MeLa Books

REPRESENTING MUSEUM TECHNOLOGIES

edited by
Jamie Allen and Eleonora Lupo

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Asmat

Introduction

> A museum is not about what it contains; it is about what it makes possible. It makes the user's future conversations, thoughts, and actions possible. It makes engagements with artifacts and documents that lie beyond the museum possible. It constructs narratives that help us to locate our memories, passions, and commitments. The museum illustrates irresistible new thoughts and stimulates revisions of former thoughts. The museum invites us to reconsider how we behave and what we craft in the worlds of lived experience. The gift of a museum for every user is an appreciation of complexity, a welcoming to the open door of the unknown, the possible, the possible-to-know, and the impossible-to-know.
>
> Carr 2006, 16

The museum is perhaps now an archetype of argumentation and application in Western societies. They are sites where the boundaries between the cultural and physical are increasingly challenged. Traditionally, and still most often in our contemporary cultural landscape, the museum is an entity that employees material assemblages (buildings, collections of objects, physically located exhibitions, images) in the consolidation, questioning and creation of cultural meanings. This is a productive function, with varied goals, motivations, outcomes: Education, experience, archiving, knowledge creation, amongst many others. The term "technology," likewise, is best broadly understood as an exceedingly and increasingly complex grouping of material structures (electronic, digital or otherwise) that resonate with cultural effects and constraints. That which concerns the study of technologies of representation intersects with the practices and interests of museums. It is this that gives both museums and technical media enormous potential as objects of study and sites of experimentation: The interplay of the noumenal (real things) and the phenomeno-

PREVIOUS PAGE — *People in Their Worlds, Rautenstrauch-Joest-Museum, Köln. Atelier Brückner, 2010. Interactive table combining projection and cultural artefacts.*

logical (senses and meanings) within a dynamic network of interactions between people, objects, representations, and sites.

Presupposed here is the pretext that museums are not only apt sites and agents for the investigation and essaying of particular effects of contemporary technologies and their application, they are also cultural constructions which, in themselves, can be thought as technological (Allen 2012). Recognising this technological dimension of museums is helpful in avoiding reductive analyses of these sites as a set of derived institutional practices articulated through a set of unbiased "tools." Instead the museum is helpfully understood as an intricate set of representational techniques and technical materials entangled with people and customs. In addition to the analyses undertaken within humanities, which often treat socio-institutional observation as predominant, it is important to note that even within the "cultural institution," we remain enframed by technology. As Rowland, et. al point out in their 2006 essay "Bringing technology back in: a critique of the institutionalist perspective on museums":

> It is not the case, as some scholars have suggested, that institutions simply precede technologies. A technology's impact is not limited to how it helps an organization's workers carry out socially mandated tasks. In contrast, technologies can destabilize organizations and they can be used to change an organization's environment. (Rowland and Rojas 2006, 92)

Central to museums is the topic of "representation." They are themselves technologies of representation, symbolizing and manifesting a host of national policies and politics, dynamic narratives, contentious or doubtful veracities, asserted norms. At the same time they are contexts where technologies of representation are employed or employable, where a truly exceptional number of communications methods and technical media can and are employed. For these and other reasons museums remain a central, perennial and enticing object of study to a number of fields of research and practice.

These perspectives are emphasized in the writings and case studies included herein. What is sought throughout is a topology of exemplary projects which seek to balance the cultural with the material and technological. In certain cases, this balance is further punctuated by projects and initiatives in which technologies constructively become a prime mover or motivator. The cultural resonances of technologies can at times even serve to problematise or question what a museum remains "good for", much as they have within other cultural industries like journalism and publishing (Merritt 2012, Cairns 2012). In new informational landscapes wrought by the ubiquity of digital technologies, what is at stake is no less than a questioning of the existence of museums, and no more than attempts at ensuring continued relevance of our beloved "seats of the Muses."

→ ON CASE STUDIES AND THEIR SELECTION

This publication forms part of a series of books emerging from the four-year long European Union Commission sponsored project European Museums in an Age of Migrations (MeLa) (www.mela-project.eu). These volumes comprise a set of writings approaching the related topics of museum studies, political and cultural studies, media studies, architecture, design and technology, and art from cross-cutting interdisciplinary and multidisciplinary perspectives. At time of publication and writing, the project overall is nearing its midway point. This book includes a set of case researchers have been carried out according to specific interests in technological dimensions of museums, under Research Field 05—Exhibition Design, Technology of Representation and Experimental Actions.

The information presented here is derived from a survey system prepared for museums researchers participating in the MeLa project. This researcher derived canvas survey was conducted for approximately 16 months, culminating in the preparation of this book, and will continue to be used as a tool for case study collection following its publication. The online survey system was developed by project partner Copenhagen Institute of Interaction Design (CIID) in order to collect case studies relevant to its own research agenda, but was expanded to included surveys specific to each research field for the collection of data relevant to these inter- and multi-disciplinary fields. The vast majority of cases entered and analysed are those created under research fields interested to regard the technological dimensions of museum-originated projects, design and initiatives, and used a variant of the surveys initial designed to question these aspects. For the purposes of the case study survey tool, a project constitutes any permanent or nonpermanent development initiative, initiated by or for a museum entity or community. In most cases these projects refer to public-facing interventions, designs, exhibits, programs and interactions with resources, although a few internal, institution-facing management tools for, for example archiving projects have been approached as well. Likewise, we do not take to mean here "museum technologies" in the sense of the vast interest and potential in discussing how objects, documents and events are digitally catalogued, digitised, documented and stored. The interpretation was done via desk-research and analysis of documentation, in order to develop an overview of user feedback, intention of design, resource infrastructure and technology use.

The approach to case studies here presented was initially designed by researchers at an institute accustomed to developing applied, practice-based technology interactions and research (CIID). One early interest in the development of further versions of the survey tool involved the checking of assumptions as to what constitutes a case study, and what constitutes the appropriate or subject-specific methods for collecting and documenting them. As an example, for an applied research group like CIID, the approach stemmed from a desire to collect many example applications—perhaps at the expense of depth of analysis of each of these. This was done in order to develop a kind of "topology" of technologies,

that could be used to show and relate technology applications to their application and context. Further interest by this group is in reading these projects through the designerly intention they embody, over perhaps more user-focused or institutional-culture orientations (this was also a repercussion of the web-based researcher-led technique used to collect these cases, as many project descriptions were culled from design documentation and descriptions). In order to aid this topological approach, a number of the survey fields were developed through a set of numerical and multiple choice selections. Researchers were, for example, asked to sort their particular cases according to a field entitled "Topic." This selection appeared as a radio button with the following options, developed through interaction with MeLa research partners: Migration, City contexts, Nation contexts, Europe, Identity (religious, political, etc.), Ethnography, Archaeology, Difficult Heritage/Memory, Contemporary Art, Community/Neighbourhood contexts.

As a further speculative and inventive direction for the survey data collection amongst researchers, a set of numerical parameter selection fields were developed. These took as their inspiration sets of qualitative *tendencies* that might be identified in the case study example project. These numerical values and parameters, more describing inclinations and presumed intentions of the designs than any specific "counting" exercise, were also entered by researchers. "Exhibition Elements" is a survey field developed in order to capture the "degree" of "objectness" or "virtualness" of a given museum element or initiative. The researcher entering the case study data is asked to respond to this field from a scale between "1" (object) and "5" (virtual). Such a parameter, although recognised as in no way a rigorous description of the project's implementation, allows researchers to quickly rate and gauge the tendency of the exhibit to use traditional paradigms of physical interaction, or the design's leanings towards virtual or digital "worlds." Perhaps more importantly and interestingly, this data can be inverted to create, for example, counted histogram analyses (which give a sense, for example, of the number of exhibition elements which tend towards "object" centric displays selected and captured by researchers). Such a direction has been fruitful in testing an approach for rethinking museum-studies derived research data (including text essays, text, and text-description case studies). The potential for treating case studies in this way, as a potentially "latitudinal" (as opposed to the depth implied by longitudinal studies) or "far reading" (as opposed to the "close readings" undertaken by humanities scholars and other pursuits). The overall technique for case study gathering and analysis here is inspired by related work in the Digital Humanities (Borgman 2009), and is illustrated and treated most thoroughly in Chapter 5 of this volume. Suffice it to say here that the term describes, amongst other things, a set of techniques where the practice of digital processing, data manipulation and filtering intersects with textual and literary humanities research outputs and techniques and methods:

> [...] digital humanities allows scholars to shift from commenting about new media and technologies to constructing arguments with and through them. Informed by claims from experience and anchored in embodied acts of building, digital humanities arguments necessarily become hands on. (Sayers 2012)

Through this comes a potential of augmenting deep and close-reading type analyses of single cases and with overall views of trends and inclinations, wrought through statistics and more complex algorithms for evoking relationships and trends. Digital Humanities and related methods point towards insights from research materials wherein "relations will be more important than categories; functions, which are variable, will be more important than purposes; transitions will be more important than boundaries; sequences will be more important than hierarchies." (Menand 2001, p. 123-124) The discussion preceding data visualisations included in Chapter 5, as well as the concluding chapter of this volume, help further elucidate these conjectural and speculative and directions.

→ ON INTERDISCIPLINARITY IN MUSEUMS AND TECHNOLOGY RESEARCH

This case study book, simply put a collection of technology-relevant application and projects in the museums sector, has raised a number of interesting points of discussion with the MeLa project team of interdisciplinary researchers. Foremost among them is the issue of "near" and "far" readings of "case studies." Or, what constitutes a case study? To the fields of sociology, anthropology and museum studies, the phrase evokes a set of site-visits, research practices and historical and institutional network mappings resulting in a sizeable set of texts, documents and other published outputs. To application and practice-oriented fields like interaction design research, architecture and technology-studies, the case study perhaps evokes a more suggestive listing or cataloguing of implementations, practices, applied technologies and possible systems. One way the research teams have sought to solve this is via a set of discipline specific case study survey systems—one which allows for specific survey fields, text-entry formats and applicable meta-data to be applied to each case. Another suggestion is that the Digital Humanities approach outlined here and in other discussions might allow a kind of multi- and interdisciplinary "boundary object" to emerge in the form of digital cross-sectioning and linking of qualitative (images, geographies, visitor numbers) and quantitative (text descriptions) case study data. These are objects of study, which are both plastic to local communities (in this case groups of researchers) and yet robust enough to be a site of transferred knowledge; "weakly structured in common use, and become strongly structured in individual-site use." (Star, Griesemer 1989) The survey and case study database created points to the idea that such techniques might produce a database-as-boundary-object, that is, a digital object (or data set) with a concerted focus and common form, but which dynamically shifts, through specific tools and filter functions, to allow for strong structuring within specific uses, research purposes or interpretations. Our approach

in this book (particularly through Chapter 5), points in these directions without exhausting them. The tools and techniques we've gathered in order to process interdisciplinary research data will be later used as a means of creating and curating other work through the MeLa project (E.g.: A planned "final exhibition" which promises to decenter the learning and definitions evoked through the different focuses presented in the project as a whole, via a set of "clusters", or perspectival "slices" through the meanings of texts and other media-derived responses by project researchers from the various fields represented).

→ THE STRUCTURE OF A CASE STUDY SOURCEBOOK

The case studies developed through this sourcebook are developed through a set of themed chapters, each identifying and introducing topics that were seen by researcher as new opportunities or challenges that technologies bring to the museum space. Some emphasis is placed on applications with a potential for technologies to address trans-nationality, multi-ethnicity and other project themes. Overall, however, the book contains applications with *potential* towards use as expositions and designs which highlight the parallel, polyvocal and dynamic identities of objects, medias and people. The independent analysis and discussion of issues relating to nationality, trans-nationality and identity (of both the museum-as-institution and the individual citizenry, audience) will be contributed to through later outputs and publications co-derived by MeLa project team members.

The first chapter, "Technology," presents a set of inventive uses of technologies, which seem to use technologies as a forefront feature. These are technologies used largely "for their own sake", as experiments, creative provocations or (at least partially) for novelty's sake. The second chapter, "Space," helps understand examples and potentialities of technologies to redefine and re-mediate the psycho-geographic perception/reception and movement of people in buildings, cities, geographies. Chapter 3, "Content" is an analysis of cases which exemplify a treatment of material or narrative in a way that resonates well with technologies of representation employed. Chapter 4, "Sociality" develops a set of case studies which are less concerned with the exposition of content as they are with the ways that media and technologies can connect people and groups to one another. These four chapters are representative of a rather traditional selection process which took place amongst collaborating researchers familiar with the case study data. Chapter 5, "Visualising" works with the museum case study data, in new and revelatory ways, through a set of visualisations which use digital techniques (such as semantic analysis and statistical analysis) to evoke new insights on examples and case studies collected through the research process thus far. Each of the subsequent sections contains an initial introduction, followed by a selection of case studies and approaches, selected and prepared by the authors and editors.

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→ REFERENCES

Allen, Jamie, and David Gauthier. 2012. "What Kind of Technology is the Museum." In *Museums in an Age of Migrations*, edited by Luca Basso Peressut, Clelia Pozzi, 161-172. Milano: Politecnico di Milano.

Borgman, Christine L. 2009. "The Digital Future is Now: A Call to Action for the Humanities." *Digital Humanities Quarterly* 3(4). http://www.digitalhumanities.org/dhq/vol/3/4/000077/000077.html.

Cairns, Suse. 2012. "Provocation: Society doesn't need museums." *Museum Geek*. June 18, http://museumgeek.wordpress.com/2012/06/18/provocation-society-doesnt-need-museums/.

Carr, David. 2006. "Mind as Verb." In *Museum Philosophy for the Twenty-first Century.* edited by Hugh H. Genoways, 11-18. Lanham, MD: Altamira Press.

Menand, Louis. 2001. *The Metaphysical Club: A Story of Ideas in America*. New York: Farrar, Straus and Giroux.

Merritt, Elizabeth. 2012. "Our Broken Economic Model." *Center for the Future of Museums*. June 5. http://futureofmuseums.blogspot.dk/2012/06/our-broken-economic-model.html.

Rowland, Nicholas J., and Fabio Rojas. 2006 "Bringing Technology Back In: A Critique of the Institutionalist Perspective on Museums." *Museum in Society* 4: 84-95.

Sayers, Jentery. "Writing with Sound: Composing Multimodal, Long-Form Scholarship". *dh2012 Digital Humanities*. http://www.dh2012.uni-hamburg.de/conference/programme/abstracts/writing-with-sound-composing-multimodal-long-form-scholarship/.

Star Leigh Susan and Griesemer R. James. 1989. Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39. *Social Studies of Science* 19(3): 387-420.

Technology

The Challenge and Response of Museum Technologies

→ CULTURES AND TECHNICALITIES

> What if a museum's overall practice were built outwards from its technology efforts, rather than the other way around? What would a museum built from the ground up for speed and agility, rather than stability and longevity, look like?
>
> Koven 2012

The phrase "digital technologies" calls to mind a set of techniques and frameworks for the novel, dynamic, mediated experience of materials, information, spaces, and ideas. Symptomatic of our contemporary condition more generally, these more technologised dimensions of culture always seem to be advancing faster than our ability to analyse or evaluate them. This resonance, or "challenge and response," (Toynbee 1946) is a feature of all discussions on the introduction or new use of technological systems, particularly in areas traditionally relegated to the domain of the humanities. There exists a tension, between visions of technological progress and our ability to understand their repercussions, that is a perennial source of anxiety for individuals, micro- and macro-cultures. Edwards and Bhaumik, in their writings on the resonances between culture, technologies and the sense of the visual, site similar anxieties arising with a now quaint popular technology: railway travel. In 1862 the medical journal *The Lancet* warned how, "the rapidity and variety of the impression necessarily fatigue both the eye and the brain. The constantly varying distance at which the objects are placed involves an incessant shifting of the adaptive apparatus … scarcely productive of cerebral wear because it is unconscious." (Edwards 2008) This passage speaks both to the potentials that technologies have to change us, as well as the concerns that arise when these changes appear to us unwanted, understated, or hidden from view.

PREVIOUS PAGE — *Les Yeux Ouverts , Milan, Paris, Shangai. Fabrica, 2006-2007. The image portrays the exhibit "We are the Time. We are the Famous" which provides users with two real-time images of themselves, one blurring time and the other fragmenting it as a strip of celluloid.*

> Proposals for the use of modern technology in making museum specimens available to scholars on video screens and in restricting the display of objects should be taken very seriously; they may be the key to the further existence of museums. (Wittlin 2004, 45)

The contemporary culture of museums is a culture in service of a *public*. As such, in each of its guises (e.g.: as institutions of artistic, heritage, historical, scientific and social import) this culture needs to recognise popular techno-cultures and mass media, while manifesting histories and styles that have evolved through research conventions, archival and conservation practices, art history and science, amongst others. The "institutional culture" of cultural institutions has often been subject to challenges, concerns and anxieties about the adoption of new technologies, implicitly behind the scenes, and explicitly in the design of public exhibition spaces. As technologies become more distributed in geographic and social senses, becoming foundational to culture itself as in our contemporary spheres, museums are continuously challenged to understand the roles they should play in the broader, digital, technical media landscape. What do technologies do to reframe the proposition of the museum as a whole, and how is awareness of these changes maintained. How do museums "keep up?" A balance between tradition and progress is to be sought: with the historical cultures of museums and institutions on on hand, and the potential of new digital tools for representation and mediation of meaning on the other. One key to achieving such an equilibration is to avoid the often-polarising arguments asserting what "museums should be," or what place digital tools *should* have within them. Questions of integration must always take primacy over questions of difference and category. Important also is to be wary of those who would present digital tools and technologies as a sole or ultimate solution to the recurring question of the value of museums. No digital project or initiative is a "magic bullet" for the relief of the challenges the museum faces, although they do often serve as helpful thought-objects and moments of self-reflection towards for what museums might need to become. These interventions are, of course, also never solely implementations of new technologies, but proposals where the support, vision and leadership of people and other non-digital activators within cultural organisations are ever more essential.

This chapter presents a set of case studies selected as "whistle posts" along the train-tracks of museum technologies. It is a sampling of the ways that technologies can be used in sympathetic ways to inform the work of museums, exhibitions and public space design in the cultural sphere. The intention of the case studies presented here is to provide a representative and inspiring look at directions and prospects for the use of information communication technologies (ICT). The systems presented should not be looked at as "just tools," or arbitrary instruments—but an attempt has been made to select cases in which technological and mediatic features predominate. All such interventions resonate and interject with a broader and particular interpretive power, world-view, and limitations. The tremendous influence that choosing a technological interpretation over

some other has on the reception of heritage, cultural, biographical and social information and interactions can not be overstated. We understand the world increasingly within and through technologies. In this chapter we emphasize these technologies, as much as is possible apart from issues of topic, media content or context (which are represented through other cases in subsequent chapters).

As social, and (somewhat arguably) public spaces framed by a set of tranditions and historical practices and conventions, the museum is an environment where the introduction of new technologies is seldom seldomunnoticed. Some of the positive repercussions of technical media are relatively conspicuous, even obvious: The introduction of a new scale or resolution available for the analysis or interrogation of a given museum asset by the visitor, for example. Technologies can in themselves become contentious, problematic or the source of confusion and misunderstanding (even when they're functioning properly, but perhaps more readily when malfunctioning frequently or under-cared-for). Still other effects are much more subtle, influencing the receptive and interactive modes of meaning creation resulting from the museum experience.

A familiar example within museum contexts, the difference between a liquid crystal display (LCD) and cathode ray tube (CRT television) presentations is not just one of technological era or resolution or fidelity, but one of the subtle shifts in experience they provide, as well as their social and cultural references. These differences create both affective and effective changes in how a designed experience is met in the museum, and how it is absorbed (a preferable term to "consumed") and remembered. How accustomed is the audience to the qualities of scan-line versus pixel based images, and what references, cultures, does either evoke? How comfortable, intimate or habitual is a visitor's interaction with the image displayed (e.g.: as signalled through things such as viewing distance and dwell time, or subtleties around the amount of heat coming off the screen). Levels of familiarity, narratives of technological progress, and questions of historical accuracy all come into play (Is it responsible or accurate to present archival CRT television footage from the 1970s on a high definition LCD digital display built in 2012?). This example of digital image representation is a particularly contemporary one, as the digital LCD screen has achieved near omnipresent ubiquity in our lives, effectively normalising the experience of these screens—they dissapear. Now, the inclusion of older technologies such as a scan-line CRT in a museum space becomes a more marked, emphatic statement—likely to provoke greater attention by visitors than more standardised technologies of the day. These kinds of reception feedback loops influence the way information and media are mapped to the particulars of experience. Such subtle differences are amplified when dealing with more involved, and less commonplace, technologies. As interactions become more conscious for an audience member; transfigured in duration, immediacy and degree engagement, technologies show their inescapable power to reinterpret and transpose meaning. (For a treatment of these and other aspects particular to interactive technologies see Michael 2010.)

What new receptions and aesthetics of experience are possible for an audience of museum content or topics, inside and outside the traditional physical edifice of the museum? What are the characteristics of these interfaces and channels, and how can these be thought as practical strategies for enabling particular kinds of experience? How might the dynamics of experience be coupled most fittingly to the dynamics allowed through current digital systems and delivery methods? These are questions to pose in reading through the case studies in this chapter.

→ BROADENING FRAMEWORKS

Digital technologies are considered generally favorable additions to museum exhibitions. They are often described from the outset as "aids" or "augmentations" to traditional museum experiences. See, as one fruitful field of example, the title of umpteen museum-related applications published through the Human-Computer Interaction technology research community: "Designing Interactive Museum Exhibits: Enhancing visitor curiosity through augmented artefacts" (Ciolfi 2002). It is true that many such applications applications are in fact providing richer experiences, in multimodal ways. But for such applications to be considered successful overall, researchers, designers, curators, and directorial teams must responsibly and critically evaluate the overall repercussions of these projects (inside and outside the museum). This is particularly true in terms of resourcing (technical support and know-how in the museum) and administration (mandate and authenticity, a desire to engage with digital culture), as well as in evaluating reception by the museum's publics. Just as important as the idea or application are the systemic and human resources required to support potentially complex interactive systems, databases, and programmes. Regardless of their technical sophistication, all digital technology projects require at least an equally deliberate human and communications resourcing plan.

A useful critical frame to regard these applications is to evaluate how a given technology changes the reception of information or media, relative to individuals and their technology uses, outside the museum. How much, beyond thinking of technologies as tools, does a museum or its designed applications take into account the broader effects of digital culture on its audience? Modelling technical systems as mere "tools" or "vehicles" for content far too often leads to inappropriate, unloved, under-resourced, hence ineffective applications. The blanket application of a seemingly "generalisable" tool is less sustainably interesting, even if initially transfixing and desireable through its novelty.

Interactive digital touch table interfaces and installations serve as a recent example of a rampantly-employed technology that the museum design community helped bring into service. Exceeding popular in museum applications throughout the 2000s, digital touch-table installations have been used in all kinds of museum applications, from science galleries (Hornecker 2008) to archival browsing tools (Ciocca 2011). Many of these early applications have been both popular and successful, but as

these technologies mature, as their use matures, designers have come to ask more probing questions about their appropriateness as objects and as technological metaphors for interaction in the museum space. A touchtable, for example, is first and foremost a table, which brings with it a set of both helpful and hampering mental models, assumptions and social expectations. A critical mindset throughout the research, design and application phase requires that we ask questions: What does the technological dimension of novelty bring to the experience in the museum space? What does the metaphor of a table bring to this interaction? Why is this particular interaction appropriate given the content, user, and context of the exhibition?"

→ NOTES ON INCLUDED CASES

Please Touch the Exhibit, a 2010 project from the Melbourne Museum, included here, develops the design and directions of a relatively self-contained exhibition platform on an Apple iPad tablet computer. This case provides a salient example of the ways that new presentation formats and presentation technologies allow for the translation of museum resources and public-exhibition thinking on to new platforms. This example project designs for interactivity that is entirely platform-specific and appropriate (through the touch-screen facilities of the device, the tilt-detection technologies on the iPad). In this way advantage is taken toward the media platform itself, and its use outside the museum, without undue concern around traditional museum-as-physical-space oriented values or evaluative metrics (e.g.: Museum attendance). The Melbourne Museum transfers its own skills and and resources onto a new delivery platform (attempting first to understand its particular use dynamics and facilities) instead of attempting to shoulder digital technologies or culture into the practices of the museum—they "get with the program", so to speak. This physical distribution of the museum's mandate continues with the AR-tours project case study included here (2009-2011), in this case serving to bridge community cultural resources with those of the museum. The Anne Frank House's Secret Annex (Online) (2010) provides a best-practice example of how technologies and the internet can be used to provide access to that which is inaccessible to most, not as a marketing initiative but as a means of providing aspects of a museum's traditional mandate to digital culture, online. A History of the World by the The British Museum in London (2010) gives us an example of what technological dimensions are possible when collaborations allow for a media ecology to form across various channels inside and outside the museum (in this case, both online and BBC Radio broadcasts). Fabrica's Les v Ouverts exhibit gives examples of the kinds of physical interactivity that becomes possible when designers of physical objects and environment collaborate fruitfully with digital technologist and interactive media specialists. The results are new new, active and reactive ways of engaging with technology-infused exhibition elements.

→ CONCLUSIONS & BEST PRACTICE

Analysis of museum-sector case studies, and of all applications of technologies initiated by museums, galleries and cultural institutions must be considered in the context of cultural technologies adoption and use outside the museum. No single community or audience is entirely well-served by a single communication channel, just as no single method of engagement will serve the needs or intentions of all communities or individuals. "The digital," interactivity and creative computing applications in museums are often thought as predominantly captivating, beneficial and popular, while other groups may read the same initiatives as signalling unwanted change, interruption, noise, or as a sign of exclusivity: "This is not for me."

The most promising aspects of bringing technologies in the museum come through an approach that is well-informed by the technological culture from which these technologies and their use-patterns and values emerge. That is, thinking "eco-systemically" about what it means to bring technological interventions into the culture and historical context of a cultural or heritage institution, and vice versa. This becomes particularly important if we look at contemporary trends and popular engagement with online culture, pointing as this does to the Internet as predominantly a medium for *social* interactions, often *around* other media. In the context of museum and cultural experiences, these interactions feed into our everyday, our public spaces, our social lives. The social has, in fact, been a long-standing understated aspect of cultural and museum experiences. Technologies are more and more designed and derived from interactions with and between other people, and less and less derived from the interactions of single individuals with "resources" or information.

> Communications tools don't get socially interesting until they get technologically boring... It's when a technology becomes normal, then ubiquitous, and finally so pervasive as to be invisible, that the really profound changes happen. (Shirky 2008, 105).

One way of approaching the problem of integration of technological materials and systems into the museum space is to recognise that there are resonances, values and contingent characteristics specific to these technologies, proper to an emergent "digital culture." It is this culture, in part or in entirety, which is invited into the museum whenever technology arrives on the scene.

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→ REFERENCES

Ciocca, Gianluigi, Paolo Olivo and Schettini Raimondo. 2012. "Browsing museum image collections on a multi-touch table." *Information Systems* 37(2): 169-182.

Ciolfi, Luigina and Liam J. Bannon. 2002. "Designing Interactive Museum Exhibits: Enhancing visitor curiosity through augmented artifacts." In *Proceedings of ECCE11, European Conference on Cognitive Ergonomics*. Rome: Consiglio Nazionale delle Ricerche.

Hornecker, Eva, and Milton Keynes. 2008. "'I don't understand it either, but it is cool' - visitor interactions with a multi-touch table in a museum." In *3rd IEEE International Workshop on Horizontal Interactive Human Computer Systems*, 113-120. Amsterdam: Open University.

Koven, J. Smith. 2012. "The Kinetic Museum". *koven j. smith dot com*. January 31. http://kovenjsmith.com/archives/468.

Michael, Despina, Nectarios Pelekanos, Isabelle Chrysanthou, Panagiotis Zaharias, Loukia L. Hadjigavriel and Yiorgos Chrysanthou. 2010. "Comparative Study of Interactive Systems in a Museum." In *EuroMed Proceedings of the Third international conference on Digital heritage*, edited by Ioannides Marionos, Dieter Fellner, Andreas Georgopoulos and Diofantos G. Hadjimitsis, 250-261. Heidelberg: Springer-Verlag Berlin.

Shirky, Clay. 2008. *Here Comes Everybody: The Power Of Organizing Without Organizations*. New York: Penguin Press.

Toynbee, J. Arnold. 1987. *A Study of History: Abridgement of bind, 1-6*. London: Oxford University Press.

Wittlin, Alma. 2004. "A Twelve Point Program for Museum Renewal." In *Reinventing the Museum, Historical and Contemporary Perspectives on the Paradigm Shift*, edited by Gail Anderson, 44-60. Walnut Creek: AltaMira Press.

Case Studies

IMG 1.1 — *Please Touch the Exhibit, Melbourne Museum. Cloud 10 Communications, 2010. Here a screenshot of the iPad app: the navigation elements of the application are visible in the lower part of the screen.*

Please Touch the Exhibit

Melbourne Museum, Melbourne (AUS) - 2010

Cloud 10 Communications

Please Touch the Exhibit is an iPad app designed to celebrate the 10th birthday of one of the largest Australian museums, the Melbourne Museum. The app is primarily addressed to a young audience but not exclusively, and provides users with ten different ways to know its collection: Ten icons on the home page allow users to discover popular, or less well-known objects, unveiled with diverse interactive actions within the application.

The application is intended as a way of helping users understand the museum collection and widen its audience internationally, by reaching also users not-local to the museum: In the first month of its launch, Please Touch the Exhibit was downloaded 4000 times by both local and international. The diversified museum collection is offered to the app's user, who must shake, tilt and touch the iPad tablet in order to explore different science and social history themes, taken from the permanent collection and from temporary exhibitions.

The app is not designed only to support on-site visits, as with an audio or multimedia guide, but is rather a teaser or preview, a way to catch the attention of potential visitors and bring them to the museum. Users can meet Cretaceous creatures from Dinosaur Walk exhibition, or animals from Wild exhibition, explore Victoria's marine habitats or Indigenous stories, or the rain forest. Each icon-accessed chapter features different objects and ends with a final experience that exploits diverse iPad technologies.

→ RELEVANCE

Please Touch the Exhibit is one of the first museum applications specifically designed for the iPad tablet, a platform rapidly gaining popularity that offers unique characteristics such as a wide screen together with smart-phones functionalities, and on-board sensing technologies. Furthermore, this app differentiates itself from more mobile-focused museum apps, not providing purely on-site mobile interpretation or directions but an off-site curated view of museum's collections closer to casual games than to the usual museum apps. It inaugurates a new vehicle and platform for the promotion of the museum, and helps reach a new public with an instructive but engaging and enjoyable novel interactive experience.

→ ICT

Please Touch the Exhibit is an application developed for iPad only that exploits several mechanics of interaction allowed by Apple's tablet to discover some of the icon objects of Melbourne Museum's collection. The app is available for the iPad only and is not specifically designed be used in the museum as an interpretative tool but at home and consequently not during the visit: digital technology is therefore employed as a communication tool and not as an interpretative one. It's an off-line application that, once installed, runs on the iPad without the need of Internet connection, except for some web 2.0 functionalities, such as sharing on Facebook and Twitter or sending images as attachment to the email. Images and photos are the most employed media together with videos and very often users are asked to solve simple puzzles, tap and rub images, swipe pages, trace lines or move a peephole-like view to discover the hidden objects.

→ USER EXPERIENCE

Please Touch the Exhibit is an application developed for iPad only that exploits several mechanics of interaction allowed by Apple's tablet to discover some of the icon objects of Mel-

IMG 1.2 — *Please Touch the Exhibit, Melbourne Museum. Cloud 10 Communications, 2010. A child using and enjoying the app on his iPad at the Melbourne Museum. Please Touch the Exhibit is specifically addressed to a young audience.*

bourne Museum's collection. The app is available for the iPad only and is not specifically designed be used in the museum as an interpretative tool but at home and consequently not during the visit: digital technology is therefore employed as a communication tool and not as an interpretative one. It's an off-line application that, once installed, runs on the iPad without the need of Internet connection, except for some web 2.0 functionalities, such as sharing on Facebook and Twitter or sending images as attachment to the email. Images and photos are the most employed media together with videos and very often users are asked to solve simple puzzles, tap and rub images, swipe pages, trace lines or move a peephole-like view to discover the hidden objects.

