Visualising Memory:
A Review of Online Museum Collections
and Digital Surrogates in Russia

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Abstract: This website review considers the impact of the digital in the cultural heritage sector, with particular reference to the online content of two of Russia's foremost museums: the State Hermitage in St. Petersburg and Moscow's Pushkin State Museum of Fine Arts. It discusses the digitisation of the physical sites of these museums and their collections, as published on the institutional websites, and the wider use of these surrogate images on third-party webpages, chiefly Google's Cultural Institute and Pinterest. The review examines the availability, selection and display of object-images online, and how this digital medium mediates our experience of the museums and their contents. It seeks not only to investigate the implications for curating access to historic and artistic collections, but to stimulate a wider discussion on the pages of this journal of the interface between digital technologies and cultural heritage in Russia, Eastern Europe and Eurasia.

Keywords: Russian culture, museums, digitisation, digital surrogates, Google, Pinterest

W e commonly associate the digital world and the opportunities that it affords with the future. Technological innovation and new ways of communicating, sharing information and getting things done have revolutionised our relationships with each other and the wider world, and promise even greater developments in future years. While we are accustomed to looking forward, the digital also gives us cause to re-examine our connections to the past. In the cultural sector, the internet is being harnessed 'in service of the ancient practice of collecting and preserving the past' (Rosenzweig 2011: 125): online exhibitions and the digitisation of museum collections now make objects, things and material culture from across the ages available to all, bringing the past very much into the online present. Nevertheless, a profound tension continues to exist between the desire to usher museums into the virtual age, and the perceived threat of mechanical—in this case digital—reproduction to the 'real' objects housed in museums and galleries, articulated perhaps most famously by Walter Benjamin and Jean Baudrillard, amongst others (Cameron et al. 2007: 4). This review con-

siders the role of digital representations of artefacts within virtual space, and the relationship with their material counterparts in the museum.

From 3-9 June 2014, Moscow's Manezh exhibition centre near Red Square hosted the 16th 'Intermuzei' International Museum Festival, themed around 'The museum in the digital age'. Both the subject and structure of Intermuzei-2014 represented somewhat of a departure for what has traditionally been a conventional annual gathering of the museum world from Russia and beyond. Instead, this year's festival showcased how museums operate in the virtual arena, presenting the achievements of museums in 'digital, virtual, and multimedia format' (Tregulova 2014), and 'over-coming long-standing stereotypes about the closed and conservative world of cultural institutions' (Intermuzei Press Release 2014). The CEO of Russia's State Museum and Exhibition Centre, Zelfira Tregulova, noted that this celebration of all things digital spanned the use of 'new technologies, digital technologies, multimedia technologies, in a variety of different spheres, from digitisation and the creation of databases, a very important matter in Russia, to the use of modern techniques to present material in temporary and permanent exhibitions' (Tregulova 2014).[1]

The gradual engagement of Russia's cultural sector with digital technology, as showcased in the Manezh, has resulted in an ever-increasing number of impressive online collaborations, and in this article I review the websites of two of Russia's most famous cultural institutions—The State Hermitage Museum in St. Petersburg (Hermitage Museum 2014a) and the Pushkin State Museum of Fine Arts in Moscow (Pushkin Museum 2014a), voted the top two sites on Russia's online museum portal, museum.ru.[2] Both museums boast world-renowned collections and buildings, and have developed a sophisticated online presence. Collectively housing some four million holdings, the Hermitage and Pushkin Museums can only ever exhibit a fraction of their collections for obvious logistical reasons, and thus as for other institutions across the world, webpages form a crucial virtual extension to the physical location of both museums. I discuss the content of these websites with regard to the use and display of digital surrogates—physical objects represented in digital format as a result of a digitisation process. This can encompass both the digitisation of collections and the museum buildings themselves. I also examine the ways in which images of these museum collections are represented on third-party sites, chiefly the Google Cultural Institute and Pinterest.[3]

In a recent interview, the Director of St. Petersburg's State Hermitage Museum, Mikhail Piotrovskii, set forth his vision for the function of museums. Quashing the idea that museums are mere 'graveyards' for things, he instead conceptualised the museum as 'memory' - the 'preservation of memory, an education' (Piotrovskii 2014). Extending this metaphor into the rapidly expanding online domain, if the physical site of the museum acts both as a repository and as an active shaping force for historical memory itself, then the digitisation of museums and their collections offers intriguing implications for how we store, access, order and relate

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[1] Tregulova has since been appointed the Director of the Tretyakov Gallery in Moscow.

[2] Since the writing of this review, the Hermitage Museum has launched a new version of its website, http://www.hermitagemuseum.org/, as part of its 250th anniversary. This includes a whole new user interface, and many of the tools discussed in the second half of this review, including user galleries and social media integration. All references and screenshots in this review relate to the older website.

