Bombay Brasserie, where colleagues enjoyed meeting new contacts, thanks to the raffle-style seating plan. The evening was made all the more enjoyable by the good food and wine and the popular speeches, welcoming new members to CODART and saying goodbye and good luck to those moving on to new ventures.

The second day of the Congress began at The Wallace Collection with a welcome by Lucy Davis, Curator of Old Master Pictures at The Wallace Collection. An Van Camp, Curator of Dutch and Flemish Drawings and Prints at the British
Museum, acted as the chair for the morning and introduced the popular Column by CODART Director Gerdien Verschoor, which addressed the changes CODART has made in its effort to adjust to budgetary challenges. Thomas Leysen, Chair of the Friends of CODART Foundation, also spoke about the work of CODART’s Friends and Patrons and encouraged members to make their contacts aware of the scheme.

The next session, Speakers’ Corner, gave members the opportunity to take the floor and present, for the delegates’ consideration, a particular problem or query relating to their work or research, in the hope of receiving suggestions or advice. Robert Wenley, Deputy Director and Head of Collections and Learning at the Barber Institute of Fine Arts, University of Birmingham, focused on his forthcoming exhibition on Jan Steen and asked for ideas about the identity of the patron of Jan Steen’s The Wrath of Ahasuerus in The Barber Institute Collection. He also discussed his theory that the composition was possibly influenced by contemporary Dutch theatre.

Wolfgang Cillessen, Curator of Paintings, Prints and Drawings at the Historisches Museum, Frankfurt, sought information on any surviving examples of German “master pieces” – the tests of workmanship needed to gain admission to a guild – for a future exhibition. The second round of speakers included presentations by Piotr Borusowski, National Museum in Warsaw, who asked for opinions regarding a sketchbook attributed to Cornelis Saftleven; Andrew Moore, The Attingham Trust, who presented a fascinating research and exhibition project on “The Paston Treasure”; and Gero Seelig, Staatliches Museum, Schwerin, who made a case for establishing an international collaborative database on historic frames. Given the responses from the audience, the Speakers’ Corner appeared to be a successful and constructive addition to the Congress program.

For the afternoon session, participants had pre-selected from a varied list of in-depth visits, organized by CODART, to museums and collections. It was not easy to choose, but I opted for the visit to the Prints and Drawings Collection of the British Museum, hosted by An Van Camp. Initially attracted by the opportunity to view Anthony van Dyck’s Italian sketchbook, I was in awe of the other treasures that An brought out to show us. She presented a wonderful selection of highlights from her forthcoming silverpoint exhibition, mounted in collaboration with the National Gallery of Art, Washington.

I was delighted to have the opportunity to view an album of watercolor studies by Adriaen van de Venne, including one drawing that featured Elizabeth of Bohemia and her husband, Frederik Hendrik, on horseback, which was particularly relevant to my area of research.
The day was rounded off by a drinks reception hosted by Sotheby’s, London, which gave the delegates a chance to relax over a glass of wine and to discuss the afternoon visits, and the opportunity to network with colleagues and researchers in an informal setting.

For the final day of the Congress, CODART organized an optional program of visits to museums and galleries around London, including the Queen’s House, Greenwich, Kenwood House, the private collection of Willem Baron van Dedem and the Royal Academy.

I opted for the excursion to the Dulwich Picture Gallery, the world's first purpose-built public art gallery. We were welcomed by Ellinoor Bergvelt, Guest Curator, Xavier Bray, Chief Curator, and Hettie Ward, Curatorial Fellow. Ellinoor provided great insight into the research she is conducting for the catalogue of Dutch and Flemish pictures at the Dulwich Picture Gallery. She encouraged the group to study the paintings and discuss topics such as attributions, compositional sources and costume identification.

The extra program proved popular with many of the delegates, who relished the opportunity to participate in additional excursions before traveling home.

Kate Anderson is Senior Curator of 16th and 17th Century Collections at the Scottish National Portrait Gallery, National Galleries of Scotland. She has been a member of CODART since 2012.