Introduction

David Bearman and Jennifer Trant,

Archives & Museum Informatics, Canada

Seeking the Ethereal

The artifacts and specimens that comprise the collections of museums are entities, with physicality, existing in three dimensions, and objectively real. In the early days of the Web, our discussion centered upon the questions of how best to represent these real things as virtual entities in online publications. Our objective was to make representations as authentic, as rich in data, and as easy to explore as possible.

Over the past few years, as the network has become a realm in which people live out their lives, the relationship between the Web and the quotidian world has taken on dimensions beyond the width, height and depth of 3-D space. Museums now seek to situate their holdings both in objective three-dimensional space – with geo-location – and in subjective spaces. We strive for the affective sphere of social links, the imaginative sphere of links to alternative realities, and the semantic/semiotic sphere of linguistic-symbolic content links. *My museum*, *my collection* and *my favorites* have meaning to me not just because of what they are, but because of who I am and who I am in contact with socially. So, as we specify locations where our museum objects were encountered, created, altered in the real world,we hope to associate them with spaces that overlap cartographically with socially meaningful, temporally significant or game-imagined places that resonate with the emotions of our visitors. We strive to structure the language used to describe objects, exhibits and experiences in the museum so it can connect with data published in cyberspace by others, and hope that by becoming semantically linked our collections accrue new significance. Delivering content through multiple channels and enabling others to easily link-in and mashup – through open APIs and interfaces – has become a science of its own.

The three sections into which the papers in this volume are organized have emerged from what participants in Museums and the Web 2011 reported about museum Web activity in 2010; it sought to expand the meaning of museums by enabling the public to encounter them subjectively in their affective, imaginative and/or semiotic dimensions. The tension between wishing to teach, to tell, and to define the objective thing that we curate, and the need to make the knowledge we convey about it personal, significant and meaningful, is exposed in these papers, along with the variety of creative strategies that museum staff are exploring to span that gap.

The Sphere of Linked Content, Delivered through Multiple Channels

Even what appears as the most 'traditional' of museum concerns on the Web – that of publishing the content of collections for use by the scholarly community – has been transformed by new strategies for access to online information driven by a better understanding of the potential audience for online museum content. As Claire Ross and her colleagues show in their study of the behavior of information seekers coming to the British Museum online, the purpose and methods of these 'visitors' are very different from those of visitors coming to the museum itself. But their needs are not completly different; like those coming to the museum, they need to 'see' the thing. Text is secondary, and often performs its work behind the scenes, by ensuring, for example, that the proper sub-set of items is browsed. Like physical visitors, scholarly researchers often have very specific object in mind in coming to their search, but may be satisfied, or even delighted, by finding related but different things. Given that few museums have a collection as well known or significant as that of the British Museum, the challenge we face is one of structuring what we do know about our collections as open and linked data that enable online searchers to meaningfully associate what they do discover with what they were searching for (see also, Kamura et al).

Sam Quigley and Liz Neely report on how an institution that wants to reconceptualize its catalogue as an electronic resource of potentially infinite depth and connectivity to other resources goes about the task of reinventing and re-presenting its documentation. In the early 1990's we imagined the e-book as a self-contained, though very deep, CD-ROM; today we imagine it as a resource of open, linked data leading us out into any content on the Web and back to any user's personal space. As with the Art Institute of Chicago e-book, the complexity of the resulting informational universe and the richness of its links leads to experiments in data visualization.

As museums consider moving from the almost familiar i-Pad application – a screen oriented (albeit touch screen) presentation such as the Art Institute's 'ostrich' – to the true novelty of situated embodied experiences, visualization becomes the primary challenge. Sarah Kenderdine and Tim Hart take us on an immersive tour through museum data represented in 3D. To most of us, even the language with which these omni-spatial visualization strategies are discussed is novel: data sculpting, interactive visualization and embodiment, and immersive multi-player exertion-based gaming aren't yet tripping off the tongue of the average museum director. But imagining how data in numerous modalities are connected and used is a growing part of the challenge of planning any museum activity. As seen elsewhere in the conference, multi-channel delivery has spawned special toolsets (Campione et al.) and open source code for a field guide for iOS devices, including mobiles, that allow users to carry the museum in a jacket pocket when they go hiking. (Sherrin).

Thus, when the BBC and the British Museum began to plan a 'modest' radio program on the History of the World, that would also introduce the public to the splendors of the museum collection, the question of how this audio presentation would be connected to other modalities of presentation was front and center. Matthew Cook takes us through the process of envisioning the different modes of presentation, together with how staff planned to exploit the strengths of each. Radio reflected back into the onsite exhibit and was in turn amplified by the online presence, where a social dimension was stimulated by introducing the game of guessing, or proposing, the final object in the series, bringing the audience into a direct relation with the presenter, Museum Director Neil MacGregor. A

printed book, published after the series was completed, led the audience back to podcasts of the programmes.

