

Institution: University of Cambridge		
Unit of Assessment: UoA 32		
Title of case study: New Ways of Seeing: Revealing the materiality of artistic practice in medieval and Renaissance Europe		
Period when the underpinning research was undertaken: 2014-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Spike Bucklow	Reader in Material Culture	1997-present
Donal Cooper	Senior Lecturer	2013-present
Kate Noble	Senior Research Associate	2010-present
Stella Panayotova	Keeper, Manuscripts and Printed Books	2000-2019
Paola Ricciardi	Senior Research Associate	2011-present
Period when the claimed impact occurred: 2016-2020		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact (indicative maximum 100 words)		
<p>Our interdisciplinary research connects art history and heritage science</p> <ul style="list-style-type: none"> - <i>MINIARE</i> project [2012-onwards] - <i>COLOUR</i> exhibition [Fitzwilliam, 2016] - <i>Riddle of the Image</i> book [2015] <p>to educational practice</p> <ul style="list-style-type: none"> - <i>Inspire2020</i> research [2016-onwards] - <i>Inspire2020</i> exhibition [Fitzwilliam, 2019-20] <p>This work challenges assumptions about the making of medieval and Renaissance paintings and manuscripts, increases public understanding of medieval and Renaissance cultures, and stimulates the creativity of children, young people and adults. The <i>COLOUR</i> and <i>Inspire</i> exhibitions reached 133,656 Fitzwilliam visitors.</p> <p>Schools and teachers have changed their practice teaching art and design through their engagement with historic painting methods, achieved via training programmes, displays and digital resources. <i>Inspire</i> created a network of forty schools, enabling our research to support 3,800 primary school pupils to create their own art and inspiring engagement with art history, science, materials, artistic processes and techniques.</p>		
2. Underpinning research (indicative maximum 500 words)		
<p>The multi-stranded investigations of medieval and early Renaissance cultural heritage in History of Art, the Fitzwilliam Museum and the Hamilton Kerr Institute (HKI) constitute a well-established research environment in Cambridge. Researchers integrate methodologies from technical analysis and heritage science with art history and digital humanities to discover more about the making of art. The findings from these explorations have in turn informed practitioner-led action research, inspiring a multi-disciplinary team to explore various methodologies and approaches to engaging audiences with medieval and Renaissance art.</p> <p>Bucklow, recognised for his research on the technical examinations of paintings, analyses the materials and methods that lie behind the production of medieval paintings, throwing new light</p>		

on art production techniques that have been obscure for centuries. *The Riddle of the Image* [R1] won the ACE/Mercers' International Book Award in 2015. The *MINIARE* (Manuscript Illumination: Non-Invasive Analysis Research and Expertise) research project (2012 onwards) extends the Fitzwilliam and HKI's expertise in technical art history to study illuminated manuscripts [R2-R3]. The project, led by Panayotova, examines statistically significant groups of manuscripts, bringing together scientific analysis with textual, historical, and stylistic scholarship. It identifies new pigments, corrects misconceptions about medieval painting, and reveals the transfer of materials and expertise across manuscripts, panel painting, stained glass and textiles. The *COLOUR* exhibition (July 2016-January 2017) shared the discoveries arising from *MINIARE* with wide audiences, reconstructing creative processes, from artists' original ideas, through their choice of materials and techniques, to the finished works [E8; E9]. Findings of physicists, chemists and mathematicians were embedded within a comprehensive interpretation of the artistic, economic and intellectual realities of manuscript production.

Inspire (2019-onwards) [R5], a multi-disciplinary, practitioner-led research project, explores how object-based research into making and creativity and responsive public programming can support the development of knowledge, skills and confidence in art and design for teachers and primary age school children. Focused on a Renaissance panel painting of Cupid and Psyche by Jacopo del Sellaio at the Fitzwilliam, it is crucially informed by these investigations into the making of art objects. The project is also underpinned by Noble's research on visual literacy [R6]. Noble's work examines the social origins of cognition to consider how looking at, talking about and making art is tied to the development of higher-order thinking skills. Thus, the project combines expertise in technical art history and art education.

