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European, sustainable virtual museum

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1. EXECUTIVE SUMMARY

This final report draws on the previous publications and papers delivered over the lifespan of the *V-Museum Network Project* that examined the critical qualities of the Virtual Museum (VM), identified the different kinds of VMs, and evaluated their self-declared purposes and self-defined objectives. After a comprehensive survey of those actors and players in the field of cultural heritage who focus their efforts on developing, building and disseminating VMs, V-Must research mapped out the field, defined a series of bench marks to evaluate the varied activity in the sector, and created a series of criteria in order to summarize the VM sector and propose best practice across the field.

This report - in summarizing the Network's accomplishments - is well poised to elaborate on the prior research and ready to set out the following:

- A series of V-Must principles
- An authoritative and concise definition of the VM.

2. INTRODUCTION

Reflecting on our research, we are now able to argue how the overarching qualities of a virtual museum must be *a posteriori* evaluated from the perspective of the physical museum; its relationship to it while serving to reaffirm the qualities of 'the museum' when the physical museum is absent. Illustrating the complexity of these issues, we would argue for example, when describing the physical museum as a location of material artifacts, conspicuous for their qualities of authenticity and originality, the digital artifact, in contrast, signals endless clone-ability and a built-in temporality. After all, unlike the self-evident durability of the material artifact, once the electricity has been turned off, the digital object simply disappears. Why then bother to locate the digital object called *a museum* that is supposed to encapsulate science and culture for posterity, when the museum in question simply fades away once the electricity is turned off? The very intangibility of the museum inevitably becomes a provocation to the museum ethos of materiality and stability, and, through its ephemerality, stands as a challenge to the very core of the museum mission. At the same time, when there is no 'original,' and when objects may be replicated and mediated just as easily outside of the museum as in the gallery, can the VM serve to replace the missing

physicality in any meaningful way?

A similar challenge to the ethos of the VM experience is apparent in the absence of the social and very visceral nature of the embodied visit of the physical gallery. The visitor to the VM doesn't have to go anywhere but look into the screen – possibly located no further away than the palm of their hand. This report will draw on the idea of the traditional museum experience to consider whether in an age of digital reproduction, end-users encounter similar, rich, meaningful experiences when they come across VMs on their pc's, smartphones or tablets.

We of course draw a straight line here from Walter Benjamin's seminal essay where he described a work of art in an age of mechanical reproduction[i] to consider their digital descendants. They are just as easily reproducible as their mechanical ancestors were, and, in their digital form, far more readably clone-able. As Benjamin was responding to the role of art in society and the idea of the modification of art through mechanical reproduction, his essay has ramifications not only for artists, but also for curators as well as the museum visitor. According to Benjamin;

> *In principle, the work of art has always been reproducible. Objects made by humans could always be copied by humans. Replicas were made by pupils in practicing for their craft, by masters in disseminating their works, and, finally, by third parties in pursuit of profit. But the technological reproduction of artworks is something new (ibid.).*

Benjamin embraced the severing of the quasi-mystical 'aura' from the original as a potentially liberating phenomenon, both for the reproduction of works of art and for the art of film, thereby making art widely available; introducing new forms of perception in film and photography and most critically, releasing art from the private to the public, domain; from the elite to the masses. While the mechanically reproduced image that Benjamin discussed represented new possibilities, what was forfeited in this process was the 'aura' reflecting the authority of the object, and encapsulating within it the values of cultural heritage and tradition.

> *For Alain Seban, president of the Pompidou in Paris: "Museums are places where things are considered in the long term. They serve as beacons, distilling a sense of*

> *authenticity and truth – and they are also, quite simply, places of beauty and meditation.*
>
> *In this same* ***Principle*** *Christopher Beanland,* ***author of the Independent Principle quotes*** *Penelope Curtis, director of Tate Britain. "Looking at art slows us down and takes us in unexpected directions: this is increasingly unusual – and something people cherish*[ii]*".*