→ TECHNOLOGY

Please Touch the Exhibit, intentionally or otherwise, exploits Apple Inc.'s App store platform to widen the Melbourne Museum's reach in an international context. The app therefore serves also as a promotion for the museum and its projects, irrespective of visitor, or content related issues. It is also educative, initiative to let people know about the museum and its collections in occasion of its tenth birthday. What is remarkable is the choice of an innovative platform, such as the iPad, only few months after its launch, and the design of small interactive games that exploit the device's potentialities: capacitive touch screen, accelerometer and compass. Users can access high-quality and high-resolution images and be engaged in mini games that usually end with a final prize, e.g.: A video or the possibility to send images by email. The described app employs mobile tablet technology in a very peculiar way: there is little use of connectivity and location awareness but provides information of a type that could be easily delivered through the web, enriching these digital resources with simple interactive activities more in line with casual mobile games than to the current museum mobile applications.

→ STATEMENT

Please Touch the Exhibit proposes in innovative use of tablets to involve users in an engaging and enjoying tour through its most iconic pieces.

DS

Key Issues

The case presented raises a number of important dimensions of the integration of technologies in the museum environment. A short list of these is included here.

→ ENGAGING AND PLAYFUL APPROACH

Small casual games are offered through the ten thematic "journeys" on the iPad device to engage users actively and stimulate reflection on the exposed objects.

→ EXPLOITING TECHNOLOGICAL CAPABILITIES

Please Touch the Exhibit has been specifically designed for the Apple iPad tablet and exploits its potentialities as well as its Apps Store distribution channel.

→ PHYSICAL INTERACTION

The technological capabilities of the iPad are exploited to create a physical relation between users and the displayed contents, and not to provide interpretation alone.

→ EMPLOYING CUTTING-EDGE DEVICES

Please Touch the Exhibit proposes an innovative application that exploits a new platform, very early after popular release of a new platform.

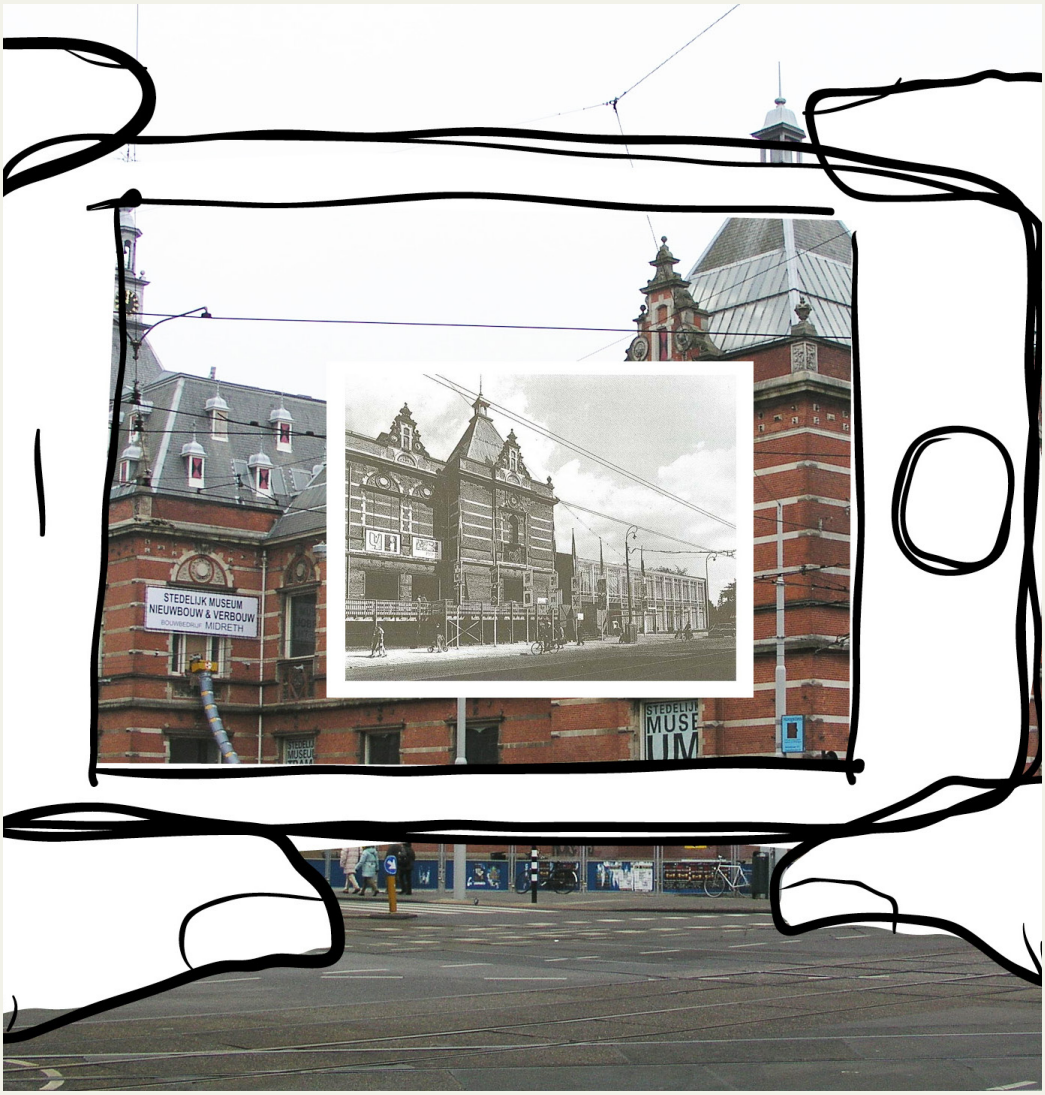
Other Examples

Culture Clic (2011)

CultureClic is a free-of-charge mobile app aimed to promote French cultural heritage. It features 700 geo-located works in high definition, viewable in AR on iPhone, museum data sheets, events listings, AR of places such as Louvre and Eiffel Tower as they once looked and practical information for 1,350 museums.

AMNH explorer (2011)

AMNH Explorer is an iPhone app that provides detailed directions around the American Museum of Natural History. Visitors can either choose from a number of Museum-designed tours or create their own from a list of popular exhibits, specimens, or artifacts. They can then share their tour by linking directly to their Facebook and Twitter profiles.



IMG 1.3 — *ARtours, Amsterdam. Stedelijk Museum, Fabrique, 2009-2011. The image synthetizes one of the capabilities of augmented reality: delivering and superimposing historic photos in the right place where they were taken.*

ARtours

Stedelijk Museum, Amsterdam (NL) - 2009-2011

Stedelijk Museum, Fabrique

ARtours is an augmented-reality (AR) project, developed by the Stedelijk Museum of Amsterdam in collaboration with the design bureau Fabrique, which investigates the potentialities of AR for presenting and interpreting the museum's large collection of modern and contemporary art and design. The technology used allows digital media to be "placed" in the scene of a real space, overlayed visually when the scene is viewed through a camera-enabled mobile phone. A two year project (2009-2011) was carried out, and created a set of subprojects: Meet Me at the Museum Square, ARtotheque, Stedelijk AR(t): Jan Rothuizen, Design Tour. The very first project, Meet me at the Museum Square (Ik op het Museumplein), was essentially exploratory and asked students of the University of Applied Science in Amsterdam to develop with an AR exhibition of 3D artworks in the main square in front of the museum, avoiding, at that time, the use of museum's objects. Six selected artworks were then exhibited in a public event that took place in May 2010.

The second project, ARtotheque, was an AR public art library that allowed users to borrow replicas of some museum's artworks and place them in AR wherever they preferred. "Stedelijk AR(t): Jan Rothuizen" went a step further, proposing AR as a way to create new artworks: the Dutch artist Rothuizen has indeed been invited by the museum to create an exhibition solely viewable in AR. The result was a fascinating AR exhibition that shows Rothuizen's drawings and graffiti only through mobile devices. The Design tour project built on previous experiences in order to create a sustainable and open AR platform, with a content management system (CMS) addressed to the museum and a dedicated interface for visitors, able to provide them with location-based multi-narratives.

→ RELEVANCE

The ARtour project proposes an innovative and even radical use of mobile technologies and augmented reality, presenting and interpreting Stedelijk museum's collection. The case is relevant for intercultural interests and exhibition topics, as it is a means of envisioning future interpretive applications of ICT in museums and for interpretive potential (literally and metaphorically) "outside the museum space." ARtours could be considered predominantly an investigation of technological capabilities, and a trial for feasible solutions which tries to push forward the use of cutting-edge technologies by cultural institutions.

→ ICT

The employment of ICT is particularly relevant in ARtours project. The augmented reality technologies employed are a primary feature of the project, as the title of the project also indicate. ARtours is indeed an exploration of the potentialities of augmented reality to show and interpret the museum's collection. The ARtour project is based on Layar technology, a favored platform that allows developers to create and publish both geo-located and vision-based augmented reality layers. Being an exploration and a trial, ARtours highlights both the potentialities and the problems that may arise from the use of AR in cultural field. The projects coordinator Hein Wils counts among the benefits: The ability to reach a new audience, to bring innovation to the way of exhibiting the collections, to help museum creating a different relationship with the audience and a new platform for artists. But AR is still not a mature technology and flaws can occur: GPS systems are not always precise and they are heavy on devices' battery-life. Furthermore foreign visitors may incur high roaming rates in order to participate.

→ USER EXPERIENCE

The user experience and intention varies greatly for each of the different sub-projects but all share the willingness to immerse visitors in a hybrid reality played between the concreteness of reality and an informative/artistic virtual layer. In Meet Me at the Museum Square, visitors are not asked to perform special actions but only to look at six 3D virtual artworks populating the sky of Amstredam Museumplein, putting them in the passive condition of a common museum goer. The Stedelijk AR(t) project proposes a similar user experience, but goes a step further using museum's rooms for their original purpose, that is exhibiting, but to show virtual artwork viewable only through enabled devices. A somewhat different approach is proposed by the ARtotheque project, which asks visitors to choose an artwork among several printed cards, scan the related QR code to load it into the Layar platform and then place the code wherever they like, in order to share the result.

→ TECHNOLOGY

The ARtour project, as well as most augmented reality projects, exmples innovative if perhaps radical relationships between people and cultural content, using technology as a prerequisite to access new layers of content and information. The project, indeed, is supported essentially by technology because visitors can access the artworks on display, or their augmentation, only looking through the camera of their mobile devices. The experience becomes one engaged in the novelty and essentially the act of layering of digital media onto real space. Technology goes beyond its prosthetic use, becoming a portal to perceive real space anew, accessible to a somewhat narrow group of enthusiasts and people possessing the right digital access tools. Furthermore, augmented reality is a location-based technology that requires people to be in the right place where virtual content have been placed. These are valuable topics of deliberation for cultural institutions that promote firsthand interaction with artworks and the spaces which contain them.

→ STATEMENT

ARtours proposes the innovative use of augmented reality to interpret and add contents to a museum collection and offers new opportunities for media artists.

DS

IMG 1.4 — *ARtours, Amsterdam. Stedelijk Museum, Fabrique, 2009-2011. Users participating at the exhibition Meet Me at the Museum Square which populated the sky of Amsterdam's Museumplein with six 3D virtual artworks.*

Key Issues

The case presented raises a number of important dimensions of the integration of technologies in the museum environment. Ashort list of these are included here.

→ TESTING TECHNOLOGICAL CAPABILITIES

AR is still a cutting-edge technology and ARtour project tests its capabilities within the cultural field as a way to exhibit and interpret art.

→ ENVISIONING FUTURE APPLICATIONS

The project foresees possible future applications of augmented reality, opening the way to alternative and radical use of ICT within art museums.

→ LAYERING INFORMATION

ARtour proposes an immersive way to layer information on the museum collection and to transform every place in an exhibition space.

→ INVOLVING STUDENTS AND ARTISTS

The project has involved university students to diffuse awareness about this new technology and an artist to increase its attractiveness.

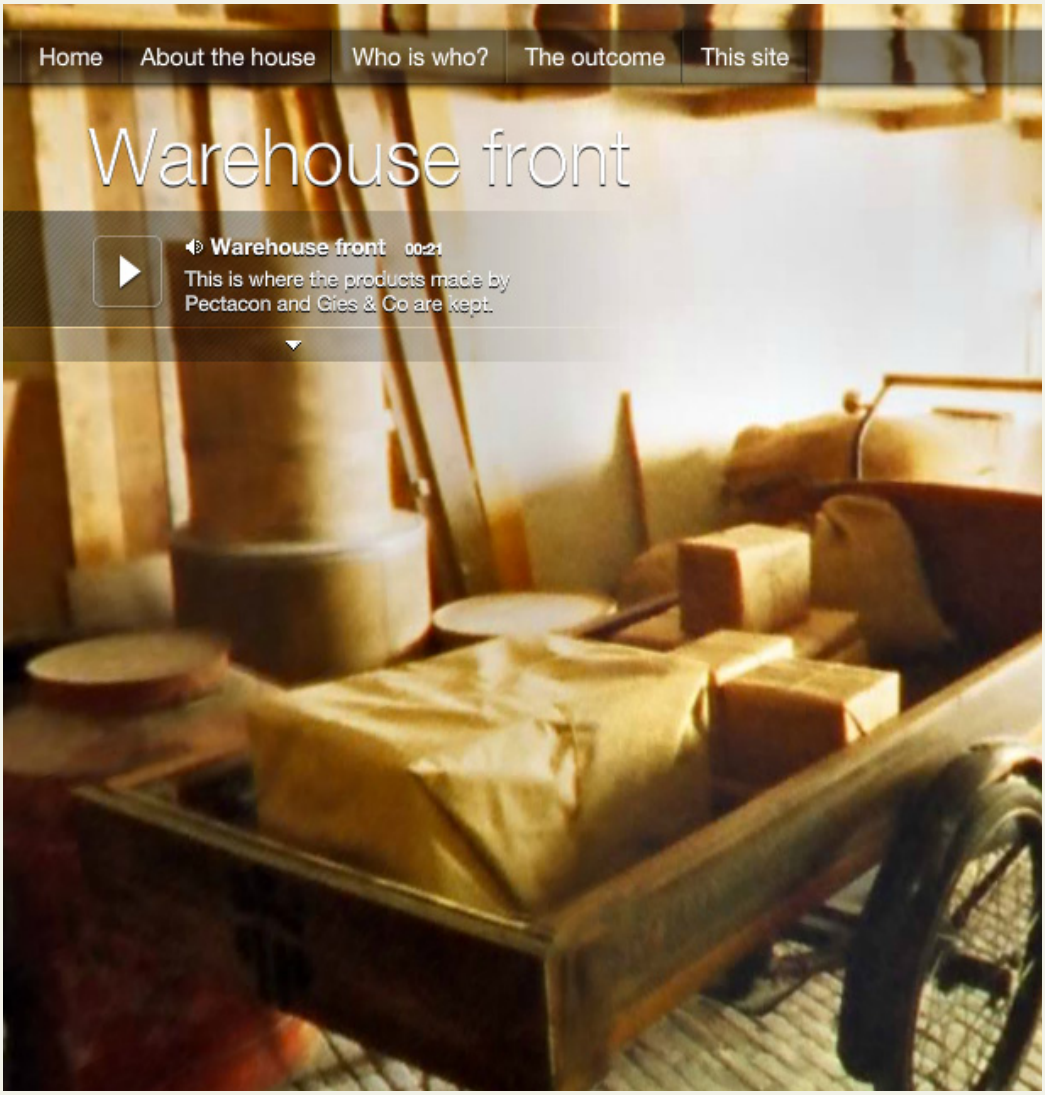
Other Examples

We AR in MoMa (2010)

On October 9 2010, the physical space inside MoMA hosted an unofficial augmented reality exhibition featuring works of invited artists. Visitors using the Layar app on their iPhone or Android smartphones could see numerous additional works on each of the floors.

Urban Augmented Reality - UAR (2010)

Urban Augmented Reality (UAR) is a mobile architecture application featuring augmented reality and 3D models and enabling users to see the past and the future of the built environment using their iPhone or Android smartphone. Rotterdam is the first city to have been transformed into UAR with the technology recreating buildings destroyed during WWII bombing.



IMG 1.5 — *The Secret Annex Online*, web. Anne Frank House, 2010. An image of the interactive web exploration showing the warehouse. Online visitors can explore the room through a 360° image and get further details by clicking on active spots.

The Secret Annex Online

Anne Frank House, Amsterdam (NL) - 2010

LBi – Lost Boys International

The Secret Annex Online is a virtual navigation in a 3D reconstruction of the house at Prinsengracht 263 in Amsterdam, where Anne Frank's family lived in hiding during The Second World War. The project's aim is to allow people who cannot visit the museum in Amsterdam to navigate through the few rooms where the world famous Diary of Anne Frank was written. The virtual model reconstructs the furniture and the possessions which were removed from the annex when it was emptied after the arrest of the Franks. Otto Frank, Anne's father, was the only annex resident who survived the concentration camp, and after his release expressed a wish to keep the annex empty.

The browser-based 3D model reconstructs the whole building including the business premises on the canal side and the annex as it was at that time. Visitors can hear stories in the appropriate (visual, virtual) location where they occurred, experiencing an atmosphere of mystery and grief recreated by actresses' voice and ambient sounds. The model also contains clickable hotspots that tell more about the object comprised in the virtual environments and historical film footage creates a context for the story. The result is a well designed and navigable web "site", designed with a strong informative commitment, and able to provide an experience that is not a virtual replica of the real visit, but delivers similar, appropriately presented content.

→ RELEVANCE

The case is an interesting example of a web-only, "virtual" visit which employs common technologies and media to provide a flowing, continuous, and hence absorbing "world" and informative experience online. The Secret Annex Online represents best practice in the field, as online platform. The project successfully mixes different media, achieving a balance—guaranteeing a high level of accessibility and translation. Furthermore the complex topics addressed (racism, segregation, quest for freedom, rejection of war) are highly valuable when considering the representation of interrelating cultures, particularly in a time of crisis. Anne Frank and her diary, as subject matter, are powerful symbols in the promotion of positive, humanistic values, in a personal and approachable way.

→ ICT

From the point of view of ICT use, "The Secret Annex Online" is valuable as it is not only a 3D experience but a real (virtual) visit that proposes a balanced mix of different media. Developers decided to avoid a fully navigable 3D environment (e.g. as employed in "virtual reality" or gaming environments such as Second Life) in favor of a guided tour which follows a more sequenced series of points of interest that, once arrived at, deliver different media. The Secret Annex Online provides online visitors with pop-ups containing the biographies of the Frank family and of the others who lived there in hiding, historic film footage, audio contributions with actors and actresses playing the role of the people who lived there, digital 3D reconstructions and historic photos.

→ USER EXPERIENCE

Users access The Secret Annex Online by following a link on the home page of Anne Frank House, which prompts a short film preview. The film explain the Frank's choice to move from Germany to Amsterdam and then to go into hiding. Clicking on a further link, users access the 3D environment starting from a digital version of the the movable bookcase that concealed and still hides the entrance to the Secret

IMG 1.6 — *The Secret Annex Online, web. Anne Frank House, 2010. A screenshot of the floorplan showing an overview of the warehouse the users can navigate.*

Annex. Brief 3D animations bring visitors from one point of interest to the other, where users can move into a 360° image and access audio contributions, videos, text descriptions and images.

In the upper part of the screen, an interactive menu allows users to change the language (English, Dutch and German), as well as to control the sound and select the image quality. A stylized 3D model of the building gives direct access to the rooms of the annex without following the proposed path. The online visit is designed to be alternative to the real visit or, at least, to come before or after it: the intent is indeed to allow very far people, who couldn't visit the house in person, to move through the rooms, grasp their atmosphere and get informed about its history. The online experience is not a simple replica of the real one but adds to it, providing interpretative material and reconstructing the lost furniture, and then being useful as a teaching support to be delivered before or after the real visit. One year after the launch in 2010, The Secret Annex Online reached about 800 000 visits with an impressive average visiting time of 17 minutes, which demonstrates users' interest through prolonged use of the website.

→ TECHNOLOGY

Technology is here employed to allow people to enter a digital representation of an existing space, but reconstructed as it was during the Frank's hiding, a translation in time period. The technology (essential, the World Wide Web and browser-based media delivery) provide additional informative material: the web interface is then proposed as a curated resource to access an environment that can't otherwise be accessed in this way, but goes a step further, differentiating from the real visit. Technology here enables of relationships between people and cultural content that can be accessed primarily on-site, but it also augments the experience with additional, contextual information. A remarkable aspect of this project is the wide and broad accessibility guaranteed by the web-based interface and by the employment of common media such as 360° photos, videos, audios and texts.

→ STATEMENT

The Secret Annex Online employs common technologies to provide online visitors with an enjoyable and informative experience, accessible worldwide, and able to arise reflection about a difficult heritage.

DS

Key Issues

The case presented raises a number of important dimensions of the integration of technologies in the museum environment. A short list of these is included here.

→ MIXING MEDIA

The Secret Annex Online mixes different media fostering the right balance between each, and guarantees a high level of accessibility beyond the museum and through links to digital culture.

→ USING WIDESPREAD TECHNOLOGIES

To guarantee wide accessibility worldwide, the Secret Annex on line employs available and commonly available technologies and media.

→ REFLECTING ON DIFFICULT HERITAGE

The project gives access to people with relevant media and technology access a place of historical import, that makes us reflect on racism, intolerance and fear.

→ REANIMATING THE PAST

The suitable use of different media allows online visitors to move through a dismantled house, grasp its atmosphere and get information about the families who lived there in hiding.

Other Examples

Street Art View (2011)

The Street Art View project sponsored by Red Bull is a collaborative collection of sites from Google Street View showcasing street art all over the globe: Users tag their favorite piece of street art, share it with friends, and collaboratively build the world largest art collection. Users can search by artist, location or can select a piece of art, any where in the system, at random.

The Augsburg Display Cabinet (2010)

A 3D reconstruction of a piece exposed at the Getty Museum, the Augsburg Cabinet, can be explored in augmented reality on a live video feed from the viewer's webcam or accessed online by remote visitors.

IMG 1.7 — *A History of the World. The British Museum, BBC, 2010. A screenshot of the web interface of A History of the World. On the left side of the page in evidence the different filters to help users browsing the rich collection of objects.*

A History of the World

The British Museum, London (UK) - 2010

The British Museum, BBC

A History of the World stems from a partnership between The British Museum and the BBC, running through 2010 and involving museums, schools and the general public across the UK. At the heart of the project is The History of the World in 100 Objects, a radio series made of 100 fifteen minutes broadcasts, each describing an object from the British Museum's collection, edited and told by Neil MacGregor, director of the institution. The objective is ambitious: to tell a history of two million years of humanity through 100 objects hosted at the museum. An online website (still functional as summer 2012) supports the project, allowing people to browse digital objects and to listen to related descriptions.

The project was extremely successful, and during the year, over 550 museums from the UK teamed up with the BBC and joined the project, uploading on the website more than 1000 objects that tell the history of the world from their perspective. After this process, the point of view of public membership to the site could upload their own objects on the website and, at the end of the year, more than 4000 object was uploaded. The result was a wide collaborative action that involved not only the British Museum and its curators but also several museums across the UK, schools and audience members that could create their curated history of the world. A well-designed web interface with several filtering criteria allows browsing of all the objects, be they curated by the British Museum, other museums, or individuals.

→ RELEVANCE

A History of the World is a successful and popular example of use of low tech to promote the knowledge of the British Museum's collection and to involve cultural institutions and individuals in a collaborative project of crowdsourcing. The project has exploited the popularity of a radio series and the potentialities of the web to deliver information but also to collect curated contents as well as user generated contents, keeping them all together but at same time making them easily recognizable.

→ ICT

A History of the World employs ICT in different ways: as an interpretative tool, providing educational radio broadcasts and descriptions; as a communication medium, using the website as a showcase for the project; but also in a more infrastructural way, exploiting the website as a collector of user generated contents, namely the objects that tell the history of the world. The cultural content is delivered through different media: the descriptions of each object have been broadcast by BBC Radio4 for twenty weeks, and are still freely available on the website with additional information and photos and their transcripts have been collected in a book.

The project exploits a very rich media strategy to reach a wide audience, that has been involved in the project as a passive receiver of information in the beginning and then as an active creator of content. This structured approach turned out to be successful in involving different audiences: The general public in the beginning, then other cultural institutions with their curatorial staff, and finally engaging with the public again, in their new role as contributors/curators.

→ USER EXPERIENCE

Users can approach the history of the world project in very different ways, according to their level of involvement. Much of the audience experienced the project only as passive receivers of information, listening to Neil MacGregor's 15 minutes descriptions on BBC Radio4. Another

part of the audience browsed objects using online interactive interface, becoming involved in a more active experience.

A very different experience is instead that of the institutions and of the individuals that contributed actively to the project, uploading the objects they thought can tell the history of the world: it was a collaborative action that required interactions with content and with other contributors (especially within museums) as well as the sharing of the results. For the first kind of audience the experience was then mostly reflective and educative while for contributors the approach was collaborative, because it required the effort of several institutions and individuals.

→ TECHNOLOGY

A History of the World is a good example of using museum and exhibition content to provide multiple points of interest and access. The of use of the web, as well as of radio broadcasting, to engage a wide audience, at different levels of participation and involvement, in a cultural experience around a museum and its collection. This result has been achieved by employing a mix of common technologies, especially those derived from the Wolrd Wide Web and so termed "Web 2.0." The media strategy adopted by the BBC and the British Museum, in particular, employed ICT as a tool to deliver information and to collect content, but it resulted also in a collaborative and collective map of objects that represents the vastness of the project. Technology is then a way to engage the audience in a learning activity with well curated and authored interpretations of objects but also as a way to represent a multifaceted view of the same topic (the history of the world) through the eyes of thousands of different contributors.

→ STATEMENT

The History of the World exploits the popularity of an existing and ongoing radio series, as well as the potentialities of the web to deliver authored interpretations but also to collect curated contents as well as user generated contents.

DS

IMG 1.8 — *A History of the World. The British Museum, BBC, 2010. A screenshot of the web interface of A History of the World: the user is listening to one of the 100 fifteen minutes broadcasts describing an object from he British Museum's collection, edited and told by Neil MacGregor.*

Key Issues

The case presented raises a number of important dimensions of the integration of technologies in the museum environment. A short list of these is included here.

→ PARTICIPATORY USE OF THE WEB

The web is used not only as a means to deliver information but also to engage the audience in a participatory action, and contribution.

→ USING WIDESPREAD TECHNOLOGIES

Common technologies and media are employed to guarantee wide accessibility.

→ MULTIFACETED INTERPRETATION

The project proposes an interpretation of the history of the world through the eyes of authored contributions but also through those of the general public.

→ SUCCESSFUL PARTNERSHIP

The project is the result of a fruitful partnership between the British Museum and the BBC. The project was successful both due to their combined curatorial competences, as well as through their combined reach, promotions and media strategies.

Other Examples

Tag! You're It! (2008)

Users register to join the Brooklyn Museum "Posse" and are then able to work with their online collection. Social networking functions involve adding favorites to their profiles, but they are also encouraged to tag artifacts as part of a game. In doing so they aid the website search function and help the Museum and other users.

Transcribe Bentham (2010)

Transcribe Bentham is a participatory project based at University College London aimed to engage the public in the online transcription of original and unstudied manuscript papers written by Jeremy Bentham (1748-1832), the great philosopher and reformer. The project asks volunteers to complete this task, one output of which will be a new authoritative edition of the Collected Works of Jeremy Bentham.

IMG 1.9 — *Les Yeux Ouvert, Milan, Paris, Shangai. Fabrica, 2006-2007. The image portrays the exhibit "Stock Exchange of Visions", that shows a series of interviews with artists, scientists, sociologists and futurologists.*

Fabrica: Les Yeux Ouverts

Temporary Exhibition (Milan, Paris, Shanghai) - 2006-2007

Fabrica, Centre Pompidou, Triennale di Milano, Shanghai Art Museum

Fabrica: Les Yeux Ouverts is a temporary and travelling exhibition (Milano, Paris, Shanghai) about the experimental and interdisciplinary activity (in terms of culture of communication) of Fabrica, the communication research center of the Benetton group based in Treviso, Italy. The exhibition is structured in four different sections: The first section reveals the core activities of Fabrica, that is communication design; the second shows the openness of Fabrica through photography and reporting; the third section presents sensorial and cognitive interactive experiments; the fourth, guides visitors towards a virtual tour of Fabrica's headquarters, animated also by video portraits of its employees. The overall exhibition is then an epitome of the group's overall activity, filled with communication design projects, but also with interactive experiences aimed at involving visitors in an active and an active visit and to reflect about themselves and contemporary circumstances.

The third section of the exhibition includes the "Tuned Stairway," a playful musical experience that allows users to compose music by ascending or descending steps on the stairway; "We are the Time. We are the Famous", which provides users with two real-time images of themselves, one slowing down and blurring time while the other fragmenting time like a strip of celluloid; "Dialogs", which stages a difficult conversation between two people and represents their points of view with a luminous display and filtered audio; "Stock Exchange of Visions", an interactive installation that shows a series of interviews with artists, scientists, sociologists, futurologists, who discuss all sorts of topics, from ecology to economy and scientific research—pressing issues affecting the future of the planet; "10 x 10", an interactive exploration of pictures and words that define our time, able to collect every hour the 100 most important words and images in the world.

→ RELEVANCE

The exhibition Fabrica: Les Yeux Ouverts proposes a diverse set of multimedia components to involve visitors in an engaging and performative experience with a multimedia museum approach. It's a catalogue of experimentation between digital art and interaction design that explores the potentialities of ICT to modify the relationship between people and content, people and space and between one another.

→ ICT

Digital technologies are featured in the exhibition and their novelty or novel applications are in themselves one of the main features of the project, but they are also employed as interpretive tools. For example in the 10x10 booth that collects and shows real time images from the world. "Les Yeux Ouverts " uses technologies that ask visitors for direct and real time interaction or provide them with regularly updated information from around the world: they are then mostly employed on site and during the visit itself.

Images, videos, sounds as well as text and 3D models are all employed in the exhibition that, at least in the third and fourth sections, seems to present itself as an archetype of a multimedia and interactive museum. People are asked to climb stairs to create a personal melody, or to move in front of two big screens in order to see their image slowed down or fragmented in a celluloid strip, or to choose the right position between luminous displays to understand different points of view of two people discussing.

→ USER EXPERIENCE

The technologies featured in the exhibition are designed to involve users in a playful interaction but do not usually provide actual interac-

IMG 1.10 — *Les Yeux Ouverts, Milan, Paris, Shangai. Fabrica, 2006-2007. The image shows a video installation at Centre Pompidou playing with the name of the exhibition: two big and different eyes blink to the visitors.*

tion with contents, objects and materials. The user experience can be defined as a quite passive contents' consumption even if visitors are mentally and bodily engaged, with a reflective but also performative approach. The interaction with the diverse installations is mostly a personal one (one visitor, one installation) but some booths exploit the single interaction to create a spectacle for the bystanders: it's the case of "We are the Time. We are the Famous", which stages on big screens the interpretation of only one person's movements.

People are then engaged individually in the interaction, but the results of their actions are shown and become public and social dimension. The tension between a personal and a more public and hence social interaction is evident also in the "Tuned Stairways" that can be experienced by a single user, generating a melody audible for bystanders, but the play-oriented aspect of the interactive present an opportunity for visitors to engage collaboratively by playing together. The impact of "Fabrica: Les Yeux Ouverts" from the user's perspective is then the ability to involve visitors in performative actions, allowing them an experience of the Fabrica research group's thinking and work.

→ TECHNOLOGY

The relation between users and technology proposed by the exhibition is based on the discovery of how the installation works and on a progressive adaptation of users' behaviors: in the "Tuned Stairway" the user must climb the stairs to learn the relation between the step and the sound and move accordingly to produce the desired melody; in "We are the Time. We are the Famous" the user takes some time to understand how the interaction works, and tests the system's reaction to different movements and possibilities of the system. The same process of discovery is required in "Dialogs," which asks visitors to find the right position to understand two contending points of view.

The discovery is then a means to engage visitors in playful and reflective activities but other booths propose a more traditional use of technology, such as projecting videos and photos, or navigating inside a 3D model, experiences that privilege a reflective approach.

→ STATEMENT

"Fabrica: Les Yeux Ouverts" proposes a diverse set of multimedia components to involve visitors in an engaging and performative experience with a multimedia museum approach.

DS

Key Issues

The case presented raises a number of important dimensions of the integration of technologies in the museum environment. A short list of these is included here.

