Imaging techniques and methodologies for acquisition, processing and distribution of multimodal image data from the oeuvre of Jan van Eyck

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ABSTRACT

The VERONA (Van Eyck Research in OpeN Access) research project gives open access to high resolution scientific image data from the oeuvre of the pioneer of Flemish painting, Jan van Eyck (ca. 1390-1441). The project is carried out by the Royal Institute for Cultural Heritage (KIK-IRPA, Brussels) in collaboration with museums that have paintings by Van Eyck in their collections. In each case, the artworks are examined and documented with the same scientific imaging techniques using the same protocol: macrophotography (normal light, raking light, infrared light and ultraviolet fluorescence), infrared reflectography and in some cases radiography. Comparable images are obtained through the use of standardized procedures and the same equipment. The resulting material is publicly released via the website 'Closer to Van Eyck' (closertovaneyck.be). The website user, via comparative windows and zoom features, can actively study for the first time differences and similarities in the artist's technique in various paintings on the basis of the same standardized material. This paper describes the scientific imaging techniques and methodologies used to produce and publish the image material, from the multimodal acquisition to the processing for stitching and multi-modal registration, culminating in web distribution.

Keywords: Jan van Eyck, Research, Art History, Scientific Imagery, High Resolution, Open Access, Website, Closer to Van Eyck

1. INTRODUCTION

The Altarpiece of the Adoration of the Mystic Lamb, a masterpiece by the brothers Jan and Hubert van Eyck, is in St Bavo Cathedral in Ghent, its original location, and is therefore known as the Ghent Altarpiece. It is currently undergoing an extensive research and conservation project, led by the Royal Institute for Cultural Heritage (KIK-IRPA), Brussels. According to the inscription on the frame, which has proven to be authentic, the altarpiece was commissioned by the Ghent mayor Judocus Vijd, painted by the brothers Van Eyck and finally installed in the Vijd chapel in 1432. Famous in its own time, the altarpiece represents a revolution in western art and has become one of the most renowned works of art in European history [1]. It is divided into two horizontal sections, with seven panels at the top and five panels at the bottom. The shutters are painted on both sides, enabling the altarpiece to be viewed in an open or closed position. When open, the polyptych measures an imposing 3.75 x 5.15 metres, which is extremely large for an altarpiece of the period. The Ghent Altarpiece is also exceptional within the oeuvre of Jan van Eyck, of which only around twenty, much smaller, paintings survive. In terms of painted surface, the Ghent Altarpiece represents 82% of the complete extant oeuvre of Jan van Eyck.

The KIK-IRPA has been involved in the ongoing conservation, documentation and research project on the Ghent Altarpiece since its inception. This pluriannual and interdisciplinary project has many partners.[1] As part of the project, the website Closer to Van Eyck (Figure 1) was launched to archive and give open access to the huge amount of high resolution scientific imagery generated, which includes macrophotography in visible light and infrared light, infrared reflectography

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[1] See http://closertovaneyck.kikirpa.be/ghentaltarpiece/#home/sub=credits.

and X-radiography.[2] The website was conceived by Prof. Ron Spronk[3] and developed by Universum Digitalis and the Vrije Universiteit Brussel, with the support of the Getty Foundation. This dynamic website will reflect each of the three phases of the conservation treatment.[4] The images of Phase One of the project (the exterior of the altarpiece, 2012-2016 [2]) are online available since 2017. The website will be supplemented with images of Phase Two (lower section of the interior, 2017-2019) during the course of 2020. Phase Three of the restoration (the upper panels of the interior) is expected to commence in 2021. The images of this final phase will complete the website.