VMs therefore must be considered not only in respect to scale, screen-aesthetic, but most importantly in terms of their auratic quality. Only then can we ascertain whether the traditional museum qualities still resonate in their digital footprint. Alternately, should the loss of aura in a VM become as critical so as to cause an irretrievable loss of their potency; this would deplete the art so that they longer act as *a beacon distilling a sense of authenticity and truth*. These are the kinds of issues that face the VM and the visitor/end user and have concerned our research from the outset. We have attempted to resolve these dissonances and in spite of the lack of physicality and originality, we have identified other, just as critical museum qualities that are amplified in the VM; such as authenticity, integrity and trust. These are the qualities that are entrenched in the Museum experience, and only if there qualities are implicit in the VM will they have the capacity to slow us down, and offer experiences, and ideas that inspire us and can cherish.

3. TURNING ON THE ELECTRICITY

Reflecting on the Benjamin equation, and after coming to terms with the loss of aura, we now argue how the VM's potency lays in its complicity to transmit not just artworks but also rich cultural heritage content in new ways; that are just as potent as emanated by the physicality of the material object.

The role of the VM, as apparent from our research, has a critical role to play in the dissemination of cultural assets such as archaeological sites, monuments, historical buildings, as well as the atomized, de-contextualized physical object. The transmission of cultural heritage from one generation to the next is tantamount to the well-being of society as expressed to succinctly by this UNESCO statement:

> *In today's interconnected world, culture's power to transform societies is clear. Its diverse manifestations – from our cherished historic monuments and museums to*

traditional practices and contemporary art forms – enrich our everyday lives in countless ways. Heritage constitutes a source of identity and cohesion for communities disrupted by bewildering change and economic instability. Creativity contributes to building open, inclusive and pluralistic societies. Both heritage and creativity lay the foundations for vibrant, innovative and prosperous knowledge societies[iii].

Our early research indicated that over recent years the museum has evolved from an almost exclusive commitment to tangible,[iv] material collections towards new practices which today embrace intangible heritage,[v] and with these new modifications, the integration of digital, creative activity. These practices have emerged from the paradigm shifts that have taken place in the museum and are reflected, in just the same way, through VM activity. These re-alignments have prompted a range of services designed with the visitor in mind; such as trendy cafes in the museum, and quality goods offered in museum boutiques and bookshops. Turning on the electricity, they have also spurred numerous educational activities, both in the museum and online, as well as the introduction of interactive applications located in the gallery and beyond, that serve to augment the collection. The VMs we evaluated reflect the emergence of the visitor-driven museum, now rendered into all sorts of electronically-mediated experiences thoroughly integrated into the DNA of the museum experience.

4. IN THE PALM OF YOUR HAND

VMs in their non-physical or intangible forms appear on your screen from a museum website, a cultural portal or in a tiny app held in the palm of the hand. These objects have clearly lost all sense of scale; appearing as a tiny resonance of their original selves on your screen. Yet, and in spite of their diminished scale, they still command a presence that demands that we look at them, look into them, and beyond; straight through to where we imagine their original-selves. This is because we are confident that we sense that somewhere, beyond the screen we know that there is a physical presence of the object, and, even if we are not experiencing them in their materiality, we do discern that they do exist – somewhere. This is the nature of telepresence that we are so familiar with, whether from

cinema, the TV or the Internet. The screen whether small, or not so small extends – with little resistance – straight into our comfort zone to mediate the world we choose to travel in high-dynamic-range (HDRI) yet as an oh-so-tiny-image (OSTI). At the same time, the mere reference to the term 'Museum' in this scenario becomes a very powerful actor. It serves to indicate the connection to the absent object on the tiny screen to its provenance that has already become 'institutionalized' that is after it has been accessioned through curatorial practice into the belly of the Museum.

Let's consider what is happening in contemporary artistic practice. It is interesting that last year's Turner prize, according to the Reuters[vi] report included*: artists who work with film, video, recorded sound and photographs took all four slots on the shortlist announced on Wednesday for the 2014 Turner Prize, one of the annual high points of the British art calendar*. All works – it is worth observing – were processed digitally and presented to the audiences on screens of varying dimensions. VMs are very much a part of our daily lives, and whether we sense them as real or virtual we are very much at home with them.