→ TESTING TECHNOLOGICAL CAPABILITIES

The exhibition is a catalogue of experimentation between digital art and interaction design that explores the potentialities of ICT in exhibit design .

→ MIXING MEDIA

The exhibition can be somehow considered an epitome of a multimedia museum.

→ ENGAGING AND PERFORMATIVE APPROACH

Fabrica: Les Yeux Ouverts proposes engaging activities for visitors who are asked to perform actions and reflect on what they are doing .

→ DISCOVERY AND EXPERIMENTATION

Most of the interactive installations proposed by Fabrica rely on a constructivist approach, leaving visitors free to understand how they work and to learn by doing.

Other Examples

YOU! The Experience (2004)

It's an interactive exhibit of the Chicago Museum of Science and Industry examining and celebrating the experience of life itself: an exhibit photographs the user then alters it depending on their answers to questions about their lifestyle and habits while another is a giant on-screen heart to which visitors can send their pulse.

Tentacles (2009)

Tentacles is an application for iPhone/iPod touch that turns the device into a mobile game controller enabling users' participation in a multi-user, location-based game projected into public spaces. The game begins as a solitary one, with each player controlling a Squid-like form and searching for micro-organisms and, as the creature grows, players become aware of others with whom they must co-exist.

Spaces


סיור בעזה דרך רחובות תל אביב
טלפנו עכשיו למוקד התיירות:
073-2557766
YOU ARE NOT HERE .org

Museum Spaces and New Paradigms of Cultural Experience

→ NARRATIVES OF SPACE

The design of the language of cultural experience, integrated within the exhibition system is a necessary condition to facilitate knowledge, transmission and translation of intercultural values.

The museum exhibition topic has already been the object of some critical theories that explore the relationship between space, technology and narrative structures.

Dernie (2006) presents theories on three types of space: narrative space which goes beyond the exhibition model of the encyclopaedia to propose an itinerary developed as episodes with alternations of pauses, overviews and detailed close-ups; performing space which breaks free from a certain linearity of cultural experience to embrace associative logics, encouraging visitors to take an active role through the dynamics of "play" and "theatre"; simulated space in which real and virtual dimensions sometimes overlap, evoking spaces, places and worlds that go beyond the architectural structure to unfold an intangible structure of new multimedia languages. This approach is emphasised by Bruckner (2011), who connects technologies, staging, exhibition and narration. He says that all staged spaces are based on the same spatial parameters: the physically substantive, the atmospherically adjectival, the verbal narrative and the dramatised syntactical (cf. case People in their world). In the Habitat narrativi by Studio Azzurro the device is an integral part of the narrative passages and exhibition. It is a significant system and meta-linguistical practice that requires a careful "techno-drama" (Studio Azzurro 2011) (cf. case Sensitive City).

PREVIOUS PAGE — *You Are Not Here, Tel Aviv. YouAreNotHere.org, 2006-2007. The image synthetises the core of the experience: visiting Gaza while walking in the streets of Tel Aviv with the help of two superimposed maps.*

→ CRITICAL SPATIALITY

This work builds on the assumption that, in a contemporary space made of interactive aesthetics and wide creativity, technologies can make the

museum experience a driver of meaningful interaction between people and social contexts. In the museum experience we analyse emotions, interaction and sense of appropriation of spaces. In the cases included in this chapter the technology introduces new behavioural codes and allows a multilevel exploration.

Technology is of course changing the proxemics of museum spaces and cultural experience. In the following we define four metaphors/concepts for space and experience facilitated through technology. Montage as metaphor (Borriaud 2004) interprets the contemporary non-linear approach to design. This post-production concept as the key to reading, interpretation and action by contemporary society is also what Griswold is thinking of (2003) when he identifies a continuous circle in the transmission of culture through media. He focuses on two phases: the production (when the media work establishes forms and meanings) and the precipitation (when the media transmits these products to the social body where they are available for new productions) (Lughi 2006).

The examples put forward explain especially the role played by configurability in creating mixed spaces (Jacucci 2004), where perception and sense experience take place, hinting at a new perspective in the "situated" use of technology. In particular, the role that participants play in intervening in their environment predisposes particular actions and experiences (cf. case People in their world). The adjective "mixed", in this context, refers to the combinations of physical and digital media in ways that propose new relations between bodies, space, physical artefacts and digital media. Another interesting aspect of cultural experience that is sometimes considered is the concept of the located body. We can speak about a located body or a displaced body. We can also speak about a responsive environment in two situations: modifying the space with the users' spontaneous movements or modifying space with the users' voluntary interactions.

We are passing from the visibility of the sign to the centrality of the gesture. The gesture becomes the main element of the cultural design and together with the use of new technologies encourages a physical approach that improves the interaction potentiality. In this way we attribute the concept of "unity" not only to the artwork/exposed but also to the user. In the case of Sensitive City, for example, the body becomes a "navigator" that explores different places.

Some thoughts about the possible direction of future work:

- Increasingly, performance and narrative are becoming diffuse practices in the cultural experience;
- The broad heterogeneity of the cultural offer calls for a focalisation on time as a main variable in the design of valorisation (cf. case You Are Not Here, where the key issue is the hic et nunc / alibi et nunc. The hic et nunc typical of location-based services is combined with alibi et nunc, transforming a locative technology into a tool for dislocation);
- It is necessary to stress experience of both mind and body.

The communicative, participatory and interactive aspects that connect the user with the contents depend on the spatial connotation (the context), the temporal variable (the length) and the gradient of the learning (type of content approach). Therefore, designing the "time dimension" means defining accelerations and decelerations in the path.

A third topic is simulation (Manovich 2000) vs. representation. "The desire to concretise the illusion is a distinctive sign of the Sixties. With the tableau, the gallery 'personifies' several spaces: becomes a bar or a hospital room (Kienholz), a service station or a living room (Segal), a bedroom (Oldenburg), a 'real' office (Samaras)" (O'Doherty 2012, 45). In a "simulated" exhibition explicit objects are used as media to bring the user onto the museum path through the model of environmental production. In this case the technology is functional to the production. Instead, in an "abstract" exhibition there are no recognisable and "figurative" elements but it is the technology itself that becomes form and language.

Bolter (2002) speaks about hyper-mediation (the insertion of "frames") and about immediacy (linear perspective), passing from a hyper-mediated dimension to an immersive dimension. In an immersive exhibition the media system is invisible and expressed through a realistic language. Instead, in a hyper-medial experience we show the media-technological system, and in this case it is quite important that the visitor recognises the frame and knows how to interpret it as a perceptive-cultural threshold (cf. cases Sensitive City as an immersive space and People in their world or Who Do You Think You Really Are? as hyper-medial space).

With Manovich (2000) we arrive at simulation and representation concepts. If we apply these terms to the exhibition field we can define two possible scenarios. In the first one we are in a "virtual" space linked to the architectural context; in the second one the link with the physical context is non-influential and the work remains unrelated to the context, but the mobility inside the space is the main work aspect. So emerges (in opposition to narrative-exhibit) the conception of the explorable space as a cultural form (Lughi 2006).

According to Mackay (1998), there are three design strategies for augmented reality interfaces: augmenting the user, augmenting the physical object (embedding devices in physical objects), and augmenting the physical environment surrounding users and objects (projecting images and records remotely) (cf. case Who Do You Think You Really Are?). We will continue the articulation of these definitions by discussing the augmented reality as an art mode in itself, as was argued in the first chapter of this book.

→ CONCLUSIONS AND BEST PRACTICE

Every related aspect are matter of rethinking the museum in the MeLa topic. In particular, the narrative, through new technologies, is a tool that facilitates communication and intercultural exchange. If we think about

museums as buildings where cultural identity is represented and negotiated, the narrative becomes the main element for an involving experience.

In this paper I would like to underline three concepts provided by Sandell (2006) regarding the multicultural experience field: access (more accessibility by ethnic people), participation (as a key to unlock the museum from its situation as a traditional institution and make it an inclusive place) and representation/communication (as an opportunity to stage local identities). If the objective is to transform museums in the "contact zones" (Clifford 1999), narrative can become a tool for the mediation of cultural heritage in the relational process that connects communities. The audience itself is a relation because it is made up of several "sites of meaning construction" (van den Booch 2005, 88) and its interpretative activity contributes to a multiplicity of experiences and narrative expressions (Pecci 2008).

In conclusion, we can underline three important aspects:

- Displays between physical and intangible dimensions where the interfaces find articulation in material qualities and spatiality, making them more expressive;
- Involving space where the infrastructure becomes an essential element for a multi-level performance in museum exploration;
- New landscape of behaviours in the museum where bodily gestures can be a tool not only for a new interpretation of the contents but also for involving other participants.

We can speak about new aesthetics of technology because the technological approach has changed the concept of aesthetics in terms of new languages, materials and forms. This is not only a formal issue because it also raises new significant questions: the democratisation of knowledge, the meaning of authenticity, entertainment as a paradigm of cultural experience and the hierarchies of knowledge in the museum. These topics might be explored in the next part of this research connecting the potential of new technologies with the migration field (of knowledge, people, culture).

We are approaching a museum proxemics that considers the relationship between people and contents from a widening perspective:

- contemplate and distance (from the display);
- feel and wearable (wearable technologies);
- touch and take (the information);
- interact and translation (of languages);
- contact and exchange (of cultures).

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→ REFERENCES

Atelier Bruckner. 2011. *Scénography. Atelier Bruckner 2002-2010*. Ludwigsburg: Avedition.

Bolter, Jay David, and Richard Grusin. 2002. *Remediation. Competizione e integrazione tra media vecchi e nuovi.* Milano: Guerini e Associati.

Bourriaud, Nicolas. 2004 *Postproduction. Come l'arte riprogramma il mondo*, Milano: Postmedia book.

Clifford James. 1999. *Strade. Viaggio e traduzione alla fine del secolo XX*. Torino: Bollati Boringhieri.

Dernie, David. 2006. *Design espositivo*. Modena: Logos.

Goffman, Erving. 1966. *Behaviour in Public Space: notes on the social organisation of gatherings*. New York: Free Press of Glencoe.

Griswold, Wendy. 2003. "From cultural production to cultural partecipation." In *International Meeting La cultura: lavoro del futuro*, Università Cattolica del Sacro Cuore, Milan, November 13-14.

Hillier, Bill and Kali Tzortz. 2006. "Space Syntax: the Language of Museum Space" in *A Companion to Museum Studies,* edited by Sharon Macdonald. Malden, Oxford, Carlton: Blackwell Publishing.

Jacucci, Giulio. 2004. *Interaction as Performance*. Oulu: University Press.

Lughi, Giulio. 2006. *Cultura dei nuovi media. Teorie, strumenti, immaginario*. Milano: Guerrini e Associati.

Macdonald, Sharon ed. 2006. *A Companion to Museum Studies*. Malden, Oxford, Carlton: Blackwell Publishing.

Mackay, Wendy. 1998 "Augmenting Reality: linking real and virtual worlds. A new paradigm for interacting with computers" in *Proceedings of ACM Conference on Advanced Visual Interfaces '98*. New York: ACM Press.

Manovich, Lev. 2000. *The language of new media*. Cambridge: MIT Press.

O'Doherty, Brian. 2012. *Inside the White Cube. L'ideologia dello spazio espositivo*. Monza: Johan & Levi Editore.

Pecci, Anna Maria. 2008 "Migranti e patrimoni culturali: il museo come (possibile) zona di contatto" in *L'arte dello spettatore. Il pubblico della cultura tra bisogni, consumi e tendenze*, edited by Francesco De Biase. Milano: Franco Angeli.

Sandell, Richard. 2006 "Misurarsi con la diversità e l'uguaglianza: il ruolo dei musei" in *Quando la cultura fa la differenza: Patrimonio, atti e media nella società multiculturale*, edited by Simona Bodo. Roma: Meltemi.

Studio Azzurro. 2011. Studio Azzurro. *Musei di narrazione. Percorsi interattivi e affreschi multimediali*. Milano: Silvana Editoriale.

Van den Booch, Annette. 2005. "Museum. Constructing a public culture in the global age", *Third Text* 19 (1): 81-89.

Zanzuneguin, Santos. 2003. *Metamorfosi de la mirada. Museo y semiotica*, Madrid: Catédra.

Case Studies

IMG 2.1 — *Sensitive City, Shanghai. Studio Azzurro, 2010. An image of the large interactive walls displaying real-size citizens of diverse Italian small cities that can be stopped and listened to by visitors.*

Sensitive City

Shanghai World Expo, Shanghai (PRC) - 2010

Studio Azzurro

The Sensitive City exhibition has been designed by Studio Azzurro for the 2010 World Expo in Shanghai. The theme of the Expo "Better city, better life" allows countries to imagine the future of the city and to suggest alternatives to the contemporary urbanization.

In Sensitive City, Italy underlines a unique and distinctive feature of its own cities, revealing the quality of its small and medium size centers. The exhibition presented an interactive experience, which allowed visitors to interact with digital citizens of Chioggia, Lucca, Matera, Spoleto, Siracusa and Trieste, stopping them (in a virtual sense) and listening to their comments.

The user who entered the exhibition was given the opportunity to interact with citizens of cities not touched by massive urbanization, which therefore have preserved a large part of their architectural and historical past. Over a hundred people were consulted for each location, with the aim of creating a collection of audio-visual portraits. These people were usually comfortable with the spaces in which they lived and stood as spokespeople for a "good life", proposed as a unique attribute of small and medium Italian cities.

Sensitive City only partially addresses the real needs of a city but seeks the poetic tone of Calvino's invisible cities, populating them with a virtual crowd and virtual places that still conserve their own history and emotions. They easily connect with real people, the spectators, when they ask to become citizens.

→ RELEVANCE

Sensitive City employs ICT to create an immersive space that relocates visitors elsewhere—in living cities thousands of kilometers from the exhibition. The "other spaces" are recreated with projections and sounds and allow visitors to interact with real people, stopping them with one hand and listening to their story.

The project is therefore a significant example of how technology can modify the relationship between people and space, providing, in this case, relocation as well as a dynamic image of six small cities. The story bearers, indeed, describe the places from their point of view, juxtaposing different portraits of the same city.

→ ICT

Life-size figures projected on a vertical surface, the story-bearers, pass by the visitors who can stop them and invite them to speak by raising their hand. Each story-bearer can indeed be consulted, as he walks along, only if the visitor stops him with the hand. The passerby then turns toward the spectator and starts a narration that will last as long as the hand is touching the surface.

Every character is therefore a node of a reticular network that composes a complex narrative structure, unveiled by visitors who interact with the system simply using their body, recreating a dynamic and absorbing experience.

Very natural behaviors, such as stopping a person with a hand, are used to allow visitors to choose the information (story-bearer) they prefer and the length of the contribution, while at the same time choosing the action of touching another (even if virtual) person conveys a strong sense of connection and social presence.

The technological system is composed by a series of video-projectors and holographic screens, high quality speakers and infrared triggering systems controlled by desktop PCs. The result is an imaginary city designed by a multitude of common authors, rather than by a draughtsman, and organized around a complex relational system.

→ USER EXPERIENCE

As happens in other exhibitions designed by Studio Azzurro, the user experience in Sensitive City is highly emotional and absorbing. The low level of interactivity is balanced by the natural mechanics of interaction that allow users to forget that they are using a technological system and enjoy a highly immersive experience.

Users cannot ask specific questions or browse information. They can just decide which story-bearer to stop and how long to listen to him or her. The project is not exactly educative or informative but aims to make visitors get a glimpse of the portrayed cities and their citizens.

The experience designed by Studio Azzurro is then both immersive and performative because visitors are surrounded by the cities and their passing citizens and must change their behavior and perform actions to interact with them.

The layout of the exhibition, with large projection walls, allows multiple users to interact with the system, recreating the optimal condition to socialize with other bystanders or, at least, to eavesdrop on their conversations with the virtual story-bearers, as would happen in a real urban environment.

→ SPACE

Sensitive City proposes a complex relation with the space, immersing visitors in a narrative and performative environment and carrying them virtually in six Italian cities.

The holographic walls and the real-size story-bearers as well as the natural interaction mechanics and the expert use of sounds are aimed at relocating visitors in a space other than that of the exhibition, namely small Italian cities, and to make them feel surrounded by "real people".

The places are described by the citizens themselves and offer a personal story, a path within the city that is told in words but also with images of the described journey, drawings, short annotations, paths, often simple scribbles that the narrators themselves have drawn in order to provide an exact description of where the narrated events took place. While the images of the cities only appear for a few seconds, the map persists and overlaps with the following image, expanded by the refractions of the projection glasses.

The result is a dynamic identity that changes according to the personal points of view and to the personal stories, which returns a multifaceted image of the described cities but also an overall impression of the Italian way of living.

→ STATEMENT

Sensitive City employs ICT to create a highly immersive space able to relocate visitors in other cities and to make them interact with their citizens.

DS

IMG 2.2 — *Sensitive City, Shanghai. Studio Azzurro, 2010. Visitors interacting with the holographic screens and listening to the story-bearers.*

Key Issues

The case presented raises a number of important dimensions of the aspects of space in the museum environment. A short list of these is included here.

→ RELOCATING VISITORS ELSEWHERE

The immersive environment as well as the natural interaction mechanics and the use of sounds are aimed at relocating visitors in a space other than that of the exhibition.

→ CONVEYING A DYNAMIC IDENTITY OF PLACES

The places are described in first person by the people that inhabit them and are rendered as a dynamic image, described from different points of view.

→ CREATING AN IMMERSIVE ENVIRONMENT

The expert use of ICT recreates a very immersive environment able to make visitors feel surrounded by real people and carried in a place other than that of the exhibition.

→ USING PORTRAITS/DIFFERENT VOICES

Real-size story-bearers are virtually stopped by visitors and tell their personal story, with their personal way of speaking, behaving and walking. The result is a living and ever changing portrait of the city told from different voices and points of view.

Other Examples

Museo della mente - Museum of the mind (2008)

The museum proposes an interactive journey through the rooms of the ancient hospital of Santa Maria della Pietà that hosted people with mental illness. Users are involved in a deeply engaging interactive experience that tells the story of the hospital and of some of its patients.

City of Memory (2003)

City of Memory is a collaborative storytelling project designed by Local Projects for City Lore, in order to map stories, memories, imprecise recollections, tales of neighborhoods, and other aspects relating to New York City and its history. City of Memory proposes a multifaceted portrait of NYC, of its place and citizens, through the eyes of several contributors that tell a story and link them to the city map.

IMG 2.3 — *You Are Not Here, New York. YouAreNotHere.org, 2006-2007. A visitor is holding the map up to the light in order to find the way towards the shared points of interest between New York and Baghdad.*

You Are Not Here

New York (USA) and Tel Aviv (IL) - 2006-2007

Mushon Zer-Aviv, Dan Phiffer, Kati London, Laila El-Haddad, Thomas Duc

You Are Not Here invites participants to become meta-tourists, simultaneously visiting multiple cities simply by using a downloadable paper map and a mobile phone.

The project, started in 2006, proposes two multiple tours: the first allows users to visit Baghdad by walking in New York City and the second, launched in 2007, uses the streets of Tel Aviv to visit Gaza.

The core of the experience is a downloadable double-sided map, with the superimposed maps of the two cities, that must be explored by holding it up to the light in order to find the way towards the points of interest.

Every point of interest in New York and Tel Aviv reports a code that must be typed by visitor during a call to a hotline in order to get the audio description of a monument or place in Baghdad or Gaza.

By using a site-specific access code, users can then access touristic information about another city that is significantly different or even in conflict with the one in which the meta-tourists are wandering. The choice of Gaza through the streets of Tel Aviv and Baghdad through the streets of New York explain this approach.

You Are Not Here is a platform for urban tourism mash-ups, and the creators aim to create an awareness of the similarities and points of contacts between two cities that are politically and culturally detached.

→ RELEVANCE

You Are Not Here proposes a fascinating use of technology to modify the relation between people and places, creating a sense of dislocation and displacement. It provides visitors with a tour of Gaza through the streets of Tel Aviv and a tour of Baghdad through the streets of New York.

The meta-tourists are involved in a sort of psycho-geographic experience and interact at street level with very simple technology (a map, a feature phone and a tourist hotline), but what they get is the description of other places in another city.

The aim is to encourage intercultural understanding between conflicted communities, between Israelis and Palestinians and between Americans and Iraqis, highlighting connections and stimulating confrontation.

→ ICT

From a technological point of view, You Are Not Here is very simple because it employs a website and a Tourist Hotline that users must call in order to get the "de-localized" audio description.

The project's website is accessible for documentation and provides a description of the experiences, the two-sided maps as well as news, press releases and information on creators. The contents of the tour are indeed only accessible on site by typing the site-specific access code at the Tourist Hotline.

The meta-visit is in some sense location-based, as it requires visitors to be at specific points of interest, despite the audio descriptions referring to other places in another city.

The entire project relies therefore on audio descriptions, accessible through a mobile phone feature and a paper map, which must be printed beforehand. The choice has been to address a target audience as wide as possible and to not require highly technological skills.

ICT is then employed in the project both as an interpretative tool (audio description) and as a way to communicate and raise awareness of the project.

IMG 2.4 — *You Are Not Here, New York. YouAreNotHere.org, 2006-2007. Visitors are listening to the audio descriptions on their mobile phone. They have accessed it by calling the tourist hot line and entering the code found on the sticker.*

→ USER EXPERIENCE

The experience proposed by You Are Not Here relies on a strong reflective approach, involving users in a strictly personal experience of displacement and dislocation that stimulates reflection about the similarities of two different or even opposing cities.

Users consume audio descriptions passively, but the disorientation provoked by the dislocation activates reflection and confrontations between the city described by the audio and the city that is surrounding the meta-tourists. The two maps are printed on a double-sided sheet and are consulted by pointing at the sun, highlighting the strong correspondences between the two cities.

The experience can also be played without the paper map, only following the instructions printed on YANH signs, discovered by chance, while walking through the streets of New York or Tel Aviv. It echoes the Situationist act of wandering as a way of knowing, here interpreted as a meta-visit that occasionally relocates the users in a completely different city.

→ SPACE

Technology here is employed to deeply modify the relation between people and space, creating displacement and dislocation through a sort of sensory disorientation. The eyes do not see what the ears are listening to. Through the hearing, visitors are transported to a reality that is by far different from that they are experiencing with the eyes, mixing the "hic et nunc" (here and now) that is typical of location based services with the "alibi et nunc" (there and now).

The streets in the city are therefore charged with new meanings, disclosed only by holding the two superimposed maps up to the sun and by listening to the audio descriptions.

The trick of superimposing the two maps highlights the connections (even the repressed ones) and stimulates confrontation between the two sets of cities, sometimes not so far geographically (Tel Aviv and Gaza) but very distant in ideological position.

You Are Not Here can be also described as a psycho-geographic experience based on the dérive, a wandering that is physical, at the street level, in one city but completely cognitive in the other.

→ STATEMENT

You Are Not Here is a platform for urban tourism mash-ups, which invites visitors to discover a city through the streets of another, encouraging intercultural understanding between conflicted communities.

DS

Key Issues

The case presented raises a number of important dimensions of the aspects of space in the museum environment. A short list of these is included here.

→ FOSTERING DISPLACEMENT AND DELOCALIZATION

Visitors wander through the streets of a city but the audio descriptions they listen to refer to other places in another city.

→ CONFRONTING PLACES AND HIGHLIGHTING CONNECTIONS

The trick of superimposing the maps of the two cities on a double-sided sheet together with the dislocated audio guide simulates the confrontation between the two cities.

→ MIXING "HERE AND NOW" WITH "THERE AND NOW"

The "hic et nunc" typical of location based services is mixed with "alibi et nunc", transforming a locative technology into a tool for dislocation.

→ USING COMMON TECHNOLOGIES

The project relies on a website, a downloadable paper map, and a Tourist Hotline accessible through feature phones, guaranteeing a high level of accessibility.

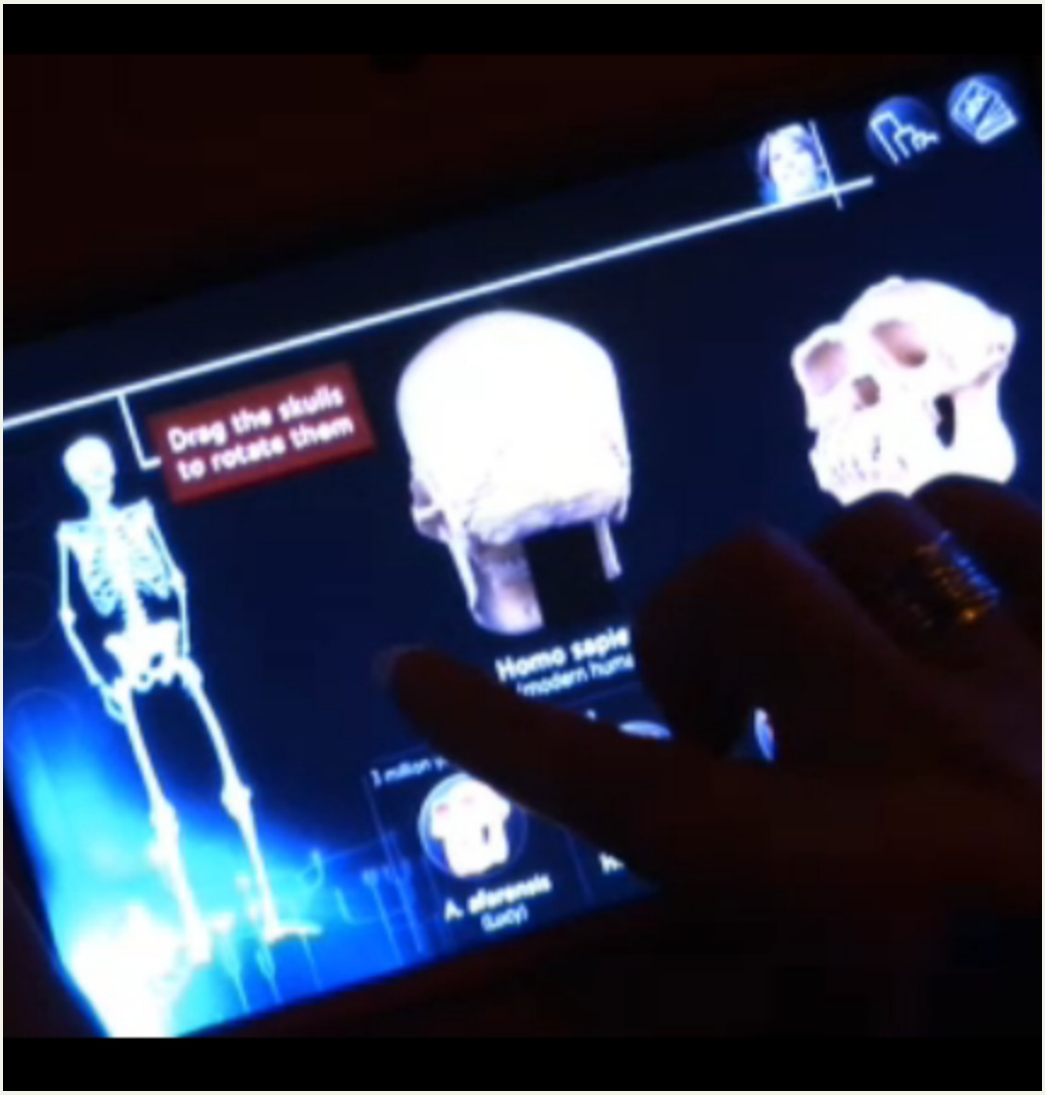
Other Examples

US/Iraq War Memorial (2011)

This is an augmented reality public art project and memorial running on the Layar augmented reality platform. The data points out that deaths in Iraq have been relocated based on the precise longitude and latitude difference between Baghdad and the Washington Mall in Washington D.C. It uses geolocation software and Wikileaks Iraq war logs to superimpose a 3D graphic of a casket for each of the 52.036 recorded deaths.

Crossing Over (2011)

Crossing Over is a web-based, pedagogical project between students in Canada and Turkey, raising issues about the care we owe to strangers and the ethics of social interaction facilitated by the World Wide Web. The students were asked to pack a virtual suitcase with personal data (i.e. images, personal data, dialogues), to be used in filling out a visa application and, once having crossed the border, create a scenario of immigration in the new country.



IMG 2.5 — *Who Do You Think You Really Are?, Natural History Museum, London. Natural History Museum, 2010. A child is learning about the evolution of humans by using a tablet.*

Who Do You Think You Really Are?

Natural History Museum, London (UK) - 2010

Ailsa Barry

Who Do You Think You Really Are? stems from a partnership between Pentagram, BBC Research and Development, and the Natural History Museum.

It is an interactive and immersive learning experience played at the Attenborough Studio of the Natural History Museum of London, aimed at involving the young audience in an engaging journey to discover humans' evolutionary past, through natural history footage and interviews with leading Natural History Museum scientists.

Sir David Attenborough guides up to 64 visitors (the room's capacity) through a 50-minute interactive film revealing the story of evolution using three large-screen projections, personal tablets (one for each seat) and webcams.

The experience is the result of a mashing-up of several techniques and media that mixes narrative storytelling, eyes-down individual interactive segments and quizzes and eyes-up social augmented reality and image sharing. The personal handset are indeed windows into the past, materializing in augmented reality virtual models of a walking dinosaur or of a Homo Erectus that can be followed around as though they were actually in the room.

The Attenborough Studio becomes therefore a truly immersive learning environment by the use of cutting edge technologies that engage visitors utterly in a totalizing experience and augment the learning space.

→ RELEVANCE

Who Do You Think You Really Are? shows an example of the use of digital technologies within museums that build a learning experience based on immersion and interaction. The space is modified and augmented with large-screens displays and personal handheld devices that both immerse users in a film and ask them to interact actively.

The result is an immersive and augmented learning space, able to involve users completely and to expand the experience at home as well, guaranteeing a post visit engagement, as strongly advised by some cultural learning theories.

→ ICT

The project is entirely sustained by technologies, of which it offers an innovative use, employing them both as an interpretive learning tool and as an exhibition of their potential. Despite the fact that the experience is played within a museum, digital technologies are not used to augment the visit but they build the entire visit, as displayed in the Attenborough Studio.

Three large-screen projections surround the 64 seats of the Attenborough Studio, and each seat provides the visitor with a personal tablet. Film footages, Sir Attenborough's speeches and interviews to NHM scientists as well as the results of individual interactions are shown on the large displays, while every tablet provides users with personal experiences such as quizzes, simple interactions and augmented reality shows.

The experience is then played with a great variety of media and different mechanics of interaction. From passively watching films to following a dinosaur crossing the room; from posting a personal photo to the large screen to rotating a human skull on the tablet; and from playing with virtual specimens to taking part in challenges such as sorting DNA.

→ USER EXPERIENCE

The experience at the Attenborough Studio is mainly, but not only, addressed to a young audience that is involved in an engaging interactive

experience of discovery of human evolutionary past.

What differs from the usual educational activity is that a passive learning experience such as watching a film is turned into an interactive and immersive session that utterly engages visitors.

Who Do You Think You Really Are? is successful in mixing individual engagement like watching films or interacting with the tablet, with more social activities like projecting each user's photo in the studio or looking collectively at augmented reality shows.

The immersive space created with digital technologies at the Attenborough Studio together with the high level of interactivity pursued with the personal handhelds foster personal reflection about the topics addressed, involving users in a learning activity that can also be continued at home. Who Do You Think You Really Are? follows the experience initiated by NaturePlus and, during the film, scientists give users virtual gifts that, once at home, can be accessed in order to get additional information or augmented reality clips.

Who Do You Think You Really Are? employs digital technologies to deeply modify the relation between people and space. The Attenborough Studio is turned into a highly immersive space with the help of large-screen projections and personal handhelds. The studio borrows its shape from the imax theaters, very common in science centers, and mixes it with virtual doors to another reality, the Augmented Reality enabled tablets.

The entire system is configured to provide visitors with a learning space in which a traditional film is layered with interactive activities and augmented reality clips, and visitors interact with them in a well-designed experience.

We can therefore define the space at the Attenborough Studio as a learning space, an immersive space but also as an augmented space in which the augmentation is pursued not only with AR clips showing walking dinosaurs or ancient humans but also modifying it according to the single interactions. Some personal activities are indeed networked and shown to the public, including taking photos of each user with a webcam and projecting these photos on the large-screens.

Digital technology therefore modifies the relation between people and space, but it also widens the space of interaction, taking it home for a post-visit experience, thanks to the virtual gifts delivered during the film by scientists.

