Debunking the Original? Technology, Public Perception, and
Tim's Vermeer
Dr. Julie Reiss

How do we assess connoisseurship in the digital age? Access to digital images of art works has helped widen the audience for art, although not necessarily for the original objects. Individuals post their own photos of canonical works of art on Facebook, Instagram, Twitter, Pinterest, and Flickr, and regardless of their quality, these images seem to pass unchallenged into circulation. Information and opinions about art are exchanged on user-generated forums that are neither peer-reviewed nor engage conventionally trained art experts. Online participation combined with a general Do It Yourself ethos can challenge authoritative expertise and learned consensus on issues of taste-making and value, bypassing the trained connoisseur in the evaluation of art. The potential impact of these trends is the subject of Payal Arora and Filip Vermeylen's recent scholarship in which they investigate the evolving role of hierarchies of expertise and training on construction of knowledge about art.[i] While participation on social media platforms may be limited to a relatively narrow segment of the population when it comes to art, there are many more voices weighing in, and they are increasing in number even as they appear to lack a conventional knowledge base.

This trend was recently demonstrated by a documentary film released in 2014, titled *Tim's Vermeer*, and by the critical and public reception to it. Produced

1

by the magician duo Penn and Teller, the film follows the attempt of Texas-based inventor Tim Jenison to prove that Dutch master Johannes Vermeer used an optical device, a small round mirror on a stick, not unlike a dentist's mirror, to achieve his sharply realistic style. Jenison calls the device, which he designed and built, a comparator. It reflects small sections of a scene and the artist need only match the tones of the paint to what is seen in the mirror to transcribe the scene with a high degree of verisimilitude. Jenison carries out his experiment by replicating *The Music Lesson*, a painting by Vermeer in the Royal Collection at Buckingham Palace. Jenison works from a poster of the painting to recreate the original room and its furnishings down to the last detail, a task that takes him six months and is a tour de force of technical acumen. He then proceeds over the course of 130 days to painstakingly paint directly from the scene using his device. Rather than applying his discoveries to what is already known about Vermeer's life or his time, which we might expect in a typical art documentary, the film begins and ends with Jenison's process, stopping short of history or interpretation. The twist? Jenison is not an artist and has never before painted a picture, two facts he states in the film's opening moments. He also, which goes without mention, has no training either as a connoisseur or as an art historian. Jenison is, however, a very successful inventor, inducted into the Inventors' Hall of Fame in Houston in 2005. The founder of a video company called NewTek, he became financially successful via his invention

of the Video Toaster, a low cost combination of hardware and software which gave access to high quality video editing and special effects to a wider audience. Essentially in the film he tries to make Vermeer's painting accessible as well by demonstrating how you could make one yourself if you just had the right device. His outcome is similar to that associated with digital means of production, where results are repeatable, routine and predictable.

Jenison carries out his experiment independent of any institution or academy, with technology he designed himself, and despite his considerable professional stature, he comes across as a low-key guy with a personal obsession, working out of a rented warehouse, a persona that has clearly had enormous public appeal in the United States. He states at the film's outset that choosing *The Music Lesson* from Vermeer's oeuvre was a practical decision, citing its replicable compositional elements, but he also makes a point of stating how difficult it was to gain access to the painting so he could study it first-hand. In a scene with Penn and Teller outside of Buckingham Palace, all three express their frustration at being considered too unimportant to gain the entry they requested. By stressing his outsider status while following his own hunches about Vermeer, Jenison implicitly challenges the authority of connoisseurs and art historians. As some of the film's detractors would point out, in choosing a painting from a private collection, he also makes direct comparisons between his finished experiment and the original

Vermeer impossible, since we never actually see the Vermeer painting in the film, and only catch fleeting glances at the poster from which Jenison is working. [Fig. 5] Comparing Jenison's painting to a reproduction, even to the poster, would not reveal very much in any case, as the myriad available reproductions in print and online vary greatly in color and tone. The perceived success of Jenison's experiment would arguably be partly due to the public's lack of familiarity with the original.