Pierre Lévy[vii] takes exception to the ideas of real and virtual as dialectical counterparts, and argues that 'virtualization, or the transition to a problematic, in no way implies a disappearance in illusion or dematerialization. Rather it should be understood as a form of "desubstantation" [...] the body as flame, the text as flux' (Lévy 1998: 169). To avoid locating real and virtual in such a dichotomy, he likens this desubstantation to the Moebius effect, 'which organizes the endless loop of the interior and exterior – the sharing of private elements, and the subjective integration of public items' (ibid.: 169). I will argue that the integration of the material and dematerialised, the tangible and intangible, cause new forms of museum hybridism that is continuously modifying museum practice. Bringing practices that have traditionally revolved around the tangible object together with the emerging methods of collecting and displaying art that refuses to remain fixed within its four walls, in the way that the 2014 Turner Prize exemplifies, it becomes clear that the museum essentially functions in an endless [Moebius] loop of interior and exterior presence. VMs reside both within and beyond the gallery, yet are connected to, and located in, the global networks of museums and galleries, and cultural centres that circulate with the very same ideology of authority and scholarship that seamlessly integrate all these processes into the fully articulated museum network that resides in the greater digital ecosystem.

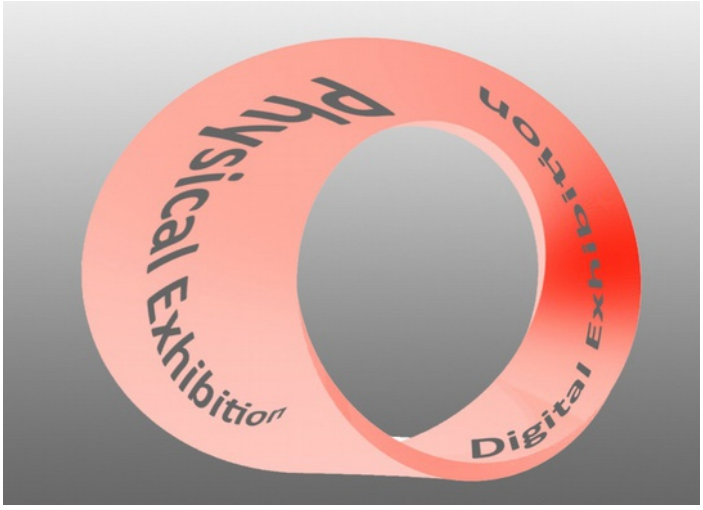

Fig. 1 Moebius effect: the physical and virtual. © S. Hazan

One of the ways that the museum imbues authority and scholarship into this ecosystem can be read in the taxonomic ordering and documentation of knowledge. Museums excel at the taxonomic structuring of their physical objects into comprehensive knowledge systems, and, similar to the practice from sister institutions, such as libraries and archives, VMs are structured in much the same way as they are in the museum; invigorated by a rich and informed body of scholastic materials – texts, documentations, images and histories. Collating these materials into orderly taxonomic structures – and replicating the breadth and width of traditional museum practices into the digital footprint – demands exactly the same dedicated, scholarly research approach that is practiced in the physical museum.

Looking at traditional museum practice, as laid out in the definition of the International Council of Museums (ICOM) we see how museum as defined by ICOM describes first and foremost an institution in the service of society:

> *A museum is a non-profit-making, permanent institution in the service of society and of its development, and open to the public which acquires,*

> *conserves, researches, communicates and exhibits, for purposes of study, education and enjoyment, material evidence of people and their environment*[viii].

A virtual museum therefore, *a piriori* is based on this definition by association, and can be described as a digital entity that draws on the characteristics of the museum, in order to complement, enhance, or augment the museum experience through personalization, interactivity and richness of content. VMs can perform both as the digital footprint of a physical museum, or can act independently, while maintaining the authoritative status as bestowed by ICOM in its definition of a museum. In tandem with the ICOM mission of a physical museum, the VM is also committed to public access; to both the knowledge systems imbedded in the collections and the systematic, and coherent organization of their display, as well as to their long-term preservation[ix]. Aligning the VM to core agenda of the physical museum therefor provides us with a firm foundation from which to discuss the VM, now appreciated as an entity that essentially acts as the footprint of physical museum. VMs that reside in tandem with physical museums can then augment or extend the institution in its responsibilities to collect, conserve and display objects that continue to reflect cultural heritage and scientific processes.

