THE TRANSFORMATIVE MUSEUM CONFERENCE

ROSKILDE, 23-25 MAY 2012

Topic: TRANSFORMING RESEARCH METHODOLOGY

Title: LIVING LAB METHODOLOGY IN MUSEUM STUDIES: AN EXPLORATION

Author: OLGA VAN OOST[1]

Abstract

We argue that in the context of a late modern digital society and the Internet of Things, the juxtaposition of audiences and collections that is often a distinguishing feature of a museum has become obsolete. We propose a 'liquid museum concept' as an alternative museum model that adjusts better to contemporary society. In this paper we will first clarify this concept. Second, we will explore to what extent Living Labs and Actor-Network-Theory (ANT) might be useful methodologies to translate the liquid museum concept into research and a daily museum practice.

Introduction

Approaches in museology or museum studies differ considerably, depending on sociological and (art) historical traditions, the geographical area or the theoretical/empirical position taken (Desvallées & Mairesse, 2010). Critical Anglo-Saxon museum studies, first embodied by Vergo's *New Museology* (1989), focus on a whole range of 'political' (power) aspects of a museum or gallery, tackling issues such as the representation of class, gender, ethnicity, sexuality and so on (Macdonald, 2006). In this line of thinking, the presence of different narratives and of a 'polysemic museum' with multiple meanings were acknowledged and audience research, education, learning became important branches in museum studies (Ross, 2004). For others, the museums' principal task is to be an object's warehouse or a shrine for sacred, autonomous works of art, supported by self-referential systems of (art) history and (art) critique. Despite of all the critical discourses (Bennett, 2005) trying to blend these different views together, the juxtaposition of audiences and objects remains pre-eminent in museums and galleries. Moreover, the challenge for museums seems to be to find a balance between audience-oriented and object-oriented perspectives.

However, we argue that in the context of late modern societies evolving into digitally, networked spheres, ubiquitous computing, emerging mobile technologies and the Internet of Things, museums will have to face another challenge altogether (Van Oost, 2012). Within this technological and societal framework, the division between audiences and collections becomes obsolete since the non-hierarchical network of tangible and intangible (immaterial) objects (heritage), people and institutions is characteristic for the Internet of Things (Gardner & Mars, 2011). This offers us the building blocks for a new museum approach that

[1] Institutional affiliations: 1) FARO, Flemish Institution for Cultural Heritage (http://faronet.be); 2) Vrije Universiteit Brussel (Free University Brussels), IBBT-SMIT Research Group. Contact: olga.van.oost@vub.ac.be (http://smit.vub.ac.be)

integrates the different viewpoints and we have called a 'liquid museum concept' (Van Oost, 2012).
In this paper we will first develop this perspective at a conceptual and theoretical level. Second, we will explore possible methodologies that might be able to help us translate the liquid museum concept into research methodologies that will enable museum studies researchers to put them into practice. The goal of this paper is to explore to what extent Living Lab Methodologies can be useful for museum studies and we will also explore the 'sociology of associations' or Actor-Network-Theory (ANT) as a possible methodology.

The museum problem: collections or audiences?