Teachers and children were stimulated in their own art-making by understanding Renaissance materials and techniques. The collaborative and audience-led ethos of the *Inspire* project enabled academic staff to test new approaches to commissioning, interpreting and displaying object-based research; the project developed in unexpected ways as the result of an iterative process, guided by an action research methodology. Sellaio's painting had not previously been the focus of detailed technical research. Responding to the interest of schools and teachers, Ricciardi drew upon the non-invasive analytical protocols pioneered in the *MINIARE* project to research the pigments within the painting. HKI conservators carried out X-rays and Infrared (IR) Reflectography scans, to understand better the panel structure and revealing revisions in the under-drawing. The findings of this technical analysis stimulated a further collaboration with Cooper, whose research focuses on Italian Renaissance art. His close examination of the newly cleaned painting uncovered new clues linking the panel directly to the Medici family, Renaissance Florence's leading patrons of art [R4]. These research findings were then incorporated within the project exhibition and public programme.

3. References to the research (indicative maximum of six references)

R1, R2, R3, R5 and R6 were all judged as at least meeting the 2* minimum threshold as part of the Unit's rigorous review processes completed in preparation for REF 2021, which included external assessors.

R1: Bucklow, S. (2014). *The Riddle of the Image: The secret science of medieval art*, Reaktion Books, ISBN 9781780232942.

R2: Panayotova, S. (2016). *Colour: The art and science of illuminated manuscripts*, Harvey Miller Publishers, ISBN 9781909400566.

R3: Ricciardi, P. and C. S. Patterson (2020). 'Science of the Book: Analytical methods for the study of illuminated manuscripts', in S. Panayotova (ed.), *The Art & Science of Illuminated Manuscripts: A handbook*, Harvey Miller Publishers, pp. 51-87, ISBN 978-912554591.

R4: Cooper, D. and K. Noble (2020). 'Schoolchildren, science and smartphones shine new light on a Florentine masterpiece', *Apollo*, 6 April 2020 (published online only and not assigned to an issue) [\[Link\]](#) [15 December 2020].

R5: Noble, K. (2019). *Inspire2020*, Fitzwilliam Museum.

<https://www.fitzmuseum.cam.ac.uk/inspire2020> [15 December 2020]

R6: Noble, K. (2016). 'Picture thinking: The development of visual literacy in young children', *Engage*, 38 (Special issue on visual literacy), pp. 40-51.

4. Details of the impact (indicative maximum 750 words)

Impacts on understanding, learning and participation



Prior to the *COLOUR* exhibition [E8], illuminated manuscripts were widely considered a marginal, medieval art form, produced by monks, very distant from the celebrated Renaissance panels and frescoes created by professional artists. The exhibition had a major effect in challenging this conventional public wisdom, and press articles describe the impact of these messages: '*It blows apart clichés about illuminated books and the medieval world that created them*' (Jonathan Jones, Review, *The Guardian* 28 July 2016) [E2].

Fig. 1. Pigments on display alongside manuscripts in *COLOUR* exhibition

COLOUR stimulated interest in the *MINIARE* research project, with 100,246 visitors to the exhibition and over 3,420 people taking part in the public engagement programme [E9]. Feedback from participants in these events demonstrated that the exhibition had provoked public interest in the research and enhanced their understanding of *MINIARE*'s key research themes: materials, processes and techniques. Visitors also noted how the exhibition encouraged them to look closely at manuscripts and think about them differently: '*First of all congratulations on a fantastic exhibition! I have been to see it several times now and am continually excited by each new thing I see and revelation I glean. As a craftsman with a special interest in re-making 15th C artefacts I am continually amazed at the craftsmanship of the artists shown in the exhibition*' (comment in visitor book) [E1].