Cultural heritage, as expressed in the UNESCO statement above, dictates that communities need to convey a testimony of their lived life, should be able to transmit their creative expressions, while securing the traces of their history for future generations. Cultural heritage therefore can be described as a bridge, or two-way process, paving the pathways that connect the past, to the present and to the future. As a receptacle of memory, it embodies the symbolic value of cultural identities and constitutes a fundamental reference for structuring society[x]. It now falls to the VM as a manifestation of these characteristics to convey them to the public with the prescribed authenticity and integrity that is expected from an actor that denotes itself a museum.

5. STANDARDS: LONG-TERM SUSTAINABILITY, OPEN ACCESS AND USABILITY

VM practice, however, is currently suffering from a lack of policy and strategy regarding not only the future persistence and sustainability of applications (hardware/software solutions), but also of digital and multimedia datasets and assets that have not been designed for future migration, re-use or exchange. Sustainability and interoperability are critical to the development of the sector and there is much work still to be done. In terms of long-term preservation of electronic document-based information, much can be learned from ISO (the International Organization for Standardization) ISO/TR 18492:2005[xi]. Recent technological advances based on of 3D laser scanner technology and photogrammetry, which allow the digital documentation of cultural elements, movable and immovable assets are also moving towards standardization policies.

In accordance with the spirit of *The Declaration of the Budapest Open Access Initiative*[xii], *The ECHO Charter*[xiii], the *Bethesda Statement on Open Access Publishing*[xiv] and *The Berlin Declaration*[xv], the authorities and public and private institutions must favor the open access to virtual museums. Open access contributions, however, must satisfy two conditions: The author(s) and right holder(s) of such contributions grant(s) to all users a free, irrevocable, worldwide, right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship (community standards, will continue to provide the mechanism for enforcement of proper attribution and responsible use of the published work, as they do now), as well as the right to make small numbers of printed copies for their personal use.

A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in an appropriate standard electronic format is deposited (and thus published) in at least one online repository (i.e. *Europeana*) using suitable technical standards (such as the Open Archive definitions) that is supported and maintained by an academic institution, scholarly society, government agency, or other well established

organization that seeks to enable open access, unrestricted distribution, inter-operability, and long-term archiving.

Virtual museums are in constant change and evolution. Many of their components include high level of innovation that need to be tested in order to verify their use and impact. In order to achieve that, it is important to establish a precise evaluation process that must bear in mind the needs of end users (usability). Usability evaluation allows assessing whether the virtual museum under evaluation is efficient enough, effective enough and sufficiently satisfactory for the users. To reach the highest levels of usability, virtual museums should be designed based on the principles of the User-centered design (UCD). To achieve that, it is recommended to follow the ISO standard Human-centered design for interactive systems (ISO 9241-210, 2010)[xvi]. Clear policy across the sector for long-term sustainability, open access and usability in the years to come will greatly advance the sector as a whole.

In addition, the sector will benefit from education, training and international cooperation. The V-Must Network has contributed to the field through the Virtual Heritage Schools Program[xvii] where every year the V-MusT network organizes a Virtual Heritage Schools Program that includes one international school and five national schools (King's College, London UK; Lund University, Sweden; CNR, Rome-Bologna, Italy; SEAV, Seville, Spain; Cyprus Institute). The network also plans to offer specialist courses based on online tutorials and set up a Virtual Academy for Museum Directors and Managers. These opportunities may be amplified in the future through the establishment of appropriate collaboration with schools, colleges, universities and the tourist industry as well as across the disciplines of Museology and Museography. Given the speed at which new technologies evolve, it is critical to prioritize the on-going training of personnel. In the long term, the success of VMs will be directly related to the ability of its personnel to maintain keep up with evolving standards and to seamless integrate them into daily practice.