What meanings can a public museum or gallery have in the 21st century? What will the museum of the future look like? Is a museum still a relevant medium? Policy makers, creative industries, academics, museologists struggle with these questions and provide us with answers, all framed within their own self-referential frameworks. However, we argue that the answers generally do not suffice and the immediate cause seems to be that the museum itself is questioned insufficiently. Museums often appear to have a general accepted authority for which they fall back on their 18th and 19th century roots. In this period museums had firm and solid positions and gained authority through art history and the belief in sacred objects with inherent and transcendent values. They also approached collections in a 'modern' manner, applying strictly hierarchical taxonomic systems, depriving the object of its ambiguity and organic context (Biezunski, 2007 in Dalton, 2010; van den Heuvel et.al., 2010). Moreover, museums presented traditional, 'modern' values to their audiences and based their so-called authority on modern, white, elitist and male premises.
This was critiqued in a 20th and 21st century framework, in which democratization and post-colonialism have made us aware of the importance of equality, cultural diversity and inclusion (Chambers & Curi, 1996). Against this backdrop, certain scholars have identified a shift from object-centered institutional approaches to more visitor-centered or experience-centered bottom-up heritage orientations. Education and learning as well as audiences, often redefined as participatory heritage communities (UNESCO, *Convention for the Safeguarding of the Intangible Cultural Heritage, 2003*), are seen as central to museums' missions (Hooper-Greenhill, 1994; Golding, 2009, Hein, 2000). However, for other scholars, the object-centered perspectives that attribute fixed hierarchically ascribed meanings to the sacred object remain valid.
At the surface, these discussions seem to slumber in our museums. However, they are still quite outspoken as we see them reflected in their organizational models based on the ICOM museum definition that clearly distinguishes objects/collections from audiences. Another problem following these discussions is that museums often tend to be quite inward looking, as was demonstrated in a PHD research study on the future of art museums in Flanders (Belgium) (Van Oost, 2009). For museums the challenge has always been to blend these different views together but the juxtaposition of audiences and objects has remained pre-eminent in museums and galleries as well as in museum studies.
An international museum definition such as the ICOM-definition still makes us believe that a museum consists of (dead) objects (collections) that have to be conserved, scientifically researched, and made accessible for audiences. Subsequently, our methodologies in museum studies also tend to reflect these 'classic' museum perspectives. We should wonder however, to what extent these views are still relevant in the 21st century? Especially when we take into account that contemporary society pre-eminently is a visual culture that is

digital and 'people-driven' (Parry, 2007, 2010). Sociologists of modernity have provided us with insights that can help us rethink the museum concept.

A 'liquid' museum concept in late modernity

To fully understand the role of a public museum in this day and age, we need to understand the period of time that we are living in for which the sociology of modernity provides us with significant insights (Berman, 1983). Traditional authoritative hierarchical systems and institutions that represent specific 'modern' power relationships are being questioned in late or 'liquid' modernity (Bauman, 2006), where uncertainty and doubt have begun to prevail. Influenced by internationalization and increasingly global capitalism, traditional ways of thinking in terms of boundaries are being abandoned (Gielen, 2010). This results in the questioning of the legitimacy of previously unambiguous concepts such as the nation state, parliamentary systems and individual institutions. This transition also has a profound influence on the position of museums in society (Prior, 2002).

Late or liquid modernity provides us with a framework that questions the legitimacy of a public museum as such and that also questions the boundaries between objects and audiences that exist within the museum. In this light we have pleaded for more hybrid or 'liquid' museums that do not make these stringent distinctions anymore and that try to approach all these elements in an integral, circular way. This is especially important in the context of our societies entering the digital age (Van Oost, 2009; 2011). In a digital, networked sphere, the distinction between objects and audiences is not that relevant anymore. Every person, thing or object is a bundle of data. This implies that the contribution of all actors can be equally valuable, at least in theory. This 'liquid' museum approach has been well received by some museums in Flanders while others are quite reluctant towards this kind of approach. A major point of critique on this 'liquid' museum concept is that it is preliminary and mainly a theoretical discourse since in daily museum practice these kinds of profound transitions are not taking place and a general feeling of status quo prevails. Moreover, many museums in Belgium and beyond still are not convinced that we are actually living in a ubiquitous digital and visual culture.

In the following part of this paper we will try to demonstrate that certain technological developments such as the Internet of Things have a large probability of becoming dominant in society and that this 'liquid' museum concept is far from an experimental exercise. Subsequently, we will explore possible methodologies that can underpin future research into this concept.

Modernity: from linearity to network in the Information Age

According to Manuel Castells' trilogy *The Information Age* (1996, 1997, 2000), we are living in a 'network society'. 'Network' has always been an important concept in social theory. Ongoing debates in classical sociologies of Marx, Tönnies, Weber, Durkheim and many others involved the relations between individuals, communities and systems in our modern era. Moreover, intellectuals throughout the 20th century studied concepts such as power, freedom and emancipation within this context. We might even be able to argue that sociological research is always research into networks to a certain extent (Inglis & Hughson, 2003).