[3] Although digitisation also offers numerous new opportunities for museum staff and curators, this review focuses almost exclusively on the utility of digital surrogates for the external virtual visitor.

to this collective cultural reminiscence. How does the process of digitisation and the online presentation of digital surrogates transform, augment, enrich, mediate or detract from items of cultural heritage and our experiences of viewing them? Can, and should, the digital ever replicate the physical reality of visiting these 'memory' sites? And what happens to the memory that has been actively curated by the museum as it expands beyond bricks and mortar into the digital world?

At a basic level, websites offer a range of augmentations to the experience of visiting a museum in person. Just as physical sites embody numerous meanings to the viewing public—a place for peace and reflection, an opportunity to view cultural treasures, a chance to use the café and toilets, a family day out, a school trip, a long-awaited exhibition opening—the presence of museums in the virtual realm reflects a similar multiplicity of roles and functions. Going online can be the precursor to an actual trip; a chance to scout out in advance possible objects of interest, but it can also be a replacement for the physical visit—a way to avoid the crowds, an opportunity to virtually visit the museum for those abroad or unable to visit in person. For researchers and the interested public alike, the digital opens up possibilities of engaging with objects from the comfort of one's own desk, and in some cases, objects may no longer be accessible in person due to their fragile condition, loaning or off-site housing.

As virtual counterparts to the physical sites located in Moscow and St. Petersburg, the websites of the Pushkin Museum and the Hermitage thus cater to the interests of a range of visitors and 'user communities' (Mintzer et al. 2001: 59). Both have similar underlying structures, containing pages that detail general information about the institutions, temporary exhibitions, events, tickets, news updates, introductions to collections, and so forth. Of interest to this review is how the collections themselves, as individual objects of memory and remembrance (including the architectural ensembles of the museum buildings) are visually presented and made accessible on each site.

The current website of the Pushkin Museum is a relatively new venture for the institution. Created in 2009, and developed by the Russian technology specialists 'EPOS Group', it offers three main access points to viewing digitised collections, and in total numbers some 28,000 webpages (Pushkin Museum email 2014).[4] Replicating a visit to the physical site, virtual users can navigate around schematic floor plans which allow the visitor to see thumbnails of objects on display in particular halls and galleries. Clicking on room one for instance, 'The art of Ancient Egypt', located on the first floor of the main building, will display to the user a description of that room and its theme, along with images of 36 items on display. Each thumbnail can be viewed in zoomable high resolution. Highlights of the collections, arranged by genre, can also be found by navigating within the collections tab, along with a further link to 'Electronic Collections', which appear as a series of self-contained mini-sites (Pushkin Museum 2014b). The museum makes very effective use of these 'satellite-sites', which allow visitors to virtually explore the collections in greater detail.[5]

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[4] The website is partially available in eight languages: Russian, English, German, Spanish, French, Italian, Mandarin and Japanese.
[5] The full schematic of the site system can be found here:
http://www.arts-museum.ru/museum_virtual_space.php (accessed 3 September 2014).

Image 1. Screenshot of the Pushkin Museum's 'Italian Art of VIII-XX centuries' mini-site.
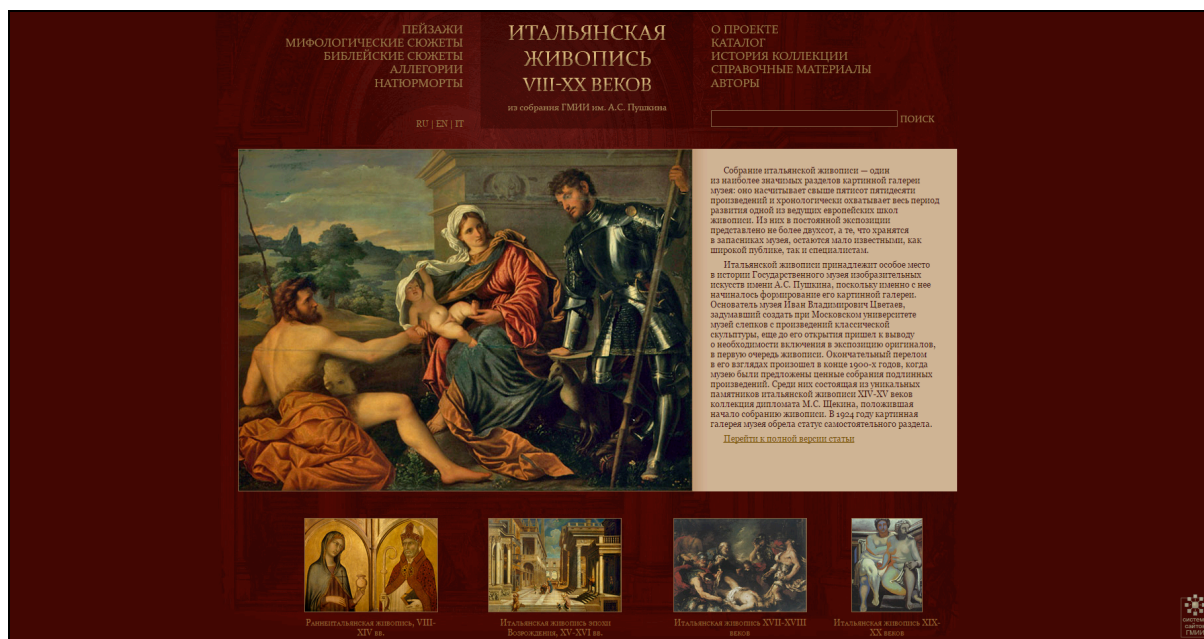

Source: http://www.italian-art.ru/ (accessed 08 December 2014).