The expeditious evolution of technology is constantly introducing new concepts, challenges and experiences that tend to shake up the field in its totality. It is therefore imperative to foster the exchange of knowledge and disseminate information across the sector. Within the spirit that inspires this interdisciplinary collaboration, new professionals in the field of virtual museums need to strengthen synergies with colleagues from other countries, as well as with institutions such as ICCROM, ICOM and ICOMOS.

6. VIRTUAL MUSEUM PRINCIPLES

Taking into consideration all of these challenges V-Must recommends denoting the term VM when the following professional criteria are met as a means of consolidating the sector around a set of uniting principles:

- The VM imbues the qualities of a museum through adhering to professional scientific inquiry.
- The electronic actor performs throughout the sector with the same integrity as commanded by the physical museum.
- Welcomes experts, curators, archaeologists, architects, engineers, artists, ethnographers, and other specialists in the field including computer experts and photographic specialists.
- Acts to disseminate VM as sustainable, non profit entities acting on behalf of society. (This does not prohibit the VM from charging access to platforms in much the same way as Museums do with entrance tickets).
- Adheres to best practice of digital methods and techniques in museums research, conservation and dissemination.
- Maintains a distinctly identifiable ontological classification (comparable to the different kinds of physical museums) as historical, art, ethnographic, heritage center, encyclopedic, maritime, national, local, VM etc.
- Adherence to ISO and similar internationally agreed upon standards.
- Contributes to the universalization of cultural heritage and open access for all.

7. DEFINING THE VM

One of the ways in which the bricks and mortar museum is held accountable to society is through the sharing of cultural and scientific heritage with its public (as described also in Deliverable 2.3 in the discussion on museum definitions). As reflected in their definition it is clear that custodial responsibility to *the collection* demands the professional management of the material artifacts to ensure their safekeeping for future generations. This, it may be

argued, represents the central function of the museum, as without its collection, the museum would cease to exist. In addition, museums are obligated to develop and maintain discrete areas that present the collection for display opening up these areas and granting public access to them. These sometimes-conflicting obligations – the conservation of the material collection, and the responsibility to share the collections with the public – are reflected in the professional definition of the museum[xviii].

To return to the International Council of Museums (ICOM) definition of the museum:

> *A museum is a non-profit making, permanent institution in the service of society and of its development, and open to the public, which acquires, conserves, researches, communicates and exhibits, for purposes of study, education and enjoyment, material evidence of people and their environment.*

ICOM Statutes, adopted by the Eleventh General Assembly of ICOM, Copenhagen, 14 June 1974[xix]

In this way, the museum affirms its institutional mission not only to collect and conserve collections, but also to display them, and in doing so expresses its obligations to facilitating study, education and enjoyment of the material collection. The ICOM definition fundamentally acknowledges the material collection as the core of the mission, and recognizes how the museum, in contrast to the world of television, theatre and advertising, prioritizes the tangible artefact. However, in addition to the material artefact, the museum is also defined as a space that communicates its messages to its audience, and, in this bid to impart the museum message, it overlaps with other media and traditional communication apparatuses in many ways.

Over the last decade, the museum has evolved to broaden its professional mandate, and is beginning to welcome a wider-ranging spectrum of museum practices into the institutional mission. The departure from 'tangibility' as the exclusive rationale of the object-driven museum is reflected in debates over the last decade in the museum community, where the introduction of 'intangibility' is indicative of the expanding museum mission. A UNESCO meeting held in March 2001 adopted the provisional definition of intangible cultural heritage and endorsed the concept of 'learned processes' as a vital component of the [intangible]

museum. Giovanni Pinna, Chairman of ICOM-Italy, and Member of the ICOM Executive Council defined the intangible museum as:

> *Peoples' learned processes along with the knowledge, skills and creativity that inform and are developed by them, the products they create, and the resources, spaces and other aspects of social and natural context necessary to their sustainability; these processes provide living communities with a sense of continuity with previous generations and are important to cultural identity, as well as to the safeguarding of cultural diversity and the creativity of humanity* (Pinna 2003: 3)[xx].