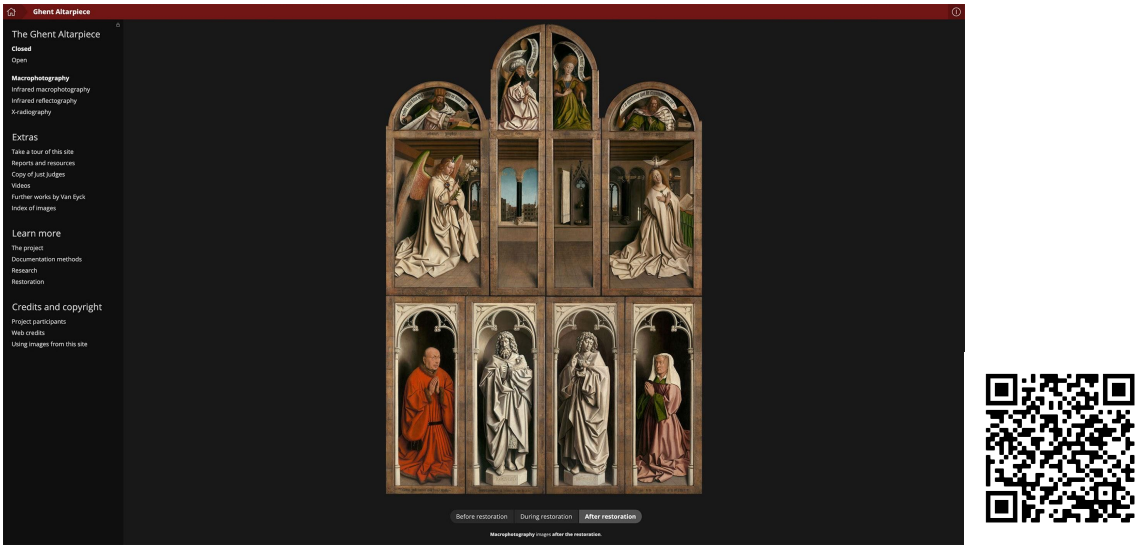

Figure 1: The exterior of the Ghent Altarpiece by Jan and Hubert van Eyck after restoration on the Closer to Van Eyck website.

Despite being known as the *opus magnum* of Jan and Hubert van Eyck, the attribution of the Ghent Altarpiece is still debated by art historians. Apart from Jan and Hubert, other workshop assistants or even family members may well have collaborated in the production of such a huge altarpiece. To distinguish the hand of Jan van Eyck, it is crucial to look beyond the Ghent Altarpiece to his other known works. This was the thinking behind the KIK-IRPA's decision to launch the VERONA (Van Eyck Research in OpeN Access) project in 2014.

This paper describes the project goals, the scientific imaging techniques and the methodologies used to produce and publish the image material, from the multimodal acquisition to the processing for stitching and multi-modal registration, culminating in web distribution. The paper contains several details from the Closer to Van Eyck website. All details have QR codes which link to the corresponding images on the website. This allows the reader to inspect the details interactively at the best possible quality.

2. THE VERONA PROJECT

The initial goal of the Van Eyck Research in Open Access (VERONA) project was three-fold: to carry out and promote new research on Jan van Eyck and his workshop to help answer the art historical questions raised by the Ghent Altarpiece; to document other paintings by Jan van Eyck and his workshop using standardised technical procedures, following the methods used for the Ghent Altarpiece; and to make this material available online in open access on the website closertovaneyck.kikirpa.be, as a point of reference for comparative research in the Van Eyck group.

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[2] This was made possible through financial support from the Getty Foundation within the project 'Lasting Support'.

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Famous even in his own lifetime, Jan van Eyck (c. 1390-1441) signed and dated at least nine of his works. These inscriptions, mostly on the original frames, are highly unusual, as the vast majority of works from the fifteenth century were not signed, and few of these can even be linked to archival documents. Van Eyck's works of certain authorship, which are mostly signed, inspired early art historians to make comparisons and establish a corpus of paintings attributed to the master. The works are spread over several museums in Europe and the US and will never be exhibited together in a single place. The most remarkable attempt to bring together as many Van Eyck paintings as possible was the recent exhibition in the Ghent Museum of Fine Arts [3]. Comparative research scholars previously had to rely on the data made available by the various institutions. In the course of the twentieth century examinations were usually carried out in the museums at the same time as conservation treatments. Each institution used their own scientific imagery equipment, which varied in quality. The stylistic comparisons made in the past were therefore based on a heterogenous set of data, which also rarely took into account differences in scale and condition between paintings, etc. Furthermore, the results of early scientific examinations should be reassessed in the light of technological advances made over the last decades.

Figure 2: Overview of the paintings in the VERONA project on the Closer to Van Eyck website.

The VERONA project includes the complete corpus of Van Eyck's works: the nine signed and dated paintings[5], the other ten generally accepted works by his hand[6], eleven further Eyckian paintings, and a manuscript.[7] Throughout the project, working in-situ in the various museums, a standardised protocol was followed, mirroring that used by the KIK-IRPA for

[5] Antwerp, Royal Museum of Fine Arts, *Saint Barbara* and *Virgin by the Fountain*; Bruges, Groeningemuseum, *Virgin of Canon van der Paele* and *Portrait of Margaret van Eyck*; Dresden, Gemäldegalerie Alte Meister, *Triptych of the Virgin and Child*; London, National Gallery, *The Arnolfini Double Portrait*, *Portrait of a Man (Self Portrait?)* and *Portrait of a Man ('Léal Souvenir')*; Vienna, Kunsthistorisches Museum, *Portrait of Jan de Leeuw*.