These sites include the Gallery of 19th and 20th century European and American Art, with fully navigable floor plans, the Department of Private Collections and an extremely detailed series of electronic collections: 'Coins and Medals', 'Russian Prints' and 'Italian Art of VIII-XX centuries', amongst others.

These mini-sites take the form of online catalogues which deliver to the user a huge amount of visual and textual information. Scholarly articles, video lectures, high-resolution images, bibliographical information and supplementary materials that are not on display in the museum itself are all contained within the stylised pages of these sites, and offer a truly in-depth experience. These pages make for a highly impressive virtual experience, of most value to those with a specific interest in particular named collections or genres of art. The hypothetically unlimited page count of these satellite sites affords far greater visual and textual description than can be found in the museum itself, and in this sense embodies what Rosenzweig describes as 'hypertext', where online exhibits 'allow visitors to explore topics that interest them in much greater depth' than in the original physical site, where space is at a premium and curators seek to limit the amount of textual 'noise' surrounding each object (Rosenzweig 2011: 171). In allowing access to such a detailed level of visual and textual description, the website does however impose certain limitations. Each mini-site is self-contained and defined by genre, and despite linking back to the main site, cannot be cross-searched. Thus remote visitors can search *within* but not *between* collections.

The website of the State Hermitage combines similar extensive background information about the museum and its ongoing activities with a significant number of digital collections.[6] At the time of creation, the site was 'one of the most ambitious web-based museum projects' (Mintzer et al. 2001: 52), and attracted almost one million hits a day when first launched (Mintzer et al. 2001: 60). Despite a drop in online visitors from this high point, the site can still boast over four million visitors a year (Hermitage Museum email 2014). As with the Pushkin Museum, the Hermitage website offers various remote access points to its collections. A 'virtual visit', covering the ground, first and second floors, along with views from the roofs, is the first port of call for online users of the site, and is complemented by a recently-released app. Floorplans link to panoramas of each room within the Hermitage ensemble and thumbnails of particular 'highlights' are displayed inside. These panoramas add an extra dimension lacking on the Pushkin Museum's site, and allow the viewer both to navigate from room to room using the floor plan and then to visually 'see' each room, hence passing through the itinerary in much the same way as if one was there in person. This approach treats the building itself as an artefact, enabling the user to see the context in which objects are displayed. Digital 'highlights' enlarge to high resolution images, but are less comprehensive in coverage than at the Pushkin Museum—some galleries have only two highlights. The site also offers visitors specific online exhibitions, curated according to themes of interest, much like the Pushkin Museum's satellite sites. These pages, found in the Virtual Viewings and Virtual Academy sections allow viewers to explore by theme or collection. Of note are a number of high-quality 3-D images within these sub-pages.

Image 2. Screenshot of the Hermitage Museum's 'Digital Collection' webpage (taken from Pinterest).
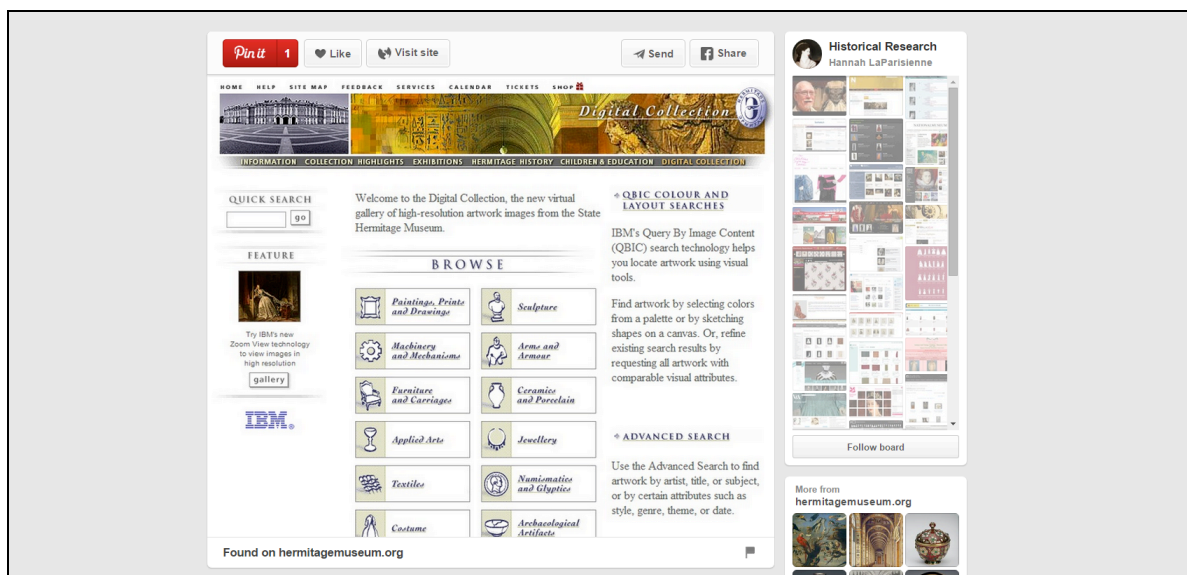
Source: http://www.pinterest.com/pin/66217056995807780/ (accessed 08 December 2014).