Jenison has a moment in the film when he expresses reverence for the original painting after he is ultimately granted a thirty-minute visit with it at the palace. But even though he is clearly moved by the experience, he is undeterred in his intention to, in his words, "paint a Vermeer." Of all the claims made in the film, this one is the most challenging to the time-honored status of the great artist. Jenison seems intent on proving that creating a Vermeer takes no special artistry or talent, and by extension, that Vermeer was no more than a patient man with the right tool, reducing the artist to, in Jenison's words, "a technical geek."[ii] Following Jenison's line of thinking, we would have to conclude that Vermeer's sole achievement was to produce an exact transcription of a scene, nothing more.

Certainly we can consider the possibility that Vermeer may have used whatever technology he had at his disposal, and theories regarding his possible use of a *camera obscura*, for example, have already been proposed, although there is

disagreement among scholars regarding the extent to which he might have used it.[iii]

The film includes scenes with David Hockney and art historian Phillip Steadman,

who have both published controversial studies of the use of the *camera obscura*

and other optical aids by the Old Masters, with Steadman writing specifically on

Vermeer. But their support for Jenison's hypothesis may have dubious value to

those who are familiar with the controversies, which go unmentioned in the film.

Hockney and Steadman are presented simply as art authorities.

One would expect the film to spur debate on the use of optical aids by the

masters among experts on Netherlandish art, but many other voices have

participated. *Tim's Vermeer* was reviewed extensively both in print and online by

supporters and detractors, and also engendered a lively conversation on social

media which is still going on. The range of voices includes art experts, artists, art

historians, film critics, art critics and for want of a better term, the general public.

By analyzing this conversation, I will demonstrate that *Tim's Vermeer*

simultaneously is a product of and resists the digital age, and that the critical

reception to it can be used as a barometer for understanding the status of art

connoisseurship in the wider field.

Tim's Vermeer might have flown under the radar like many other art films,

but in fact it did not, likely due to three factors: its high profile producers, Penn

and Teller; the widespread popularity of Vermeer's paintings; and the film's

irreverent stance. The combination proved a winner. The film enjoyed commercial

success and popularity at the worldwide box office. It was the eighth highest

grossing documentary released in the United States in 2014, and is among the top

100 highest grossing documentaries of all time, and the only art documentary in

the top 100 list. To date *Tim's Vermeer* has grossed over $3 million worldwide,

which is rare for any documentary, let alone an art documentary.[iv] In addition to its

success in the theaters, the film was shortlisted for an Oscar, nominated for a

BAFTA award and won the Toronto Film Critics Association award. It has its own

Wikipedia page, where the reader is informed that *Tim's Vermeer* has been met

with positive reviews from critics. On *Rotten Tomatoes*, the film holds a rating of

89% based on 107 reviews, with the consensus reading: "Entertaining and

profound in equal measure, *Tim's Vermeer* uses its seemingly esoteric subject to

pose fascinating questions about art and obsession".[8]

The questions about art that are raised by the film are not directly addressed

within it, but are discussed in the more developed critical responses. Jenison was

alternately hailed as a villain and a hero. Considering this varied response, we

might ask: on what grounds did the film find favor with its supporters, and on what

grounds was it critiqued by its detractors? Did the responses of art historians and

connoisseurs markedly differ from those of film critics and the viewing public?

How is the response complicated by the medium of the art documentary, which is

directed at a more general audience than say, an art book? As we will see, the suggestion that Vermeer's uncannily realistic paintings can be explained solely by his use of an optical device was soundly rejected by art historians and some film critics, but for the most part was accepted without question by the general public, at least those who commented on the film on social media platforms such as Twitter and Instagram.