The auxiliary or supporting texts, which had been incidental to the primary object, were now being promoted by ICOM as primary texts, and museum professionals were encouraged to integrate them accordingly into museum practice. Intangible expressions, however, demanded the introduction of new disciplines for collecting and display, and three categories of intangible cultural heritage were set out to describe their parameters. The first category, according to Pinna, included the physical expression of the culture of communities: religious rites, traditional economies, ways of life, folklore, etc. The individual or collective expressions that did not have a physical form were placed in the second category: language, memory, oral traditions, songs and non-written traditional music, etc. In this case a critical role for museums was envisioned in the conservation and preservation of intangible artefacts through recordings and transcriptions for intangible heritage. This, Pinna suggested, would transform intangible cultural heritage into tangible heritage and preserve it as historical and cultural testimony. The third category included the symbolic and metaphorical meanings of the objects, which, it was argued, constituted tangible heritage in a category that encapsulates an object's links from past to present (ibid). In spite of these clarifications and the description of the separate categories, the implications of these processes were still somewhat ambiguous and demanded further explanation and supplementary professional support.

The new concepts of intangibility were instituted into the museum community in several ways. ICOM celebrates International Museum Day on May 18 every year. The theme selected by the Advisory Committee for 2004, as well as the theme for the 2004 triennial conference, was intangible heritage, acknowledging that although the concept of heritage has been dominated by its tangible embodiments, intangible heritage is no less a vital

ingredient of every civilization (Pinna 2003: 3). The term 'intangible' in the museum context required more than a little explanation, even before the idea of digital creativity was to be grafted onto the (already complex) idea of intangibility. Amar Galla, Chair of the Asia-Pacific Organisation of the International Council of Museums (ICOM-ASPAC), was asked to clarify the ICOM position on intangibility, and went on to produce new guidelines for the incorporation of intangible heritage into museum practice. His 'Frequently Asked Questions about Intangible Heritage' included issues such as whether intangible heritage can be a vehicle for education and cultural action, and, if curators are involved with intangible heritage (Galla 2003: 4)[xxi].

These principles presented new challenges for museums and museum practitioners, and, in addition to the guidelines set out in the special ICOM News: Museums and Intangible Heritage, 2003, the ICOM General Conference in Seoul, which took place in the autumn of 2004, specifically focused on intangibility. Conference participants were invited (perhaps with the aim of demonstrating 'learned processes') to performances of traditional Korean performing arts, Shaman dance, Pansori (Korean epic chants), and Ancestral Ritual Music and Dance. At the National Museum of Korea and, at other conference venues, participants met 'living treasures', and watched demonstrations of traditional knotting techniques, paper-flower making and woodcarving.[xxii] According to the UNESCO portal on 'Living Human Treasures', the Government of the Republic of Korea introduced its own system in 1964 to ensure the preservation and transmission of their intangible cultural properties to future generations, while in 1950, the Government of Japan recognised 'bearers of the skills and techniques essential for the continuation of certain important intangible cultural properties'. These individuals were designated as 'Living National Treasures,' and a full list describes similar practices in the Philippines, Thailand, Romania, and France and many other countries.[xxiii]

None of these categories were intrinsically novel for ethnographic or anthropological museums, but the prioritisation of intangible elements was a significant action. The innovation encouraged the display of intangible elements. However, how they were to be displayed was another question. It fell to the museums themselves to preserve the 'traces' of the performances and they took over responsibility for documenting all kinds of performed intangible heritage such as oral history, folk life, religious ceremonies, and storytelling. The link between living heritage and documentation, therefore, was forged by

the following amendment to the definition of the museum, where digital processes soon became the preferred modality for documentation.

In the July of 2001, the 20th General Assembly of ICOM association amended the statutes (as quoted above) in Barcelona, Spain, to include in the museum definition:

> *Cultural centres and other entities that facilitate the preservation, continuation and management of tangible or intangible heritage resources (living heritage and digital creative activity)* (ICOM Statutes amended by the 20th General Assembly of ICOM, Barcelona, Spain, 6 July 2001, clause viii).