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[6] The website is available in Russian and English versions.

Of particular interest in extending the capabilities already displayed by the Pushkin Museum's website, however, is the 'Digital Collection': 'a virtual gallery of high-resolution artwork images' from the museum collections (Hermitage Museum 2014b). This tool allows the user to browse objects by pre-defined rubrics—sculpture, ceramics, jewellery, furniture, paintings and so forth—and within each category, to further refine the search parameters according to format, country of origin, title and artist, amongst others. Thus, it is possible to view all images of pottery from Central Asia, or all glassware objects from Persia, or all paintings by Renoir. Such searches effectively cut across temporal and spatial boundaries that are often imposed in the physical museum—it is now possible to view a range of objects made from similar materials from across a range of centuries. After selecting an object, the viewer can then use the 'Zoom View' tool to enlarge the image, which the website boasts to be a 'unique opportunity' to view masterpieces up close (Hermitage Museum 2014c). Having viewed a high-resolution image of a particular artefact, the visitor is then offered new possibilities—to view the remaining objects within the classification group, or to view new objects with 'similar attributes or visual properties', either from the same country, from similar time periods, or made using similar techniques. The Digital Collection also supports more advanced searches, where date ranges, creator, and place of manufacture can also be specified. This type of browsing makes it possible to view a fairly disparate range of objects that may not be housed together in the museum's galleries and displays, but still relies at essence on descriptive genre categories to select and display images.

More innovative is the QBIC search tool, which dispenses with such categories, and instead allows images to be cross-searched by their visual properties. Employing IBM's Query by Image Content search, this tool is a fantastic example of content-based image retrieval in action, and offers a range of different parameters to access the collections, including colour and texture. Unlike the Pushkin Museum, which appears to have prioritised a more in-depth, educational experience, this tool allows users to search *across* the Hermitage's holdings, by specifying their own unique criteria. The colour search matches items from the digital collection with a spectrum of colours defined by the user. Using a palette, the viewer can mix the required shade, and then adjust what percentage of the colour is to be found in the object. The layout search performs in a similar fashion—having chosen a colour from the virtual palette, the user then draws onto a grid canvas to create a coloured shape that matches the type of layout that they have in mind. In this way, the website claims that the user can find a 'Gauguin masterpiece simply by recalling the organisation of his subjects' or a 'Da Vinci painting by searching for its predominant colours' (Hermitage Museum 2014d). Despite the seemingly random selection of hits that such searches throw up, the overall results are surprisingly accurate. The layout search works better than might be expected, and returns a good number of items that conform to the original specifications, for instance, inputting a layout of mainly blue in the top right, with yellow in the centre returned amongst others, Van Gogh's 'Boats at Saintes-Maries', 1888 and Francesco di Stefano's 'Allegory of Rome', c. 1448—a juxtaposition that would hardly be likely to be found in the Hermitage building itself.

The novelty of this type of search is its originality—it offers a new way of navigating the Hermitage's collection, different from the standard method pursued either in person or online. Both the physical and virtual collections of the two museums are predominantly or-

dered in similar fashion, grouped together by artist, time period or genre. On the ground, access and viewing is controlled by curators, who select which items are displayed, and in what hierarchy of cases, rooms and floors. To a large extent, the majority of the online content discussed here replicates these categories, albeit augmenting them with high-resolution images, search functions and additional contextual information. The QBIC function effectively does away with these imposed values, completely changing the remote user's access points to the collection, and leaving the only limits those imposed by the number of digital surrogates uploaded by Hermitage staff.