[6] Berlin, Gemäldegalerie, *Virgin in a Church*, *Portrait of Baudouin de Lannoy* and *Portrait of Giovanni Arnolfini*; Frankfurt, Städel Museum, *'Lucca' Virgin*; Madrid, Museo Thyssen-Bornemisza, *Annunciation Diptych*; Paris, Musée du Louvre, *Virgin of Chancellor Rolin*; Sibiu, Brukenthal National Museum, *Portrait of a Man*; Turin, Galleria Sabauda, *Saint Francis receiving the Stigmata*; Vienna, Kunsthistorisches Museum, *Portrait of a Man (Cardinal Albergati?)*; Washington, National Gallery of Art, *The Annunciation*.

[7] Berlin, Gemäldegalerie, *The Crucifixion*, *Head of a Man* and *Head of Christ*; Covarrubias, Museo de la Colegiata, *Virgin and Child reading*; Leipzig, Museum der bildenden Künste, *Portrait of a Man*; Montauban, Musée Ingres Bourdelle, *Portrait of a Man*; New York, The Metropolitan Museum of Art, *The Crucifixion and the Last Judgment*; Paris, Musée du Louvre, *Diptych of the Virgin and Child and Saint John the Baptist*; Paris, Musée des Arts Décoratifs, *Fragment with architecture*; Rotterdam, Boijmans van Beuningen, *The Three Marys at the Tomb* Turin, Museo Civico d'Arte Antica e Palazzo Madama, *Turin-Milan Hours*; Venice, Galleria Franchetti alla Ca' d'Oro, *Crucifixion*.

the documentation of the Ghent Altarpiece. Using the same cameras, the same lighting, the same photographic team and the same protocol for all paintings, the documentation provides a standardised dataset that enables objective comparative research. This is useful both for stylistic comparisons and the study of Van Eyck's creative processes.

The new VERONA documentation was made universally accessible through a collaboration with the Closer to Van Eyck website project, initially intended to showcase the conservation and research on the Ghent Altarpiece (see above). A new section to the website was designed by Universum Digitalis, entitled 'Further works by Jan van Eyck and Followers'. This was launched in 2017 and supplemented with further material in 2019. The expanded Closer to Van Eyck website has since become the primary international reference for comparative visual research on the work of Van Eyck. The website user, via comparative windows and zoom features, can actively study for the first time differences and similarities in the artist's style and technique in various paintings on the basis of the same standardized material.

2. IMAGING TECHNIQUES

During the VERONA project all artworks were examined and documented with the same scientific imaging techniques using the same protocol: macrophotography (normal light, raking light, infrared light and ultraviolet fluorescence), infrared reflectography and in some cases radiography and macro-XRF scanning. The latter was done by the University of Antwerp on the four Van Eyck paintings in Bruges and Antwerp.[8] Here we describe those techniques used by the Royal Institute for Cultural Heritage for the VERONA project that are now available online. Illustrations of the used equipment and set-up can be seen at: http://closertovaneyck.kikirpa.be/verona/#home/sub=documentation-methods.

2.1 Macrophotography

Throughout the project, high resolution photography was carried out with professional Hasselblad cameras. Initially this was a Hasselblad H4D-200MS, which has a 50MP pixel sensor (8176 x 6132 pixels, 49.1 x 36.7 mm). This model was replaced in 2016 by the Hasselblad H6D-100c, which offers higher resolution (11600 x 8700 pixels, 53.4 x 40.0 mm). The same Hasselblad 120 mm macro lens was used for all the photography. Both cameras were adapted by the manufacturer to take photographs in infrared mode through the removal of the infrared blocking filter. Flash photography was employed in each case, using a Broncolor lighting system.

The protocol for photographing the paintings remained the same with both cameras. The surface size per shot was either 15 x 20 cm or 7.5 x 10 cm, depending on the format of the work and the time available. Four different modalities were employed: normal light, raking light, infrared light and ultraviolet light. Documentation included any original painted frames. Where reverse sides were decorated with original marbling, these surfaces were also photographed in the same way and at the same resolution as the front sides.

To enable the subsequent digital stitching of the high-resolution images, the camera was placed on a remote-controlled motorised rail system. This consists of a transportable horizontal and a vertical rail and a platform.9 Of particular importance is the mobile stage on which the camera sits, which moves backwards and forwards automatically to accommodate the warp of a panel painting.