→ STATEMENT

Who Do You Think You Really Are? shows an example of the use of digital technologies within museums that create an immersive and augmented learning space, able to fully engage users.

DS

IMG 2.6 — *Who Do You Think You Really Are?, Natural History Museum, London. Natural History Museum, 2010. A primate is walking across the Attenborough Studio thanks to augmented reality. The interactive and educative exhibition consists of diverse digital technologies to deeply engage the young audience.*

Key Issues

The case presented raises a number of important dimensions of the aspects of space in the museum environment. A short list of these is included here.

→ AUGMENTING THE SPACE

The use of augmented reality enabled tablets enhances the space with clips showing prehistoric creatures moving in the room or virtual simulations superimposed onto real images.

→ MODIFYING THE SPACE WITH USERS' INTERACTION

Some personal interactions and their results are networked and projected in the studio, continuously modifying the space.

→ CREATING AN IMMERSIVE SPACE

Large-screen projections and the use of augmented reality clips create a highly immersive environment.

→ CREATING A LEARNING ENVIRONMENT

The mix of different techniques and media involve users in an engaging learning environment played between passive content consumption and active interaction.

Other Examples

The Centre of New Englightenment - TCoNE (2007)

As part of the restoration of Kelvingrove Museum in 2006, Glasgow Museums developed The Centre for New Englightenment (TCoNE), an immersive, interactive learning experience for schools and families. It uses state-of-the-art equipment and dramatic presentations to explore the museum and its collections and help young people discover their potential.

Samsung Digital Discovery Centre (2009)

The Samsung Digital Discovery Centre is a state-of-the-art technological hub for children and young people to learn about and interact with the British Museum's collections. Children can use digital cameras to photograph works around the gallery, laptops to explore the collections, and podcasting technologies. Informal learning sessions allow families to play with green-screen technology and put themselves in historical frameworks.

IMG 2.7 — *People in Their Worlds, Rautenstrauch-Joest-Museum, Koln. Nicolai Wolff, 2010. A visitor is playing with an exhibit that makes her up like a Chinese Opera's actress.*

People in Their Worlds

Rautenstrauch-Joest-Museum, Koln (D) - 2010

Atelier Brückner

People in Their Worlds, designed by the Atelier Brückner, is a thematically dedicated presentation of the Rautenstrauch-Joest-Museum, the ethnographic museum of Koln.

It is a journey of exploration and comparison of diverse cultures that covers an area of 3,600 square meters spread out over three floors, structured as a sequence of varied spatial experiences, narrative and scenic spaces and individual chapters that give access to various world cultures.

The exhibit space is divided in two areas entitled "Shaping the World" and "Understanding the World", each of which is subdivided into several theme-based subsections. It is an innovative multimedia exhibition concept, designed to be as engaging as it is informative, involving visitors in a different museum experience for each room.

Fourteen highly scenic rooms relating to everyday life and festival culture from different regions of the earth encourage the visitor to recognize the equal rights and equal value of different ways of life.

→ RELEVANCE

People in Their Worlds is a noteworthy example of integration of ICT and multimedia within the exhibition space, as a common piece of exhibition to be carefully mixed with the other. Technology is not something added to the space in order to get a "wow" effect nor something that completely overpowers the exhibit but rather something fully integrated into the space.

The project therefore proposes another way of addressing the relationship between visitors and space mediated by technology, but it is also relevant for transnational and multicultural issues in Europe because it addresses issues related to culture, diversity and integration.

→ ICT

Technology is sometimes exhibited at the beginning and end of the exhibition, where multimedia installations present representations of unfamiliar cultures that welcome visitors with their language and ways of behaving. The same could be said about the room Stereotype and Prejudice that uses video art projections in a completely white room.

But technology is sometimes embedded and domesticated within the scenography. It is not featured, but it is an essential part of it, usually providing visitors with interpretative material and information. In the European Parlour, the big XIX century table hides interactive drawers and is animated by digital projections. In the room dealing with death and the next life, visitors kneel to lift portions of the floor and discover screens showing diverse burial rites.

ICT is therefore employed both as an interpretative tool that adds to the comprehension of the exhibits and mixes with them, but it is also used as a pure communication tool.

Images, text, audio as well as video are the media employed in the rooms, sometimes camouflaged within the scenic space and sometimes exhibited as the main attraction of the space with which users are asked to interact or simply to stare at.

→ USER EXPERIENCE

The highly scenic rooms of the Rautenstrauch-Joest-Museum drive visitors through different world cultures in a personal journey of discovery and reflection.

The visit experience proposed is mainly a soli-

IMG 2.8 — *People in Their Worlds, Rautenstrauch-Joest-Museum, Koln. Nicolai Wolff, 2010. Three visitors in the room dealing with death and next life. By lifting portions of the floor they discover screens showing diverse burial rites.*

tary one, and even if it can be lived with companions it has not been specifically designed for it. The interactive installations and multimedia are indeed designed to be experienced alone and do not take social experiences into account.

The level of interaction proposed by multimedia installations is quite low, sometimes relying on a simple choice of contents and sometimes on the consumption of passive content.

The user experience provided by the Rautenstrauch-Joest-Museum does not rely heavily on technologies but on their perfect integration within the scenic context of the rooms, sometimes hiding and something being featured. The result is a scenic space full of strength and magic able to immerse visitors in a completely different context by simply changing the room, sometimes stimulating reflection and sometimes asking for actions and interactions.

into the space.

The strong scenic approach, typical of Brückner, uses technology with ease, as any other part of the scenery, sometimes hidden and other times used as the main attraction. Despite the dichotomy between featured and camouflaged technology, a common feature of ICT's employment in the museum is that it is part of an environment strongly connoted by a scenic setting.

The technology is domesticated by the designer, who looks for a well-balanced exploitation of its potentials in enriching and characterizing the space, according to the final scenic design. The use of technology, therefore, is not aimed to modify the relation between people and space (even if some behaviors necessarily change) and this peculiarity is what makes the case noteworthy.

→ SPACE

Trying to understand how technology modifies the relation between people and space in People in Their Worlds could be tricky, because technology is not something added to the space nor is it something that completely overpowers the exhibit but rather something fully integrated

→ STATEMENT

People in Their Worlds is a noteworthy example of integration of ICT and multimedia within the exhibition space, as a common piece of exhibition carefully mixed with other exhibitions.

DS

Key Issues

The case presented raises a number of important dimensions of the aspects of space in the museum environment. A short list of these is included here.

→ INTEGRATING TECHNOLOGIES IN EXHIBITION SPACE

Technology is not something added to the space or interpreting it, nor something that completely overpowers the exhibit.

→ CREATING AN IMMERSIVE SPACE

Each room with its multimedia and interactive installations immerses visitors in a completely different environment.

→ CREATING A SCENIC SPACE

A strong scenic approach, typical of Brückner, characterizes the project that proposed 14 different chapters that give access to various world cultures.

→ HIGHLIGHTING CULTURAL CONNECTIONS

The rooms relating to everyday life and festival culture from different regions of the earth encourage the visitor to recognize the equal rights and equal value of different ways of life.

Other Examples

Churchill War Rooms (2005)

The Churchill Museum uses cutting-edge technology and multimedia displays to bring the story of Winston Churchill to life. The technological systems are integrated in the exhibits showing documentary footage or interactive presentations. These include the Lifeline exhibit, a 15-metre-long interactive table through which visitors can access information from every year of Churchill's life, down to specific days.

A Oriente - To the east (2011)

The exhibition is organized as an itinerary through eighteen multimedia stops that corresponds to twelve places celebrating existing legs of the Silk Route. A Oriente animates the Silk Route and its stops telling personal stories, proposing different viewpoints and highlighting the connections between cultures.

IMG 2.9 — *Digital Dacha Murals, San Jose. Digital Dacha, 2007-2008. Visitors interacting with Blueprint. By drawing with a stylus on a web tablet, a video projection redraw it in real time as it was with a blue Bic following the style of the artist Il Lee.*

Digital Dacha Murals

San Jose Museum of Art, San Jose (USA) - 2007-2008

Björn Hartmann, Scott Doorley, Parul Vora, Kevin Collins, Dan Maynes-Aminzade

Digital Dacha Murals is a collection of three interactive projected murals featured at San Jose Museum of Art between 2007 and 2008. The Museum commissioned digital artists to create pieces related to the current exhibition, to be placed in the central hallway to engage visitors in a creative activity.

The first mural exhibited is Affinity, a moving digital mural of dots, which uses computer vision and optical flow to track the position of passing visitors and associate them with some dots that are moving in sync. The result is a fascinating ever changing mural of colored dots with some likeness to optical art, but several visitors were not able to work out the relationship between their movements and those of the artwork.

The second mural, Blueprint, is inspired by the work of the Artist Il Lee who uses ballpoint Bic pens to create highly expressive abstract art. The project employs user generated drawings, by asking visitors to draw with a stylus on a web tablet in order to redraw in real time the video projection as it was with a blue Bic. The main idea behind the exhibition was both to modernize and create discussion about the work of the Korean artist.

The third piece, Wishing Wall, asked visitors to answer the question "What do you wish for?" by leaving a message on an antique phone. Automatic visual representations of the messages are created dynamically and projected on the wall and the messages can be heard by picking up another phone under the projection.

→ RELEVANCE

Digital Dacha Murals is noteworthy for its experimentation with digital technologies to create an interactive/responsive space able to relate with visitors according to different dynamics. It is an example of how digital technology can modify the relation between people and space within a museum environment, transforming people's actions and interactions into ever-changing artworks that characterize a space.

→ ICT

The three installations of Digital Dacha Murals employ digital technology to create simple interactive artworks that modify in real time according to visitors movements, actions and interactions.

Technology is therefore featured as a novel application, and it is the main focus of the exhibition in itself, despite the fact that it tries to convey messages related to the current museum's exhibitions.

Digital Dacha Murals is an example of a responsive environment, because the murals respond in real time to the inputs received by visitors, whether or not they are aware of the interaction.

The first piece, Affinity, exploited the passerby's movement to create a dynamic artwork, but visitors were unaware of the interaction and most of them did not recognize the relationship between their movements and those of the dots. The other two pieces instead introduced a more aware interaction, asking visitors to draw on a tablet or to leave a message in a phone and listen to other messages in another phone.

Sometimes the artwork did not use real time interaction, as was the case for the third piece, which pulled wishes randomly from those previously recorded if there were no wishes in the pool.

The media include interactive videos, and the technology consist mainly of open source elements like Arduino and Processing.

→ USER EXPERIENCE

The user experience provided by Digital Dacha Murals is a combination of passive and active involvement. Visitors can experience the murals as dynamic artworks to just be observed or take part in the action and modify the artwork.

The first piece, Affinity, blurs the boundary between these two conditions because visitors are unaware of being active participants of the interactive artwork, and only few worked out the relationship between their movements and that of the colored dots.

Digital Dacha Murals does not foster direct social engagement but activates several social dynamics. Sometimes the interaction of a single visitor becomes the spectacle for the entire audience (Blueprint). Sometimes all the visitors are both spectacle and audience (Affinity), and sometimes more single interactions are aggregated and shown to the entire audience or to a part of it (Wishing Wall).

Despite the fact that the Museum commissioned the three artworks as something related to its current exhibitions, there is no evidence that they actually succeeded in stimulating reflection. The result is a performative experience that involve visitors as creators/modifiers of the projected murals.

→ SPACE

The three murals at San Jose Museum of Art are an example of interactive/responsive space in which visitors' behavior affects the space, even if only on a superficial level. The projection wall is indeed continuously regenerated according to the visitors' actions and interactions.

In the piece Affinity, we could define the resulting space as a responsive one, because visitors' movements directly affects the shape of the artwork and, by only understanding how it works, users can voluntarily modify the artwork.

The shape of the artworks can also not be controlled in the Wishing Wall piece because the floating words are the result of the messages left by users. But their dimension, density, speed or direction are not directed by the user. The space defined by this piece is therefore interactive but also responsive.

The space generated by the Blueprint piece is instead an interactive one because users, through a tangible user interface, voluntarily control the shape of the artwork.

The technology-generated space in Digital Dacha Murals is something abstract and somehow detached by the context. It is a wall in a white box, animated by an ever-changing artwork.

→ STATEMENT

Digital Dacha Murals is noteworthy for its experimentation with digital technologies to create an interactive/responsive space able to relate to visitors according to different dynamics.

DS

IMG 2.10 — *Digital Dacha Murals, San Jose. Digital Dacha, 2007-2008. A phone hanging on the wall of "What do you wish for?". It allows listening to messages left by visitors at another phone and transformed by the system in dynamic representations projected on the wall.*

Key Issues

The case presented raises a number of important dimensions of the aspects of space in the museum environment. A short list of these is included here.

→ MODIFYING THE SPACE WITH USERS' MOVEMENTS

The piece Affinity employs digital technologies to create a responsive space by tracking visitors' movements and syncing them with those of colored dots.

→ MODIFYING THE SPACE WITH USERS' INTERACTION

In Blueprint and Wishing Wall, the space is modified voluntarily by visitors' interactions with the system, using a stylus pens and a voice-recording old phone, respectively.

→ TRADUCING INTERACTIONS INTO AN ARTWORK

Visitors' movements and interactions are transduced into an abstract artwork which represents and symbolizes them.

→ ENGAGING AND PLAYFUL APPROACH

The models of interactions proposed by Digital Dacha Murals as well as its graphical choices highlight a willingness to engage and entertain visitors.

Other Examples

The 11th tapestry (2010)

The project consists of an interactive projection alongside the V&A's 15th-century Devonshire Hunting Tapestries that continuously changes based on movements and sounds in the room, encouraging visitors to change their behaviors to get a response from the tapestry.

Wonderland: Paint Out (2009)

Exhibited by Media Arts Graduates from CCT of San Francisco, Paint Out is a virtual graffiti project and a collaborative work that allows the participant to create a virtual graffiti drawing on any reflective surface. PaintOut facilitates the creation of temporary street art and graffiti, and because of this, it allows the normally marginalized street artist to participate in the current contemporary art dialogue without defacing or damaging public property.

Content

Cultural Content and Technologies of Memory

→ TYPOLOGIES OF CONTENT

This chapter deals with the "cultural content" of the design-led applications of digital technologies in the cultural fields (i. e. exhibition design, installations, devices within museums, cultural institutions and so on). The crucial aspect of user experience is analysed through a peculiar "relational" tension that is how the cultural content are conveyed by the use of technologies (forms and tools of representation, languages) and are crucial in connecting people. Even if not all the cases of the source book are significantly relevant for the presence of content that can be precisely defined as "cultural" in a traditional and rigorous sense (regarding for instance the cultural heritage, a local, national, or diffused patrimony) they are indeed quite all concerning the relation between technology applications and unconscious behaviours or attempt of critical understanding and interpretation of the technology itself, therefore related with issues that are eminently cultural, in the sense of culturally (socially, collectively) determined and shared.

In this analysis anyway we will mainly focus on strictly institutional cultural content, and on how they constitute one of the fundamental components of the user experience mediated by technology in a peculiar spatial and social environment (in a complementarity with the space and setting—as shown in the previous chapter—and the social engagement—see the following chapter) that is primarily within traditional museums (permanent displays and temporary exhibitions), but also outside the museums (installations, websites and cultural programs), so widening the analysis of experience from a tout court museological level into a more comprehensive cultural one. Selecting successful and virtuous cases and experiences of cultural experiences mediated by technologies we try to give evidence to a possible dependence from their cultural content, that means recognizing possible recurring patterns on how they have been designed or the use of technology has been influenced and declined accord-

PREVIOUS PAGE — *StoryCorps, NewYork. StoryCorps, 2003. A girl is recording her story at the StoryBooth with help of a facilitator.*

ing to their content. This is meant possibly to reinforce deliberately these assumptions as an effective design strategy in the frame of MeLa. In fact, coherently with the project objectives of envisioning new museums roles and strategies in an age of migration, content is not understood as a neutral and independent element but magnified in its relation with the user of the museum through different processes of appreciation, appropriation, interpretation in a defined space and interaction among people, that represent crucial platforms for mutual understanding in a trans-cultural context. In this relation we pose the digital technology as a mediator that in one way is enabling content, and at the opposite can be shaped by it. We expect also to evaluate the correlations between the digital technology applications and the different forms of cultural content as possible design directions to envision enriched and intensive inter-cultural experience within museums.

In order to set our analysis frame we start considering the peculiarity of the elements of this relation. A cultural content and its specificities can be listed under the typology and qualities of the cultural content. Concerning the typology of cultural content, it ranges from tangible to intangible patrimony, moving from objects or collections of museums or exhibitions (i.e. see *A Matter of Faith* and *A Oriente*, which display tangible artifacts beside their intangible contents) to identity aspects like religion (see again *A Matter of Faith*), rituals and traditions (see again *A Oriente*), memories and stories of people and places (i.e. see *City of Memory* or *StoryCorps*). Overlapping this range there is the grade of "normalisation" of the contents that means the status of institutional and legal acknowledgment and safeguarding of the considered cultural heritage (i.e. see *A Matter of Faith* and *A Oriente*), versus a certain degree of liveliness and bottom-up emersion from the contemporariness of collectives and communities (i.e. see *City of Memory* or *StoryCorps*). Finally a third range refers to the scale of the considered heritage, starting from a direct connection of the cultural content with a museum (being it a permanent collection or an exhibition i.e *A Matter of Faith*) to its diffusion on a larger spatial scale where it can be localised and derived from (district, city, territory, nation or trans-national. i.e. *A Oriente* and *City of Memory*) or even to the web (i.e *Crossing Over*).

Some qualities of cultural content can intertwine through typologies, for instance the grades of tradition/contemporariness, individuality/collectiveness: these aspects emerge often as critical elements and will be more deeply considered in the following paragraphs.

The peculiarities of technology too can be individuated under the typologies. In the previous chapter they have been diffusely described, here we simply recall the various forms that digital technology assume in the case hereafter presented for convening cultural content and experiences: from on line platform (i.e *Crossing Over* and *City of Memory*), to smart and portable devices (i.e. *A Matter of Faith*) for location based applications, to interactive multimedia installations (like screen, booths) (i.e *StoryCorps*), to TUI (i.e *A Oriente*).

As will be shown in the text which folllows, the matching of content and technologies typologies creates different forms of interaction and roles for the users, in the appreciation, participation and co-creation of cultural values.

→ CRITICAL ASPECTS

The more interesting aspects related to cultural content relies on the approach used to design, often by digital technologies, the experience around them for the users, for instance conveying the content with a safe-guarding aim (i.e. documenting through recording) or by a re-enactment action. It is within this interval that are played those various opportunities of activation of cultural content by digital technologies that magnify their cultural meaning in relation to the users. In other words, cultural content can be made simply available by using digital technologies (displays, interactive devices…) or can be "re-generated" in their forms and meanings through an innovative "re-production" in contemporary contexts (this is the case, for instance of *A Matter of Faith* where the user experience is conceived to re-negotiate the beliefs among different religions, possibly helping in dismounting stereotypes).

In addition, the question of authoritativeness of the content is crucial too: putting in relation the cultural content with the users and the technologies raises the question of individual/public curacy of the content themselves. In our analysis we'll skip a deep this complex aspect, and we'll only point out as critical question the co-production of content by the users.

By the way, as initially stated, the reflection on how the different cultural contents reach the user, and how this process can be improved by the use of various digital technologies cannot avoid the critical question of dependence, needing to focus on specific issues inherent in the nature of cultural content itself. One of this is the concept of "cultural friction": cultural content is not neutral and this strongly influences its reception by people and therefore their proposal to the public of museums. In the relation between user and cultural content, frictions can occur when different cultures get in contact and contaminate each other: elements of dissonance, authenticity, inclusion/exclusion are the result of different modalities of "representations" of culture. This aspect is present and relevant within the selected cases for the direct or indirect way in which the cultural contents are expressed, meaning that the owner is directly involved in presenting his own culture, values, stories, heritage (self-representation) or not (hetero-representation), and that the audience is its own community or the "others". Many cases present the concept of plurality of representation, that is here intended as a value opposite to a monolithic and unitary perspective deliberating excluding minorities and dissenting voices: juxtaposing different voices and representing other points of view (i.e. *A Matter of Faith*, *A Oriente*, *City of Memory* and *StoryCorps*), discussing about identity issues (i.e. *Crossing Over*) looking for connections and points of contacts (i.e. *A Oriente*) are the aims of cases. In order

to get this, many of the cases make use of personal stories (i.e *A Matter of Faith*, *City of Memory* or *StoryCorps*).

Connected with the self-representation there is the idea of participation, even if participation implies a wider and more active contribution of the community to the whole cultural chain (not only to the representation, but for instance to the production and interpretation of culture and cultural content too, i.e. see *City of Memory*).

Anyway polyvocality is not a guaranteed result of participatory practices, as well as the use of personal stories and interviews not necessarily lead to re-discussing the identity through cultural friction. It's nevertheless evident that the technologies can play an important role in the way of intermediating the cultural content to the users, contributing to the process of identity construction. The choice of digital applications can impact on these features of cultural content: from closed to open system, from collaborative to dialogic tools, technologies can enable multifaceted cultural representation (enriched cultural content) of a specific patrimony, showing different points of view along side (i. e. see *City of Memory* where the ICT employed is a website), or helping in identifying interconnections (connective cultural content) (see *A Oriente* where the ICT employed are multimedia and interactive installations), or supporting parallel interpretation and active renegotiation (some examples can be novel reinterpretation and re-writing of the existing) (see *A Matter of Faith* where the ICT are screen, devices, interactive tables…). For all of them we can speak of activation of cultural content by technologies. Basically digital applications can move from the opposites of emphasizing the protection of the identity and memory of the culture/s represented or its active reproduction, balancing between a conservative or provocative and challenging approach. Narrative and spectacular technologies (screen, displays…) are more addressing safeguarding purposes while portable devices and interactive systems and platforms seem more oriented to help in re-discussing identity issues.

Another relevant issues related to the nature of cultural content and its tendency is the question of delocalisation and relocalisation/recontextualisation: the localization corresponds to a physical dimension where the cultural content has been generated, but also to the natural, environmental, cultural and territorial conditions which determine its form. Delocalisation happens when this connection breaks, the contextualization is a design process that reconstructs this relationship between the cultural content and a context: if is this relation that generates sense and value, when this link loosens is necessary to rebuilt it or to make it understandable, linking traditional meanings with new interpretations. This happens particularly in *A Oriente* or in *A Matter of Faith*.

And this leads to the last peculiarity that we consider relevant for cultural content: is the concept of "difficult heritage" (MacDonald 2009:1). This concept is here related to other factors instead of MacDonald painful aspects: for instance those controversial aspects of cultural content where

legitimacy or "truth" is still disputed, or that dispersion and fragmentation of residual and isolated memories, scattered material whose singularity, dislocation, de-contextualisation, absence of relation or disconnection doesn't help in recognising its value. The friction is here leading to denying processes. The religious heritage for instance is an emblematic example of a patrimony in need of a complex process of sharing and understanding (i.e. see *A Matter of Faith*). The use of digital application can intervene on helping to overcome the delocalisation and to bridge the controversial and differentiating aspects.

→ CONCLUSIONS & BEST PRACTICE

Cultural content are "activated" by technologies and therefore "used" by the user in what we earlier defined user experience. This use is of course not consuming the heritage but in fact exploiting its value. From the cases presented, is evident that stratified cultural content like identity issues, with tangible and intangible aspects, require to shape by technology different mixed forms of interaction, from structured and formalized behaviors, to unconscious but formal actions (approaching, leaning out) to informal but conscious behaviours.

According with the use that users make of the cultural content during the experience we propose, as recurring patterns, three approaches or aims of technology application. Or at the opposite, these three objectives pursued by the application of ICT lead to different metaphors for the use of cultural content. For each of these three approaches space and time assume different connotations in the way the technology connects content with the users in a peculiar experience.

When the application of technology is meant to the interpretation of the heritage, cultural content functions as a repository or source for new meanings. The contextualisation is here determinant and time is based on an interval or portion of history. Technology in this case should therefore support a shift towards a personalization of the experience that beside than being focused only on the use of personal stories and participation, should be complemented by the possibility of profiling the user cultural background and adapting adequately content for better understanding and reception.

When the application of technology is meant to the re-negotiation of the heritage, cultural content functions as a text where new stories overlap. Time is therefore cyclical and stratified and content are situated meaning responsive to spaces. Technology in this case should enable users to generate personal content and to layer it on the curated content finding connections, links, correspondences.

When the application of technology is meant to the traceability of the heritage, cultural content functions as a chain which helps in reconstructing the full story. Time is linear and content is place-based. Technology in this case should facilitate a social engagement for the confrontation and the building of a reliable collective memory.

From this short overview of case-derived insights we think it is evident that cultural content is a powerful drivers for innovation of user experience, that is based on soft qualities like cultural and sensorial elements enhanced by technologies: this leads to the design of new symbolic and relational aesthetics of interaction among users and cultural content.

Eleonora Lupo

→ REFERENCES

Lupo, Eleonora. "Design, Arts and Aesthetics of Innovation." 2011. *Strategic design Research Journal* 4(2): 40-53.

Giunta, Elena, Eleonora Lupo and Rafaella Trocchianesi. 2011. "Design research and cultural heritage: activating the value of cultural assets as open-ended knowledge system". *Design Principles and Practices Journal* 5(6): 431-450.

Lupo, Eleonora. 2008. "Beyond localism, looking for sustainability. Designing 'typical knowledge' active-action." *Changing the change proceedings.* Eds. Carla Cipolla and Pier Paolo Peruccio. Torino: Allemandi.

Macdonald, Sharon, ed. 2009. *Difficult heritage: negotiating the Nazi past in Nuremberg and beyond*. Routledge, Abingdon-New York.

Case Studies

IMG 3.1 — *A Matter of Faith. Stapferhouse, Lenzburg. Beat Hächler, Sibylle Lichtensteiger, 2006-2007. Young visitors at the fourth station of exhibit showing diverse items of faith lent by a hundred people to represent their faith.*

A Matter of Faith

Stapferhouse, Lenzburg (CH) - 2006-2007

Beat Hächler, Sibylle Lichtensteiger

A Matter of Faith is a temporary exhibition that deals with religious issues, asking people to enter the exhibit as believer or non-believer and making them reflect upon their choice with interactive installations. Through interactive booths, audio and video contributions of four men and five women, aged between 16 and 71, accompany visitors along several stages into their own world of faith, beginning with their conception of God or with an attempt to formulate their own individual pronouncement of faith.

The first station deals with prayer, through six audio contributions that tell how and why people pray or do not pray. The second station addresses the topic of religious habits, representing three different familiar habits: a Muslim prayer ritual in the evening, a goodnight ritual in a family with no religious affiliation and a morning ritual with shamanistic elements. Religious celebrations are addressed by the third station, which represents four diverse celebrations: a temple celebration of Hindus, a Zen Sesshin, a Roman Catholic Mass and an International Christian Fellowship celebration. Personal objects lent by a hundred people to represent their faith are the focus of the fourth station, items of faith, while the following station deals with the clash of faiths through three emblematic topics: the picture of a Hindu god on a shopping bag, a planned minaret in a Swiss village and Christmas carols at school. The last station, future of faith, tries to classify visitors into five different religious approaches: traditionally religious, culturally religious, alternatively religious, patchwork religious and irreligious.

→ RELEVANCE

The topic addressed by "A Matter of Faith", namely the contemporary and post-immigration religious panorama of Switzerland is highly relevant for transnational and cultural issues in Europe, as well as its way of exhibiting contents with a multicultural and intercultural approach.

Furthermore the case is interesting for this document because it employs ICT, despite it being very common and not cutting-edge, to stimulate reflection about the topic, confrontation with different viewpoints and even a rethinking of visitors' religious identity.

→ ICT

ICT is employed on-site mainly, in order to provide visitors with audio and video contributions across the entire exhibition. Monitors and headphones are the devices and tools used within the exhibit space and therefore we are dealing with static and non-mobile devices.

At the entrance, visitors are also given an USB drive/brooch that identifies them as believers or not believers with the double function of wearable identity and storage space for personal data of visitors. In addition to these stations that put visitors in a condition of passive content consumption (audio and video contributions), there is also some interaction allowed. An interactive questionnaire at the end of the tour helps visitors be categorized within the five kinds of religious approach cited above.

The design of the exhibition and of digital technology is not specifically aimed at stimulating social interaction among visitors, but the co-director Beat Hachler notes that the final table that shows visitors' personal profiles very often resulted in spontaneous conversation among visitors.

Visitors' participation is requested in two main ways: they are part of the show, wearing the brooches that identify them as believer or not believer, and they can share their answers to the

IMG 3.2 — *A Matter of Faith. Stapferhouse, Lenzburg. Beat Hächler, Sibylle Lichtensteiger, 2006-2007. The last station classifies visitors into five different religious approaches: traditionally religious, culturally religious, alternatively religious, patchwork religious and irreligious.*

test of faith at the end of the tour. The digital questioning system is therefore employed to collect data about visitors and eventually use that data to compose statistics and improve visitors' comprehension of the Swiss religious landscape.

Advanced digital technology is not employed within the exhibition because the use of video and audio pans across the entire exhibition. The value added deriving from the employment of ICT is certainly more recognizable in the interactive table which asks visitors questions about faith, in order to categorize them.

→ USER EXPERIENCE

Despite some interactive booths that help categorize visitors according to their interactions and answers, the user experience proposed by the exhibition is mostly passive. A Matter of Faith proposes indeed an experience mainly aimed at engaging visitors cognitively, asking them to reflect about what they see and listen to.

The level of interactivity is therefore quite low as well as that of social engagement, proposing a personal experience even if sometimes the interactive table at the end of the exhibition stimulates spontaneous social engagement.

→ CULTURAL CONTENT

The exhibition aims at making visitors reflect about religious issues through the dichotomy believer/non-believer and about five main topics: prayer, habits, celebrations, items of faith and clash of faiths. Every visitor enters the exhibit choosing to be believer or not believer and observes the stations through this perspective until the final station where his or her position is questioned and re-arranged within a more multifaceted view.

The reflection is stimulated through the continuous juxtaposition of different stories, different objects, celebrations following a multicultural approach. Showing together very diverse items of faith such as a necklace with cross, a picture of Mary, a Sabbath menorah and a statuette of Buddha represents the multicultural and multireligious contemporary Switzerland.

At the same time, other stations show a more intercultural approach exposing objects and celebrations that represent the interconnections among different cultures even if not always positive. The Hindu god represented on the Migros shopping bag speaks of interconnections among cultures but also of a clash among cultures.

Representing different religious identities and memories and inducing visitors to reflect about different practices, the exhibition questions the religious identity. The last station, in particular, helps people to re-categorize themselves within five types of religious approaches overcoming the starting dichotomy believer/non-believer.

→ STATEMENT

A Matter of Faith provides a multifaceted religious panorama of Switzerland, questioning the religious identity of visitors and staging cultural friction.

DS

Key Issues

The case presented raises a number of important dimensions of the features of content in the museum environment. A short list of these is included here.

→ STAGING CULTURAL FRICTIONS

A Matter of Faith represents voluntarily religious friction through three main topics in the Clash of faiths station: the picture of a Hindu god on a shopping bag, a planned minaret in a village and Christmas carols at school. Furthermore, a conflict played among the different religions, their symbols and different lifestyles, pans across the entire exhibition.

→ DISCUSSING THE IDENTITY

The first dichotomy believer/non-believer is questioned during the entire exhibition and rediscussed at the final interactive table, which categorizes visitors in a more informed and detailed way. The interactive system is therefore employed as a tool to question the identity and stimulate reflection.

→ JUXTAPOSING DIFFERENT/DISSENTING VOICES

Different and dissenting opinions about religious issues are presented using audio and video contributions with a multicultural approach.

→ USING INTERVIEWS AND PERSONAL STORIES

Personal life stories and personal opinions told in first person is the strategy chosen to provide a multifaceted religious panorama of Switzerland.

Other Examples

Memories of NY Chinatown (1991)

The Memory of New York Chinatown exhibition dates back to 1990, but it is one of the more advanced concept in the nineties of a dialogue-based approach in designing the experience of social cultural memories.

The use of technology within the museum has always been connected with dialogue-based and participative modalities. For this reason, in addition to interactive technologies there are also present analogical collaborative modalities (public dialogues, reunions, conversations, etc.)