The full ramifications of this shift from viewing traditional, 'static' webpages to incorporating increasingly 'dynamic' capabilities of browsing, searching and viewing the museums' collections are at this moment in time, still largely seen on external sites, which like the QBIC search, allow the user to take a more active part in the digital experience (Mintzer et al. 2001). The Pushkin Museum and the Hermitage both maintain Facebook and Twitter accounts, which, along with the Hermitage's Instagram account, allow for a two-way process of informal interaction between the museum and online followers. Images of objects, particularly those featuring in ongoing exhibitions, can be liked, retweeted, reposted and commented on, while followers also post images of their own visits to Moscow and St. Petersburg. Yet more digital functionality is to be found not in those accounts administered by the museums themselves, but on third-party sites, and it is to two examples of these that I now turn.
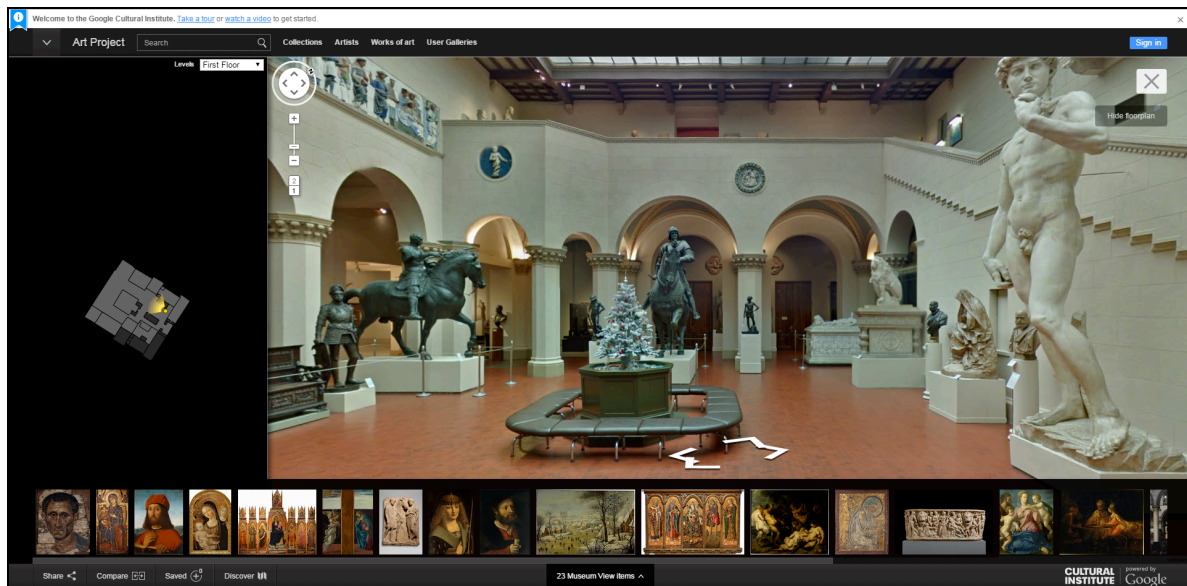
Google Cultural Institute

Google's Cultural Institute, 'an effort to make important cultural material available and accessible to everyone and to digitally preserve it to educate and inspire future generations,' has the ambitious aim to 'host the world's cultural treasures online' (Google Cultural Institute 2014a). Acting on an international rather than institutional level, the site brings together digital surrogates from over 500 museums and galleries around the world. The Hermitage and Pushkin Museum are two of several Russian institutions that participate in the scheme (Google Cultural Institute 2014b, 2014c). The site deals primarily with the two main types of digitisation hosted on the local websites discussed above: virtual tours and high-resolution surrogates. In the case of the former, neither of the virtual walkabouts offered by the Hermitage or the Pushkin Museum comes close to the level of detail offered by Google. Using the Street View tool, appropriately re-named here as 'Museum View', the online visitor can 'walk around' the two museums (along with the State Russian Museum and the State Tretyakov Gallery), navigating using the usual system of directional arrows found in Google Street View, and a schematic of fully navigable floor plans that allow the user to travel through each gallery, as if in reality.[7] Given the level of detail available, the experience is far more immersive than the equivalents offered on the Hermitage and Pushkin Museums' own sites,

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[7] At the time of writing, the virtual tour of the Hermitage is no longer accessible via the Google Cultural Institute, but can be partially viewed here: http://www.youtube.com/watch?v=jE0YpQGlB2g (accessed 17 September 2014).

and points to the new and productive uses that navigational technologies can be put to in a cultural setting.

Image 3. Screenshot of the Google Cultural Institute's 'Museum View' for the Pushkin Museum.

Source: https://www.google.com/culturalinstitute/asset-viewer/the-pushkin-state-museum-of-fine-arts-moscow/twHHbYSKj4PMgQ?projectId=art-project (accessed 08 December 2014).

Selected objects during the virtual tour can be examined as high-resolution images, some of them available in gigapixel format, while the 'galleries' section contains hundreds of supplementary artefacts. The display of these surrogates makes clear the different approach taken by Google than the institutions themselves—interactivity is prized above textual content. Thus while each image is supported by only basic textual information, images from the Hermitage can sit next to surrogates from America, England, France and beyond. User Galleries allow the virtual visitor to assemble or collect images from across institutions according to themes of their choice—for instance, student-curated 'Movements that Matter II' features images of objects housed in a range of museums, including the Hermitage, the Rijksmuseum and the National Gallery of Art in Washington DC (Google Cultural Institute 2014d). This offers a distinctly different experience of digital collections—no longer bound by institutional hierarchies, but placed in a flattened virtual world that allows the user to compare and contrast annotated museum holdings. Moreover, the site allows the visitor to take an active role as curator, creating galleries and sharing them with friends via social media. Thus while the digital surrogate loses some of the textual context of exhibition in the original physical site or institutional webpage, it is subject to far broader visual comparison, so much so that it can become, in effect, virtually detached from its host museum, as users create galleries driven by their own aesthetic or historic interests.