Reviews of the film fell along several different lines. Some commentators, including artists, found holes in Jenison's process and posed questions as to how changes in daylight could be accounted for if an artist were merely transcribing exactly what they saw by matching tones in a mirror over time. Others found the basic premise of the film so offensive that they never got around to raising such technical questions. Quite a number of critics saw the film as an attempt to reduce art to a trick and were suspicious that with Penn and Teller behind it, there must be some sleight of hand at play. Several reviewers derisively describe Jenison's process as a kind of paint by numbers, seeing no commonality whatsoever between Jenison and Vermeer. [v] On the flip side, several film critics gleefully cheered *Tim's Vermeer* for seeming to take art history down off its high horse, which is rather disconcerting as these were among the positive reviews. For example, a headline for the *Boston Globe* refers to the film as "A debunkers' delight."[vi] Stephen Salto, reviewing the film for Moveablefeast.com, boldly proclaims that "An amateur

upends art history,"[vii] a reference to Jenison's lack of artistic and art historical training and his apparent success in proving his theory. These reactions demonstrate a schism in contemporary culture and a general perception that art historians resisted. For example, Stephanie Zacharek, principal film critic for *The Village Voice*, finds that directors Penn and Teller "think they're mischieviously raining on our parades when, really, they're not telling us much at all."[viii] Art historian Marsely Kehoe, reviewing the film for the *Historians of Netherlandish Art,* writes along similar lines, pointing out the mischaracterization of art historians in the film, and objecting to the stance that [Penn, Teller and Jenison] are "exposing a great secret…and a big challenge to art historians, when it's not necessarily the case."[ix]

Art critic Jonathan Jones, writing for London's *The Guardian*, was particularly dismissive and indicates a schism in the other direction when he calls *Tim's Vermeer* "an art film for philistines," and states that it "is a film about a man who totally fails to paint a Vermeer…. It's a film about a man attempting to replicate a poster." He refers to Jenison's finished painting as "a stillborn simulacrum"[x] and finds that "the takeaway from the movie is that of a modern-day man trying to one-up a historical figure."[xi] A similar reaction was expressed in milder terms by art historian Sally Whitman Coleman, who reviewed the film for art minute.com. Coleman writes that Vermeer "is not given enough credit for his

artistic accomplishments….the essence and the aura of the image cannot be reproduced." She states unequivocally "the only one who can paint a Vermeer is Vermeer."[xii] Skepticism was not limited to art historians. Peter Simek, reviewing the film for DMagazine.com, states that "The big problem with *Tim's Vermeer*…is that neither the filmmakers nor its subject seem to know a lick about art."[xiii] Unfortunately this appears to have been part of the film's appeal.

Not everyone commented on the success or failure of Jenison's experiment, focusing instead on his process. A considerable part of the film is spent on Jenison's recreation of the room and furnishings. He is clearly a talented "technologist," as he refers to himself, and critics were duly impressed to see him use high tech means to realize his low-tech project. Film critic Peter Rainer states that "However these great paintings came about, they exist apart from the method used to create them, and for all time…What "Tim's Vermeer" is really about is two geniuses, of very different sorts, communing across time and space."[xiv]

Bendor Grosvenor, a British art dealer and historian of Old Master paintings, reviewed the film for *Art History News* and came to the opposite conclusion regarding Jenison's genius, seeing him as nowhere near the same league as Vermeer. Grosvenor states that he does not accept earlier *camera obscura* theories about Vermeer, and rejects Jenison's comparator theory as well, claiming that the skills it took to paint as well as Vermeer have disappeared so "we try and fool

ourselves that in fact not even great artists like Vermeer could do it either, and that he was just cheating. It makes us…feel better to think that."[xv] This conclusion is in fact a logical takeaway from the film. In one scene Jenison and Penn consult the expertise of a perceptual psychologist who authoritatively claims that no human being, no matter how exceptional, could possess the superior optical capabilities to paint as realistically as Vermeer with a naked eye. Once they appear to have credibly established that Vermeer could not possibly have done it by skill, talent, hand and eye alone, the door is open to Jenison's comparator theory, and many viewers would accept this at face value.