Whispering table (2009)

The piece deals with the topic of food and religion. Four unique festivities celebrated by people of distinct cultures are assembled in an archetypal scene of a congregation. Visitors approaching a round table filled with empty dishes discover that these are actually telling personal stories about the symbolic meaning of food and rituals.

IMG 3.3 — *A Oriente, Roma. Studio Azzurro, 2011. The installation tells the stories of queen Zenobia. Approaching a screen in front of the stop, the light of 4 small display cabinets is turned off, and the eyes on the screen open activating videos and audio content.*

A Oriente. Città, Uomini e Dei sulle Vie della Seta (To the East. Cities, People and Gods on the Silk Route)

Museo Nazionale Romano - Terme di Diocleziano, Roma (IT) - 2011

Studio Azzurro

This temporary exhibition deals mainly with an intangible past heritage, focusing on the Silk Route (from East-China to West-Eurasia and back) as known across the time between the II Century b.C. and XIV Century a.C. The exhibition is organized as an itinerary through eighteen multimedia stops that correspond to twelve places celebrating existing legs of the journey: Palmira, Ctesifonte, Taq-e Bostan, Merv, Samarcanda, Ghazni, Kucha, Turfan, Dunhuang, Chang'an and the localities of Tur 'Abdin and Swat.

These places housed different populations for provenance, religions and traditions offering occasions for living together in respect and tolerance or for culturally contaminating each other. Through interactive installations, the visitor explores the complexity of this cultural system connecting real objects on show (100 archeological finds of different typologies coming from various institutions, museums, libraries) with stories and characters of the past. In particular two important documents are displayed: Marco Polo Bible and a Mongolia Map of XIV century. The wooden chests, usually used to archive archeological material, are used as a metaphor of the journey and support of the video-installations. The videos give voices to otherwise silent patrimony of objects.

→ RELEVANCE

A Oriente uses digital technologies and interactive booths to involve visitors in a fascinating journey on the Silk Route as it was in the past, re-enacting an intangible heritage and engaging with a performative approach.

The physical journey through the twelve stops is also an exercise of comprehension of different viewpoints, learning how people from different cultures and religions lived together and listening to personal stories that tell the same event from different points of view. The exhibition looks at the past but at the same time makes visitors reflect on contemporary issues, including ones dealing with transnational and cultural issues.

→ ICT

Multimedia digital technologies and in particular interactive video and audio installations are the trademark of Studio Azzurro which designed this exhibition. Every stop has an interaction to be performed next to the ancient objects and documents on display.

Static devices like screens and digital projections are activated by the presence of visitors or by their actions, and no direct physical contact or interaction is required. Every contribution starts by simply approaching a screen or leaning over a case. Exceptions to this are the bazaar stops, where visitors are asked to flip the pages of books to activate video and audio; the carpet, which needs to be stepped on, and the individual traveler room, where visitors must blow on feathers.

The exhibition mixes structured and formalized ways of interaction (flipping pages) with unconscious but formalized behaviors (approaching a screen or a case) with conscious but informal behaviors (occupying the space, or blowing on a feather).

→ USER EXPERIENCE

The use of technology here is aimed to enrich the environment and the experience, stimulating surprise and curiosity in order to make the experience and the learning more memorable. Visitors are indeed involved in a performative experience that asks them to move and do things in order to activate contents and contri-

butions. At the same time, the museo-graphical choices are aimed at immersing visitors in a narrative environment, retracing the legs of the Silk Route.

The model of interaction enabled by technologies is not directly promoting an extra engagement of the visitor but rather a simple experience of the content (listening and seeing) that continues until the visitor moves away. There is no social engagement, but it can happen naturally that other visitors get close to the installation and share the experience.

The exhibition is not built on a participatory approach and visitors cannot provide or add their own content but can only consume content edited or selected by experts and curators. This content is not open and accessible outside the exhibit.

→ CULTURAL CONTENT

The exhibition represents different cultures, religions and traditions and relates to each of these by highlighting contextual connections. The approach proposed by the exhibition is then multicultural but also intercultural. The videos mix different stories creating a virtual dialogue among the characters, e.g letting them all tell the same event, or letting them experience places from different viewpoints. In this sense, the exhibition is an example of a plural representation of multiple voices, but within the main narrative, the voices are dissenting. The described heritage does not present difficulties or disputed aspects, and there is a correspondence between History (the institutionalized frame) and personal stories and memories. These basically help in emotionally enriching the experience, recovering details, discovering and enabling meaningful attributions but not allowing further dissonant interpretations.

The representation rhetoric is based on a contemporary and global approach, which uses narrations and interactive booths to foster visitors' engagement and is directed to a global audience. There are no peculiar behaviors that users should enact, stipulated by the cultural content and context conveyed by the exhibition (i.e re-evocating specific rituals of traveling to activate the interactive installation). There are simple interaction mechanics like approaching or touching. This probably responds to the need of overcoming the delocalization of the cultural contents that are told in a different context from the one where they are originated. It is a mix of self-representation and hetero-representation dynamics: people are involved as protagonists in telling their stories, while objects and archival documents offer a non personal but institutionalized (historically) perspective.

→ STATEMENT

A Oriente animates the Silk Route and its stops telling personal stories, proposing different viewpoints and highlighting the connections between cultures.

DS

IMG 3.4 — *A Oriente, Roma. Studio Azzurro, 2011. At the center of a bazaar, an interactive carpet is interweaved by the steps of the visitors. When is completed a projection on the roof starts, showing convoys and travelers moving.*

Key Issues

The case presented raises a number of important dimensions of the features of content in the museum environment. A short list of these is included here.

→ JUXTAPOSING DIFFERENT VOICES

The exhibition stages a virtual dialogue between different characters, in one example letting them tell the same story. A plural representation of different voices, even if not dissenting, is displayed through personal stories, told in first person.

→ HIGHLIGHTING POINTS OF CONTACTS

A Oriente tells a story of places that in the past housed different populations for provenance, religions and traditions offering occasions for living together in respect and tolerance. For instance the three big religions Buddhism, Christianity and Islam co-existed peacefully along the route.

→ RE-ENACTING THE INTANGIBLE

Multimedia installations are employed to re-enact an intangible heritage as that addressed by the exhibition and to involve visitors in a narrative and performative experience. Alongside the established history, represented by the archaeological finds, another people's story emerges thanks to ICT.

→ ENGAGING AND PERFORMATIVE APPROACH

Visitors are asked to use their body and perform actions to explore the contents and activate interactive installations.

Other Examples

Doha Memories Prototype (2010)

Doha Memories is a museum based on intangible, precariously ephemeral memories. A preview of the 1st prototype/demo of Doha Memories has been presented Sunday, June 6th 2010, in the Ceremonial Court, Education City, Doha. The project, in the context of research through design, explores a temporary museum of oral memories from Doha - Qatar.

Reanimating Cultural Heritage (2008-2011)

Reanimating cultural heritage aims at digitally repatriating objects from Sierra Leone spread in museums around the world. It considers how objects that have become isolated from oral and performative contexts that originally animated them can be reanimated in digital space alongside associated images, video clips, sounds, texts and other media, and thereby given new life.

IMG 3.5 — *Crossing Over, University of Regina and Sabanci University. Kathleen Irwin, Rachelle Viader Knowles, 2011. The image shows the web interaction of the project: a virtual baggage claim allows users to click on suitcases and reveal their story.*

Crossing Over

University of Regina, Regina (CA) and Sabanci University, Istanbul (TR) - 2011

Kathleen Irwin, Rachelle Viader Knowles

Crossing Over is a web-based, pedagogical project between students in Canada and Turkey, raising issues about the care we owe to strangers and the ethics of social interaction facilitated by the World Wide Web.

The project has involved teams of students from the University of Regina, Canada, and Sabanci University, Istanbul, Turkey, in a three days workshop: the students were asked to pack a virtual suitcase with personal data (i.e. images, personal data, dialogues) and to fill in a long visa application. These suitcases were then inspected at the virtual border, replicating the common process of immigration or asylum seeking. Once having crossed the border, the contents packed in the suitcase were used to develop an immigration scenario, taking the socio-political climate of the destination country into account.

The workshop exploits the web to create a framework for collaboration, based upon a creative exchange of identities between two very different countries and multimedia, to make students build a personal identity and to question it.

→ RELEVANCE

The Crossing Over project does not stem within a museum or for a museum but is particularly relevant for transnational and cultural issues because it employs digital technologies to question the role of globalization and the consequent global mobility (the age of migrations).

It raises questions about identity and about the other, asking students to virtually perform a process of immigration, to send a packed identity in a suitcase across the border and to imagine what will happen.

→ ICT

ICT is employed in different ways in the Crossing Over project. The students participating in the workshop were asked to script, produce and post their video projects, and then use an interactive website to fill in a visa application and send their virtual baggage. The same actions are required to claim a baggage, explore its content and produce a new video, revealing an immigration scenario.

Technology is employed as a tool to create content, namely the videos, but it also allows for communication and exchange between distant countries, as well as simulate a process of immigration, creating a background narrative and a post-immigration scenario. Common web technologies allow international students to collaborate in real time and share different media, namely images, videos and texts.

The website, still online, shows now a virtual baggage claim where several suitcases pass by. Upon rolling the pointer over them, one can read the baggage tag. Clicking it will reveal the visa application form and show personal information and two videos—the departure and arrival stories. Flipping the card will show other personal information on the immigration form.

The project stems from a teaching methodology that combines studio practice and theoretical investigation and is specifically addressed to students and to make them think broadly and deeply, and to reflect on globalization, the web and their influence on personal identity.

→ USER EXPERIENCE

The Crossing Over experience starts asking students to script, produce and finally post a video project, a subjective narrative on a dedicated website. Each student must fill a visa application form and pack a virtual suitcase with

IMG 3.6 — *Crossing Over, University of Regina and Sabanci University. Kathleen Irwin, Rachelle Viader Knowles, 2011. A screenshot of a video telling a personal story. Students were asked to produce videos to present the character before and after the immigration.*

personal belongings and send it across a virtual border, where it is scrutinized and made public. Once passed the border, the baggage is claimed and unpacked and the content is used to build an immigration scenario.

Crossing Over's participants are therefore involved in a highly social activity, a workshop that requires collaboration between every member of the class in both universities. They are asked to perform identities and respond in kind to their international team mates, blurring the distinction between performance and social networking.

Crossing Over can be described as an international parlor game, an interactive web-based activity played on a collective level that involves users in a reflective but also immersive experience. The students set up an immigration scenario, taking the socio-political climate of the different countries and their diverse procedures into account and in so doing, they reflect on issues related to identity and immigration.

→ CULTURAL CONTENT

The project is aimed at making students reflect on their consideration and responsibility for others, an issue that is acquiring an ever-growing interest in an age of global mobility, blurring of borders and instantaneous exchange of information. Crossing Over raises several questions that are focal within the globalization of information and the consequent increasing difficulty to negotiate with and to understand the other.

The performance/act of freezing an identity in a video and sending it virtually across the border following the entire immigration process is an extraordinary way to reason about the other and to question the personal point of view and the notion of identity.

Crossing Over can be defined a trans-cultural practice, or at-least an effort in this direction, because it facilitates and encourages multiple readings and parallel interpretations of cultural dynamics, exploring what could happen when diverse culture intersect or collide.

→ STATEMENT

Crossing Over is a web-based, pedagogical project that raises issues about the care we owe to strangers and the ethics of social interaction facilitated by the World Wide Web.

DS

Key Issues

The case presented raises a number of important dimensions of the features of content in the museum environment. A short list of these is included here.

→ DISCUSSING THE IDENTITY

In Crossing Over the identity is frozen in a video and a visa application, packed in a virtual suitcase and then transformed according to the socio-political climate of the country of destination.

→ CONSIDERING OTHER POINTS OF VIEW

The project asks for an effective rethinking of identity when transferred to a different country, taking a different culture and different points of view into account.

→ REFLECTING ON THE ROLE OF TECHNOLOGY

Crossing Over proposes a reflection on the role of technology and of the Internet in the general process of globalization, blurring of borders and confrontation with diversity.

→ EFFECTIVE USE OF ONLINE INTERFACES

The project makes an effective use of online interfaces to support workshop activities and make different institutions communicate in real time.

Other Examples

Home & Exile (2006)

Home & exile is a multimedia installation dealing with Jewish Emigration from Germany since 1933. By turning a rotary knob, the visitor can choose one of 80 countries and find out about German Jewish emigration to that destination. An info ticker shows texts and images, revealing key facts to the viewer. Up to three users can interact and experience history independently from each other.

You Are Not Here (2006-2007)

You Are Not Here is a platform for urban tourism mash-ups, which invites visitors to discover a city through the streets of another, encouraging intercultural understanding between conflicted communities. Simply using a downloadable paper map and a mobile phone, it allows users to visit Baghdad by walking in New City and the second, launched in 2007, uses the streets of Tel Aviv to visit Gaza.

IMG 3.7 — *City of Memory, New York. City Lore, Local Projects, 2003. A screenshot of interface of City of Memory website: by clicking the red and blue dots on the map users can access different stories about New York and its citizen.*

City of Memory

New York (USA) - 2003

City Lore, Local Project

City of Memory is a system to capture personal geographies, a collaborative storytelling project designed by Local Projects for City Lore, in order to map stories, memories, imprecise recollections, tales of neighborhoods and more, related to New York City and its history. These stories are told through video clips, images, and text. The project is the digital implementation of the Memory Maps project realized in 2001 by Local projects, at that time without the use of any technological tool.

The stories in City of Memory are placed on the map of the city. Some stories are curated by City Lore (blue dots), while others are submitted by the audience (red dots) despite all the entries going through a process of revision before being published.

Some stories are linked together in a tour around a topic and periodically, some tours and stories are featured on the website. To access the stories, users must navigate the map and press the red or blue dots or browse them by title.

A peculiarity of the project is that the stories are placed on the map but they are not necessarily geo-referenced. They can simply be pinned to a location in order to create different personal geographies and as a way to navigate through them. Connecting the stories thematically or geographically, the website creates synergies among these stories and presents each one as a part of a virtual comprehensive story of NYC.

→ RELEVANCE

City of Memory is a noteworthy example of a personal storytelling website aimed at providing users with a comprehensive story of New York from several points of view, layering user generated contents with curated material. It links the stories to the map, letting users easily understand which are curated (blue) and which are user contributed (red) and proposes featured/popular stories and thematic tours.

The project differentiates from the common personal storytelling website because it mixes curated and user contributed content, filtering the latter to guarantee the absence of crude or not relevant material. The result is then a mix between an inclusive and participatory project that creates a meaningful experience for visitors.

→ ICT

City of Memory is the digital version of a previous project by Local Projects, Memory Maps, with respect to which it adds accessibility from everywhere—multimedia contents as well as the ability to easily browse stories and connect them, together with the simple differentiation between user contributed and curated contents.

The web interface is very simple, displaying a high-contrast and not detailed map of New York with clickable red and blue dots, and an essential menu that allows zooming in and out (only twice), adding stories or browsing them on a list. Zooming in or out and selecting the colored dots are the only two mechanics of interaction allowed by the Flash developed website.

Users can upload their stories in three simple steps and accompany them with images, video, audio and text or a combination of these media.

Technology is employed to collect and show stories as a tool for participation and for communication that addresses a generic audience and asks for its contribution in order to create a repository that could protect the identity and the memory of the intangible heritage represented.

→ USER EXPERIENCE

City of Memory is mainly a participatory project that requires a high level of audience involvement to live and grow even if not all the material is user contributed. However, the proposed model of interaction does not provide users with tools to engage socially with others, at least virtually.

What seems to lack in this project is the risk of allowing users to freely upload content and comments. Every user contributed story is indeed examined before the publication, and no comments are allowed.

The user experiences the website individually (both by uploading stories and by reading them), only perceiving a sense of social presence conveyed by the stories uploaded by peers and by City Lore.

The project relies both on a collaborative and reflective approach because single users consume in a mainly passive way (e.g. reading a text, listening to an audio or looking at a video). The stories are collected due to the collaboration of other visitors.

→ CULTURAL CONTENT

The stories in City of Memory are presented without any particular interpretative filter, apart from proposing thematic tours. They are simply stories pinned to a map and divided between user contributed and curated ones, without any evidence of a further level of interpretation.

In the storytelling practice proposed by City of Memory, the comparison among different stories as well as a deeper inquiry is missing, but the final result, however, is of interest.

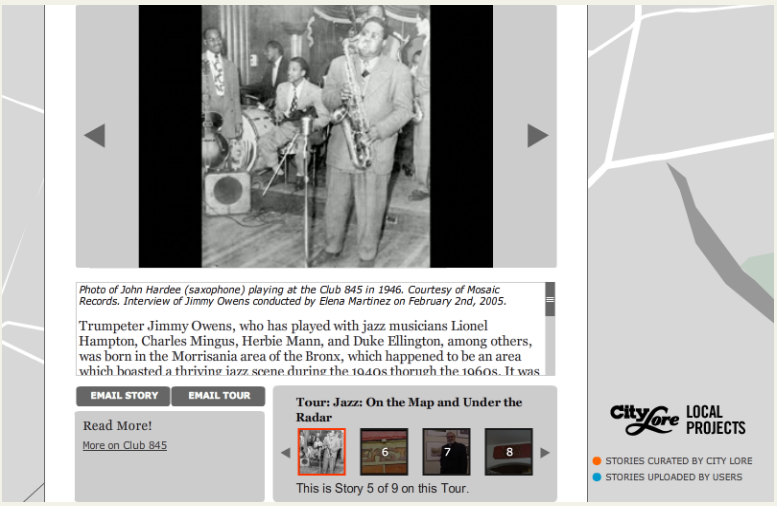
It proposes a cognitive map that shows different personal geographies and in doing so, allows users to explore different representations and interpretations of places, people and events related to New York. Different stories and thus diverse points of view are presented alongside a multicultural approach that does not try to make them interact or even collide, despite the fact that cultural friction may come up.

The result is a plural representation of a city, of its places and inhabitants through the eyes of a cultural association (City Lore) that takes care of conserving and promoting personal stories but also through those (despite filtered) of a diversified audience.

→ STATEMENT

City of Memory is a personal storytelling website which provides users with a comprehensive story of New York from several points of view, layering user generated content with curated material.

DS



IMG 3.7 — *City of Memory, New York. City Lore, Local Projects, 2003. An example of a story posted by City Lore, identified by a red dot. Those uploaded by user are placed on the map with a blue dot.*

Key Issues

The case presented raises a number of important dimensions of the features of content in the museum environment. A short list of these is included here.

→ JUXTAPOSING DIFFERENT VOICES

City of Memory proposes a multifaceted portrait of NYC, of its places and citizens, through the eyes of several contributors that tell a story and link them to the city map.

→ PRESERVING IDENTITY AND MEMORIES

The website is an online repository of memories that not only preserves an intangible heritage but also conveys the identity of the city.

→ USING PERSONAL STORIES

The website tells the story of the city through personal memories linked to places or people that lived in the city, and the historic events are told from personal points of view.

→ LAYERING UGCs INTO CURATED MATERIAL

City of Memory mixes user contributed content with those curated by City Lore, but differentiates them graphically on the map.

Other Examples

Geheugen van Oost - Memory of East (2008)

The project is focused on the collection of micro-stories of urban neighborhoods of East Amsterdam with the goal of promoting the integration between old and new inhabitants and the rooting of the latter in the places where they live. The stories are collected on a website. The goal is to build a collective memory that will grow over time thanks to the participation of residents and to propose an alternative to academic history.

The organic city (2005)

The organic city is an interactive collection of narrations about several quartiers in Oakland. People can listen, write and share these narrations, collected according to different movie formats (horror, comedy, drama, fantasy, etc.) The result is a collective history of Oakland and the Merrit lake.

IMG 3.9 — *StoryCorps, NewYork. StoryCorps, 2003. The StoryBooth portrayed is the first one, opened in 2003 in Grand Central Terminal, New York, to collect stories from New Yorkers and visitors.*

StoryCorps

New York (USA) - 2003

Dave Isay

StoryCorps is a nonprofit "whose mission is to provide Americans of all backgrounds and beliefs with the opportunity to record, share, and preserve the stories of our lives". It was established in 2003 and since then StoryCorps has collected and archived more than 40,000 interviews from more than 60,000 participants that told their story, becoming one of the largest oral history projects of its kind.

A StoryBooth in Grand Central Terminal, New York, opened in that year to collect the stories from New Yorkers and visitors, and the success of the initiative resulted one year later in the setting up of two MobileBooths, namely recording studios travelling across the US.

StoryCorps collects and archives personal stories and makes selected ones available through different channels: StoryCorps website, a weekly broadcast on NPR's Morning Edition, podcasts, as well as animated shorts, books, DVDs and CDs.

Since 2005, StoryCorps started curating thematic collections dealing with contemporary issues, such as those started with the National September 11 Memorial & Museum. They wanted to record at least one story to honor each life lost in the terrorist attacks of September 11, 2001 and February 26, 1993. There was also the StoryCorps' Memory Loss Initiative about people with memory diseases, or the StoryCorps Griot initiative about African Americans.

→ RELEVANCE

StoryCorps is highly relevant for transnational research because it raises issues related to identity, social inclusion, and minorities and addresses them through personal life stories. Furthermore, the StoryCorps programme collaborates with a relevant cultural institution, the Library of Congress, and specific initiatives are carried out with museums such as the National September 11 Memorial & Museum or the Smithsonian's National Museum of African Americans.

This case also opens a reflection about different approaches in curating user contributed content. It has collected more than 40,000 interviews that are now archived at the American Folklife Center at the Library of Congress but not accessible to the wide public and only few curated stories are broadcast.

→ ICT

StoryCorps programme uses flagship StoryBooths and MobileBooths to record personal stories with the help of a facilitator. Each session lasts about forty minutes, and at the end of the interview, the facilitator takes a photo of the participants and hands them a cardboard sleeve containing a CD copy of the interview while a second copy is sent to Washington, DC, to be archived at the Library of the Congress's American Folklife Center.

The devices used within the booths include a professional digital recorder, a professional-quality microphone and studio-grade headphones. They can be also rented as a StoryKit, designed for individuals and families to capture stories at home.

Furthermore, each StoryBooth has a number of "Listening Stations" that encourage people to put their ears against the booths for sample stories.

Digital technology is therefore employed to record and archive stories, and afterwards selected stories can be listened to online, while featured ones can be downloaded as podcasts or heard weekly on NPR's Morning Edition.

Digital technology is used by StoryCorps as a communication tool, sharing personal stories, but also in the back office to archive them at the American Folklife Center. The core of the experience is not the technology in itself but the way it works as enabler and amplifier for the project.

→ USER EXPERIENCE

The flagship StoryBooths and the MobileBooths are spread across the US to allow American citizens to record their stories and attract new users by allowing them to listen to sample stories. Stories can also be recorded at home without going to the recording facility, by renting a StoryKit or through a door-to-door service.

The recording, as well as the listening, is almost a personal experience, and the StoryCorps programme does not provide any opportunity to have any degree of interaction with the contents or to engage socially around it, by sharing or commenting, for example.

The user experience is almost passive, but StoryCorps still provides a space for the exchange of stories, and everyone can access the programme and record and archive personal stories, or simply listen to other people's stories.

At the moment, the website and the other media are sharing only curated stories, and most of the recorded stories are only archived at the Library of Congress but not available to the wide audience.

→ CULTURAL CONTENT

StoryCorps records personal stories of American citizens and shares a curated selection of them through different media, including the website that allows browsing among stories divided into 18 thematic channels like Friendship, Identity, Wisdom, Angels and Mentors, September 11, etc.

The user generated stories result in a multifaceted and plural representation of the American contemporary history and, even if not voluntarily pursued, a cultural friction among the narrated content may arise, as each story represents a specific point of view and a subjective interpretation of a particular episode in the framework of the American history.

This is particularly true for the special featured projects addressed to minorities or people living in disadvantaged areas of the US, such as the StoryCorps Griot initiative in collaboration with the Smithsonian's National Museum of African Americans, which is aimed at ensuring that the life stories of African Americans will be preserved and presented with dignity. There is also StoryCorps Historias for Latino stories or StoryCorps Alaska, which records stories of people living in that State.

The choice to present only curated stories, namely filtered and selected user generated content, has the advantage of allowing StoryCorps to put value on the collection, but the downside is that a huge amount of stories are not available to the audience, thus limiting the resulting collective images to the curated thematic paths and to the choices of curators.

→ STATEMENT

StoryCorps raises issues related to identity, social inclusion and minorities addressing them through recorded personal life stories.

DS

Key Issues

The case presented raises a number of important dimensions of the features of content in the museum environment. A short list of these is included here.

→ JUXTAPOSING DIFFERENT VOICES

Each story represents a specific point of view and a subjective interpretation of a particular episode in the framework of the American history.

→ PRESERVING AND SHARING A CONTEMPORARY HERITAGE

StoryCorps collects, archives and partially shares personal life stories that result in a multifaceted contemporary history of USA.

→ "COOKED" USER GENERATED CONTENTS

StoryCorps does not give access to all the collected stories, as happens in other similar projects, but curates some of them according to initiatives and thematic tracks.

→ USING INTERVIEWS AND PERSONAL STORIES

The entire project relies on personal stories collected mainly in dedicated StoryBooths and MobileBooths.

Other Examples

7 billion of others (2010)

The exhibition presents video interviews of people from around the world: 5000 interviews in 75 countries by 6 directors looking for "The Other". The interviews are based on 40 questions about what joins and divides people. All interviewees answer the same questions about the meaning of love, the spiritual heritage of their parents, their fear, their dreams, their difficulties and their hope.

Collective conversations (2004)

Collective Conversations is an award-winning project that makes films about people's encounters with objects from the Manchester Museum's collections. It has involved a diverse range of groups and individuals, including local migrant communities, researchers, enthusiasts and academics. The films are available both on YouTube and in the Museum.

Sociality

The Social Life of Museum Goers

→ THE SOCIO-TECHNOLOGY OF MUSEUMS

The most recognisable feature of communications technologies developed in the past fifty years is their resolutely and increasingly social dimension. Digital technologies and technical media, a part of this development trajectory, are increasingly above all tools of the intersubjective—mediations of relations, not to information, but to other people. As Nina Simon describes in her book The Participatory Museum, this has long been an overlooked and understudied function of museum exhibitions. She writes:

> Imagine looking at an object not for its artistic or historical significance but for its ability to spark conversation. Every museum has artifacts that lend themselves naturally to social experiences. It might be an old stove that triggers visitors to share memories of their grandmother's kitchen, or an interactive building station that encourages people to play cooperatively. It could be an art piece with a subtle surprise that visitors point out to each other in delight, or an unsettling historical image people feel compelled to discuss. It could be a train whistle calling visitors to join the ride, or an educational program that asks them to team up and compete. (Simon 2010)

Museums, as one of the remaining few (contestably) public spaces where cultural information can be used to spark conversation, discussion, provocation and knowledge sharing through social interaction. Although this still occurs predominantly and traditionally in the form of physical objects, the suggestion here is that similar set of digital interactions occur in a similar "object-centered sociality" through interactions online. Simon quote engineer and sociologist Jyri Engeström, who characterises these digital items (be they photos, YouTube clips or news articles) as "social objects" (Engeström 2012). And so emerges a strange dichotomy between the physical object and the nature of new social interactions in digital culture: They are both "object-oriented," intersubjectivities cen-

PREVIOUS PAGE — *Archie Project, Gallo-Roman Museum, Tongeren. Expertise Centre for Digital Media, 2008. Young pupils interacting with mobile devices near an exhibit in the Gallo-Roman Museum.*

tered around a media or informational object of some kind.

The cases in this chapter deal with the application of museum design elements that change the relations between people, in diverse environments and settings. As pointed to in earlier chapters and through other case studies in this volume, engagement through exhibition design elements and technologies often point to a re-structuring of social relations, with tacit or follow-on effects on museum popularity and learning strategies (See for example Packer & Ballantyne 2005, for a study of the ways that educational mandates in the museum are structured and elaborated).

A main factor in considering the social dimension of particular digital technologies and interactions are the effects and expectations that networking and Internet technologies have had on interactions offline, and on society at large. As two rather salient examples, related to taste and style, the Western digital cultural trope of "sharing" (through services like Flickr and YouTube) and "liking" (e.g.: on Facebook) of items, have evolved into an expectation that anything we are viewing, experiencing or consuming (literally or figuratively) should be "shareable," "likeable" and immediately transferable to our friends and family via the web. Enable and furthered by the proliferation of technical media networks into the everyday lived spaces of our cities and public areas through mobile access points and internet enabled phones, these expectations and layerings become even more powerful and ubiquitous. People increasingly expect to be, and remain, connected throughout most experiences, no matter where they are, or what they are doing. In many instances, we can theorise digital social relationships themselves a kind of new media, or channel, able to be regulated, controlled and fashioned by the systems and infrastructures which support them. Many have decried the commodification of social relationships which occurs when these are digitised, tracked, always-on and hence develop into the material-good: a saleable database of interactions (Giddens1992). Those who intend a more positivist view of neo-liberal market forces refocus this commodification as an imancipation or new power of the individual in the marketplace, as identity is augmented by the "The Brand Called You" (Peters 1997). The Archie Project, presented as a case study here, allows for avatar-based identity play of a temporary kind, possibly suggesting an alternative to the two politics just outlined outlined.

Sidestepping for a moment the political economies of digital sociality, distinguishing sociality interactions as a kind of medium in its own right is useful in distinguishing "social" and "participatory" media, which are often conflated over the under monikers such as "Web 2.0." Online participatory behaviour is oftentimes social, but may revolve more centrally around the creation and authoring of media, whereas social interactions and "social networks" presume no such creative activity, outside communicating with other people. In considering these kind of divisions in the characteristics and repercussions of "social networking" and "social media" technologies, it is important to analyse these technologies in terms of differentiators and subtleties. Technologies of interest and use to the

development of cultural institution audiences, and content or communities relevant to the museum, gallery or cultural institution, are of course never either "social" or "non-social" but merely social in different ways. Although partly enabled through similar platforms (i.e.: at a base level, the internet) each of the most popular social media technologies have subtle and not-so-subtle affordances and community propensities which separate them. As science fiction writer William Gibson recently commented regarding his interest in Twitter, "I was never interested in Facebook or MySpace because the environment seemed too top-down mediated. They feel like malls to me. But Twitter actually feels like the street. You can bump into anybody on Twitter." (Gallagher 2010) (William Gibson tweets at https://twitter.com/GREATDISMAL).

Thought of this way, as having a digitally enabled social backdrop where informational and knowledge exchanges are increasingly social, the socio-technology of museums can be give through example cases which take advantage both of digital intermediaries (The Archie Project, presented later) and technology-infused physical intermediaries (The Fish Generator and the Digital Hydroscope, as well as Dead Drops, both also described later in this chapter). Social technologies are not a choice but a dimension of museums applications, of all cultural activity, calling to mind Marshall McLuhans warnings of the difficulty of structuring something we are so deeply embroiled in: "We don't know who discovered water, but we know it wasn't the fish." (McLuhan, Fiore 1968)

This book of case studies is concentrated largely on the technological dimensions of museums and examples thereof, we would be remiss were not to reference the growing concern that is the emergence of digital-cultures of transnationality. Barry Wellman's formulations of a new culture of "networked individualism," which ties people less to solidified group orientations in general, and may lead to a more critical populace, that is less likely to understand, accept or respond to national narratives or simple "matters of fact." (Wellman 2001) If the connectivity we see now online, and pervading the traditional museum, urban and lived space links individuals dynamically to both their local and global communities, the meaning of place and identity, in relation to conceptions of nationalities and cultural identity need to be re-thought. Sense of "place" and traditional social hierarchies and networks are necessarily warping, expanding and contracting to include online resources and direct and immediate connections to migrant, immigrant and "home" communities.

→ NOTES ON THE INCLUDED CASES

The cases studies presented here are included and discussed in terms of their potential to reveal or re-examine social relationship in the museum, or through the work of the museum. The Archie Project (2008), by the Gallo-Roman Museum provides a good example of a hybrid digital and physical museum interactive, complete with architectural-scale movement of people in the museum space. The projects presented here from the Kattegat Marine Centre in Denmark include the "Fish Generator"

and the "Digital Hydroscope," both projects (2007) which exhibit the potential of technology-infused physical objects that can be manipulated and experience by more than one person. With these two projects we see the resurgence of an interactive materiality that comes with advances in the design of robust, tangibly manipulative technologies. Free2choose is a project that gives us the potential of technologies to extend specifically into the representation of the individual versus the representation of whole peoples and communities. Finally, Dead Drops, a guerrilla art project that is both a physical installation, a social network and a set of instructions for the general public to take up interventions in the city streets (communicated via the internet).