Pinterest

In a similar fashion to Google's User Galleries, the Pinterest website allows members to collect, categorise and display images and other media on their own personalised 'boards' (Pinterest 2014). Describing itself as a 'visual discovery tool', the site imposes no set boundaries on what types of images can be pinned to which boards: themes are prescribed by the user themselves, and so open up a far broader horizon of possibilities than the Google galleries which display only content from participating institutions. Pinterest members can 'pin' images, or 'visual bookmarks' from all over the internet, as well as from other users' boards within Pinterest, with each pin linking back to the site of origin. The site thus caters to an extremely wide set of interests and activities—compiling images of would-be holiday destinations, assembling visual ideas for jobs, projects and events, or creating galleries of favourite places—and transforms the passive consumption of internet-based content into a more vibrant arena for suggesting, sharing and liking visual media.

Within the context of the museum websites discussed above, Pinterest thus acts as a further extension of the link between the physical museum and its virtual representation. Unlike the 'closed' institutional sites, which offer few links to external webpages, Pinterest allows members to create a montage of images from innumerate sources of origin. Boards dedicated to the Hermitage or the Pushkin Museum have been created by users who display their favourite images of the interiors, facades and collections of the museums, and while some have been sourced from hermitagemuseum.org or arts-museum.ru, the majority of images are pinned from a disparate variety of external sites, including flickr, tumblr, independent blogs and Russian tourism websites.

Digital surrogates online are thus in no sense limited to those uploaded by the institutions themselves, and serve to blur the distinction between officially-mediated forms of representation and private, individual or 'unofficial' framings of museums that have been produced by visitors with their own cameras in both the digital and pre-digital age: Pinterest boards include holiday snaps and photographs taken by visitors inside the museum alongside images pinned from institutional websites. More than simply broadening the visual representations of the museums and their collections however, the attraction of Pinterest is that boards and collections of pinned images are personalised reflections of the user's interests, giving members an opportunity to create their own personal highlights, memories and aspirations of their museum experience. Alongside explanatory captions, those pinning images can add their own thoughts. One Hermitage board appears to have been put together by somebody planning a future trip—a pinned photograph of one of the museum's internal galleries is accompanied by the note 'a couple weeks absorbing this art collection is my dream vacation' (Dawn Rubino 2014). Other boards chart once-in-a-lifetime visits, or locals' favourite corners of these famous institutions in their home town or objects on display.

Annotation tools allow the user to invest images with the emotions of viewing either the digital surrogate or having visited the original object, with often very little distinction drawn between the two. Comments attached to costumes, sculptures, paintings and decorated interiors reveal the motivations behind the selection of particular images to be pinned: 'beautiful', 'very strange figures' (Anna Reshkova 2014), 'truly wonderful', 'very realistic', 'More to be

seen here than the eye can take in or the mind can comprehend' (Sachi Hearts 2014), 'LOVE the Deep green color!' (Alison Foster 2014). Thus the owners of these boards offer their own judgements on the aesthetic, historic and emotional content of objects, and in doing so, transform the passive action of viewing digital collections on the Hermitage and Pushkin museum websites into an active process through which sentiments are expressed and objects are selected according to their personal value to the board owner.

Images of the two museum's collections also appear in more diverse contexts. Some users come across objects meriting inclusion on their own boards from other websites such as tumblr, without ever coming into contact with either the physical museums or their websites, and in some cases, seek suggestions from other members of the Pinterest community to identify which museum holds the original (Charmaine Zoe 2014). Others set up pages of objects drawn from the collections of any museum or gallery across the world, much like Google's User Galleries. Thus Meissen porcelain teapots housed in the Hermitage appear pinned alongside images of 'Tea Pots, Coffee Pots and Chocolate Pots' found on ebay, Google, House of Fraser, Sotheby's and New York's Metropolitan Museum of Art (Moira Jones 2014).