2.2 Visual light photography in normal and raking light

Normal light photography accurately registers the motifs and colours in a painting and facilitates comparisons with other works. Zooming in on these images enables the user to carry out in-depth analysis of style and technique. Raking light photography enhances the artist's brushwork and also points up any unusual variations in the surface of the painting that would not easily be detected otherwise. For such images, the light source was placed high up to the left of the painting and at a sharp angle.

In the case of the St Barbara panel (Antwerp, Royal Museum of Fine Arts), considered by many scholars to be unfinished, raking light images at high magnification reveal minute incisions. It is likely that these incisions were not meant to be seen

[8] By Koen Janssens and Geert van der Snickt of Antwerp University, Antwerp X-ray analysis, Electrochemistry and Speciation (AXES).

[9] The system was custom built by the Institut de Physique Nucléaire, Atomique et de Spectroscopie, Centre Européen d'Archéométrie, Liège University.

and correspond to an early phase in Van Eyck's creative process. In other paintings, he deliberately used surface effects to create effects of texture [4]. Working rapidly, he blotted his paint with cloths, his fingers, and even the palm of his hand, as can be seen when zooming in on details in the *Virgin of Canon Van der Paele* (Bruges, Groeningemuseum) [5]. In other parts of this same painting, he imitated the effect of gold embroidery by dragging and feathering the paint. These details are shown in Figure 3.

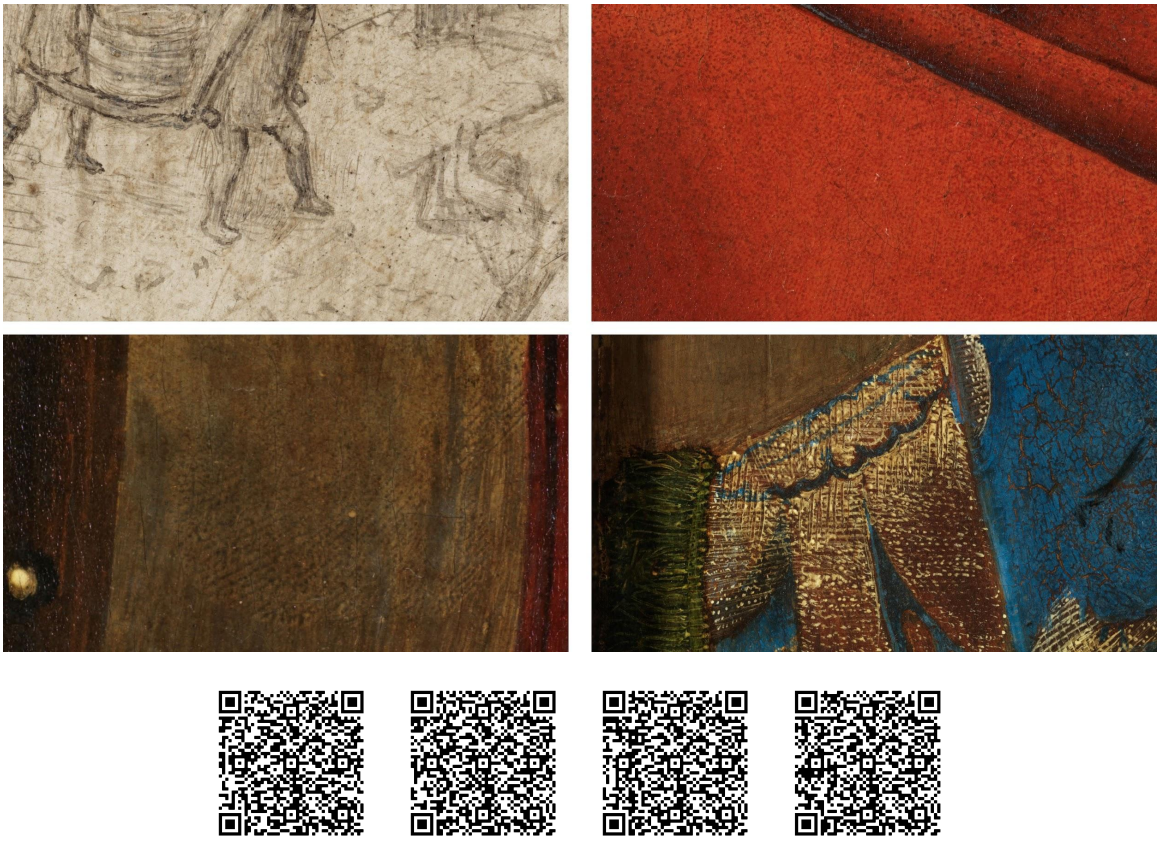

Figure 3: St Barbara (Antwerp, Royal Museum of Fine Arts), detail with incised lines (upper left); Virgin of Canon Van der Paele (Brugge, Groeninge), detail of blotting the paint (upper right), fingerprint (lower left) and dragging the paint (lower right).