On the other extreme, we find resentment in the critical response towards the idea that Vermeer's painting is any more special than Jenison's. Film blogger Rick Ouelette finds that the film challenges the idea of the aura of a great work of art, invoking something of the spirit of Walter Benjamin when he says: "That leads to the final unaddressed question [within *Tim's Vermeer*]. Is it just the age-old belief in a great artist's aura of ineffable genius that keeps the real Vermeer's in the hands of zillionaires and museums that charge you a twenty to get in, while Jenison's doppelgänger is only fit to hang on his bedroom wall?" [xvi] This hostility to the notion of artistic greatness is part of the zeitgeist and factors into the film's popularity.

If established film and art critics, even those who liked the movie, found plenty to critique, the conversation at #tim'svermeer on twitter has been almost unanimously accepting and enthusiastic, with adjectives such as astounding, incredible, fascinating, stunning, awesome and inspirational in full evidence. Many members of the virtual audience used the word genius to describe Jenison – not Vermeer. They expressed delight in simply watching the process of the painting being painted. As one person tweeted, "Have you ever wondered how #Vermeer painted so beautifully? No, me neither. But this is a great watch."[xvii] And on Instagram: "Finally watched **Tim's Vermeer**. Such an amazing documentary! It made me feel like I could paint a Vermeer lol so inspiring! #TimsVermeer #Vermeer #painting ..."[xviii]

Unbothered by the suggestion that Vermeer may have used optical devices, Twitter and Instagram users asked why anyone would insist on a distinction between art and technology, and loved how the two were complementary in the film. One twitter user questioned whether art historians were afraid of science, in reference to some of the negative reviews they had seen of the film. One of the few dissenting voices on twitter complained that they "felt betrayed by Vermeer and [were] horrified."[xix] The largely favorable response on social media indicates that *Tim's Vermeer* got viewers excited about art. The film helped invigorate and perpetuate an interest in Vermeer's work and in the creative process in general,

which should be seen as positive outcomes. Whatever relation it bears to Vermeer, Jenison's process proved to be so alluring that on Instagram one can now find photos of original art made by people using their own improvised versions of the comparator device. They were perhaps inspired by the personal satisfaction Jenison derived from his efforts, in evidence when we see him standing proudly with his painting at the end of the film.

We can compare *Tim's Vermeer* to another recent film that revisits a popular Dutch master. In 2016, J. Walter Thompson Amsterdam produced a 23-minute film titled *The Next Rembrandt*, which documents a team of computer experts who create an algorithm based on the spacing of the facial features on all of Rembrandt's portraits, and using this algorithm as a common denominator, generate a "new" Rembrandt, a computer-produced pastiche portrait. The film ends with the "painting" framed and hanging on the wall, and the producers proudly say they themselves would be fooled by it if they came upon it. *The Next Rembrandt* is truly a product of the digital age. By contrast, *Tim's Vermeer* straddles two worlds. Jenison's project was driven by his desire to connect back to the original means by which *The Music Lesson* was created, and he even grinds his own pigments as Vermeer would have done. However, despite this zeal for authenticity, *Tim's Vermeer* is carried out in a vacuum, and seems to have resonated so strongly with

the viewing public at least in part because it plays into the tension between those who are versed in art history and connoisseurship and those who are not.

As art historians and connoisseurs, as specialists and expert art advisors, do we dismiss the various grounds by which the film was praised as so much noise? While that may be tempting, I suggest that we pay attention. Judging by the enthusiastic response, large numbers of people readily accepted Jenison's conclusions about Vermeer's process, and his claim that he succeeded in making a painting just like Vermeer's – in fact that he made a Vermeer. Search the reviews and you will find no demand to see the original painting for comparison. The original is not the standard against which viewers measured Jenison's results. The standard is the room he built and how realistically he paints it, irrespective of compositional choices that Vermeer may have made originally. Such nuances are threatened with erasure. Beyond the domain of film, *Tim's Vermeer* has become part of the vast digital archive on Vermeer. Search Google for images of "Vermeer's *The Music Lesson*" and you will now find nearly as many scenes from *Tim's Vermeer* as images of the original painting, if not more, leading to a sense that Jenison's result is what Jean Baudrillard might refer to as a copy without an original.

In conclusion, the conversation around the film demands our attention if we are to maintain any relevance to today's diverse and participatory audience for art.