Image 4. Screenshot of the 'Teapots and Teasets' Pinterest board.
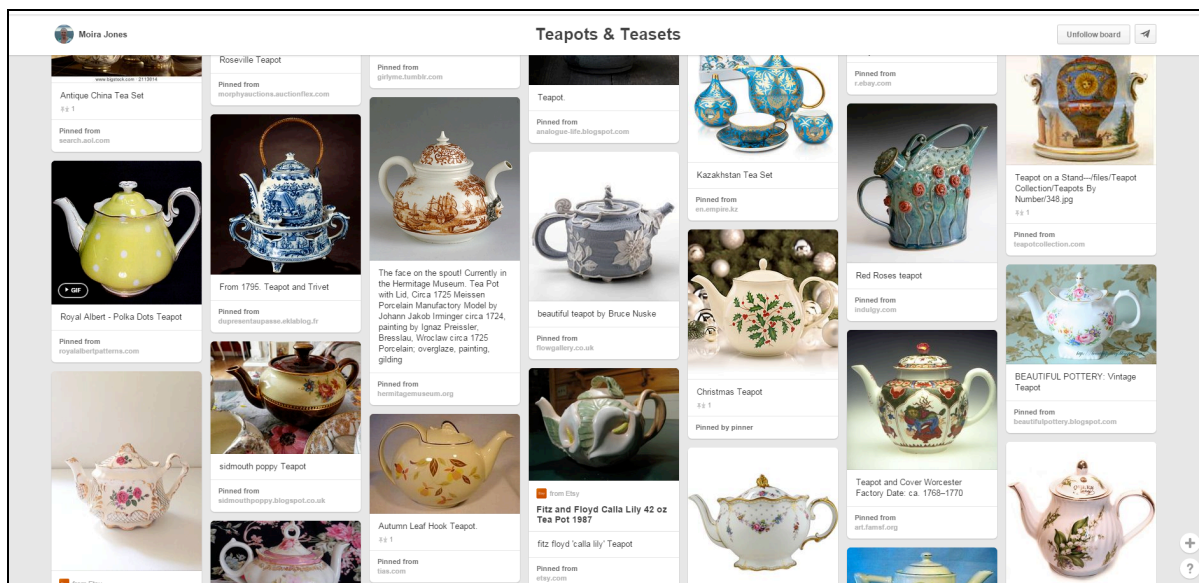
Source: http://uk.pinterest.com/jonesmoira4/teapots-teasets/ (accessed 08 December 2014).

This type of image collection represents a different type of memory preservation than that of large national institutions. Pinterest users curate their own exhibitions by pinning images and sharing their boards via Facebook and Twitter. Far from being limited to only the artefacts contained within a particular museum, they can select freely, breaking down the physical barriers of museum walls and the virtual limits of institutional websites. In many cases this results in the flattening of the collection hierarchies present within the museum, including categories of genre, origin and national narrative. Thus by finding, displaying and juxtapos-

ing objects housed in Russia with a plethora of artefacts housed elsewhere, Pinterest members effectively cut across institutional, national and international boundaries, and in doing so, create new relationships between historic objects, whose meaning and value may previously have been limited by being kept within the walls of a physical or virtual museum. This in turn may begin to constitute new forms of historical memory, bounded less by institutional frameworks and shaped more by personal connections to objects.

The creation of these new collections, or '21st century cabinets of curiosities' (Terras 2009: 426), forges new links between objects and institutions, but at what cost to the integrity of the original and the digital surrogate? When viewed outside the institutional site, objects can become divorced from the information that sets them in historic context: date, country of origin, provenance. Images can appear with little attributing notes other than 'Pushkin Museum of Fine Arts'. In this sense, their collection by Pinterest users speaks, in some cases, to the increasing primacy of aesthetic appeal over historic interest—objects are gathered by users according to the visual qualities of looking 'beautiful', 'purple' or 'awesome'. On the other hand, although objects may lose their historic perspective, they gain more varied emotive contexts than they may have had in the physical museum.

Better than the 'real' thing?

It is clear that virtual projects augment our experiences of museums and their collections. Digitisation opens the way for an audience of potentially billions of internet users to experience museums and their exhibits at close quarters, thus greatly expanding institutions' public engagement capabilities. As discussed in the brief review above, the websites of the Pushkin and Hermitage museums contain thousands of digital surrogates—digitised versions of physical objects in their collections—available to the online user to browse and explore. This access enables the remote visitor to view objects in much higher resolution than a trip to the physical site might afford—no need to queue to see popular items, such as the Hermitage's Peacock Clock, to stand behind barriers or to view precious objects behind glass. The level of detail available is often more than could be seen with the naked eye, even at close quarters: the surrogate images of paintings and engravings at the Pushkin Museum show how impressive high-quality digitisation can be, even down to brushstroke level at a resolution of up to 80 megapixels. The medium of the digital benefits the museum as well as the viewer, as digitisation can protect exhibits by 'minimizing the impact of light on artefacts, dilapidated documents, frail manuscripts and rare photographs' (EPOS Group 2014). By making use of virtual space, the display of items and information online can also ease existing logistical problems of where to store and exhibit growing collections.

Yet as the two museums' websites attract increasing numbers of viewers, the museums themselves continue to grow in popularity, in terms of visitor numbers. A partial explanation can be offered by the discrepancy between the virtual and the physical sites - for some, the digital experience cannot match its real-world counterpart; it is 'not quite the same'. Indeed, many feel that the digital surrogate offers a somewhat sanitised version of reality, lacking in the 'aura' of the original, which is deemed to have 'a more vivid connection and a greater