Besides technical observations, macrophotography also reveals iconographical details that are simply invisible to the naked eye. In the Virgin of Chancellor Rolin (Paris, Musée du Louvre), zooming into the distant landscape brings into view the tiny figures in the streets of the town and on the bridge over the river, which Van Eyck has painted with minute brushstrokes (Figures 4-5). Among the small houses in the far background, there is even one on fire, less than three millimeters wide. As the same protocol has been followed for other Van Eyck paintings in other collections, it is also possible to observe that the tiny rowing boat on the placid river is almost identical in shape and size to the boat in the St Francis panel (Turin, Galleria Sabauda) (Figure 5).

Figure 4: Virgin of Chancellor Rolin (Paris, Musee du Louvre), details of the street view (upper left), figures on the bridge (upper right) and the house on fire (lower left); comparison with St Francis (Turin, Galleria Sabauda), detail of the boat on the river on both paintings (lower right).

2.3 Infrared photography

Infrared photography requires the use of a black and white 093 filter at the front of the lens, which filters out any visible light. The Hasselblad camera's internal captor is sensitive to wavelengths of up until about 1100 nm, which means that in the case of paintings with thin paint layers composed of mixtures of low-infrared absorbing pigments such as lead white and vermilion, the underdrawing can sometimes be revealed. The resolution of the image is greater than that of infrared reflectography, but the absorption of the overlying paint usually reduces visibility.

2.4 Infrared reflectography (IRR)

Infrared reflectography was carried out using a near infrared digital camera with a 640 x 512 focal plane array and a 1500-1730 nm narrow band width filter.[10] The camera was placed on the same remote-controlled motorised rail system as that used for macro-photography. Since the resolution of the camera is relatively low, tens or hundreds of IRR captures were necessary, each of which covered a surface area of 5 x 5 cm.

Like infrared photography, IRR can reveal carbon-based underdrawing lying between the priming layer and the paint layer. However, since the camera's InGaAs sensor is sensitive to infrared radiation to about 1700 nm, the majority of pigments become transparent or translucent, revealing more underdrawing than with infrared photography. True blacks, being carbon-based, remain opaque.

IRR helps us to understand Jan van Eyck's creative process. The underdrawing stage, fully revealed in the Arnolfini Portrait (London, National Gallery) (Figure 5), did not simply outline the composition [6]. Even before applying his first layer of

[10] Lionsystems, Foetz, Luxembourg (no longer exists).

oil paint, Van Eyck established light and shade in draperies, flesh tones and background using delicate hatching and cross-hatching strokes. These strokes, probably applied in an aqueous medium with a fine brush, correspond to the areas of shadow cast by a single virtual light source. In this detail, you can also see that Van Eyck changed his mind on the size of the famous mirror in the background and on the position of the fingers and the eyes during painting.

Figure 5: Arnolfini Portrait (London, National Gallery) in IRR, detail showing hatching and changes in position in the underdrawing stage (from Closer to Van Eyck, © National Gallery, London).

In some areas, infrared reflectography reveals important iconographical changes, such as the purse that was initially drawn hanging from the belt of Chancellor Rolin (Paris, Musée du Louvre) (Figure 6), an idea that Van Eyck abandoned at the painting stage [7]. In the same painting, above the seated Virgin, IRR reveals the outlines of a canopy and a cloth of honour (Figure 7), both underdrawn and even underpainted, but dropped during Van Eyck's final painting stage.

Figure 6: Virgin of Chancellor Rolin (Paris, Musée du Louvre) in IRR and normal light, detail of the purse that is underdrawn but not painted.

Figure 7: Virgin of Chancellor Rolin (Paris, Musée du Louvre) in IRR and normal light, detail of the Virgin with the outlines of a canopy and a cloth of honour, both underdrawn and underpainted but left out in the final painting stage.

2.5 X-radiography

X-radiography is an imaging technique that has been used by the KIK-IRPA since the 1940s. For the VERONA project, portable, air-cooled X-ray generators were used (50kV to 160kV)[11] with high resolution industrial film. For smaller paintings, 30 x 40 cm film plates were employed. For larger works, 35.5 cm wide X-ray film strips were cut and assembled to the size of the painting and the painting exposed in one shot. Once developed, the plates or strips were scanned with a laser film digitiser[12]. As well as revealing the true extent of losses to the paint layer, X-radiography reveals the structure of the panel or canvas support. It can also reveal aspects of the painter's technique and changes of mind during execution.