Combining the idea of digital creativity with the core notion of 'the museum' provides us with a useful foundation from which to continue this discussion, but first it is important to clarify the differences (and similarities) of those Virtual Museums that act as the footprint of physical museum, and those other kinds of Virtual Museums that are born digital.

> *A **virtual museum** is a digital entity that draws on the characteristics of a museum, in order to complement, enhance, or augment the museum experience through personalization, interactivity and richness of content. Virtual museums can perform as the digital footprint of a physical museum, or can act independently, while maintaining the authoritative status as bestowed by ICOM in its definition of a museum. In tandem with the ICOM mission of a physical museum, the virtual museum is also committed to public access; to both the knowledge systems imbedded in the collections and the systematic, and coherent organization of their display, as well as to their long-term preservation.*
>
> *As with a traditional museum, a virtual museum can be designed around specific objects (akin to an art museum, natural history museum), or can consist of new exhibitions created from scratch (akin to the exhibitions at science museums). Moreover, a virtual museum can refer to on site, mobile or World Wide Web offerings of traditional museums (e.g., displaying digital representations of its collections or exhibits); or can be born digital content such as net art, virtual reality and digital art. Often, discussed in conjunction with other cultural institutions, a museum by definition, is essentially separate from its sister institutions such as a library or an*

archive. Virtual museums are usually, but not exclusively delivered electronically when they are denoted as online museums, hypermuseum, digital museum, cybermuseums or web museums.

(http://en.wikipedia.org/wiki/Virtual_museum)

8. CONCLUSION

After delineating the VM's boundaries and ontologically locating them in their rightful place next other digital entities in a thoroughly mediated world, we can now be assured that the VM acts within the identical ecosystem of trust, authenticity and integrity as does their material counterpart – the physical Museum. What is critical to discern is whether VMs will retain their auratic potency in the long term as it is simply – in the museum tradition – not enough to consider the VM as a momentary experience but how they will fare – in five, ten, or fifty years from now. Will the emotive qualities they evoke still be potent enough to allow us to cherish them – will they still be able to slow us down or stop us in our track with that 'wow' moment in the future?

Fig. 2. Trust her, she is a curator. © S. Hazan

Referring to *The New Renaissance, Report of the Comité des Sages*:

> *For centuries, libraries, archives, and museums from across Europe have been the custodians of our rich and diverse cultural heritage. They have preserved and provided access to the testimonies of knowledge, beauty, and imagination, such as sculptures, paintings, music, and literature. The new information technologies have created unbelievable opportunities to make this common heritage more accessible for all. Culture is following the digital path and "memory institutions" are adapting the way in which they communicate with their public* (New Renaissance Report, P.4).

This realistic approach calls to publically funded institutions in a bid to draw on their institutional knowledge and seek new kinds of partnerships with players from the private sector to develop Europe's cultural heritage over digital platforms. This has many benefits for society; both for the individual user who will be able to interact with their own cultural heritage in novel ways, as well as the use and re-use of rich content as important building blocks of the digital economy. VMs need to maintain and extend these responsibilities into the digital realm, and to promote them as *unfailing testimonies of knowledge, beauty, and*

imagination for all.

These kinds of responsibilities extend not only to collecting, and exhibiting the VM, but also to their long-term preservation. Once the original hardware/software platforms have marched forward through their countless upgrades – how will we be able even to view them unless they have some sort of enabling emulation at their disposal. And will they, say in 30 years from now, still be *distilling a sense of authenticity and truth?* For the sake of argument let's presume that they have magically emerged, technically unscathed into the mid-21st century. What kind of experience will they relate to future generations? We can but only guess how they will be experienced once their physical provenance has become separated not only by space, technology, but also time. We can but ponder - and hope - that we will be left with more than a mere shadow or echo of the original after all the dedication and effort that goes into creating a VM. Hopefully, if high resolution, high fidelity, and institutional integrity are sustained in the museum tradition, the results could possibly be impressive.