In Autumn 2019, over 68 teachers, and 3,800 children from forty schools studied and made art in response to Sellaio's painting of Cupid and Psyche as part of the *Inspire* project, training teachers to support children to look at and make art [E3]. Many schools spent weeks looking at and talking about the painting: '*The Cupid and Psyche painting was something most of our children would have never seen or heard of but now, if you ask any of the children in Year 1 and Year 2 at my school, they can tell you the entire story from start to finish!*' [E3]. The project encouraged participating schools to explore interdisciplinary links between art and science. One school studied the writings of Renaissance artist Cennino Cennini to find out about how egg tempera paint was made; another invited a local scientist to help them to carry out experiments on the effects of colour and light on plants. The resulting exhibition (December 2019-March 2020) had 33,410 visitors and further impacted on teacher, student and public knowledge and understanding of Renaissance techniques and materials, as members of the public, University staff and visiting academics reported how seeing the children's responses and ideas within the exhibition also made them see the painting differently. A university professor told the project team, '*as an Italian Renaissance person who must have seen that painting hundreds of times, I looked at it through entirely new eyes*' [E3].

The specially commissioned technical and art historical analysis on Cupid and Psyche by Cooper, Ricciardi and conservators from HKI was used for a display within the exhibition and for a new AR App (see fig. 2 below) designed in partnership with app developer Maggioli Musei and the University of Florence. As visitors discovered, the 'Ways of Seeing' app locks on to the picture when held in front of it and a navigation bar at the bottom of the screen offers IR, X-Ray and pigment analysis overlay modes to allow the viewer to uncover hidden layers of meaning.

User testing was cut short after the closure of the exhibition due to COVID-19, but initial feedback was very positive with one enthusiastic visitor remarking on how the app enabled the secrets of the painting to be uncovered, *'What would he [del Sellaio] think? All those secrets! He spent so long hiding all his mistakes and now we can see them all!'* [E3].

For older students and their teachers, the University of Cambridge Museums' *Looking at collections* resource once again combines Ricciardi's research on Cupid and Psyche and Noble's on visual literacy to explore different ways of researching objects [E4]. Feedback reveals that the resource now supports the development of student research skills as part of the 'A' level curriculum, *'a great way to get students looking as well as layering more information that's not too heavy! The resources worked really well, so many thanks! More please??'* [E10]. The resource also raises awareness of potential career routes for those with an interest in both art and science. The site has had over 3,000 unique views to date and we are still developing and launching new content [E4].



Fig. 2. 'Ways of Seeing' app in use in *Inspire* exhibition



Fig. 3. Young artists and teacher giving a public talk in *Inspire* exhibition

Impacts on creativity, culture and society

Our research on the making and meaning of medieval and Renaissance cultural heritage has inspired a range of different audiences to create their own artwork through the public programmes attached to the Fitzwilliam exhibitions. These audiences included children, young people and adults who might not have otherwise visited the museum, such as people with a dementia diagnosis and their care partners, people accessing support for mental ill-health, blind and partially sighted visitors (who made use of a rich audio guide), adults with learning disabilities, and people who are homeless or vulnerably housed. A young person who participated in one of our *COLOUR* workshops commented that they *'loved learning about how to paint (with and how) pigments were created. [...] This was a fantastic opportunity [...] and would be interested in doing a Gold Arts Award,'* evidencing how their creativity has been stimulated by research that bridges art and science [E9].

Inspire built on the success of these colour- and pigment-related workshops and shared some of the art activities developed for the *COLOUR* exhibition with teachers. The project had a significant impact on children's creativity with over 3,800 children studying the painting and making their own artwork in response to the focus painting [E3]. Drawing on Noble's research, the project gave children the time and space to be creative, to make their own decisions and to follow their ideas, generating new ways of thinking and inspiring new forms of expression. One child (age five) commented, *'I felt just like a real artist!'*; a second child (age nine) described how *'working with the clay was really fun and we felt very proud that we had thought of this idea and followed it through from beginning to end'* [E3].