→ CONCLUSIONS & BEST PRACTICE

A main conclusion we might draw from the case studies here included involves the ways that museums can come to embrace their social functions alongside their mandates as educational or institutions of cultural dissemination. Technologies maintain a field of the social, pervading our lives and keeping people connected to other people nearly 24 hrs a day, should one so choose. This tendency is only likely to increase. The four "satisfying experiences" types developed by museums studies researchers Pekarik, Doering and Karns include "object experiences" of authenticity, "cognitive experiences" intellectual enrichment, "introspective experiences" of private reflection and "social experiences" of immediate interactions with family and friends (Pekarik and Karns 1999). If online behaviours are any indicator, increasingly this last dimension will come to influence much of how the other three operate. Through social technologies, and the ubiquity of personal and public interfaces to them, we might think to add a prefix to each of the above satisfying experiences: "shared." We are left asking ourselves what the expectations and needs of such a distributed "self" are as a museum visitor, and where his or her museum is (dis)located.

Jamie Allen

→ REFERENCES

Aileen Gallagher. 2010. "The Vulture Transcript: Sci-Fi Author William Gibson on Why He Loves Twitter, Thinks Facebook Is 'Like a Mall,'and Much More." *Vulture*. September 27. http://www.vulture.com/2010/09/vulture_transcript_william_gib.html.

Engeström, Jyri. 2005. "Why some social network services work and others don't - Or: the case for object-centered sociality". *Zengestrom*. April 13. http://www.zengestrom.com/blog/2005/04/why-some-social-network-services-work-and-others-dont-or-the-case-for-object-centered-sociality.html.

Giddens, Anthony. 1993. *Transformation of Intimacy: Sexuality, Love and Erotism in Modern Societies*. Stanford: Stanford University Press.

McLuhan, Marshall, Quentin Fiore, Jerome Agel. 1968. *War and peace in the global village: an inventory of some of the current spastic situations that could be eliminated by more feedforward.* San Francisco: HardWired.

Packer, Jan, Roy Ballantyne. 2005. Solitary vs. Shared Learning: Exploring the Social Dimension of Museum Learning. *Curator: The Museum Journal* 48(2): 177-192.

Pekarik, Andrew J., Doering D. Zahava, David A. Karns. 1999. Exploring Satisfying Experiences in Museums. *Curator: The Museum Journal* 42(2): 152-173.

Peters, Tom. 1997. "The Brand Called You". *Fast Company*. August 31. http://www.fastcompany.com/28905/brand-called-you.

Simon, Nina. 2010. *The Participatory Museum*. Santa Cruz: Museum 2.0.

Wellman, Barry. 2001. "Physical Place and Cyberplace: The Rise of Personalized Networking". *International Journal of Urban and Regional Research* 25(2): 227-252.

Case Studies

IMG 4.1 — *Archie Project, Gallo-Roman Museum, Tongeren. Expertise Centre for Digital Media, 2008. Young visitors playing an Archie game near an exhibition of pottery. The system is context-aware and users explore the museum in search of artifacts on display.*

Archie Project

Gallo-Roman Museum, Tongeren (B) - 2008

Expertise Centre for Digital Media (Hasselt University)

Archie Project stems from an interdisciplinary research partnership between the Expertise Centre for Digital Media (Hasselt University) and the Gallo-Roman Museum of Tongeren (Province of Limburg) and aims to discover how a handheld guide can be used to enhance museum learning experiences. The project is structured as three different mobile games each focusing on three museum narratives, covering the history of people living in the local region from Neanderthal times up to the fall of the Roman Empire: a farming game (5300 BC), a trading game (825 BC) and a Roman game (150 AC).

The farming game is aimed at explaining the introduction of a sedentary lifestyle and players are divided by tasks: chop trees, build farm and place fields. Players engage in an intensive face-to-face collaboration and the same approach is used in the Roman game where they are invited to understand the basic functioning of an ancient Roman city. The project is explicitly developed for the target group of youngsters on a school trip and pursues an high level of personalization, allowing each player to adapt his or her own personal avatar which accompanies him or her throughout the entire museum game.

The system is context-aware and is used to determine when all team members are near the physical presentation of the corresponding museum narrative. Users explore the museum environment with the support of mobile devices, in search of artifacts on display or to get detailed descriptions of these artifacts.

→ RELEVANCE

The Archie Project proposes an interesting use of mobile gaming as a means to engage young pupils in a learning activity while visiting a museum. Furthermore the game is designed to foster direct and indirect social engagement between players, promoting a collaborative learning approach.

→ ICT

The experience is the result of a research project and consists of three prototypes of mobile games playable on a PDA, exploiting its capabilities such as Internet connection and location awareness. The pilot project is composed of three different experiences, they all share some common features mostly traceable back to a common technological framework. A goal pursued by the project is a high level of personalisation both in terms of target audience and of individual players. The game concept, as well the interactions and the graphical design are specifically addressed to young pupils but each player can also create a personal avatar that accompanies him or her throughout the museum-game. Another feature is location awareness, used to determine when all team members are near the physical presentation of the corresponding museum narrative and starts the game accordingly. All games make it possible for team members to communicate via a walkie-talkie system, allowing them to define strategies and exchange game-related data when they split up, to accomplish personal tasks, such as finding a specific object among those exposed.

→ USER EXPERIENCE

The games of The Archie Project are designed to stimulate a high level of user involvement with the museum's objects, as part of the game narrative itself, and with other visitors: They are indeed played in teams, and ask users to fulfill both collaborative and individual tasks. Classes on a field trip are split up in teams, which com-

pete one against the others in order to win the game. The activities are designed to stimulate collaboration between the team members, fostering face-to-face communication and allowing indirect communication and game related content sharing. The audience engagement is then pursued both on an individual and collective level, providing specific learning moments, aimed at personal reflection or collaboration. The project is built in order to achieve balance between a reflective approach, aimed at stimulating personal learning activities, an immerse one, guaranteed by the engagement in the game, and a collaborative one, stimulating direct and indirect social engagement. Developers report that about 90% of users enjoyed the experience (a great deal) and that they were enthusiastic about the delivery mechanism (PDA). Another remark noted by the authors is the combination of a personal avatar with a team experience was successful in stimulating social engagement and museum exploration.

→ SOCIAL ENGAGEMENT

The games composing the pilot project are specifically designed to pursue learning goals through engaging activities played both on an individual and social level. The role-playing experience provided by the game is indeed aimed at stimulating collaboration between the team members, in order to meet the final goal, namely to win the game, but keeping specific roles with related duties and tasks. Social engagement is pursued at a number of different levels, providing both a face-to-face communication and interaction with peers, as well as indirect communication via walkie-talkie, and through the exchange of data. The visualization of the other team members' avatars within the game environment allows them to understand their personal and relative positions within the space, and to provide players with a sense of social presence while accomplishing personal tasks.

→ STATEMENT

The Archie Project employs mobile games to involve young users in learning activities within the museum and to stimulate social interaction between peers.

DS

IMG 4.2 — *Archie Project, Gallo-Roman Museum, Tongeren. Expertise Centre for Digital Media, 2008. A screenshot of the farming games, aimed at explaining the introduction of a sedentary lifestyle. Players are divided by tasks: chop trees, build farm and place fields.*

IMG 4.3 — *Archie Project, Gallo-Roman Museum, Tongeren. Expertise Centre for Digital Media, 2008. Pupils reading interpretative material to get information useful to continue the game.*

Key Issues

The case presented raises a number of important dimensions of the elements of sociality in the museum environment. A short list of these is included here.

→ SOCIAL ENGAGEMENT THROUGH GAMES

The game mechanics are designed to foster social engagement, both through face-to-face and technologically mediated communication and interpersonal links.

→ FOSTERING INDIVIDUAL AND COLLABORATIVE LEARNING

The experience is designed to provide both personal and reflective activities and learning moments that require the collaboration of each team member.

→ LEARNING BY PLAYING

The three games are aimed to engage young users in a learning activity.

→ ENGAGING AND PLAYFUL APPROACH

Games are specifically addressed to young pupils and keep a playful approach, very often including humorous and surprising elements.

Other Examples

Frequency1550 (2005)

Frequency 1550 is a history city-game using mobile phones and GPS-technology for students in the age of 12-14. In Frequency 1550 mobile game, students are transported to the medieval Amsterdam of 1550 via a medium that's familiar to this age group: the mobile phone.

Mystery at the museum - M@M (2003)

M@M is a mobile collaborative and interactive mystery game designed for Boston Museum of Science, which supports synchronous play of groups of parents and children over a two to three hour period. Each player takes on one of three possible roles—a technologist, a biologist and a detective—each with special capabilities and need to collaborate with others to solve the mystery.

IMG 4.4 — *The Fish Generator, Kattegat Marine Centre, Greena. Department of Information and Media Studies - Aarhus University, 2007. Young visitors create new species of fish by combining virtual bodies, heads, tails and fins.*

The Fish Generator and the Digital Hydroscope

Kattegat Marine Centre, Grenaa (DK) - 2007

Department of Information and Media Studies (Aarhus University)

The Fish Generator and the Digital Hydroscope are two interactive installations addressed to children, and designed by the Department of Information and Media Studies of the Aarhus University for the Kattegat Marine Centre. Visitors, through RFID enabled tangible user interfaces, can create new species of fish by combining parts from a kit that contains bodies, heads, tails and fins; assembling physically the diverse parts, a virtual copy is created in real time and shown on a screen placed in the center of the assembly table, together with information about its physical strengths and weaknesses and supplemented with a graphical assessment of its abilities to survive. The aim is not to assemble a correct fish but rather to learn about their properties through exploration. Once the visitor is satisfied with the new fish, it can be released into a virtual sea that runs (virtually) beneath the floor. This virtual sea can be explored by moving a Digital Hydroscope, a second interactive installation, over the floor surface of the room: it provides a peephole view of the underwater, be it the bed of a river, low or deep water, and allows to follow the fishes released by all the visitors. A peculiarity of the system is that the fishes find their way to the most appropriate waters according to their physical characteristics designed by the visitors.

→ RELEVANCE

The Fish Generator and the Digital Hydroscope propose two hands-on learning activities addressed to children, aimed to make them learn about the marine life and how the physical characteristics of fishes can affect their ability to survive. The two interactive installations allow also social interaction between users that can collaborate to create the fish and to explore the virtual sea.

→ ICT

The Fish Generator kit is composed by diverse parts of the fish body with RFID tags, which are assembled on a special table with built-in tag-readers, able to recognize the corresponding piece and make it appear on the central dome display. The system provides users with imaginative artifacts to build a real, even if simplified, fish and its virtual copy is automatically generated, augmented by information about the physical strengths and weaknesses of the created fish. The use of tangible interfaces in the interaction with a virtual world allow children to experience in first person the physical quality of the fishes and, at the same time, to understand how little changes can affect the final result. The Digital Hydroscope is more exploratory and children can move it to have glimpses of the virtual underwater life and look for the just created fish. The system is then highly interactive and allows only location based and real time interaction, exploiting tangible user interfaces and a virtual world as principal tool and media.

→ USER EXPERIENCE

The project pursues a high level of audience involvement, by engaging children in an interactive hands-on activity that can be experienced alone but also in social groups. The first part of the experience, that of the Fish Generator, is both performative for others and reflective for individuals. By physically changing the pieces to the fish body, experience of the results teaches how these changes can affect the characteristics of the generated fish. The second part, the digital hydroscope, is instead more reflective, because children can explore the virtual underwater and reflect on how diverse physical features can affect the fishes' behavior and their preferences. The peephole-like interaction

IMG 4.5 — *The digital hydroscope, Kattegat Marine Centre, Greena. Department of Information and Media Studies - Aarhus University, 2007. Children are exploring the virtual sea moving a digital hydroscope across the room: they can follow with a peephole view the fish they have generated as well as those created by other visitors.*

allowed by the hydroscope is designed to stimulate curiosity, imagination and exploration, by allowing users access to only a small part of a larger world. Technology is here employed to create a strict connection between the real tangible world and the digital one, employing physical and tangible interfaces to affect a virtual world.

→ SOCIAL ENGAGEMENT

The two interactive installations, and in particular The Fish Generator, are not specifically designed to foster direct social engagement between young users but the physicality and tangibility of the interfaces does much to encourage social use. Two children or family members can collaborate to build one or more imaginary fishes and then release them into the virtual sea and more children can move the hydroscope by pushing together on the tire that surrounds it. The digital hydroscope has great potentialities from the point of view of social engagement: Children can indeed move this digitally augmented physical object together, discussing where to push it or reasoning about what they are looking at, using it as a discussion object for conversation and further play. The screen is big enough to be seen by several visitors and from different angles. To the direct social engagement and communication, another more subtle form of social interaction can be added, the indirect social engagement that stems by viewing other visitors interacting with the system or simply looking at the behavior of fish generated by other users.

→ STATEMENT

The Fish Generator and the Digital Hydroscope are examples of two hands-on learning activities addressed to children, able to stimulate social interaction between users.

DS

Key Issues

The case presented raises a number of important dimensions of the elements of sociality in the museum environment. A short list of these is included here.

→ SOCIAL ENGAGEMENT THROUGH TANGIBLE INTERFACES

The physical interfaces can stimulate social interaction by engaging users in collaborative actions and fostering dialogue and confrontation.

→ FOSTERING INDIVIDUAL AND COLLABORATIVE LEARNING

The system provides both the opportunity to enjoy a personal learning experience or to share it with peers.

→ ENGAGING AND PLAYFUL APPROACH

Children are encouraged to interact thanks to the engaging dynamics of interaction based on manipulating imaginative artifacts.

→ PHYSICAL INTERACTION

The project proposes a strict connection between the real tangible world and the digital one, employing physical and tangible interfaces to affect a virtual world.

Other Examples

Story Surfer (2004-2006)

StorySurfer is an interactive floor application enabling children to browse library materials in an untraditional way, displaying book covers by stepping on buttons on the edge of the floor. The project focused on developing an information technology understandable for children aged 6-9 years, spatial interaction with the teaching material linked into books by use of various types of tags, and services that support children's communication while investigating and playing at the library.

Kurio project (2010)

Kurio is a museum guide system designed to enhance interaction among family members and small groups visiting the museum. The interactive museum guide itself is comprised of four tangible devices, a tabletop display, and a personal digital assistant (PDA) all networked wirelessly to a central reasoning engine that guides the family through the museum visit.

IMG 4.6 — *Free2choose, Anne Frank House, Amsterdam. Anne Frank House, 2010. Visitors taking a rest and looking at the short video clips displayed on four big monitors hanging on the wall.*

Free2choose

Temporary exhibition - 2006 and Anne Frank House, Amsterdam (NL) - 2010

Anne Frank House

Free2choose project was born in 2006, thanks to European Union co-funding, and was aimed at creating a travelling exhibition about human rights in 11 European Union countries: beginning as a temporary exhibition at the Anne Frank House in Amsterdam it has been recently converted into a permanent exhibition for this same institution. All the original materials—catalogue, manual for guides, audio-visual materials, and website—have been translated into the ten languages of the project partners to allow their dissemination on a European scale. The Free2choose format is an interactive show in which visitors vote on their stances on issues related to freedom, frequently accompanied by workshops and debates organized in each partner country at locations where the Anne Frank House's travelling exhibitions was staged. Fifteen short video clips, dubbed into ten languages, highlight five themes: freedom of speech, religious freedom, freedom of the press, the right to demonstrate and the right to privacy. They show up-to-date examples from around the world of how human rights can come into conflict with each other or with the democratic rule of law, showing examples from different parts of the world. At the end of each film, visitors are asked to express their viewpoint on electronic voting consoles and can compare their response with the collective opinion of the people present in the room, and then with the cumulative opinion of all the visitors who have answered this question at Free2choose.

→ RELEVANCE

Free2choose format uses digital technology and multimedia to stimulate social reflection about important human rights and to make people aware of different opinions. The experience is highly relevant for issues related to multiculturalism, trans-nationality and migration because it addresses the issue of freedom and tolerance from different viewpoints: freedom of speech, religious freedom, freedom of the press, the right to demonstrate and the right to privacy. A simple interactive voting and charting system, together with short video clips are the main technological tools employed in the project.

→ IC

Analyzing the permanent exhibition at the Anne Frank House from a technological point of view, technologies are not employed to improve the understanding of exposed objects or artworks but largely comprise the entirety of the exhibition. Based on short video clips and a polling system, Free2choose indeed benefits from a separate space on the ground floor of the museum, at the end of the exhibition. The entire system is based on the use of four big monitors hanging on the wall that show the video clips and several poling stations that allow visitors to express their preferences simultaneously. The system is completely static and is based upon a main media for communicating ideas (video), and the interaction is based on the polling system: the only mechanic of interaction allowed is to press the button A or B in order to answer the proposed question. The role of digital technology is essential in this project, because it is the interactive poll system that adds essential value to the videos, allowing people to side with one opinion or the other and then showing these results as they are collected in the room and in the entire history of Free2choose. The videos are very informative and thought-provoking but not necessarily sufficient to stimulate reflection and debate on human rights.

→ USER EXPERIENCE

The entire experience at the permanent exhi-

bition follows the following sequence: visitors enter the dedicated room, look for the monitor that shows the videos with the subtitles in the desired language and look at the clip. At the end of the video a question with two possible answers (A and B) appears on the monitor and visitors select the answer by pressing one of the two buttons on the nearest free pole. After a brief elaboration, the monitors show the collective opinion of the people present in the room, and the cumulative opinion of all the visitors who have answered this question at Free2choose. The installation gives a mostly reflective experience, as users are asked to think about video clips, and express their preferences, and then also to compare and discuss their own opinions when compared to other visitors. The audience is involved on a highly engaging and personal level, and can experience a direct confrontation with (potentially) varying and differing opinions.

→ SOCIAL ENGAGEMENT

The original Free2choose format, travelling across Europe, was aimed not only at sensitising young citizens about issues related to racism, segregation and freedom, but also to deal with these topics collectively, socially. More than fifty debates were organized, especially for high school students of the eleven partner EU countries, each stimulating a local and collective discussion around these issues. Considering only the interactive multimedia installation of the Anne Frank House, the proposed model of interaction is mostly personal: the user interacts individually with the system and does not necessarily enter into a dialogue with the bystanders. The interactive system provides the sense of a larger social presence, confronting with the opinions of those who are there, in the same room, and of those who passed there and expressed their viewpoint.

→ STATEMENT

Free2choose format employs digital technology and multimedia to stimulate social reflection about important human rights and to make people aware of different opinions.

DS

IMG 4.7 — *Free2choose, Anne Frank House, Amsterdam. Anne Frank House, 2010. A view of Free2choose exhibition.*

Key Issues

The case presented raises a number of important dimensions of the elements of sociality in the museum environment. A short list of these is included here.

→ Fostering reflection and confrontation

Free2choose employs video clips and a poll system to stimulate reflection upon freedom and confrontation with different opinions.

→ Conveying a sense of social presence

The poll system and the visualization of the collective results provide users with the sense of being surrounded by other people with the same or opposite ideas.

→ Addressing human rights

The project addresses universal human rights and encourages a personal reflection on different conceptions of freedom.

→ Multimedia and poll system

The entire project is supported by a very simple technological system composed by short video clips and a poll system.

Other Examples

No accounting for taste (2010)

The travelling interactive exhibition deals with food and some booths explicitly addresses the topic of food in different cultures: users seat in front of a camera holding a plate (with a QR code drawn on it), and see themselves in the screen holding unusual dishes of other Countries (dog, silk worms, mutton brain) and listen to explanations about the dishes.

Northern Spirit: 300 Years of Art on Tyneside (2010)

The project involves a display of paintings and decorative arts accompanied by a number of photographic, audio and ICT AV units designed by researchers at Newcastle University. Each of the three galleries in the display contains two touchscreen interfaces allowing visitors to watch films, digital stories and other media outputs produced by community members in the context of a participative project developed and managed by the university.

IMG 4.8 — *Dead Drops, New York. Aram Bartholl, 2010. A user has plugged his laptop to the walled USB flash drive: walls, floors as well as poles and benches, dead elements, become places of networking and interaction.*

Dead Drops

New York (USA) - 2010

Aram Bartholl for Eyebeam

Dead Drops is a project initiated by the German artist Aram Bartholl during his artistic residency at EYEBEAM in New York City, October 2010 and is an anonymous, offline, peer-to-peer file-sharing network in public space. The project aims to diffuse the concept worldwide and consists in embedding USB flash memory drives into walls and buildings, both indoor and outdoor, keeping them accessible to anybody in public space. Everyone can freely connect a laptop to the drive, drop and share files or take a copy of those already there. Each dead drop is initially installed empty, save a readme.txt file explaining the project. Dead Drops is a format, a framework for physicalised data networks, and is easily repeatbale in different cities all over the world. The website of the project encourages the dissemination of the idea, by providing a detailed tutorial on how to install a dead drop and the read-me file provided in ten different languages. The website also provides an interactive map that shows all the dead drops installed around the globe, most of which are concentrated in Europe and U, but also in south America, Africa, Australia and Asia, totally around 1000 dead drops. A more recent feature of the project is a simple mobile app that helps users to locate the nearest dead drops, providing the position and photos.

→ RELEVANCE

The Dead Drops project makes an experimental use of USB flash drives to allow an anonymous, offline, peer-to-peer file-sharing network in public space. It proposes a different view of public spaces that become places of sharing, embedding technologies directly in walls and buildings, and therefore working at architectural level. The project is relevant for its innovative way of providing with simple interventions a space for technology mediated indirect social engagement.

→ ICT

In Dead Drops technology is not employed to deliver additional information or interpretation of cultural assets and urban space but as a communication tool, able to relate diverse people through peer-to-peer file sharing. The project is location based, because it works only if the USB flash drive is placed in a public space, easily reachable by users that can drop and share or take files whenever they want: no particular knowledge is needed to use the Dead Drops, you just need to have a laptop and plug it to the building that hosts the pen. There isn't any control over the files that people share on a dead drop, not in terms of format nor in terms of contents: they can include texts, audio and video as well as photos and images or even files in a proprietary format and can deal with an unlimited range of contents. The project is addressed to a generic audience but it clearly focuses on and is tailored to people interested in technology, art and a critical dimension of current technological development (based as it is on "clouds" infrastructures and other dematerialised metaphors). Dead Drops looks for a reflection on freedom and free distribution of data. Dead Drops, with its viral format, and Do-It-Yourself attempt to decentralise media networks, and become an agent of change in the physical space of the city.

→ USER EXPERIENCE

The immediate experience enabled by Dead Drops is a particularly personal one, as only one user at a time can connect to a USB stick via laptop or mobile device. In reality, however, this person is meeting and entering a highly socialised and and shared space through this connection. As the DeadDrop is a space where it is possible to drop any and all files left by prior users, it represents an unknown social and human history of activities, interests, media and

IMG 4.9 — *Dead Drops, New York. Aram Bartholl, 2010. The image explains how the project works: the user can plug his device to the USB drive and then add personal files, explore and pick those left by other users or eventually delete them.*

interactions. The mobile application now available helps users locate DeadDrops and, once located, users are free to interact with any files on the device, modify and duplicate them and even to delete them, because the drives agency-fee "dead" elements which passively receive and share files by all users. DeadDrops has also another kind of users, those who decide to physically install a USB flash drive in a public place, and hence to become part of the geographically distributed community associated with the project—the "DeadDrops community." In each case the community associated is asked to perform a set of related actions. These are of two types. The first kind of user have to find a DeadDrop and use it, plugging in a laptop and interact with file, media and other digital content. The second type of use are invited to follow a brief tutorial on how to install the system in a wall, or other public infrastructure. The main approach of the project is therefore performative, asking people to perform actions, but at the same time it's highly collaborative because it requires the collaboration of many people to work.

→ SOCIAL ENGAGEMENT

he entire project relies on file sharing and therefore on the social engagement of several users that decide to share personal files and, eventually, to copy the existing ones. The kind of sociality pursued by the project is not the direct social engagement between peers but rather a (now commonly experienced) indirect sociality, mediated by the shared files and enabled by the technological device. It also provides users with a sense of social presence, that of other users who lived those places and left a trace on the dead drop. Participation is therefore required to fill the USB flash drives with files but also to diffuse virally the project, installing dead drops in different locations.

→ STATEMENT

Dead Drops is an artistic project/movement that asks people to rethink the freedom and distribution of data, proposing an anonymous, offline, peer-to-peer file-sharing network in public space based on social collaboration.

DS

Key Issues

The case presented raises a number of important dimensions of the elements of sociality in the museum environment. A short list of these is included here.

→ FOSTERING INDIRECT SOCIAL ENGAGEMENT

The peer-to-peer file-sharing network, despite completely anonymous, allows indirect social engagement between users.

→ CONVEYING A SENSE OF SOCIAL PRESENCE

Sharing files with other unknown users cannot stimulate face-to-face engagement but it's useful to convey a sense of social presence and a sense of belonging to a community.

→ EXPERIMENTAL USE OF WIDESPREAD TECHNOLOGIES

A simple and widespread technology such as a USB flash drive is reinterpreted and experimentally employed as an architectural element.

→ ANIMATING ARCHITECTURES

Walls, floors as well as poles and benches, dead elements, become places of networking and interaction through other dead elements such as a USB flash drive.

Other Examples

These Walls Could Talk (2011)

These Walls Could Talk gives voice to walls, providing alternative audio tours for the American Museum of Natural History of NY, inspired by dioramas in the Culture Halls of the museum, which depict people throughout history and from across the world.

The media portrait of the Liberties (2008)

The Media Portrait of the Liberties is an interactive neighborhood portrait comprised of context-aware stories capturing the life, lore and color of the Liberties community in Dublin, Ireland, both past and present. The stories, in form of downloadable video clips, are available to the audience on PDAs at the geographical locations where the stories happened, and contribute to a community-related story map of the area.

Visualisations

Visualisation of Cross-Field Research Data

→ INTRODUCTION

Here is presented a slightly different approach in the analysis and synthesis of case studies through the European Museums in an Age of Migration (MeLa) project. By means of computer graphics, statistics, algorithms, colour coding and text mining, this chapter offers a different, yet complementary, perspective on the cases aggregated during our study. Far from being merely a communication exercise, our initiative positions the current research into new types of territories: computational, diagrammatic and inferential insights into interdisciplinary data.

The case study analysis presented in this chapter is inspired by the concept of *distant reading* in contrast to the closer readings and descriptions presented in the other chapters of this book (Moretti 2000). Rather than electing a number of emblematic cases under a pre-determined category as prime material of qualitative analysis and synthesis, the current investigation extracts information from the entire set of collected cases and produces diagrammatic schemas of this dataset to better understand the nature and scope of the data collected. These readings are *distant* as they do not focus on singular cases within a field, but rather concentrate on constructing a holistic and/or microscopic view of the subject. Using programmed sorting, and semantic algorithms, it allows the research to "focus on units that are much smaller or much larger than the text: devices, themes, tropes—or genres and systems" (Moretti 2000, 57). Distant reading, as a method, is derived from burgeoning approaches to the Digital Humanities where statistics and computer programs form the basic instrumentation employed by researchers to produce information from a given corpus of data (text, images, time-based media, etc.). The prospect is one of creating new knowledge on the subject matter. Giving formal exposition to the validity of these new digital humanities approaches is out of the scope of this essay, however posing our method within current cultural analysis practices offers an interesting perspective on the aims of

PREVIOUS PAGE — *Norman McLaren drawing on film. Jack Long, National Film Board of Canada, 1944. Norman McLaren doing experimental animations with writing directly on celluoid film. His processes and approach to film making has been influential to generations of time-based media artists, scholars and technologists studying and experimenting with visualisations techniques.*

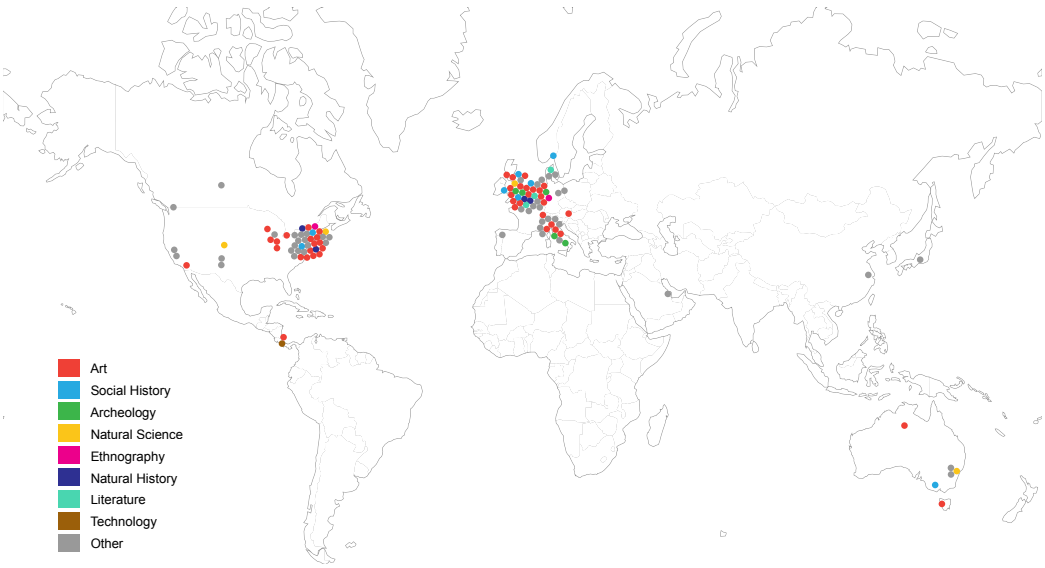


FIGURE 5.1 — *Map Field of Activity. All institutions collected in our study are depicted as a coloured dot representing each institution's field of activity.*

the European Museums in the Age of Migrations (MeLa) research.

Museums and libraries devoted to cultural heritage are re-sequencing, arranging and presenting history, subjects and objects in aggregates of representational displays following specific categories and narratives—epochs, genres, techniques, etc. Cultural institutions unify, identify and classify cultural objects and consign them to their archive which aims "to coordinate a single corpus, in a system or a synchrony in which all the elements articulate the unity of an ideal configuration" (Derrida 1996, 10). In this sense, culture is already segmented into logical quantities, divided into chapters and rooms, recombined into books and exhibitions, consolidated as collections. Similarly, computational process and algorithms operate through sequencing, classification and combination, but with different taxonomies and means of determining, differentiating and coding-decoding objects and subjects; producing an augmented archive, a new corpus and network of meaning.

In our study we used a mix of *digitised methods* (Rogers 2010)—classical social scientific methods such as surveys and scaling—coupled with *natively digital methods* (ibid)—algorithms used to dynamically aggregate, order and schematise relationships between all collected cases. Digital assets (including text descriptions and websites) are treated as archived objects, entities, and the Internet as milieu to base our research experiment where algorithms instantiate this epistemological dialogue between "what could be true and what is in fact the case." (Medawar 1969, 59)

→ VISUALISATIONS - DATA

As a first, albeit comprehensive, visualisation approach, we look at a summary of all responses to our survey in relatively raw, linear form. In Figure 5.3 (overleaf), each line represents a case study flowing from the top to

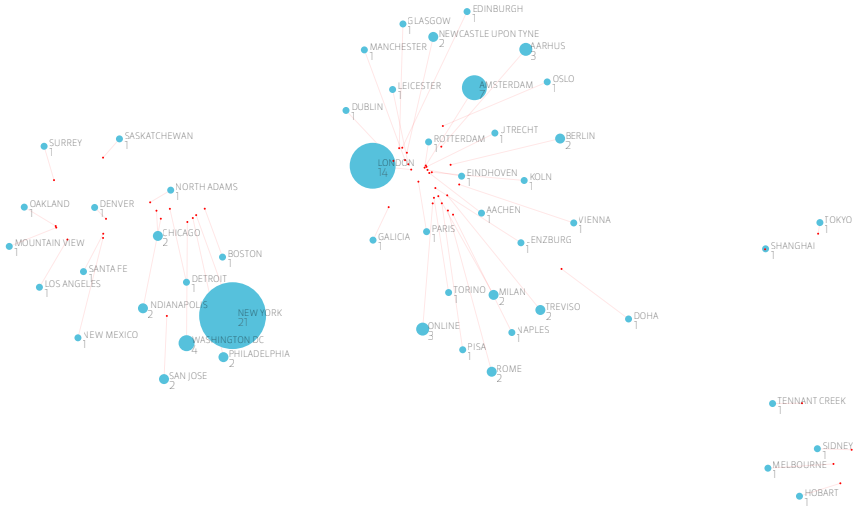


FIGURE 5.2 — *Map Cities. Every cities from our study represented by a circle sized according to the number of exhibitions or project they hosted.*

the bottom of the page, following a path traced according to fourteen discrete (non-textual) answers from the questionnaire. In total, one hundred and twenty-three cases approaching uses of technological apparatus in or by museums institutions have been collected and catalogued according to forty one parameters or questions (multiple choices, scales, and free-text parameters).