We don't have any crystal ball promises here – only time will tell.

[i] Benjamin Walter (1936), The Work of Art in the Age of Mechanical Reproduction. In: Arendt Hannah (1985, ed.). *Illustrations*: Walter Benjamin – Essays and Reflections. New York: Schocken Books, pp. 217-251.

[ii] *Is there a future for the traditional museum?* The independent, Friday 21 November, 2014, http://www.independent.co.uk/arts-entertainment/is-there-a-future-for-the-traditional-museum-9855822.html

[iii] Protecting Our Heritage and Fostering Creativity, http://en.unesco.org/themes/protecting-our-heritage-and-fostering-creativity

[iv] 'Tangible objects: Materials used to communicate and motivate learning and instruments for carrying out the museum's stated purpose' (American Association of Museums [AAM] *Accreditation, Self-Study*, 1997).

[v] *The Convention for the Safeguarding of the Intangible Cultural Heritage* defines the intangible cultural heritage as the practices, representations, expressions, as well as the knowledge and skills, that communities, groups and, in some cases, individuals recognise as part of their cultural heritage. UNESCO Portal, <http://portal.unesco.org/culture>

[vi] Video, film-inspired artists dominate Turner Prize shortlist, Michael Roddy, Reuters, 07.05.2014, <http://www.reuters.com/article/2014/05/07/us-art-britain-turner-idUSKBN0DN0J520140507>

[vii] Lévy, P. (1998) *Becoming Virtual, Reality in the Digital Age,* New York and London: Plenum Trade.

[viii] *Development of the Museum Definition* according to ICOM Statutes (2007-1946), http://archives.icom.museum/hist_def_eng.html

[ix] See evolving definition of the virtual museum, http://en.wikipedia.org/wiki/Virtual_museum

[x] Protecting cultural diversity through the preservation of cultural heritage in all its forms and through normative action, UNESCO Culture Portal, http://portal.unesco.org/culture/en/ev.php-URL_ID=12619&URL_DO=DO_TOPIC&URL_SECTION=201.html

[xi] ISO (the International Organization for Standardization) https://www.iso.org/obp/ui/#iso:std:iso:tr:18492:ed-1:v1:en

[xii] *Budapest Open Access Initiative*, http://www.budapestopenaccessinitiative.org/

[xiii] *ECHO Charter*, http://echo.mpiwg-berlin.mpg.de/policy/oa_basics/charter

[xiv] *Bethesda Statement on Open Access Publishing*, legacy.earlham.edu/~peters/fos/bethesda.htm

[xv] *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities*, openaccess.mpg.de/Berlin-Declaration

[xvi]

ISO 9241-210:2010, *Ergonomics of human-system interaction* -- Part 210: Human-centred design for interactive systems, http://www.iso.org/iso/catalogue_detail.htm?csnumber=52075

[xvii]

Training | v-must, https://www.v-must.net/content/activities/training

[xviii]

For example, fragile objects are best stored away from excess lighting rather than being permanently exposed to gallery conditions. This could cause a conflict of institutional obligations.

[xix]

ICOM – definition of the museum <http://icom.museum/who-we-are/the-vision/museum-definition.html>

[xx]

Pinna, G. (2003) Intangible heritage in Museums in *ICOM News, Museums and Intangible Heritage*, Vol. 56, No. 4, 2003. Newsletter of the International Council of Museums, Paris.

[xxi]

Galla, A. (2003) *Frequently Asked Questions about Intangible Heritage*, ICOM News, No. 4 2003.

[xxii]

. Individuals ascribed with the national designation of 'living treasure' include Lee Saeng-kang, National Living Treasure (Intangible Cultural Asset No. 45), who plays the daegeum, a large transverse bamboo flute, and dancer Yi Mae Bang (Intangible Cultural Asset No. 97).

[xxiii]

See discussion on UNESCO Intangible Heritage, <http://portal.unesco.org/culture/en/ev.php-URL_ID=34325&URL_DO=DO_TOPIC&URL_SECTION=201.html>