emotional impact than its digital replica' (Newell 2012: 296). Viewing an image online certainly dispenses with some of the materiality of walking through a gallery or standing close to an object in a museum, even if the digital can actually offer more visual depth. Yet framing the real-world and the virtual experience of objects within the same parameters appears to be a false dichotomy. Even though high-resolution digital surrogates come with the promise of legitimacy, due to the level of 'real' detail provided, they are evidently not an exact analogy, and it would be foolish to assume that the same experience could be gained from visiting a museum in person and browsing the museum's website. Despite the undoubted layers of detail present in digitised images, they do not necessarily offer the same authenticity as the original, in terms of having been physically part of the past. As those who set up the Hermitage website admit, images have to be retouched, as 'many holdings such as oil paintings, have shiny surfaces that produce reflections that should be removed. Photography distorts the color of the holdings. Scanned holdings often exhibit dust' (Mintzer et al. 2001: 58). Thus digital surrogates are *not* copies of the original - they have to be retouched, sharpened, tinted, and invisible watermarks added. Equally, the majority of digital surrogates continue to depict artefacts in only two dimensions, which may work well for paintings and engravings, but fails to do justice to sculptures, ceramics, costumes and jewellery. The scattered 3D images on the Hermitage website are a model for future improvements that can be made.

Nevertheless, digitised images are integral to the continuing creation of historical memory, and allow it to take a variety of new, increasingly cosmopolitan forms. Equating the original and the surrogate is simply an incorrect comparison—both fulfil different requirements. Some, such as researchers, casual browsers and those unable to visit the physical site may be perfectly satisfied by the offerings of the virtual museum. Digitised collections have proved of invaluable use in my own academic work, and in that of many of my colleagues. Equally, a huge number of people will continue to flock to the Hermitage and Pushkin Museum to see the original artefacts in situ. What is key is that the digital offers *fresh* possibilities, rather than simply replicating older modes of display. The Hermitage website boasts that 'modern technology allows you to take a *new* [emphasis mine] look at the Hermitage and the masterpieces in its collections' (Hermitage Museum 2014e),—the digital mediates our experience not necessarily by attempting to replicate reality, but by bringing different perspectives that complement those already on offer in the museum itself.

Much like the scope of this review, the online holdings of the Hermitage and Pushkin Museums are inherently limited. None of the digital collections can realise their potential until they contain a far higher percentage of surrogates from the physical sites. Nevertheless, viewing existing digitised images online opens new access points to the two collections on a number of scales. Browsing within a museum's own online collection can now include items not currently on display, or the ability to search using non-traditional parameters, for instance colour or composition, in effect, taking responsibility away from the curator. On a larger scale, the availability of digital images allows comparisons to be made between collections, allowing historians and those interested in the historic past to create new relationships between objects, independently from the institutions that house them. The interactivity of digital media facilitates the exchange of information *between* and *among* people (Rosenzweig 2011: 124), allowing internet users to view, collect, comment and swap information on items

that previously may never have been seen side-by-side, both within particular institutions and on an international stage. This represents a new type of collecting, where selection control belongs to the viewer rather than the museum curator, and which brings 'distant things closer within virtual space' (Newell 2012: 303).

What are the implications of this development? The growth of the digital cultural heritage sector prompts a number of intriguing new lines of thought surrounding the agency of new media in creating new ways to think about the past. If the physical museum is a space of memory, its virtual representation allows far broader access to that memory, both socially and geographically, for specialists and non-specialists alike. Pieces of art, sculpture and design are no longer the sole domain of the museum, and neither is the vision of memory that is linked to such objects. Online collecting has the potential for users to by-pass the museum curator who traditionally mediates what is seen and unseen, and instead to put together new collections, creating original and unusual juxtapositions between different types of objects, and forming new histories of material culture. The move away from passively viewed, pre-selected and curated objects both within the museums' walls and on their websites allows for more active participation by the virtual user, and thus perhaps a greater sense of a collective, egalitarian memory than that contained within state institutions. These new methods of collecting have implications for our relationship with art, objects and 'things' in general, at times effacing the distinction between 'high' and 'low' culture, between precious artefacts and everyday objects, and imposes new understandings of what constitutes 'value' in a material sense. As new possibilities are gained however, some things are at risk of being lost. Digital surrogates can easily become detached from their historic context, which museums and their websites seek to preserve. Does the availability and proximity of digital images threaten to irrevocably change our relationship with material culture, and to devalue the importance of 'original' historic artefacts? The online experience of using digital surrogates can be both 'enriching in the way it provides freedom of access to new kinds of information and limiting in its absence of guidance and context' (Frost 2013: 239). Just as the museum attempts to preserve the connections between historic objects and overall historic memory, so without the boundaries and hierarchies suggested by curators, the online consumption of images can result in a fracturing of memory, a blurred and chaotic muddle of seemingly disparate individual objects. Whether this remains a viable alternative to traditional modes of viewing in the museum depends not only on the participation of online 'collectors', but also the willingness of museum institutions themselves to develop their own digital capacities, and to rethink their usual methods of display and organisation of collections. In the broader scheme, it remains to be seen how specific types of memory—national, regional, ethnic, social and political–will evolve: whether online users are simply reconstituting and rearranging existing historical memory from the museum in digital form, or whether the rise of new media marks a fundamentally new way of relating to the past and to material culture, one which bears little resemblance to the memory shaped by the museum.

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