However, there are differences between the more classical sociological approaches and the idea of a network society that became apparent in the nineties. One major difference is Castells' argument that the current model of a network society is defined by the emergence

of networks *'powered by new information technologies'* (Castells, 2000: 15 in Gane & Beer, 2008). Due to the domestication of technologies, the widespread use of home computers and the emergence of the Internet since the nineties, the image of a 'network society' started to transform. The information architecture of computer networks became a metaphor for our late modern digital society. The analogy is particularly apparent in the online world, in which users are literally linked to each other. The shift towards an idea of a network (or information) society led to optimistic views of which Daniel Bell's probably is the most known. According to him, *'technology transformed social relationships and our ways of looking at the world'* by which he meant that former stringent balances in power would diminish or even disappear (Bell, 1999: 188; cited in Laughey, 2007: 160). However, for Castells and many others the network society is basically a critique on late capitalist society in which the interests of powerful industries are reinforced (Gane & Beer, 2008). We refer to other publications on the Information Society for an overview of different perspectives (Lister, 2003; Laughey, 2007).

Our case in point is that views on a digital network society differ considerably and it is often a discussion of believers versus non-believers. Until today critics state that too much attention is paid to technologies and believers are considered to be technology determinist. Otherwise, in the last couple of years we notice that the work of Marshall McLuhan is reappraised (McLuhan & Zingrone, 1995). McLuhan firmly believed in technology's power to shape systems, human behavior and relations. 'Technology determinism' has a strong and rather negative connotation, as if people are not in control of their own thoughts and behaviors. On the one hand, we acknowledge the individual's strength to make reasonable decisions and to be emancipated but on the other hand we cannot deny that technology has an impact on our daily lives. Mars illustrates this very well with this example of software: *'Software is a socio-technical system in which computing technology meets social relationships, organizational politics, and personal agendas. Every time an organization starts to implement software it will need to restructure itself in order to accommodate new procedures, flows of information, social relations, corporate memory, monitoring, control, and demand to understand the new system as a whole. That process binds together, as Nathan Ensmenger writes, "machines, people, and processes in an inextricably interconnected and interdependent system" which never goes without "conflict, negotiation, disputes over professional authority, and the conflation of social, political, and technological agendas. Software is perhaps the ultimate heterogeneous technology. It exists simultaneously as an idea, language, technology, and practice'* (Gardner & Mars, 2011: 5).

Modernity and Innovation: The Internet of Things

Our current conception of the network society also reflects a particular view on innovation as it became increasingly pronounced in the nineties. 'Innovation' is a cornerstone in the construction of the Information Society and closely tied to the European Digital Agenda (Altec, 2009). We should be aware of the fact that this is a specific discourse and that 'innovation' can have many interpretations and meanings. When technologies that did not exist before come to the market they are 'new'. Whether they are 'innovative' is another question all together that technology specialists will be able to answer. Furthermore, in our modern society the emergence of technologies or media is a recurrent phenomenon and within this broader context 'newness' and 'innovation' risk to become obsolete concepts. For scientists of the humanities, and art sociologists in particular, what it means to 'renew' is an ever-recurring question (Graham & Cook, 2010). We merely have to raise concepts such

as avant-garde and modernism to make our point. Characteristic for modernity, every concept can be defined in different ways depending on the perspective and for every definition an alternative can be found.
In spite of these critical remarks, we do argue that within a contemporary new media ecology characterized by ubiquitous computing and 'everyware' technologies, traditional media-approaches are being challenged (Sterling, 2005; Greenfield, 2006). Especially a technological development such as the Internet of Things (IOT) is highly innovative from a humanities angle. Within computer sciences and from an industries perspective, the IOT is a very specific area covering a whole range of technologies, commonly referred to as 'smart technologies'. QR-codes and RFID-signs are examples that are already quite commonly used by commercial sectors in their advertising campaigns. At first sight these codes appear to be similar to the barcodes imprinted on everyday products, mainly used for the scanning of prizes. However, there are some major differences of which the most important one is that these objects are 'smart' meaning they are dynamic and constantly changing instead of being static codes. Each code has a unique identifier that in turn makes each object unique. These codes contain information that is stored in a database and that can be updated regularly. Furthermore sensors allow these objects to update 'themselves': for example, they can react to changes in temperature, humidity, and so on: *"As these new micro-devices become commonplace, museums will be able to easily monitor conditions in the gallery, in storage, and in real time. Smart object technology is becoming more integrated with mobile phones, and the ecommerce potential of near field communication will allow visitors to seamlessly make a purchase from the gift shop, and even have it shipped home with a click on their NFC-enabled mobiles"*. (New Media Consortium, 2011: 8-9).