In the case of the Virgin of Canon Van der Paele (Bruges, Groeningemuseum) (Figure 8), X-radiography reveals the construction of the wooden support, with original dowels between the planks and later additions. It also shows Van Eyck's use of lead-white based paint in faces and in lighter tones in the background, in which he sometimes left reserves for dark motifs. X-radiography revealed changes in composition during painting in the Portrait of Margaret van Eyck (Bruges, Groeningemuseum). Her white headdress and sleeves were initially painted differently (Figure 9) [8].

[11] Balteau NDT, Hermalle Sous Argenteau.

[12] Array Corporation 2905HD film digitiser.

Figure 8: Virgin of Canon Van der Paele (Bruges, Groeningemuseum) in X-radiography and normal light, detail of St. Donatius, showing the use of dowels at the joins between the wooden planks and reserves in the lead white-based paint.

Figure 9: Portrait of Margareth van Eyck (Bruges, Groeningemuseum) in X-radiography and normal light, detail showing changes in the underpainting of the hairdress and the sleeves.

2.6. Object shots

Object shots are taken with the Hasselblad camera (see 2.1) in visual light and from different angles to show all the edges as well as the reverse sides of the panels. These photographs are hardly ever shown in art history books, but reveal valuable information about the construction of the panel, the frame and the painting's function as a three dimensional object.

The Triptych of the Virgin and Child (Dresden, Gemaldegalerie), for example, is not a flat object (Figure 10). With its shutters, painted on both sides, the triptych was meant to be opened and closed and perhaps taken travelling [9]. At the bottom edge, there is the brand of Charles I of England, one time owner of the triptych.

Figure 10: Triptych of the Virgin and Child (Dresden, Gemäldegalerie), object shots showing the triptych open and closed.

3. IMAGE PROCESSING AND WEB DISTRIBUTION

3.1 Stitching

For most of the imaging methods discussed in the previous section, the images were captured using a positioning system that scans row by row or column by column over the painting. The result is a matrix of image tiles that covers the entire panel. All subsequent tiles have an overlap of approximately 20% of the tile width or height. The task of the stitching process is to assemble all these tiles into a single smooth ultra high resolution image as illustrated in Figure 11.

Figure 11: Example of the input and output of the stitching process.

When aligning two subsequent tiles with their overlapping area on top of each other, there willp always be slight misalignments as shown in the difference image in Figure 12. These misalignments are a consequence of several factors, including lens deformations, perspective changes when scanning over the panel, slight positioning errors and so on. These misalignments are extremely minimal and can be easily smoothed out. However, since every subsequent tile has a small misalignment, the error will propagate when a larger sequence of tiles is put together. The propagated error is too large to be concealed by smoothing. It will lead to noticeable unsharp or double edges. Therefore, the task of the stitching algorithm is a minimization problem of the distributed error over the entire painting. To measure the errors, feature points are calculated in the overlapping areas. The aim is to minimize the distances between matching feature points in subsequent images.

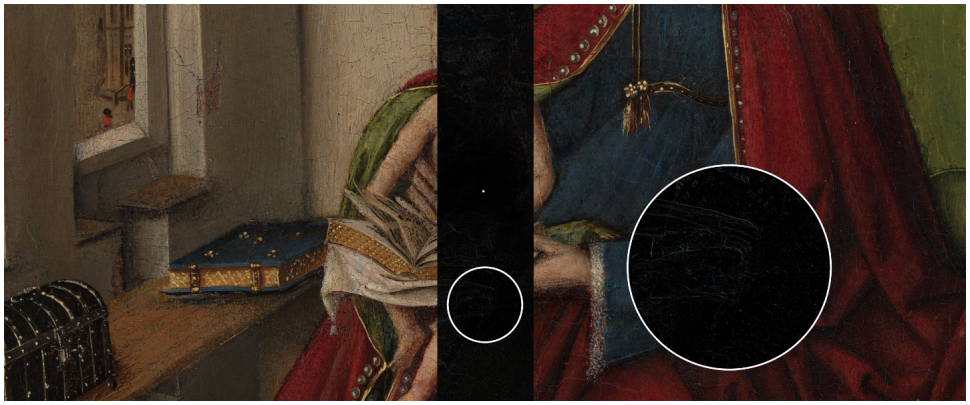

Figure 11: Difference image of two subsequent tiles aligned on top of each other.