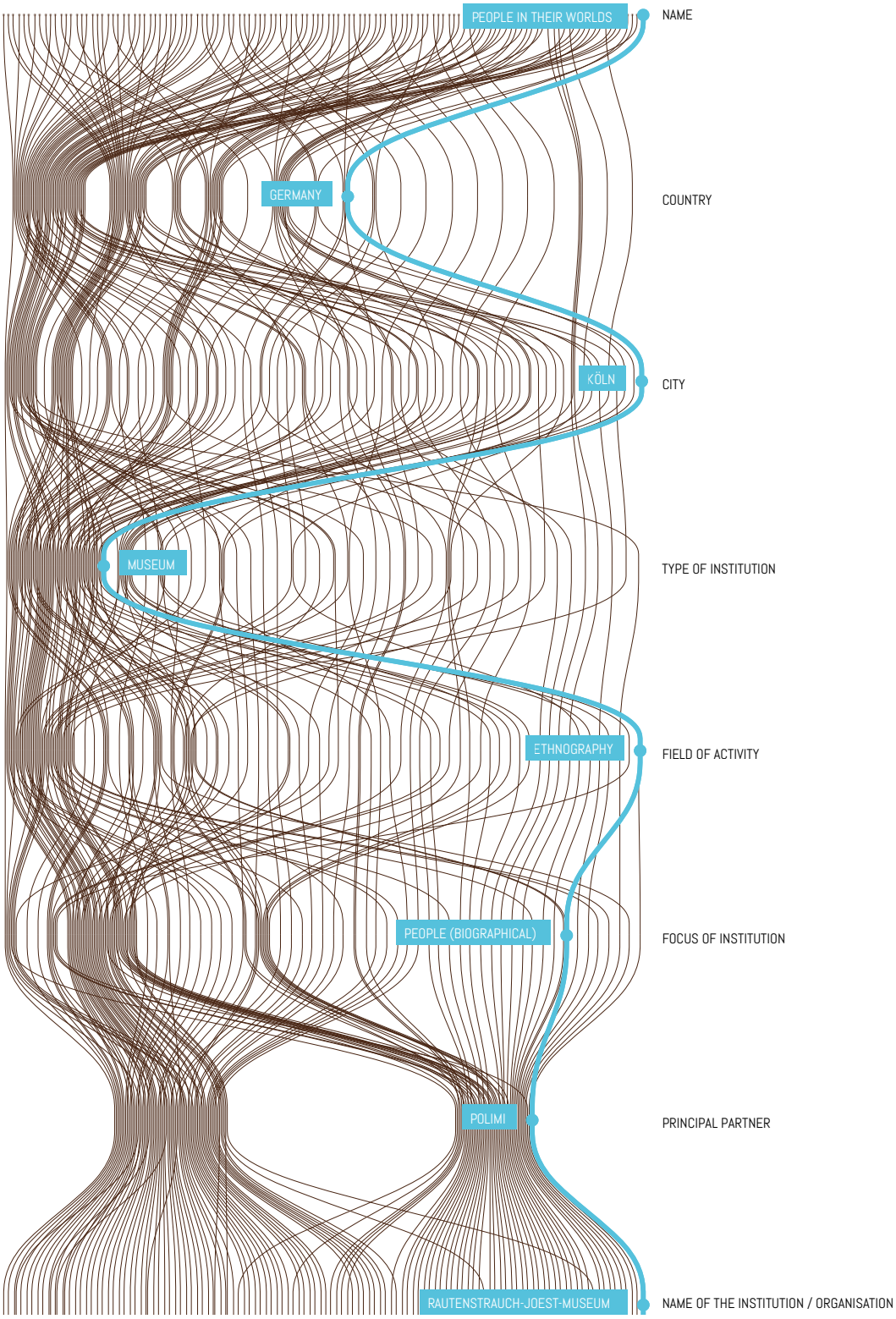
This simple visualisation distinctly illustrates the number of cases collected during our research, as well as their most predominant tendencies. Most importantly, the image graphically represents the amount of variance the collected answers have according to each of the descriptive parameters or questions. At a glance, it is clear that some answers are more varied than others—as illustrated by further dispersed lines for certain answers compared to bundles of others.

The variance (i.e.: variation about a "mean" or average) of the answers gives us a double bind of information: (1) a tendency of the collected cases to show a certain aspect overall, and (2) that the questions themselves may not have been interpreted as intended by the inputting researcher.

Figure 5.1 offers us a view of the geographical distribution of the institutions gathered in our survey. Most of our collected cases originate from Europe and North America where cities such as New York, London and Amsterdam act as poles comprising the most cataloged cases as depicted in Figure 5.2. Each institution is assigned a field of activity (listed in the legend of the map of Figure 5.1) rendered as coloured dots. Not only does the map inform its reader about the geographical distribution of cases but also about institutional activity distribution. We can read, for example, that Archeology exhibitions are more present in Europe than in the rest of the world.

FIGURE 5.3 — *Diagram of all cases in the study, traced accoding to selected input fields from the survey.*

OVERLEAF


PEOPLE IN THEIR WORLDS
NAME
GERMANY
COUNTRY
KÖLN
CITY
MUSEUM
TYPE OF INSTITUTION
ETHNOGRAPHY
FIELD OF ACTIVITY
PEOPLE (BIOGRAPHICAL)
FOCUS OF INSTITUTION
POLIMI
PRINCIPAL PARTNER
RAUTENSTRAUCH-JOEST-MUSEUM
NAME OF THE INSTITUTION / ORGANISATION

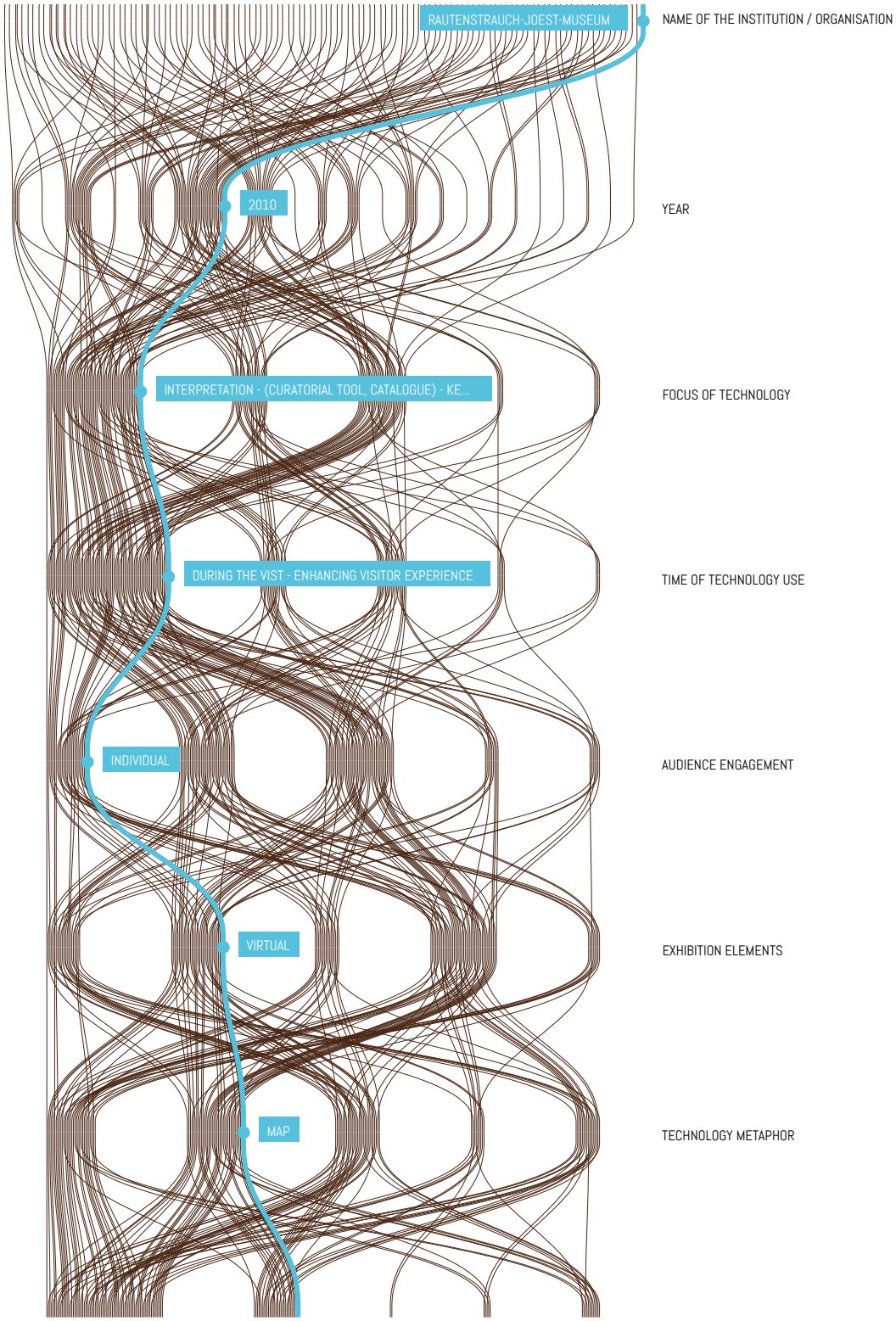

RAUTENSTRAUCH-JOEST-MUSEUM
NAME OF THE INSTITUTION / ORGANISATION
2010
YEAR
INTERPRETATION - (CURATORIAL TOOL, CATALOGUE) - KE...
FOCUS OF TECHNOLOGY
DURING THE VIST - ENHANCING VISITOR EXPERIENCE
TIME OF TECHNOLOGY USE
INDIVIDUAL
AUDIENCE ENGAGEMENT
VIRTUAL
EXHIBITION ELEMENTS
MAP
TECHNOLOGY METAPHOR

FIGURE 5.4 — *Time of Technology Use (horizontal axis) vs Audience Perception (vertical axis).*

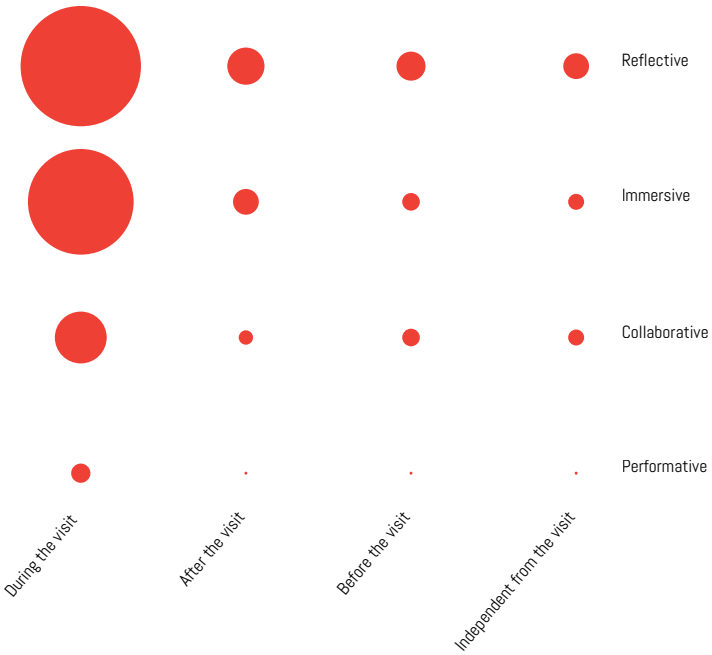
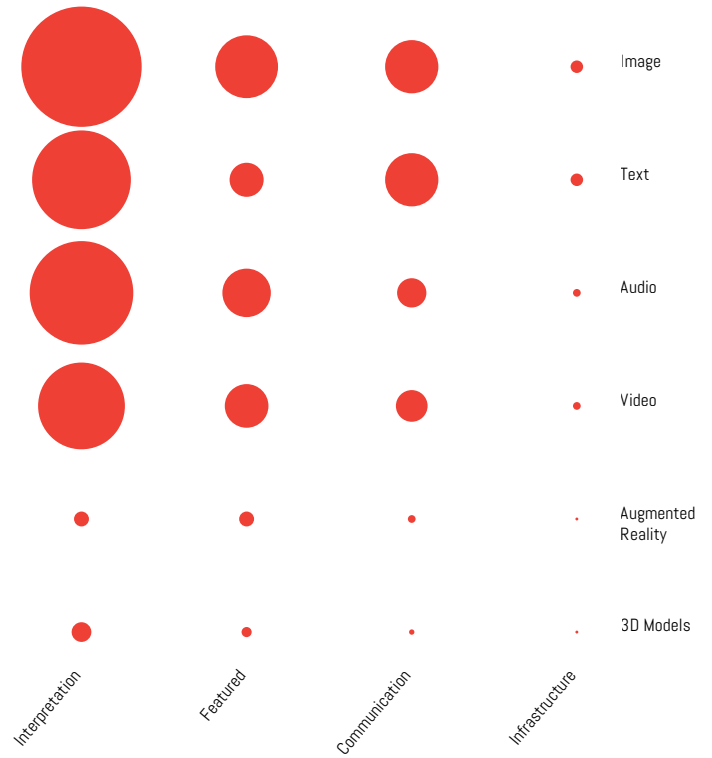


FIGURE 5.5 — *Focus of Technology (horizontal axis) vs Type of Media Exhibited (vertical axis).*



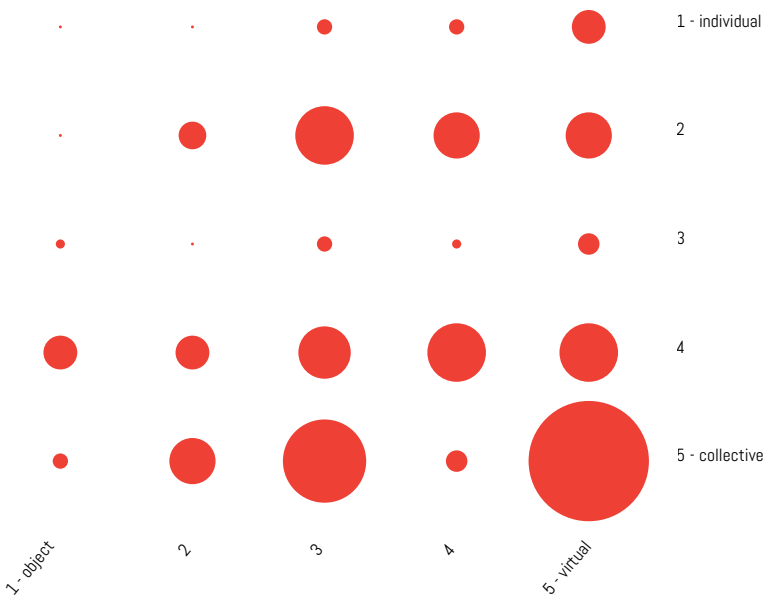


FIGURE 5.6 — *Exhibition Elements (horizontal axis) vs Audience Engagement (vertical axis).*

The online survey input form used to collected these cases offers researchers a similar visualisation of their collected cases, where institutions are positioned on a world map. Simple yet evocative, this map has the prime value of showing global and local geographical distribution of cases, which can be used to reflect on the cultural focus (or bias) our study may render as a result.

→ VISUALISATIONS - RELATIONS

Earlier visualisations have presented data derived from collected cases in raw and unprocessed forms. In this section, cross-field relationships are established and presented diagrammatically. The following visualisations illustrate interrelationships between certain facets of our data set in order to direct the current reading towards a more correlative and differential standpoint.

The first three graphs illustrate interrelationships between specific fields of our survey. Figure 5.4 puts into relationship answers regarding *Time of Technology Use* and Audience Perception, Figure 5.5 correlates *Focus of Technology* and *Type of Media Exhibited*, and Figure 5.6 *Exhibition Elements* and *Audience Engagement*. Foregrounded in these graphs are some of the multiple-choice questions and scales researchers used in the survey to categorise cases.

In order to better understand these parameters, used in Figures 5.4 - 5.6, we explain them as following:

Time of Technology Use, relates to the time when a given technology is used by visitors and is categorised according to: (a) Before the Visit (preparation prior to the visit) (b) During the visit (enhancing visitor experience), (c) After the Visit (to support or deepen understandings following the

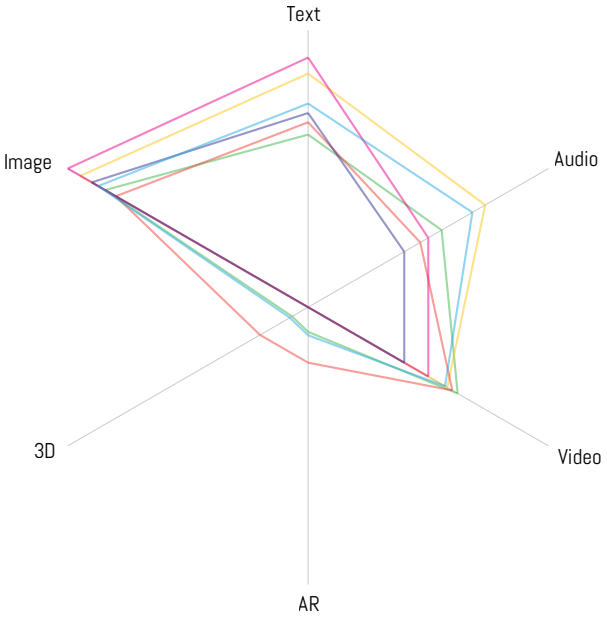


FIGURE 5.7 — *Type of Media Exhibited vs Field of Activity. Each axis of the graph represent a type of media used as an exhibition element according to a given institutional field of activity. The more the media usage is important for given field of activity, the further from the center of origin its coloured line intersects the axis. The colored lines correspond to the following institutional activities:*
art
social history
archeology
ethnography
natural science
other

visit), and (d) Independent from the Visit (no relation to the visit).

Audience Perception, relates to the main approach employed to support meaning making through technology. It is categorised according to: (a) Performative (focused on making visitors acting something), (b) Reflective (focused on engaging visitors cognitively), (c) Immersive (focused on making visitors experience something) or (d) Collaborative (focused on making visitors build knowledge together).

Focus of Technology stands for the primary technological emphasis of the project application. It reflects the intention of the host institution/organisation, if apparent or explicitly stated. It is categorised according to: (a) Interpretation—key function of technologies is to help in the exposition of existing informational platforms (e.g.: catalogue), (b) Featured—novel or a novel application of technologies are in-themselves the primary feature of the project or exhibition, (c) Infrastructure—information and communication system used for institutional, non-visitor facing applications such as databases and management systems, and (d) Communication—the project or application functions to convey, present or promote the activities of the project or institution (e.g.: website).

Type of Media Exhibited relates to the technological medium employed in an exhibition or project and is listed as: Text, Audio, Image, Video, 3D Models and Augmented Reality (AR).

Exhibition Elements represents a rating ranging from 1 to 5 categorising an exhibition or project as to its predominantly physical, bodily and situated applications (1), as opposed to digital, simulated, distributed features (5).

Audience Engagement also represents a rating ranging from 1 to 5 categorising an exhibition or project in terms of how physically or cognitively engaging it is intended to be. We have placed in opposition here tendencies towards individual or interpretive forms (1), versus more informational, collaborative or didactic strategies (5).

A few insights may be derived from the three relational graphs presented in Figures 5.4-5.6:

1. Reflective experiences (where visitors are engaged cognitively with exhibition content or information) appears to be invariant of the time of technology use.

2. Collaborative experiences are less frequent after a visit to a museum or exhibition, while Reflective and Immersive experiences seem to investigate this time opportunity.

3. Mixed-media appears to be consistently used when technologies are focused on providing interpretative resources to exhibition visitors.

4. Text as a medium is less frequently used in the context where technology is exhibited and featured as such.

5. Technological means appears to collectively engage visitors in both physically situated and distributed contexts.

While the aforementioned insights may not hold as most accurate (in general), they nevertheless provide us with a blueprint of the state of our survey. It has been of prime importance during this study to communicate and explain questions in our survey as to diminish interpretative biases. Yet it has been established early in our process that researchers' interpretations and feedback would offer the designers of the survey a joint understanding of the suggested categorical questions, which descriptions have hence changed and evolved during the earlier phase of the current study.

In order to select fields which offer the most potential in yielding correlated information when matched in our diagrams, we employ different mathematical tests as relational measures (Wilcoxon 1945, Mann and Whitney 1947). Rather than defining questions to match a priori, we observe our data a posteriori and derive correlation values between coupled questions that are used to inform and direct our choices of matchmaking.

The previous graphs, ordered in rows and columns, are simple enough diagrams to reveal and expose differences and variations between various quantitative fields of the survey. In Figure 5.7, another type of relational diagram is presented using a circular line chart, illustrating relationships between *Type of Media Exhibited* and *Field of Activity* of the institution where a given exhibition or project took place. In this geometric diagram, the values of each media type, positioned along each axis, have been normalised as a means to compare usage of media across various catalogued institutional sites (e.g. more institutions relating to art practices have

been collected than institutions relating to ethnography, thus the need to normalise their use of media). The more a media usage is important for given field of activity, the further from the center of origin its coloured line intersects the other axes.

Following each axis one can read the importance of a given medium according to different sites and contexts. *Audio*, for example, appears to be a medium of choice for *Social History*, *Other* (non-listed), *Art*, Ethnography, *Archeology* and *Natural Science* sites respectively. On the other hand, *Images* present an extensive usage across all sites while *Augmented Reality (AR)* features only in few cases relating to *Art* and *Archeology*. Each polygon traced with a specific set of data in the diagram could potentially be analysed using geometric formulas and related algorithms in order to extract information from their intrinsic shapes such as surface dimensions (cumulative use of media) and barycenter (central tendency of the use of media) to name a few.

Normalised results illustrated in the diagram tend to suggest an even distribution of cases in each *Field of Activity*. In reality it is not the case. Increasing the number of cases in fields of activity where few are collected could potentially transform the diagram of image 5.8 and bring about new geometric shapes which may or not resemble the current ones.

Normalised results illustrated in the diagram tend to suggest an even distribution of cases in each *Field of Activity*. In reality it is not the case. Increasing the number of cases in fields of activity where few are collected could potentially transform the diagram of figure 5.7 and bring about new geometric shapes which may or not resemble the current ones.

→ VISUALISATIONS - CLUSTERS

In this section, focus is directed towards grouping subsets of cases in clusters according to selected discriminants, creating a set of dendrograms: a graphical representation of a hierarchy of categories and subcategories used to illustrate taxonomic relationships, in this case between textual case descriptions. Clusters can be extracted from the corpus of cases according to multivariate properties, that is answers to multiple questions or fields as opposed to the previous sections where only two questions or fields were put into relation.

Hierarchical clusters are illustrated as two dendrograms comprising five clusters each. Each branch of a dendrogram represents a certain category corresponding to a specific character or discriminant. Categories may share certain characteristics forming larger categories hence illustrated as part of a same branch at a given level in a dendrogram. At the bottom of a dendrogram resides what is commonly called a leaf (in our diagrams these feature names of cases) that do not represent categories per se but elements of a category. We call clusters the grouping or congregate of such elements according to one or multiple shared characteristics.

Dendrogram of Figure 5.8 determines clusters of cases according to *Type of Institution*, *Focus of Institution*, *Topic*, *Type of Media Exhibited*

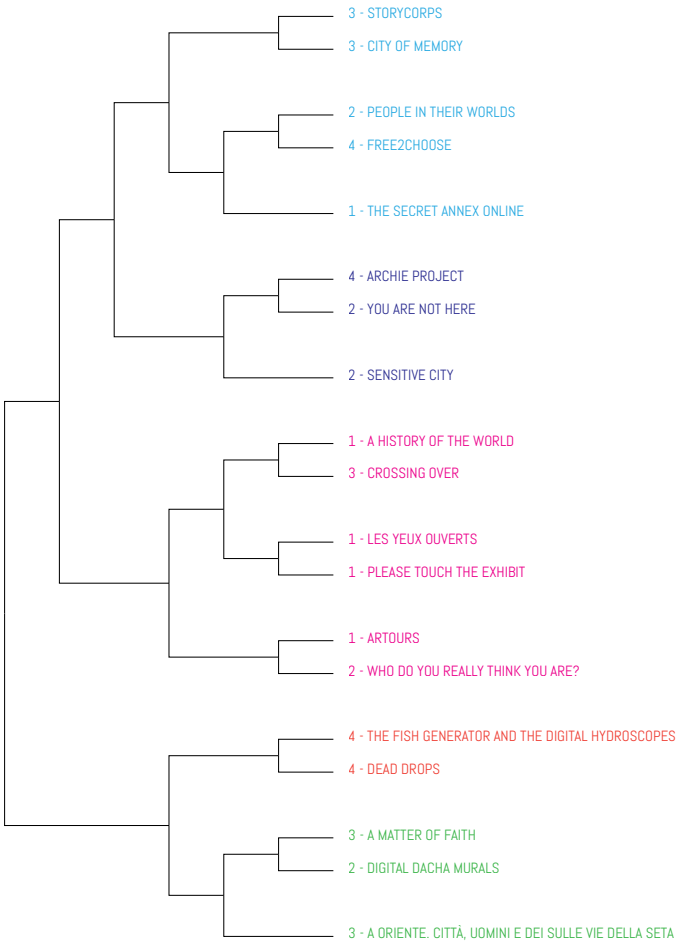


FIGURE 5.8 — *Dendrogram representing clusters of cases grouped together according to:*

- Type of Institution

- Focus of Institution

- Topic

- Type of Media Exhibited

- Audience Perception.

Each colour represents a cluster, while the branches of the dendrogram represents logical categories and subcategories. All cases presented in this book are ordered in the dendrogram and their respective chapters are featured at the beginning of each cases name.

and *Audience Perception*. Dendrogram of Figure 5.9 composes groups of cases according to *Focus of Technology*, *Type of Media Exhibited*, *Audience Involvement* and *Audience Perception*. To put these diagrams into context, cases from previous chapters, noted at the beginning of each exhibition name, have been selected as cluster elements (for the reader to refer to).

The subdivision and branches illustrated in the dendrograms may appear to be directly dictated by distinctive subcategories of the survey (e.g fields such as *Type of Media Exhibited*, *Focus of Institution*, etc.) but are in fact following a specific clustering algorithm. Strategies employed by the present algorithms follow an agglomerative process where each individual case start in its own cluster and gradually merge with others according to their shared characteristics and similarities. We call relative distance the degree of similarity between cases. Following this logic, *Natural Science* as a *Field of Activity* is closer to *Science History* than it is to *Contemporary Arts*, for example, hence cases relating to *Natural Science* and *Science History* are more likely to be merged in the same cluster (or be part of the same dendrogram branch) at a given stage. Relative distances

FIGURE 5.9 — *Dendrogram representing clusters of cases grouped together according to:*

- Focus of Technology

- Type of Media Exhibited

- Audience Involvement

- Audience Perception.

Each colour represents a cluster, while the branches of the dendrogram represents logical categories and subcategories. All cases presented in this book are ordered in the dendrogram and their respective chapters are featured at the beginning of each case's name.

between cases are calculated out of every field and matched together to form the dendrograms.

Interesting agglomerates can be read from the three dendrograms.

The dendrogram of Figure 5.8 illustrates groups sharing similar themes and approaches. Biographical focus is represented by a cluster composed of *The Secret Annex Online*, *City of Memory*, *StoryCorps*, *Free2Choose* and *People in Their Worlds*, while the topic of augmented guides and city context is represented by a cluster formed of *You Are Not Here*, *Archie Project* and *Sensitive City*.

The dendrogram of Figure 5.9 shows technology focus aggregates revolving around themes of (1) augmented reality with *Who Do You Think You Really Are?* and *ARTours*, (2) networked interactions with *Archie Project* and *City of Memory*, and (3) performative engagement with *Sensitive City*, *Free2Choose*, *People in Their Worlds* and *A Oriente. Città, uomini e dei sulle vie della seta*.

The "residue" of these clusters (cases who do not conceptually match certain grouping) are inherently produced by these hierarchical clustering algorithms. Some of the groupings featured in the aforementioned images are composed of arguably heterogeneous elements which may or may not produce coherent clusters, in regard to certain pre-defined categories found by researchers. Nonetheless, the multivariate and agglomerative nature of the hierarchical clustering algorithms offers researchers multiple relational views of a single set of case studies by combining and recombining groups and themes around established fields and qualified metrics (often called "metadata"). It is on these multivariate terms (answers to multiple questions) that algorithms define distances between data set elements and establish criterions (Ward 1963) of cluster mergers and splits. Using our hierarchical clustering algorithms we can re-order this book dynamically into new chapters and subchapters given a specific set of discriminants to choose from our survey.

→ VISUALISATIONS - TOPICAL SPACE

All previous visualisations and algorithms have manipulated data which has been collected through specific input fields in the survey. These fields were designed somewhat to produce information suitable to the kinds of analyses performed here, as well as to define relationships and more generally to index cases with a finite set of words and/or numbers (metadata).

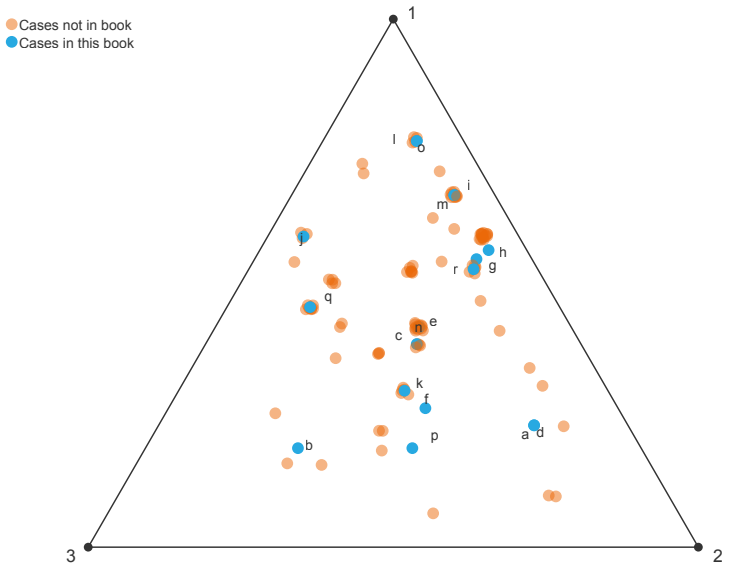
In this section, a slightly different and more powerful approach is put forth in which text is dealt with as object of analysis from which algorithms extract overall topics and themes from the corpus. Here we mean powerful in terms of not having to directly read and manually categorise text (as it was the case with metadata). This approach is used by scientists studying literature development over long periods of time or world literature including many different languages. Without having to read all the texts (which is sometimes not possible or impractical) they are able to extract semantics from them and make sense of certain speculations they postulate which otherwise could not even be approachable.

A few sections in the survey are free-text inputs where researchers, rather than categorise cases according to a predefined and limited typology (metadata), are asked to reflect or describe in words or prose their view and analysis of cases. These sections comprise "*Descriptions*" of the project or exhibition, the "*Actions and Mechanism of Interaction*" these suggests to visitors, a reflection on "*Why is it of interest for MeLa's Research Field*" and finally a speculative description of the "*Impact the project or exhibition may have on both User and Institution perspectives*." All of these fields are present, of course, as interpretations of each case by a researcher entering the data. The following visualisations relate to the section *Why is it of interest for MeLa's Research Field 05* as it presents more interpretive and speculative perspectives than descriptive ones from the other sections.