While responses to *Tim's Vermeer* on Twitter are not necessarily going to impact the art market, they do provide insights into the current climate and indicate the need for a broader dissemination of knowledge and platforms for informed discussion. As custodians of culture, it is vital that we participate in dialogues on forums that will engage with diverse audiences, continuing to share ideas and contributing to shaping public perceptions about art, embracing innovation while maintaining integrity. Join me for a discussion at #connoisseurship #tim'svermeer.

.

Thank you.

[i] Payal Arora and Filip Vermeylen, "The End of the Art Connoisseur? Experts and Knowledge Production in the Visual Arts in the Digital Age." *Information, Communication and Society*, Vol. 16, No. 2, March 2013, pp. 194-214.

[ii] Conversation with the author, October 1, 2015.

[iii] See, for example, Philip Steadman, *Vermeer's Camera: Uncovering the Truth behind the Masterpieces*. Oxford: Oxford Univ. Press, 2002.

[iv] Farley Ziegler to author, April 9, 2016.

[v] Matt Brunson, Clclt.com/charlotte/tims-vermeer-paint-by-numbers Accessed 2/11/16.

[vi] Ty Burr, "Tim's Vermeer is a Debunker's Delight," *The Boston Globe*, Feb. 20, 2014. Accessed 11/1/15.

[vii] Stephen Salto, "An Amateur Upends Art History in the Artful 'Tim's Vermeer," Moveablefeast.com December 6, 2013. Accessed 11/1/15.

[viii] Stephanie Zacherek, "Making Vermeer's Genius Fathomable in Tim's Vermeer," *The Village Voice*, December 4, 2013. Accessed 3/1/16.

[ix] Marsely Kehoe, "Tim's Vermeer," *Historians of Netherlandish Art,*
*w*ww.hnanews.org/hna/exhibitions/reviews/tims-vermeer.html. Accessed 4/1/16.

[x] Jonathan Jones, DIY Vermeer Documentary Utterly Misses the Point about Old Masters," *The Guardian*, January 28, 2014. Accessed 3/15/16

[xii] Sally Whitman Coleman, "Make the Time: "Tim's Vermeer," www.the-art-minute.com, 2013. Accessed 3/20/16.

[xiii] Peter Simek, "Why Tim's Vermeer Fails to Illuminate the Work of the Dutch Master," www.dmagazine.com, February 28, 2014. Accessed 3/15/16.

[xiv] Peter Rainer, "Tim's Vermeer is a Fascinating Story about the Artistic Process," www.csmonitor.com/The-Culture/Movies/2013 Accessed 4/1/16.

[xv] Bender Grosvenor, "Tim's not-Vermeer," *Art History News*, January 29, 2014. www.arthistorynews.com/articles/2614_Tims_notVermeer. Accessed 4/1/16.

[xvi] Rick Ouellette, "Art and the Movies; The Shadow of Perfection," Curnblog.com/2014/04/29/art-movies-shadow-perfection Accessed 4/6/16.

[xvii] Ben Trow, 3/25/15 #Timsvermeer

[xviii] http://tofo.me/tag/timsvermeer. Accessed 4/29/16.

[xix] Stephen Blawking, 1/31/15 #Timsvermeer

Authentically Digital? Considering Art Knowledge in a Technological Age

Dr. Joel McKim, Director of the Vasari Research Centre for Art and Technology

Connoisseurship, it must be said, is not a term that surfaces often in contemporary discussions of digital culture. The concept possesses connotations of aesthetic elitism and brings to mind an unfashionably Kantian "judgement of taste." Digital initiatives in the arts generally position themselves on the side of democratizing both taste and access and thus, implicitly or explicitly, against the idea of the connoisseur. Reconsidering terms or concepts that have become unfashionable, however, can be a very productive and revealing exercise and I was intrigued by Elizabeth's provocation to revisit the notion of connoisseurship in the digital age. As the current director of the Vasari Research Centre for Art and Technology – a Birkbeck University research centre that has, since the late 1980s, pioneered the use of digital technologies within the study and production of the arts – this panel provides an opportunity to reflect upon some of the perhaps unquestioned assumptions of our research. I am very disappointed I can't be there in person to join the debate, but have had to return to Canada unexpectedly for a family emergency. I thank Elizabeth for reading this short contribution in my absence.