As explained in the previous section, the surface area captured in a single tile is 15 x 20 cm or 7.5 x 10 cm depending on the size of the painting. As an example, the Virgin of Canon Van der Paele (Bruges, Groeningemuseum) panel measures 141 cm by 176.5 cm. The final stitched image has a size of 60924 by 78830 pixels. At 16 bit per pixel this results in an image file of c. 27 gigabyte in tiff or raw.

3.2 Registration

A painting is not a flat surface. Van Eyck painted on oak panels, which have natural irregularities and tend to warp slightly over time. In addition, the paint layer and its network of cracks add additional texture to the surface. When photographing a painting, several factors will influence the projection of the painting on the sensor, such as the used lens and position of the camera. In addition, the stitching process can cause additional local deformations. Therefore, if multiple images of the same painting are aligned on top of each other by applying an affine transformation based on the four corner points, there will still be local misalignments that become apparent when zooming in close. Given the ultra high resolution of the images produced in this project, this will become particularly noticeable when comparing or overlaying local areas as illustrated in the difference image shown in Figure 12. Therefore, an additional registration process is required where the images are aligned with each other at the pixel level. To make sure that a consistent ground truth is used for the registration, all images are registered to a single shot image of the painting. These single shots were captured for each painting under consistent conditions.

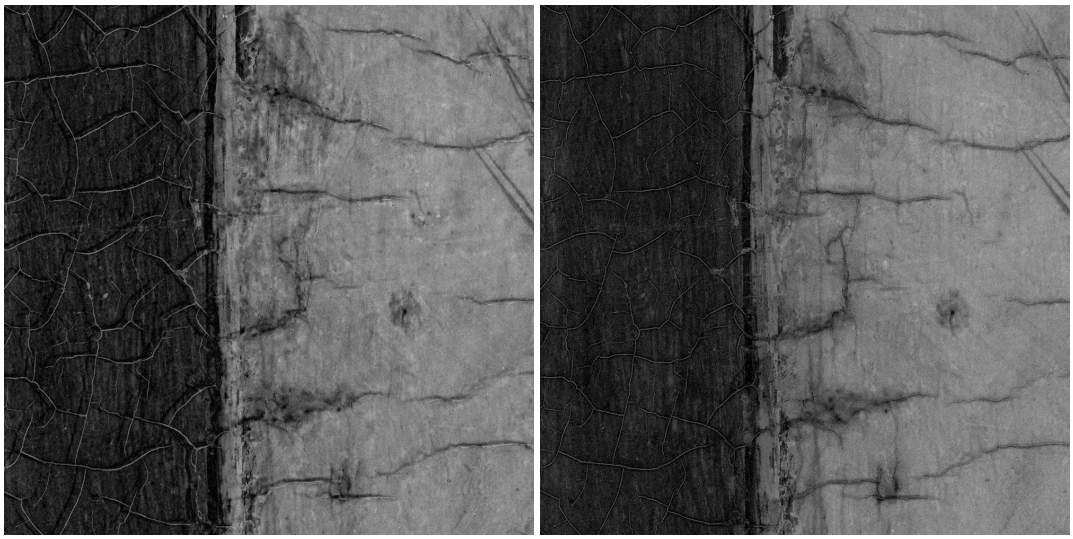

Figure 12: Difference image between visual light and infrared reflectography image before (left) and after (right) pixel-level registration. Notice the misalignment of the cracks in both modalities in the left image.

3.3 Web distribution

The aim of the project was to make the ultra high resolution images accessible via the web. However, the stitched and registered images are too big to simply embed directly in a website. A dedicated viewer was developed that allows zooming in and out while only loading the visualised area at the corresponding resolution. To this end, the website loads 256 by 256 pixel tiles which are, like a puzzle, rendered as a single image. On the server side, these tiles are generated from JPEG 2000 image files [10]. JPEG 2000 is a wavelet based image codec and hence supports resolution scalability. This means that various resolutions of the image can be loaded without loading the entire image file in memory. In addition, JPEG 2000 supports random access which allows it to extract specific regions. The regions extracted from the JPEG 2000 file are then transcoded to the legacy JPEG format to ensure web browser compatibility.

The web viewer is designed to be easy to use for the average visitor but also supports more advanced functionalities which are particularly intended for research purposes. For example, each viewer window can show the scale at which the painting is displayed. Also, multiple synchronized windows can be loaded to visualise different image modalities at the same time as shown in Figure 13. Synchronization of zoom level and position can be turned off independently. This enables additional possibilities such as visualisation of details of different paintings next to each other to allow detailed comparative research. In any viewer configuration all buttons and menus can be hidden. As a result, every single pixel of the screen can be used to display image content.