The IOT can be of a practical use in museums and galleries but this technological perspective is far too limited. The idea that technology provides objects with agency is innovative as well as the blurring boundaries between the physical world and the Internet. Human users, as well as objects and spaces become active and dynamic and connected. Following Gardner this means that we gain *'an additional perspective, to see the human as equal of things, as an object amongst objects, a flat hierarchy, a democracy of objects.'* (Gardner & Mars, 2011: 13). In other words, in a digital context every object becomes an actor or an active agent and vice versa, every human actor becomes a digital object. 'Smart objects' as they are commonly becoming known, are penetrating our daily lives and according to researchers this trend is here to stay (New Media Consortium, 2011).
From a humanities point of view, this means we are at the verge of a new theoretical and methodological paradigm entailing challenging perspectives to observe, analyze and interpret late modern societies an that re-opens structure-agency debates: *'The internet of things is the world of real and virtual objects. Each object can have behaviors, characteristics, internal workings, external affects, particular methods or practices. Each object relates to other objects by hierarchy, affiliation, set, or sequence. Each object can mobilize other objects, move in clusters and swarms, reinforce their constellation and gain meaning and influence. This world view is classified as 'object-oriented' or as 'material-semiotic' webs or networks. Fields are springing up around these world views like object-oriented philosophy in terms of theorizing, object-oriented programming in terms of operating and Actor-Network-Theory in terms of analyzing'.* (Gardner & Mars, 2011: 13).
Within this context of the IOT, the liquid museum concept is not such a theoretical and incomprehensible idea anymore since the entire idea underpinning the concept is the

blurring of boundaries between collections and audiences. However, we need methodologies that enable us to translate this technological-theoretical paradigm into a research study and a daily practice. First we will explore what Living Lab Methodology might be able to contribute. Second we will have a look at Actor Network Theory.

How to study this new museum paradigm: an exploration of methodologies

Living Lab Methodology

Re-thinking boundaries within the organization is characteristic for the liquid museum concept. This museum proposition denounces the entrenched idea that a museum should be built on the poles 'object' and 'audience' as it is also dictated by the museum definition of the International Council of Museums (http://icom.org). Subsequently, this museum model has an entirely different starting point that has an impact on the museum's mission and the organizational model. For this means that a curator who formerly only focused on collections and literally worked in a separate department, will be asked to open up and also work together with other people in the organization. Likewise, audience developers or conservators will have to open up their viewpoints and practices as well. Currently, few museums actually dare to deviate from the ICOM museum definition. Furthermore, museum staff also works within the academic self-referential frameworks of art history, history or other sciences that reinforce the 'classical' museum approaches.

Digitization and long-term preservation of collections, the emergence of new media applications to involve and engage audiences and the Internet to say the least, and the Internet of Things in particular, render the liquid museum concept an increased plausibility. However, we need methods to scrutinize to what extent. 'Living labs' seems to be a very useful and appropriate platform to test these questions.

William Mitchell defined living labs as: *"Living Labs is a research methodology for sensing, prototyping, validating and refining complex solutions in multiple and evolving real life contexts"* (Mitchell, in Pierson & Lievens, 2005). The living lab has to be understood in the specific context of innovation and 'open innovation' paradigm as described elaborately by Henry Chesbrough (2003, 2006). The idea underpinning this is that new technologies should be developed, tested and validated in an iterative process that includes user involvement from the start. In other processes users are asked to test an application when it is fully developed. The central idea of innovation in a Living Lab context is that users, developers and creative industries co-create and that there is a willingness to share (Altec, 2009). The process involves a whole range of actors and is network-oriented (Chesbrough, 2003). To state the obvious, we emphasise that the aim of a Living Lab approach is to support the development of new technologies and applications and to test these applications on their market viability before actually entering the market.