Our approach in analysing written text fields is to deconstruct its constituting sentences and phrases to focus on extracting semantics out of

NOTE — *The annotated blue dots in figure 5.10 and 5.11 corresponds to the following cases in the study:*

a - Please Touch the Exhibit
b - ARtours
c - The Secret Annex Online
d - A History of the World
e - Les Yeux Ouverts
f - Sensitive City
g - You Are Not Here
h - Who Do You Think You Really Are?
i - People in Their Worlds
j - Digital Dacha Murals
k - A Matter of Faith
l - A Oriente...
m - Crossing Over
n - City of Memory
o - StoryCorps
p - Archie Project
q - The Fish Generator...
r - Free2choose
s - Dead Drops



1 - stories , memory , history , specific , life , american , initiative , interviews , record , museum
2 - images , video , process , developed , content , digital , museum , game , objects , metadata
3 - stories , approach , narrated , cultures , memories , city , project , people , cultural , intercultural

FIGURE 5.10 — *Topical Space composed of three vertices. Each vertices correspond to a topic listed and numbered under the geometry. All cases from the study are represented as dots where blue coloured ones are cases featured in this book's earlier chapters while the orange coloured dots illustrated all other cases. Cases are positioned according to their respective distances from the three topics.*

groups of words. More precisely, through algorithmic manipulation, text is transformed into a bag-of-words model, where it is disassembled into an unordered list of words from which all documents in a given corpus (e.g.: *Why is it of interest for MeLa's Research Field*) are graded atomically according to the frequency a given word has in its text. From this bag-of-words, two-topic modeling algorithms are employed to extract topics (as a list of meaningful words or vocabulary representing the latent topics) out of the textual corpus: one is called *Latent Dirichlet Allocation* (LDA) (Blei et al. 2003) and the other *Correlated Topic Models* (CTM) (Blei and Lafferty 2007). Both algorithms yield a list of topics against which all documents in the corpus are measured and given a proportion in a scale ranging from 0 to 10. In other words, both algorithms assume that each documents are composed of words arising from a mixture of topics from which proportions are drawn in a document-specific manner yielding a vector of proportions that can be represented in space.

With this approach, we assume a correlation amongst the words of a text and its latent, or holistic semantic themes. This methodology is prefered as it is more suggestive than deterministic; topic modeling offers better dynamism and flexibility in abstracting text than does metadata (e.g.: counting metrics, histograms, etc.)

Four Topical Spaces are constructed and represented in the current essay. Each space is composed of a simplex-like geometry where topics are represented as vertices (Blei et al. 2003). The entire set of cases, represented as dots, are positioned inside these geometries according to their respective distances (proportions) to each topics-vertices. Blue coloured dots

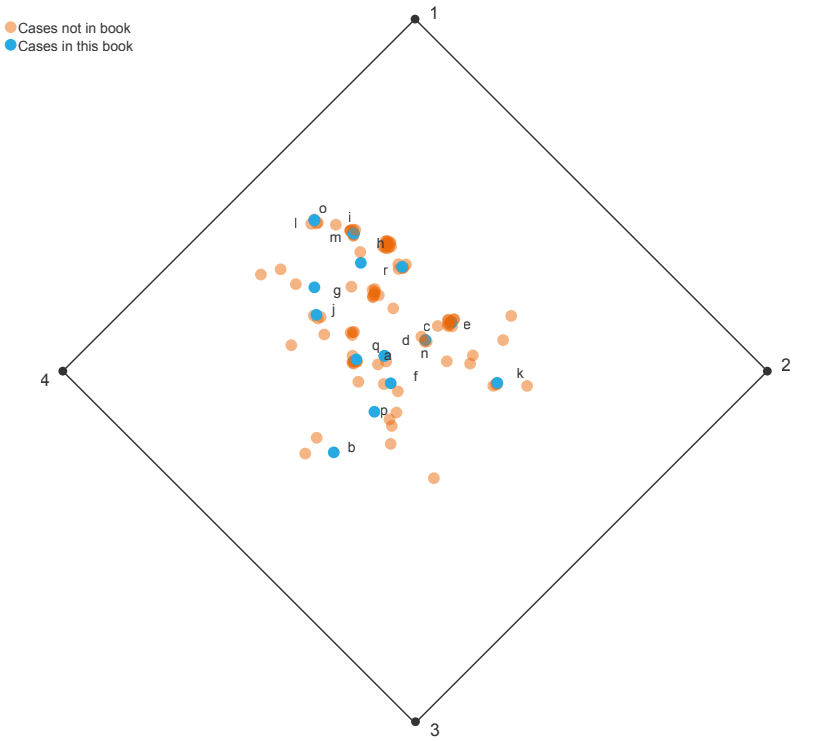


FIGURE 5.11 — *Topical Space composed of four vertices. Each vertices correspond to a topic listed and numbered under the geometry. This topical space illustrates the spatial reordering of cases, represented as dots, caused by the introduction of a new topic-vertex (4) to the topical space depicted in figure 5.10.*

are cases from previous chapters while orange coloured dots represent all other cases.

Figure 5.10 offers a view of the corpus spatially dispersed according to three extracted topics listed under its geometry. From the extracted list of words we can interpret the meaning of latent topics such as: (1) stories as specific historical and lived memories, (2) media and content oriented and (3) approaches in presenting stories and memories. From this diagram, one can read for example that *A History of the World* relates to digital media content (2), *StoryCorps* and *Crossing Over* relate more to lived memories (1) while *The Secret Annex Online* appears to integrate both lived memories (1) and media (2) in its textual field.

Multiple topics can be extracted from the corpus using the aforementioned algorithms, hence creating higher dimensions topical spaces. In Figure 5.11, a new topic is introduced to the previous space of Figure 5.10 which highly influences the spatial distribution of the cases. The new topic (4) relating to exhibition, museum and technologies appears to attract many cases as a result of the reordering, to the detriment of the topic-vertex (2) relating to media and content . In fact, these two topics are correlated and act upon the same subset of cases. When topic (4) is introduced, this (hidden) subset in Figure 5.10 is split and a partage of

cases between both topics is exhibited.

Throughout our research, we found that an average of three to four latent topics can successfully be abstracted from our text-based data sets. The remaining topics usually do not afford strong symbolic difference between one another and do not suggest strong leads with the multiple documents under consideration. In contrast, analysing the entire corpora of news from the French journal "*Le Monde*" from last year, for example, would obviously lead to more topics and hence geometric diagrams of higher orders. This is a lesson for future research undertaken in this way towards ensuring consistency and understanding of these techniques as they are used in interdisciplinary projects.

The type of topic modeling employed offers powerful and suggestive organisational structures for humanities and textual data, which can be interpreted in various ways. One benefit of using this type of modeling over other procedures is that free text appropriately constitutes the datum of algorithms. Rather than pre-determining limited meta-informational elements, topic modeling helps researchers decipher themes and tropes from various corpora of texts from which they can base their critical speculations.

→ CONCLUSION

In conclusion, we would like to summarise the aim of this chapter and further elaborate on the critical perspective presented in the introduction. Our approach, the core of which is expressed through the illustrations in this chapter, has been to perform a *distant reading* (Moretti 2000) of the collected case-studies collected by project researchers. Using various visualisation techniques and statistical algorithms, we extract and expose various interrelationships between the parameters and free text entries of our dataset, focusing on small and specific aspects of aggregate case data or larger structures rather than single cases alone. In some ways, the content of singular cases may have vanished along the way, to the benefit of overall abstraction of the entire data set, exposing trends or "tendencies" for further interpretation by researchers. Yet this "loss" is a fundamental condition for gaining numerous systematic perspectives of a single corpus which we use to speculate further cultural meanings, across different sites relating to museums and exhibition design.

Conducting research in a highly interdisciplinary and multidisciplinary context, such as the European Museums in an Age of Migrations (MeLa) project, brings into perspective the contours and boundaries of one's field of expertise. As explained in the general introduction of this book, following the success of our the initial initiative of collecting museum and technology cases online, several online surveys have been devised and developed for each research field in order to collect cases relevant to each community of practice. Multiple discussions on how to approach the task of designing these surveys, their generality, differences, relevance and appearance contributed in defining common objects and languages

(loosely) relevant to each field and have proven a valuable point of synergies and understanding for research groups. In turn, the graphics and dynamic visualisations we have created are envisioned as objects of study in our field have been made transferable and useful to other research groups. These might be regarded as a kind of computationally-derive boundary object for interdisciplinary research of the kind being undertaken here:

> Those objects that both inhabit several communities of practice and satisfy the informational requirements of each of them. Boundary objects are thus both plastic enough to adapt to local needs and constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use and become strongly structured in individual-site use. (Star and Griesemer 1989, 297)

From our experience, digital humanities techniques possess a niche position in interdisciplinary and multidisciplinary contexts in that they are capable of elaborating and researching such objects (Manovich 2008), which do not claim to represent universal and transcendent truths about the information at hand, but rather practical elements on the intersecting borders of various research fields and communities (e.g: Architecture, Critical Studies, Computer Science, Sociology, etc.) (Bowker and Star 1999). However, this practical cross-field relevance should not overshadow the deeper critical potential of digital humanities research, as exampled in this book. Recent criticism (Liu 2012) has openly questioned the relevance of digital humanities arguing that its lack of critical foundations could potentially undermine the field's future growth. It is not enough, argues Liu, to service other fields by helping them better communicate online or better organise in a database questions from a survey.

> [...] digital humanists will need to find ways to show that thinking critically about metadata, for instance, scales into thinking critically about the power, finance, and other governance protocols of the world. (Liu 2012, 495)

Accounts of (technical) instrumentalism are certainly inevitable for a field where questions of functionalism, tool-oriented research and, more broadly, practice serve as prime or sole elements of further discourse. On these terms, efficiency appears to serve as the unique principle in discriminating successful and failed initiatives, arguments shifting from critically discursive to technically formulaic. Technology-mediated research appears to borrow the virtues generally attributed to scientific rationality, when in fact it should rather critically reflect on its own context and expand the idea of instrumentalism and technology by exposing the necessity and the universality of technical decisions. Algorithms are not only tools but culturally and ideologically charged statements. Technologies should be employed critically, as any other interpretive tool or thought-object.

Through our MeLa investigations to date, rather than positioning our research endeavours as functionalist and rationalist in essence (leaning towards organisational efficiency and communication) we adopted a

perspective of technology-mediated-inspired research driven by design, speculation and interpretation.

In a previous publication we critically positioned the social construction of museums as being technological in nature (Allen and Gauthier 2012). This perspective is certainly attributed to the fact that we do not conceive technology solely as instrumental, or of a particular scale, but rather presenting and revealing *technical codes* which can be critically examined from technical objects (Feenberg 1991). These codes can be understood as criterion and discriminants that dictate ideological choices, made between possible and alternative technical designs in terms of a social goal. In these terms, connections can be drawn from the technical codes and codes of cultural institutions. The memory of a computer (information storage), for example, is mainly designed and implemented in terms of relational and hierarchical database, following concepts of data storage, persistence and classification. So does the institutional archive with its aim (and power) not only to unify, identify and classify cultural memory but to consign it in a physical space (Derrida 1996).

In this essay, our aim has been to render a study about the usage of information and communication technologies in museums as a technological representation in itself (visualisation and software). Parts of this construction have certainly been tailored around some aspects of efficiency, yet more profoundly it was driven by a sense of design. As we clarified in this essay (featuring text, software and diagrams) our design incorporated values through the choices we made of the diverse alternatives we encountered in every step of our research—from designing the survey's questionnaire to be computationally analysable to the choices we made of using some statistical algorithms (turning text into numbers) instead of others. The algorithms (as arguments) presented in this essay are far from being value-neutral "black-boxes" as they are sometimes misread as. Following this endeavour, we position our text, software code and diagrams as being part of the more complete analytical, critical and speculative apparatus of a technical age.

The MeLa project offers these techniques, derived from those of trained scientists, technologist and designers, an interesting interdisciplinary context where questions of culture and technology, theory and practice, instrumentalism and criticism converge in defining new research territories where distinctions between technical sciences and the humanities are suspended (for a moment) to provide vital ground for new approaches to be cultivated.

David Gauthier

Visualisations by Marcin Ignac

→ REFERENCES

Allen, Jamie, and David Gauthier. 2012. "What Kind of Technology is the Museum." In *Museums in an Age of Migrations*, edited by Luca Basso Peressut, Clelia Pozzi, 161-172. Milano: Politecnico di Milano.

Blei, David M., and John D. Lafferty. 2007. A correlated topic model of Science. *Annals of Applied Statistics* 1(1): 17-35.

Blei, David M., Andrew Y. Ng and Michael I. Jordan. 2003. Latent Dirichlet allocation. *Journal of Machine Learning Research* 3: 993-1022.

Bowker, Geoffrey C. and Susan Leigh Star. 2000. *Sorting Things Out: Classification and Its Consequences*. Cambridge, MA: MIT Press.

Derrida, Jacques, and Eric Prenowitz. 1998. *Archive Fever: a Freudian Impression*. Chicago: The University of Chicago Press.

Feenberg, Andrew. 2010. *Between Reason and Experience: Essays in Technology and Modernity*. Cambridge, MA: MIT Press.

Feenberg, Andrew. 1991. *Critical Theory of Technology.* Oxford: Oxford University Press.

Liu, Allan. 2012. "Where is Cultural Criticism in the Digital Humanities?" In *Debates in the Digital Humanities*, edited by Gold K. Matthew, 490-509. Minneapolis: University of Minnesota Press.

Mann, Henry B., and Donald R. Whitney. 1947. On a Test of Whether one of Two Random Variables is Stochastically Larger than the Other. *Annals of Mathematical Statistics* 18(1): 50-60.

Manovich, Lev. 2008. "Cultural Analytics: white paper." http://softwarestudies.com/cultural_analytics/cultural_analytics_2008.doc

Medawar, Brian Peter. 1969. *Induction and Intuition in Scientific Thought*. Philadelphia: American Philosophical Society.

Moretti, Franco. 2000. Conjectures on World Literature. *New Left Review* 1: 54-68.

Rogers, Richard. 2009. *The end of the virtual: digital methods*. Amsterdam: Amsterdam University Press.

Star Leigh Susan and Griesemer R. James. 1989. "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39." *Social Studies of Science* 19(3): 387-420.

Ward, Joe H., Jr. 1963. "Hierarchical Grouping to Optimize an Objective Function." *Journal of the American Statistical Association* 58(301): 236-244.

Wilcoxon, Frank. 1945. "Individual comparisons by ranking methods." *Biometrics Bulletin* 1(6): 80-83.

Conclusion

Representations of a Museum in Transformation

→ MUSEUM AS TECHNOLOGY

A museum is a system, or perhaps even a technology, that serves to project, mediate and represent culture. As a system it asks for a systemic view, that is an overall vision considering all the elements and the way they interact and compose the system itself. For the purposes of this book, these elements (technology, space, content, sociality) have been focused upon, in order to point out and isolate the more critical aspects and potential opportunities. These areas are of course deeply intertwined and influence each other greatly. Here we make more conjoined and cohesive the relations between cultural content, museum space, technology applications and social interaction that create a user experience. In addition, since the focus of this book is on technologies and their application, this will be a constant element of analysis that is to be confronted with the others one by one.

The aim is also to derive some design strategy, crossing all the elements (content, space, sociality) , for designing effective ICT within museums and intercultural settings. We will hence start considering the key issues related to each case and chapter (see figure 6.1), in order to bridge and group them through transversal connections in the form of "key lessons." The concept of "representation" in its wide sense, is hereafter used as metaphor of technological strategies for dealing with intercultural issues and practices.

→ REPRESENTING AN INTERCULTURAL MUSEUM SPACE

According to many cases, space is a constitutive element of the user experience. The key lessons that have been derived sum up three dimensions of space that can be enabled by technology integrating it in the exhibition space and design: situativity, creation and empowerment.

PREVIOUS PAGE — *Sensitive City, Shanghai. Studio Azzurro, 2010. Visitor interacting with narrator from another culture mediated by technology in an immersive visual, acustic and textual environment.*

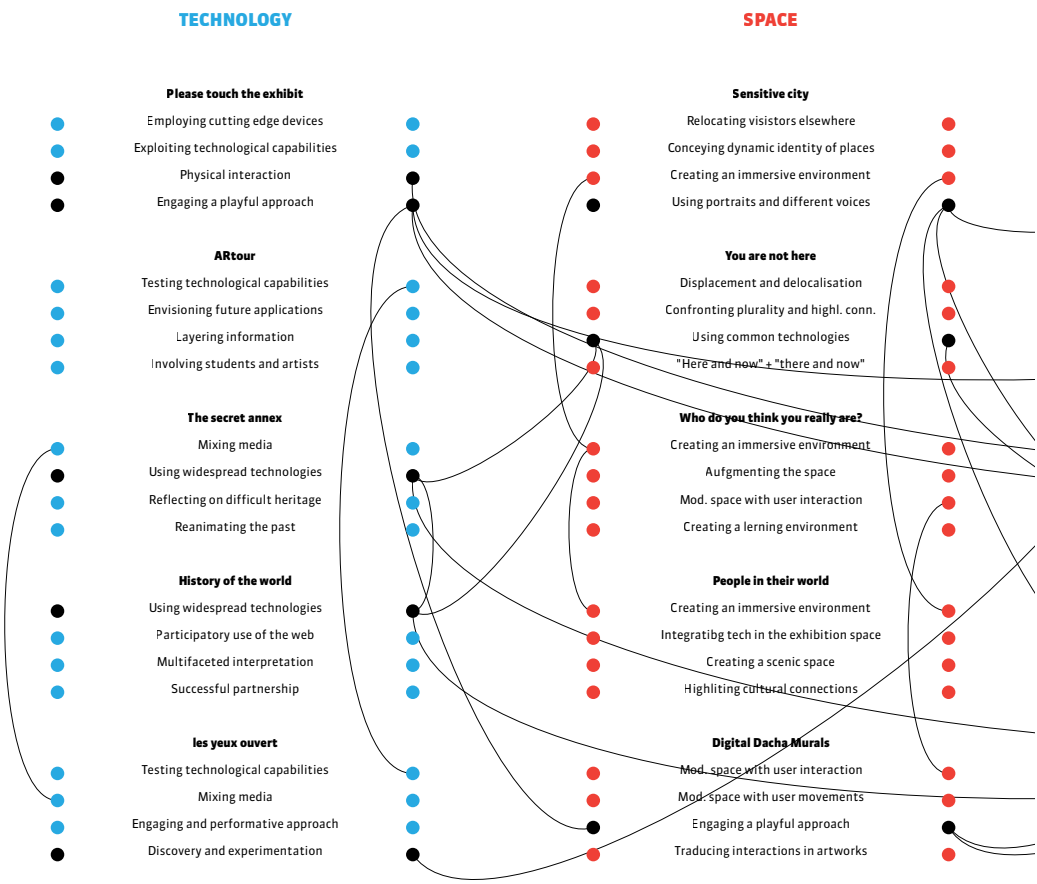
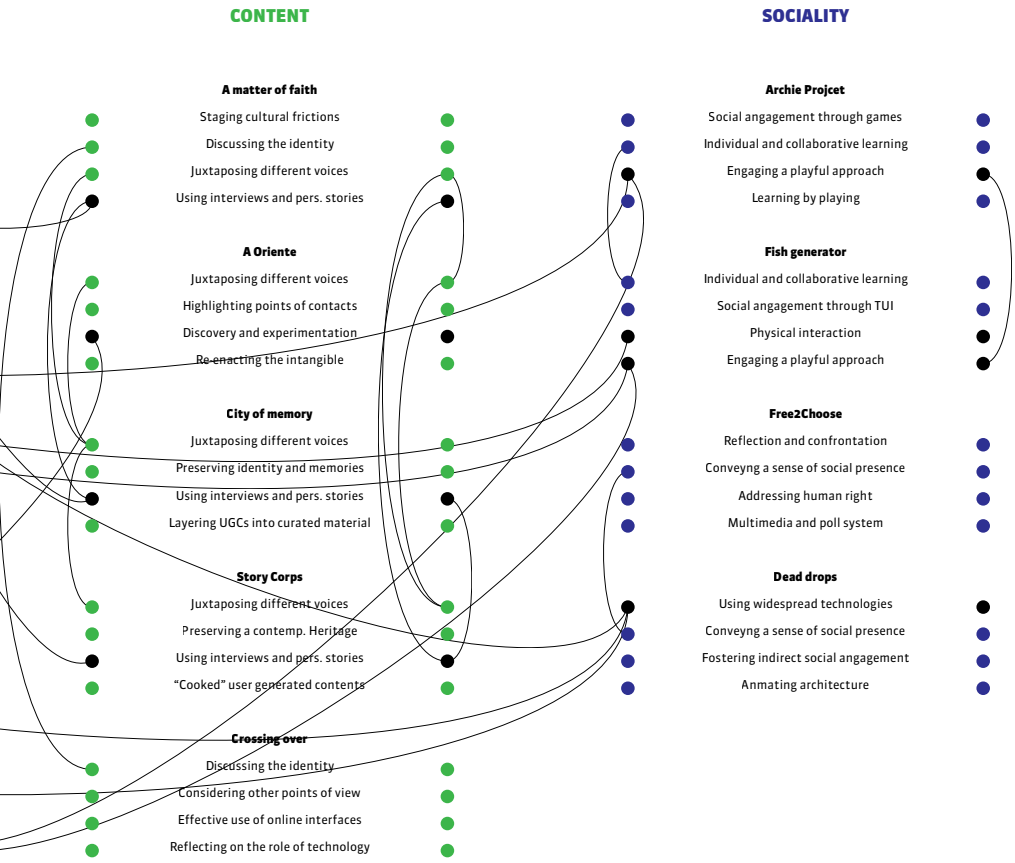


FIGURE 6.1 — *Key issues overview and connections between cases.*

→ *space situativity* refers to those interventions and applications which work on the location of the experience and of the content and social engagement it implies, for instance, the *delocalisation and relocalisation of visitors* (see for instance the case study *Sensitive City*). The sense of displacement can be used to provoke *cultural friction*, *encourage plurality and confrontation* and *suggest possible connections* (see for instance, the case *You Are Not Here*);

→ *space creation* refers to those interventions and applications which build an identity for the space where cultural content are placed. This should be done in a multi-vocal perspective, defining the space by different subjective points of view (first person descriptions), or using a performative approach, i.e. *modifying and adapting the space through the user movements or interaction* in order to *create a learning or scenic environment*. The participation of the user leads to a dynamic and flexible concept of the space identity, suitable to continuous re-discussion and negotiation (e.g.: *Who Do You Think You Really Are*).

→ *space empowerment* refers to those applications that amplify and enrich the space itself, through activity by the visitors or otherwise. The responsive, narrative, immersive environments become a setting for information that nurtures user engagement (*playful, performative,*



educational approach) and therefore provides opportunities for more diverse interactions, accessibility and understanding by the users (i.e. *People in their world* and *Digital Dacha Murals*).

Technologies used in order to create, enrich and adapt to the spaces in which they are situated are of different types: from video-projectors and holographic screens that occupy walls and three-dimensional exhibition spaces, to websites and audio descriptions that work as guide or triggering system for an imaginary space, they all generate an immersive and learning environment.

To exploit the intercultural potentiality of the space experience within the future museums and cultural institutions, more attention need be devoted to the behaviours and movement of the visitor in the space, underlining the connections between culture and spatial movement and gesture. Formalisation and consciousness of movements and habitualised actions in the museum space (subtle elements like looking around, path of approach, as well as more direct contact through interaction) are culturally connotated, both stimulating different interpretations (through formal but unconscious action, e.g.: leaning out on a window) or frustrating them (e.g.: those action that might be typical in another context or culture, but uncommon to the museum setting, like blowing or running).

→ REPRESENTING INTERCULTURAL MUSEUM CONTENT

Content is a driver for a soft (based on culture and sensoriality) innovation of user experience within the museum space, and the key lessons in this exposition focus on four dimensions of content that can be activated with and through technology: meaning, multiplicity, connectivity and generation.

- *content-meanings* refers to those interventions whose focus is a shift from the simple *preservation of traditional identity* and memory to the *inclusion of contemporary heritage*, controversial or difficult patrimony like migrating identity, from the accessibility to the practice and re-generation of the meanings of the cultural asset, thus for instance *reanimating the past* or *re-enacting the intangible*. These approaches employ technology to negotiate the idea of heritage itself in an intercultural background;

- *content-multiplicity* refers to different applications which make use of concepts and key issues such as *juxtaposing different voices*, *other points of view*, or *using interviews and personal stories or layering information* and is meant to stage *a cultural friction* and stimulate the *discussion about identity* allowing *multifaceted interpretation* (e.g.: *A Matter of Faith*, *StoryCorps*);

- *content-connectivity* refers to those applications which create contact points amongst content elements, highlighting dissonances and similarities, connections and synapses in the dynamics of exchanges between the "self" and the "other." Technology devices allow parallel reading and cultural connections (e.g.: *A Oriente*);

- *content-generation* refers to application and devices which allow to produce user generated content in different grades: *Layering UGCs into curated material*, *"Cooked" user generated content* and so on. This approach, while enabling people participation and self-representation (helping in increasing the multiplicity and diversity of content and so the discussion, confrontation and possibly the exchange), raises questions of authoritativeness and curation of the content: therefore technology works on the traceability and reliability of content (e.g.: *City of Memory*);

Information and communication technologies already employed to exploit interculturally content inside and outside the exhibition spaces are: monitors, interactive video and audio installations, portable devices, websites and online platforms. To strengthen the intercultural value of particular content, participative tools should be developed to facilitate their parallelism and confrontation, to allow the personalisation of the cultural repository they generate in order to facilitate its understanding, negotiation and re-writing; content can be place based and responsive to space too, being localised and when activated by visitors' behaviours.

→ REPRESENTING AN INTERCULTURAL MUSEUM SOCIALITY

The user engagement is a crucial phase of the museum experience. The engagement asks for participation at different levels: individually and socially and with different purposes (learning, entertainment…) and therefore connotations (playfulness, performativity…). Here we consider both direct and indirect social engagement enabled by technologies.

The key lessons focuses on four grades of sociality enabled by technologies: knowledge, connectivity, exchange, collaboration.

- *social knowledge/connectivity* refers to applications where the learning (of the content) and the knowledge (of the "other") are crucial, *stimulating reflection and confrontation*. Here technology *conveys a sense of social presence* (e.g.: *Free2choose*, *Dead Drops*);

- *social exchange* refers to platforms which allow people in contributing to the construction of a common heritage, for instance *juxtaposing different voices*, *other points of view*, or u*sing interviews and personal stories* or *layering information*, in order to *stimulate reflection and confrontation* even without direct contact (e.g.: *StoryCorps*);

- *social collaboration* refers to applications and devices which aims at making people directly and consciously cooperate (physically or virtually) in the production, discussion, negotiation of their heritage and identity, for instance *using common technologies* or with *social engagement through games or TUI*, *physical interaction* and so on (e.g.: *Crossing Over*, *Archie Project*).

Technologies employed to facilitate sociality within museums are often interactive installations, RFID and tangible user interfaces, portable devices, polling systems, social networks and online platforms.

Technologies employed to facilitate sociality within museums are often interactive installations, RFID and tangible user interfaces, portable devices, polling systems, social networks and online platforms. Social interaction and engagement should be interculturally developed reinforcing by technologies the relations among people "through content in place": exchanges and collaboration should be addressed to build a collective and contemporary memory, heritage and identity balancing reflective and performative tasks at a collective scale. Social engagement and collaboration can therefore be content based or influenced and space localised and responsive too.

→ REPRESENTING THE INTERCULTURAL POTENTIAL OF TECHNOLOGY

Technology is a transversal driver that intercepts place/space, content and sociality within museum, functioning as medium that widens the relation between visitor and content to the ones among visitors and content-in-space and visitors and visitors. Some considerations could be made about "initiatives in which technologies constructively become a prime mover or motivator" and therefore not only a medium to interculturally convey

other content, but the content in itself with intercultural values and potentialities.

Common to many cases in the book in fact is the key lesson "*reflecting on the role of technology*": The way ICT engages people and displays content in space is an opportunity for exploring ICT potentialities and envisioning future applications (*Employing cutting edge technologies*, *exploiting technological capabilities*, *testing technological capabilities*, *mixing media*, *using more widespread technologies*, *effective use of online interfaces*). Technology is never neutral, and shapes users' experiences in accordance with its cultural understanding in the specific context where it is used, orienting it on the basis of what is being culturally and socially legitimated in that space.

The speculative visualisations of case study data, presented in Chapter 5 let emerge contemporary trends and tendencies in correlations between technology, applications, context and public demands. In order to exploit the potential interculturality of particular technology within museums, two sub-themes to take in account for envisioning future applications are:

- *Sharing processes* (*Participatory use of the web*, *using common technologies*) designed to form and make people aware of the dynamics of exchange, contribution, participation and fruition of content as "cultural" actions;
- *Design of new dynamics of interactivity* (*Physical interaction*, *Engaging, playful and performative approach*, *learning by playing*, *spatial performativity*, *new behavioural codes*) always more context and content specific.

→ CONCLUSION

This book provides, through cases, insights, key issues and lessons, a snapshot of applied technology within museums, exhibition spaces, cultural institutions and settings. It is a repertoire (or "re-presentation") of actual museum technologies that mirror the paradigms of contemporary intercultural society. In other words, it is an attempt to provide a both an overview, substantiated by different variables that have been considered relevant (space, content, sociality), looking for analogies and conccurrences amongst all the parameters gathered through the online case-study collection tool. The technologies thus have been analysed both in a kind of horizontal dimension (the cases-cases confrontations called latitudinal analysis or far reading) but also somewhat through close vertical deepening, in the close reading of particular emblematic cases and relating key issues. Far from being a manual of procedures and modalities for these technological intervention, we aim to provide indications, insights and stimulation for the museum in transformation, facing its technologies of representation toward the challenge of an intercultural world.

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MeLa* - European Museums in an age of migrations

Research Fields:

RF01: Museums and Identity in History and Contemporaneity
examines the historical and contemporary relationships between museums, places and identities in Europe and the effects of migrations on museum practices.

RF02: Cultural Memory, Migrating Modernity and Museum Practices
transforms the question of memory into an unfolding cultural and historical problematic, in order to promote new critical and practical perspectives.

RF03: Network of Museums, Libraries and Public Cultural Institutions
investigates coordination strategies between museums, libraries and public cultural institutions in relation to European cultural and scientific heritage, migration and integration.

RF04: Curatorial and Artistic Research
explores the work of artists and curators on and with issues of migration, as well as the role of museums and galleries exhibiting this work and disseminating knowledge.

RF05: Exhibition Design, Technology of Representation and Experimental Actions
investigates and experiments innovative communication tools, ICT potentialities, user-centered approaches, and the role of architecture and design for the contemporary museum.

RF06: Envisioning 21st Century Museums
fosters theoretical, methodological and operative contributions to the interpretation of diversities and commonalities within European cultural heritage, and proposes enhanced practices for the mission and design of museums in the contemporary multicultural society.

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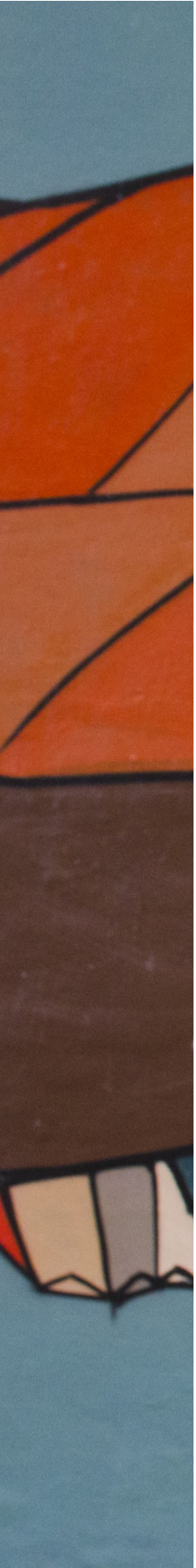

REPRESENTING MUSEUM TECHNOLOGIES

The use of technologies in the context of museums and cultural institutions is a topic that helps bring a focus to the myriad of representational, interactive and informational forms these milieu allow. Combined with developments in the public take-up of mobile technologies and networked media and communications, technologies used in representing and producing culture cause us to re-imagine and reinvent the role of cultural institutions in a technological society. This case study sourcebook is a snapshot, a distillation of contemporary practice by museums and cultural institutions, along with commentary, critique and best practice reflections by interdisciplinary-researchers from the European Museums in an Age of Migrations (MeLa) project.

With contributions by: Jamie Allen, Eleonora Lupo, Davide Spallazzo, David Gauthier, Raffaella Trocchianesi and Marcin Ignac.

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COVER IMAGE — *Street Art at Vesterbro, Copenhagen. Ishac Bertran, 2012.*

MeLa–European Museums in an age of migrations

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