I suggest that connoisseurship is a term that has lost currency in the digital age, yet the idea that digital technologies, and the internet in particular, have brought about a crisis in the production of "expert knowledge" is actually extremely prevalent. In the field of journalism, for example, this situation is often characterized as an editorial crisis, in which a proliferation of often unpaid, "amateur," "freelance" or "open source" reporting has led to an abundance of journalistic content, while resources devoted to editing, contextualization and quality control have been greatly diminished. Digital technologies have the general tendency of disrupting hierarchies of knowledge in both productive and problematic ways – more voices have the opportunity to be heard, but this democratization of communication sometimes comes at the expense of the editorial assurances of

the expert. Viewed in this light, a decline in connoisseurship could be the art world's version of a more general crisis of "expert knowledge" being experienced in the digital age.

But before we move too quickly to conclusions, we should pause to acknowledge the fact that the impact of the digital on the contemporary art world is actually not a single phenomenon, but rather many distinct, yet interrelated processes. I suggest that there at least four separate ways that digital technologies are changing the study, curation and reception of art within the museum context, each of which should be considered individually in relation to the question of connoisseurship. Let me name all four, before considering each in turn through a number of examples and projects, some of which have involved the Vasari Centre directly.

1. The process of extending the reach of the museum through digital access
2. The process of augmenting the museum experience through digital technologies
3. The process of using digital technologies as tools within art historical studies
4. The process of acknowledging the emergence of digital art itself

1. The process of extending the reach of the museum through digital access

The digitization of public archives and museum collections has been one of the largest collective cultural projects of the past two decades and has a key priority for a variety of organisations and funding bodies, including the Heritage Lottery Fund, the European Commission and the Arts and Humanities Research Council. Public access initiatives have become almost synonymous with digitization and the quantity of cultural material available online has grown exponentially during the last ten years in particular. The Vasari Centre has certainly played a role in this wider process of digitization and open access. It participated, for example, in the National Inventory Research Project, an initiative led by Professor Francis Ames Lewis from 2005 to 2008 that involved researching, documenting and digitally databasing pre-1900 European paintings in UK public collections. The Art UK online database of 212,000 works of art in UK public collections

evolved out of this earlier venture. This autumn, the Vasari will host a symposium on the theme of Open Cultural Data, which we hope will be an opportunity to step back and reflect upon the rationale, successes and challenges of the last two decades of large scale investment in digitization projects.

While these digitization initiatives are often justified via the rhetoric of public access and democratization of the arts, this does not mean that they necessarily stand opposed to connoisseurship or expert knowledge. Indeed, the increased availability of digitized information often benefits the dedicated art researcher as much as the member of the general public. If we take the example of Tate, an institution that has been particularly committed recently to digitizing its archives and collections (to the extent that the institution's website is sometimes referred to as the Fifth Tate), we see that the improved quantity and quality of online information provides a resource to both the casual viewer and the serious academic or connoisseur. While certainly providing access to the collection for an audience that may not be able to visit the physical galleries, the Fifth Tate also has the objective of being the definitive source of information on specific works in the collection – the description of works are intended to be a resource for external researchers and Tate curators, as well as the general public. Connoisseurship and democratization, at least in this case, do not appear to be contradictory forces.