Though few institutions have the resources, or the prominence, to author a history of the world based on their collections, it is probably more important for museums to recognize that such an undertaking would in any event not scale well beyond 100 objects. Imagine trying to tell a story with 137,000 hours of video, 20,000 hours of film, 124,000 hours of audio and more than three million photographs as the initial source data – and with a nearly infinite amount more to be added over time. Johan Oomen and his colleagues report on a prototypical location-based system implemented on an open source, extensible platform designed to cope with the potentially massive scale of digitized historical resources. In its first instantiation, the system provides access for mobile devices to rich multi-media information sources on the theme of War Monuments in The Netherlands, and does a credible job of augmenting visitor experience with respect to those historical sites. But its longer term implications are as a testbed for robust, scalable multimedia delivered from diverse heritage data sources through multiple channels.

As their experience demonstrates, one challenge is to present richly connected data through a variety of channels so that the different experiences in each medium enrich each other, and so that each individual feels addressed personally. Silvia Filippini-Fantoni explores this oxymoron – an intimate broadcast experience – with an application that attempts to establish for visitors the sense of a one-to-one dialogue with an artist. Using an asynchronous videophone-like application, 12,000 visitors recorded a question to the artist; 250 have received a response on the artist's website within 72 hours, uniting a single work exhibition, a video kiosk and a website in a unique personal dialogue space. Jette Sandahl, Jacob Parby and their collaborators make their museum personal in an almost orthogonal manner, by pushing the museum content out in a streetscape-sized touch-screen interactive designed to enable crowds to engage with the collections of the Museum of Copenhagen, and individuals to have their own private experience as part of the whole. As these creative implementations illustrate – and others bringing Amsterdam to the mobile devices of tourists and residents (van Dijk) or the experience of thirty years of a marathon to participants' families and friends (Clarke and Galani) – imaginative means of reaching the affective sphere are being explored throughout the community. Whether the channels are targeted to reach one or many, to provide for feedback or immersion, to link to other museum sources or to data outside, the interface is the museum, and the museum is many faceted – in part because each interface creates a different experience and each user experiences different content in a personal way.

The Social-Mobile Sphere

That the museum is a social experience as well as a source of information has been one of its defining attributes and has been the driver of its user-oriented programming for several decades. Yet, when museums adopt social media as a way of interacting with their audiences, they find their existing structures and policies are not well suited to the new demands. Dana Allen-Griel and colleagues from the Getty and Monticello look at this phenomenon in the context of management literature and reflect on its organizational impacts. They find that each of their museums placed responsibility for social media in a different organizational niche, and that these locations influenced the character of the resulting programming. As the Swiss (Vogelsang) and Danish (Holdgaard) museum communities report elsewhere

in the conference, planning for social media – and developing the appropriate policies and strategies – is proving to be a major challenge for the traditional leadership of our institutions. Museums everywhere are seeking to use prevailing avenues of social media interaction, as they discover that abstaining from Flickr® or YouTube® or Facebook® does not insulate them from that world; it simply gives them no say in how they are represented.

In the delightful case study presented by David Harkness and his colleagues, we find that the rules governing the social domain are so independent of the museum, and so far from our daily work processes, that sometimes museum content can 'go viral' in the social cybersphere, leaving the museum scrambling to figure out why. A sudden surge in usage alerted the Canadian Heritage Information Network to the fact that a photograph from the previously obscure Bralorne Pioneer Museum had became an Internet phenomenon. Misconstrued online, the photograph shows a man in the center of a 1940's crowd dressed in what was perceived by viewers as today's contemporary fashion, thus suggesting to the imaginations of a vast community of believers in such things, documentary proof of 'time travel'. An informed reading of the image was able to demonstrate – by locating each part of the man's attire in other 1940's sources – that the scene was internally consistent. The lesson to museums goes to the heart of trying to interpret their collections, both because it demonstrates how difficult it is for uninformed visitors to read the past and because it reveal the potential power of social media to attract attention.

Planning to get attention, however, can be much harder. Loïc Tallon reports that museums which have implemented social media programs are keenly aware that the most difficult task they face is attracting visitors, while those who have not yet implemented their first social media activity think that getting attention for it will be a minor problem compared with the other challenges they face. Social media should imply that success is not simply a matter of building something and waiting for the audience to come, yet one of the oversights most museums seem to make is not planning in advance how they will bring visitors to their social site, and keep them involved over multiple visits.