Impacts on practitioners and delivery of professional services

The *Inspire* project worked on-the-ground to support teachers to develop their knowledge, skills and confidence in teaching art and design and working with museum collections. Artist partner AccessArt's *Inspire* blog posts about the project have been shared widely with their creative community of over 14,000 artists, teachers and facilitators [E7]. In a follow-up survey at the end

of the project in Spring 2020, this impact was still being reported: *'I am now able to use paintings as a stimulus ... I feel more inspired to do creative things in schools after seeing the huge impact it made'* [E3]. Feedback from children also demonstrates that the project changed art teaching in participating schools: *'Normally in art we all have to do the same thing. I really enjoyed having the chance to experiment and choose what I wanted to do and how I wanted to do it'* [E3]. Thirty-three teachers also took part in additional training sessions linked to the exhibition, and visiting teachers and students took photos and made notes to take ideas back with them to the classroom and studio, further extending the impact of the project [E3].

Building on the clear need for additional resources for teachers, during Summer 2020 Bucklow, Noble and Ricciardi developed a prototype 'Ways of Seeing' teaching resource for primary schools, designed to support the development of transdisciplinary analytical skills essential to both artistic and scientific investigation. Teachers who took part in the pilot session were excited by the teaching potential of the AR app: *'Fantastic resource as it tells the story within the story and makes the artist and his decisions appear more real'* [E3]. They also said that they had found the training day very beneficial, boosting their confidence and motivation and inspiring them to improve their art and science teaching and to make links with other areas of the curriculum [E3].

Impact on public policy

Inspire aimed to raise the profile of art and design locally and nationally at a time when the subject is under threat, due to a reduction in subject specialist training opportunities for both trainee and in-service teachers. A feature on BBC Look East described how *Inspire* made art accessible to schools and children across the county and an interview with a head teacher from a Fenland school described how the project had *'opened up an amazing opportunity for the children'* in her school where they had not been teaching much art [E5]. In February 2020 *Inspire* was presented as evidence to the national All-Party Parliamentary Group for Art, Craft and Design in Education, demonstrating the potential of artist, museum and university partnerships to support teacher development [E6]. As a result, Noble has been asked to join the NSEAD (National Society for Art and Design Education) council and is part of a steering group writing a white paper on art and design education, demonstrating how museum based research can inform policy debate in this area.

5. Sources to corroborate the impact (indicative maximum of 10 references)

E1: Visitor comments from *COLOUR* exhibition and linked programming/activities.

E2: Review: Jones, J. 'Colour: The art and science of illuminated manuscripts review – a rainbow of agony and ecstasy.' 28 July 2016. *The Guardian*. [\[Link\]](#)

E3: *Inspire: A celebration of children's art in response to Jacopo del Sellaio's Cupid and Psyche. Project evaluation and exhibition report.* 2019. The Fitzwilliam Museum. [\[Link\]](#)

E4: (i) Online resource: *Looking at collections: A how to guide for researchers.* 2019. University of Cambridge Museums. [\[Link\]](#)

(ii) Website analytics: *Looking at collections*, 1 Jan. 2019-16 Dec. 2020.

E5: Transcription of interview about *Inspire* on BBC Look East. Audio file available on request.

E6: (i) Testimonial: Secretary to the All-Party Parliamentary Group for Art, Craft and Design in Education. 2020.

(ii) Blog post: Morrison, H., Noble, K. and Willis, S. *Inspire: A celebration of children's art.* 31 Jan. 2020. University of Cambridge Museums. [\[Link\]](#)

E7: (i) Blog post: Ceccarelli, S. *Cupid and Psyche: how a fifteenth-century Renaissance panel became the most loved painting in Cambridgeshire.* AccessArt. [\[Link\]](#)

(ii) Overview of AccessArt and its membership. [\[Link\]](#)

E8: Website: *COLOUR: The art and science of illuminated manuscripts.* 2016. Fitzwilliam Museum. [\[Link\]](#)

E9: *COLOUR* exhibition report. 2017.

E10: Testimonial: Head of A-Level History of Art, Hills Road Sixth Form College. 2018.