2. The process of augmenting the museum experience through digital technologies

The digital experience of art clearly not only takes place in a parallel online environment, distinguished from the physical environment of the museum. Digital technologies are ever more present within the space of the museum or gallery itself, in the form of digital consoles and terminals, handheld digital guides and mobile device apps. The physical museum space is overlayed with other forms of digital information. It is part of a wider phenomenon media theorist Lev Manovich refers to as "augmented space." Within this new, information rich museum experience,

the auratic art object becomes part of a network of knowledge that forms around it. The object of study or contemplation becomes one element, a particularly important one, within a wider web of experience in which digital objects interact with physical ones. We look at the painting while selecting our preferred audio track in our headset, while clicking on a link in our mobile app that brings us to a biography of the artist. How this "augmented" informational space of the gallery is impacting the experience of art viewing is something that certainly bears consideration. Perhaps something is lost by more things being added to the encounter between art work and viewer. But in some ways, this has always been the case for the expert art historian or connoisseur, who comes to the art object, already equipped with an abundance of information. Now some of this available knowledge, previously confined to the realm of the expert, is brought into the space of the gallery itself and made available to all. Whether this process expands the sphere of connoisseurship or puts it at risk is subject to debate.

3. The process of using digital technologies as tools within art historical studies

When we mention the digitization of art, it may call to mind the mass circulation of low resolution images across the web, intended for public consumption. This image, a perceived threat to the integrity and authenticity of the art object, risks occluding the many ways in which digital technologies have been utilized within the museum context, not as a means of mass distribution, but precisely as a tool for art historical scholarship and the development of accurate, expert knowledge. The name of the Vasari Research Centre actually derives from one of the pioneering UK projects in the area of technology enhanced art research. The Vasari project – and acronym for Visual Art System for Archiving and Retrieval of images – was a collaboration between Birkbeck (led by Professor William Vaughn) and the National Gallery, initiated in 1989. At a time when digital cameras had yet to reach the consumer market, the Vasari project development a system for high resolution image capture directly from paintings. The system employed a "colourimetric" lens and

sensor that captured seven colour bands, rather than the usual three colour RGB format. The result was a very precise and colour accurate high resolution image that captured elements like cracks and brushstrokes. The system had huge implications for art preservation and conservation as it produced a precise record of a paintings condition and colour and allowed small changes to be monitored over time. The later addition to the system of infra-red lenses and other technologies permitted the detection of painting elements that were otherwise invisible to the eye. The original Vasari project is but one example of digital technologies used within the context of the art museum, precisely to add to the development of expert knowledge and thus assumedly enhance the sphere of connoisseurship.

4. The process of acknowledging the emergence of digital art itself

While we have thus far discussed the implications of the digitization of traditional art objects, it should also be acknowledged that a growing number of the art works housed in museum collections are in fact digital from the outset. While digital art has until recently operated mostly in parallel with the mainstream gallery and art auction environment – through its own separate institutions, festivals, publications, etc. – these two worlds are increasingly coming together. During the last few months in London alone, there have been three significant digitally-themed art exhibitions in what could be called mainstream art contexts: The Electronic Superhighway exhibition at the Whitechapel, the Big Bang Data exhibition at Somerset House, and the Emotional Supply Chains exhibition at the Zabludowicz Collection. As interactive, web or software based artworks become increasingly prominent elements of contemporary art collections, this introduces entirely new conservation, storage and display challenges. In addition to asking, "what impact digital technologies are having on connoisseurship," we may also need to ask the question, "what does it mean to be a connoisseur of digital art?" Through the work of past directors such as Professor Charlie Gere and Dr. Nick Lambert, the Vasari Centre has been heavily involved in the preservation and collection of

the UK's digital and computer art history. The AHRC funded CACHe Project (Computer Arts, Contexts, Histories etc) which ran from 2002-2006, was a collaboration between Birkbeck and the Victoria and Albert museum, which resulted in the V&A becoming the main repository of digital art in this country.

Conclusion:

The impact of digital technologies on the study, curation and reception of art is both varied and pronounced. I think if the four processes I've tried to highlight in this short contribution tell us anything it is that the emergence of the digital need not place the democratization of art access and the expert knowledge of connoisseurship in an oppositional position. The institutional projects that are promoting the digitization of art and the expansion of digital information about art often have productive effects on both sides of this apparent divide between the public and the professional, or the amateur and the expert. I'm sure that the other panellists will have different perspectives on the questions addressed here and I sincerely regret that I can't be present to participate in a larger conversation on what is an important and complex topic.