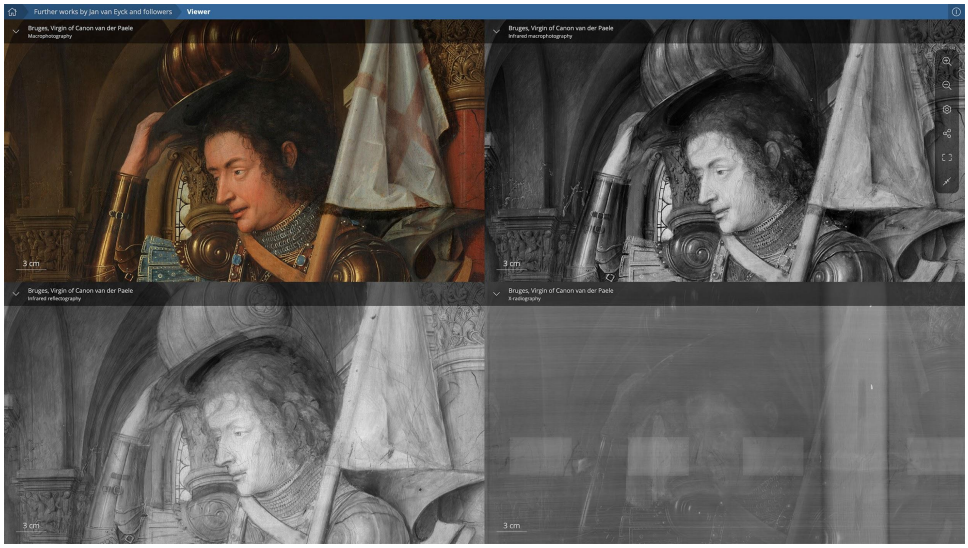

Figure 13: Comparison of a detail of the Virgin of Canon Van der Paele in four image modalities simultaneously.

4. CONCLUSION

The VERONA project followed the principle of standardised practice for documenting artworks dispersed in different locations. Working on site in the various museums, the imagery team from the Royal Institute for Cultural Heritage in Brussels carried out macrophotography, infrared reflectography and X-radiography on Jan van Eyck's paintings using the same equipment and the same protocol. The research value of the data is enhanced by the inclusion of different types of imagery, which reveals what lies hidden beyond the painted surface and gives unparalleled access to Van Eyck's working processes. Furthermore, VERONA also photographs the paintings as three-dimensional objects, which helps researchers understand their original function and manner of use.

Thanks to a collaboration with the Closer to Van Eyck project, all this documentation is available for research and educational purposes on http://closertovaneyck.kikirpa.be. This web portal was initially designed to focus on the Ghent Altarpiece conservation and research project, but since 2017, the has included all imagery from the VERONA project. For

the first time, Van Eyck researchers are able to study the differences and similarities in the artist's technique and style on the basis of the same comparative material. The approach of the website is not to provide interpretations of the images, which can be subjective, but to offer the raw data to every scholar, student, teacher or amateur for their own independent research. They are then free to form their own opinions on the creative process of Jan van Eyck and the attribution of debated works.

The project is acknowledged both nationally and internationally, not only because it focuses on the fifteenth century pioneer of Flemish painting, Jan van Eyck, but mainly because research on his oeuvre and scientific imagery - until recently only available to a privileged group of scientists and restorers - is now released in open access, offering a unique tool for education and research. In 2018 the Closer to Van Eyck website received a Belgian E-gov-Award for usability[13] and in 2019 the VERONA project was given a European heritage award in the research category.[14] From feedback we learn that the website is frequently used for education in Art History and Conservation, but also in Scientific Photography and iComputer Sciences. Apart from education the website is used as a research tool by scholars in the museum sector. Finally, the project is opening channels of communication between the different curators and conservators of the paintings and other scholars. It brings three disciplines together: art history, science, and conservation. It also helps students, who can easily share the website and specific comparisons in the viewer via social media.

Until recently the Closer to Van Eyck website drew about 6000 visitors each month with peaks of up to 30.000 visitors a month when new imagery was launched. Recently, however, due to the 2020 Van Eyck exhibition in Ghent (Museum of Fine Arts) and the Corona crisis lockdown, the website has received an increasing number of visitors, up to 62000 visitors in March 2020. Remarkably, visitors spend an average of 15 minutes exploring the site, which is relatively long for a website. For comparison, the average museum visitor stands in front of an original artwork for 15 to 30 seconds. This confirms that the website is being used as a tool for research and education, a new tool that has given the heritage sector a new dimension.

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