A strategy being adopted by many museums is to integrate social media into mobile experiences. This makes sense, of course, since the mobile realm is tightly bound the social – phone conversations and texting are inherently interpersonal, and where we are minute-to-minute is very much a factor in what we want to share. While we could simply publish the museum website to mobile devices, if we want to meet our visitors there the conjunction of mobile and social is invaluable. Yet several of the institutions with the longest experience in mobile and social applications warn us, in their distillation of lessons they have learned in 'Getting on, not under, the mobile bus', that mobile media will not prove a panacea either. Whether planning for income or eyeballs, for basic social interaction or extended games, institutions thinking about entering this domain (and those already invested who are considering further developing their presence) should heed the warnings. Success in the social mobile realm requires new practices and new business models, but it requires substantial investment by the museum, so it should be planned to benefit both the museum and the online visitor.

The National Maritime Museum in the UK provides an example of how to engage the community in a way that entertains the visitor while helping to further document the collection. When the public joins the museum in 'crowd sourcing' scientifically important data, a new social space is created. Fiona Romeo and Lucinda Blasser explore the roles that users are playing and quote responses that illustrate their excitement at being part of a museum-led endeavor with larger scientific purposes. The testimony provided by those who are involved makes it evident that participation in these museums projects becomes an important part of the lives of some volunteers and that they look forward to their on-going engagement, even while they are assisting the museum in enhancing its documentation. With clever implementation, the public is rewarded by being transported, through the museum's collection, to an alternative, imagined, realm where they are 'on-board' the ships whose logs they are transcribing.

Elsewhere in the conference (Pert & James), the Peoples Collection Wales illustrates the more familiar; contributions by visitors of their own memories give them a sense of belonging to the community created online and encourage them, their friends, and others to contribute yet more content to the project. But it is through tools that enable users to tell their stories, or build their own tours, that the relationship is fully cemented. Making a toolset for end-users is, of course, a substantial investment, but the investment that those users make in re-imagining themselves through the tools is potentially even greater.

The Sphere of Alternative Realities

Where the seriously engaged participants in Old Weather are taking part in a voyage of discovery that took place a hundred years ago through the old-fashioned process of reading a diary and exercising their own imaginations, Rothfarb and his colleagues at the Exploratorium have designed a way for the average, unprepared visitor to participate in an alternative reality experience that works by direct feedback from the real world. First, showing the printed museum magazine cover to the camera in a phone calls a 3-D birthday cake complete with lighted candles to the user's screen. Then the user can blow out the candles with a puff into the phone! This may not seem to have a larger purpose, but by demonstrating the permeability of the once-solid boundaries between the real and the virtual world, it engages visitors in an alternate reality they have only heard described in the abstract. And it prepares them for involvement in subsequent Exploratorium projects such as the Golden Gate Bridge fog altimeter, or the visceral experience of participating as both subject and object of surreal art in the "Getting Surreal" show.

Like the Exploratorium experiments, the Augmented Reality pilots launched by the Stedelijk Museum in 2010 and early 2011 have an artificial quality. They help to answer questions about how to implement GPS-based information overlays that communicate museum-based information to users' handsets, but they are incomplete as museum-based experiences. That integrated geo-location and large databases of images from other times in history could allow us to engage in virtual time-travel is now widely recognized, but few museums have taken the step of implementing alternative reality within their exhibitions.

The Bunratty Folk Park implementation reported by Ciolfi and McLaughlin would, therefore, have broken new ground even if it hadn't been especially sensitive to the need to connect

the experience of another reality firmly with tokens representing the artifacts of the historical site. Using these tokens, which they could subsequently take home, the visitors called forth virtual realities throughout their tour, and then could leave behind their impressions and thoughts of those virtually enhanced spaces for other visitors to encounter, making their itinerary in an imagined space a concrete memory for future visitor imagining the space for themselves.

There is, in all these successful implementations of augmented reality, the element of game playing. Visitors are brought into a world with different rules, where information from the museum is overlaid on their experiences and the reality in which they are embedded, with some museological purpose – be it to teach the parliamentary system, help enhance collections data, or achieve empathy with wolves. Playing games allows us to adopt a new persona and learn the life-skills associated with a different world. Indeed, as Stidwill and his colleagues from the Houses of Parliament demonstrate in *MP for a Week*, the depth of experience that a player can obtain from 'being' a member of parliament, and facing some of the conflicts that a real MP faces, is deeper and longer-lasting than can be conveyed in any lecture. But beware: designing a game for multiple players, that takes a classroom into another realm for a week, will prove no less demanding a job than designing a major exhibition.

Mia Ridge spent a year looking at alternative strategies for gaming in designing a way that visitors could both learn about the museum collections and help the museum document them better. Serous games require serious thought. We know that some people will tag museum collections objects without any reward, but the rewards of a game – engagement, competing for points, seeing the results over time – might contribute to better and more tagging. In the games Ridge reports, the context of the game, its conceit and the rules it imposes are just sufficient to provide the impetus for action.