Researchers from the Interdisciplinary Institute for Broadband Technology (IBBT) have developed a Living Lab research cycle in which quantitative and qualitative methodologies are combined. This research cycle consists of 4 phases: 1) contextualisation; 2) concretisation; 3) implementation and 4) feedback (Pierson & Lievens, 2005).

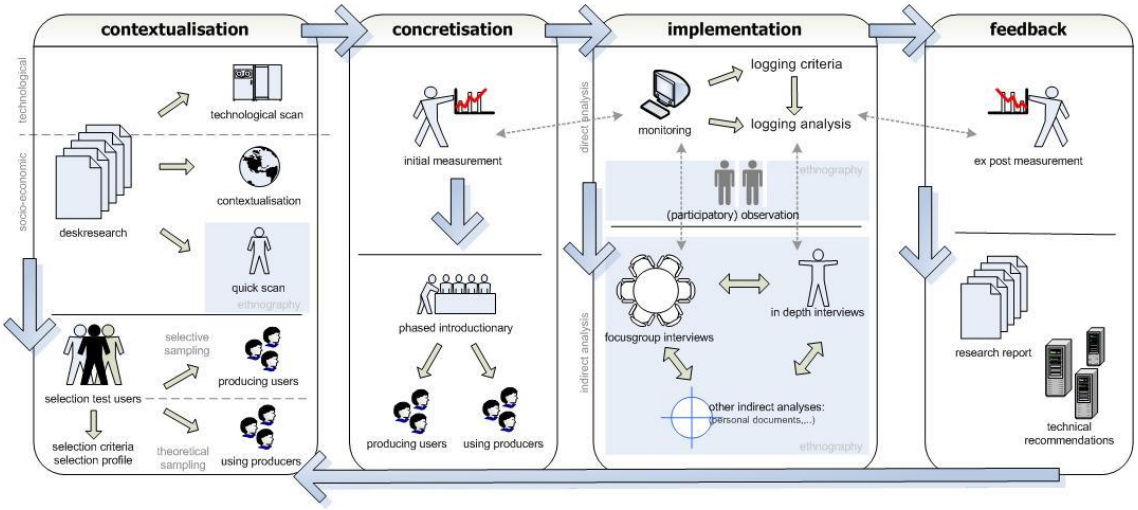

Figure 1. Overview of living lab research cycle (Pierson, Lievens, 2005)

The **phase of contextualisation** is an explorative phase in order to set up the research framework, to describe a state-of-the-art of the technologies and the socio-economic backgrounds, and to identify user groups. Methods that are often used in this phase are: a listing of technologies, a study of literature, environmental scanning. For the selection of users, Pierson and Lievens draw on sampling procedures from qualitative research. Notable is the extensive attention paid to user research and these selection procedures. The authors state clearly that the goal of the LL-research is: *'gathering information on adoption, usage, meaning, motivation and possible influence* (of technologies)' (Idem).

In the **phase of concretisation**, the researchers state that we need *"to get a thorough description of the current characteristics and everyday life behaviour and the perceptions of the selected test users regarding the research focus"* (Idem) for which they propose doing an (online) survey, (semi) structured questionnaires and in-depth interviews, depending on the research scope and size of the Living Lab user panel. The aim of this set of questions is to gain a better insight in the daily lives of the users and their media usage. Next to a rather general set of questions, others will focus more on the specific case involved. Important in this stage is also a questionnaire of initial measurement that can be re-used in the last phase to make an evaluation. Against the backdrop of this information the Living Lab can be set up.

During the **third phase of implementation**, the Living Lab is made operational. Generally, devices such as smartphones and tablets are used in a Living Lab. To enable data retrieval logging tools are deployed. In order to do this, a logging framework, that takes into account user data and detailed case-related data, is set up in advance. Next to this kind of analysis, users' experiences and behaviours are studied employing observational techniques, usually followed by focus group interviews, in-depth interviews and self-reporting methods like diaries.

Finally, the **phase of feedback** consists of 2 steps. With the questionnaire of the initial measurement as a starting-point, a closing survey is conducted on the entire test sample. The aim is to find out whether *"there is any evolution in the perception and attitude towards the introduced technology or service, to assess changes over time in everyday life in relation to technology use and to detect transitions of usage over time"* (Idem). Besides this closing survey and based on the data gathered in the implementation phase technological recommendations are made, always in relation to user's behaviours and media usage patterns.