In other games, such as those described be Schaller, the world of the game is rich and complex, defined by a set of rules and comprising a system. The objective of playing is to understand those rules so as to be able to exploit them to win within the alternative reality that the game maker has constructed. The objective of the game designer is to teach the players things about the system that governs the universe of the game that it would be difficult to convey, or which players would be unlikely to internalize, without the conceit of the game. Whether the rules we learn are those that a wolf must follow to survive, or a seventeenth century gentleman must master to marry well, preserve his fortune and rise in court, the intuition gained through role play may be better suited to navigating these waters than directly reading the scientific or sociological literature from which the rules were derived. And for most, it will be more enjoyable too.

The Music of the Spheres

In the ancient world, the harmony imagined in the procession of celestial bodies was an artifact of human imagination, and the bodies themselves and their presumed movements were represented in ingenious astrolabes and marvelous art. The world of museums is likewise a world of artifacts in both senses. The things in the collections of the museum are artifacts, or specimens, created in the real world, but the lesson

that these objects can teach is best conveyed by constructing a new artifact, telling a story. Traditionally the museum curator or educator was confined to telling this story, creating this new artifact, through a museum exhibition that might be accompanied by a book. Then we added the audio tour to tell the story in the words of the curator or other visitors. The Web instantiation of the traditional exhibit allowed us to associate the objects with lots of other data, images, sounds and video and to make a richer, deeper story. All the time, we have been trying to make the tale we want to tell more personally meaningful, more engaging, more immediate, more convincing.

What this volume tells us is that museums have embraced the potential of multi-media fully in the past few years, and are struggling to achieve its imagined benefits. They are exploiting every channel of presentation simultaneously, not just one or two sequentially. And they are reaching out beyond the walls of the museum into cyberspace, into mobile always on, fully surrounding, everyday life. By extending the museum through visitors to their social circle and from that circle outwards to networks that were unaware of the museum and its holdings, they seek to attract visitors online, if not also on-site, and engage their imaginations.

Will museums be able to manage these affective, imaginative and semiotic realms to overcome the burdens of physicality, locus and objectification? If so, we may truly leave the 19th century museum behind and witness the birth of a social institution suited to the 'mediate', and unmediated, the demands of the 21st century. And if we do, these papers and the many others presented in the full online Proceedings of Museums and the Web 2011 will have doubtless helped illuminate the path.

References

Note: there are other related papers in the full *Museums and the Web 2011: Proceedings* online at http://conference.archimuse.com/mw2011

Campione, P., et al., A "Smart" Authoring and Delivery tool for Multichannel Communication. In J. Trant and D. Bearman (eds). *Museums and the Web 2011: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2011. Consulted March 15, 2011. http://conference.archimuse.com/mw2011/papers/smart_authoring_delivery_tool_multichannel

Clarke, R. and A. Galani, My Great North Run: Facilitating rich audience participation. In J. Trant and D. Bearman (eds). *Museums and the Web 2011: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2011. Consulted March 15, 2011. http://conference.archimuse.com/mw2011/papers/my_great_northern_run

Holdgaard, N., Online Presence and the Act of Not Just Being There. The Use of Social Media by Danish Museums. In J. Trant and D. Bearman (eds). *Museums and the Web 2011: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2011. Consulted March 15, 2011. http://conference.archimuse.com/mw2011/papers/online_presence_and_the_act

Kamura, T. et al., Building LOD for cultural information resources in Japan. In J. Trant and D. Bearman (eds). *Museums and the Web 2011: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2011. Consulted March 15, 2011. http://conference.archimuse.com/mw2011/papers/building_lod_for_cultural

Pert, T. and D. James, Casgliad y Werin Cymru – People's Collection Wales: combining museum, library, archive, broadcaster and user-generated content to create "Wales in a website". In J. Trant and D. Bearman (eds). *Museums and the Web 2011: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2011. Consulted March 15, 2011. http://conference.archimuse.com/mw2011/papers/peoples_collection_wales

Sherrin, S. Release your local species into the iOS ecosystem. In J. Trant and D. Bearman (eds). *Museums and the Web 2011: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2011. Consulted March 15, 2011. http://conference.archimuse.com/mw2011/papers/release_your_species_into_the_ios

Van Dijk, D. The Amsterdam Museum App – exploring heritage in participatory culture. In J. Trant and D. Bearman (eds). *Museums and the Web 2011: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2011. Consulted March 15, 2011. http://conference.archimuse.com/mw2011/papers/the_amsterdam_museum_app

Vogelsang, A. and B. Minder, Audience+: A holistic approach to developing social media guidelines for Swiss Museums. In J. Trant and D. Bearman (eds). *Museums and the Web 2011: Proceedings*. Toronto: Archives & Museum Informatics. Published March 31, 2011. Consulted March 15, 2011. http://conference.archimuse.com/mw2011/papers/audience+_a_holistic_approach