The Living Lab Methodology is still in a developmental phase. When taking a critical look at the Living Lab Research cyle, we might conclude that, for now, rather than an entire 'new' methodology, a Living Lab is a specific setting where existing quantitative and qualitative methods are deployed. An overview of museums functioning as living labs also leads us to this preliminary conclusion (http://enoll.eu). In the research project Apollon, the Museum of Contemporary Art in Antwerp (M HKA) was used as a living lab to test a mobile game application (Coenen, et al. 2011). In this project, the focus obviously lay on game development for which the input and feedback of museum staff as well as test users were imperative. However, the problem is that it basically remains a quite functional approach of a museum experience. Although user's behaviours are observed and analysed, the final goal remains the testing and implementation of a technology. A Living Lab approach holds major potential but the focus on instrumental 'user testing' appears to have limitations, especially if we want to establish a cross-over with the liquid museum concept. The framework of the Living Lab is very useful, but we need another methodology to overcome the shortcomings. In the next part of this paper, we will explore Actor Network Theory, that is basically an elaborate ethnographic research paradigm for which users as well as objects, technologies and space, are possible actors.

Actor Network Theory or the sociology of innovation/associations

We criticize the 'instrumental' and 'functional' method of user testing in Living Lab approaches. The main problem is that these methods have fixed frameworks and social realities as their starting-points, but as thinkers of reflexive modernity and of Actor-Network-Theory (ANT) have stated clearly, frames of reference are not fixed at all (Latour, 1993; Lash, 2003; Law, 2004). Clearly defined structures and systems are non-existent: *'Society is no more 'roughly' made of 'individuals', of 'cultures', of 'nation states' than Africa is 'roughly' a circle, France a hexagon or Cornwall a triangle. Why should sociology alone be forbidden to invent its own path and be requested to stick to the obvious"* (Latour, 2005: 24). Furthermore, this approach also gives a restricted view on the identities and backgrounds of users. Bruno Latour is very sharp on this 'sociology of the social' that also provides the researcher-analyst a central 'untouchable' role. According to him an observer always places his respondents within a 'social context' that offers him *'a full-blooded theory of what sort of sociology they should be treated with'* (Idem: 32), as if social sciences are established truths. Besides this, he also criticizes the distorted power relationship between the analyst and his research subjects. For critical sociologists *'actors do not see the whole picture but remain only 'informants'. This is why they have to be taught what is the context 'in which' they are situated and 'of which' they see only a tiny part, while the social scientist, floating above, sees 'the whole thing'* (Idem: 32).

We endorse this critique especially since these methodologies and the underpinning theories prevent us from having an open view that could help us break away from our fixed thinking patterns and 'modern' thoughts. Besides, these 'old' views also hamper the development of new societal concepts such as the liquid museum concept. It appears to be quite paradoxical to study innovation on the one hand and to fall back on rather 'classical' methodologies on the other hand. Therefore, the sociology of associations or Actor-Network-Theory is refreshing. When taking a bird's eye view on ANT, we notice that it is actually an anthropological methodology. A first characteristic of ANT is that *"we have to follow the actors themselves, that is try to catch up with their often wild innovations in order to learn from them what the collective existence has become in their hands, which methods*

they have elaborated to make it fit together, which accounts could best define the new associations that they have been forced to establish." (Latour, 2005: 12; Cressman, 2009). Subsequently and as mentioned above this means that the researcher's role is very low profile: he observes, describes and captures elaborately without making any judgments or suggesting answers. Third, the analyst will focus in his descriptions on interactions taking place and connections being made. Important, and this is the fourth characteristic – that distinguishes ANT profoundly from the user-testing in the Living Lab approach – in ANT the research area is not limited to humans or carefully designed user groups. In ANT every person, object, space is an 'actant' that can become an 'actor' when interaction occurs. The idea that every 'thing' can be an actor might have seemed quite strange a couple of years ago but currently, the Internet of Things illustrates this perspective perfectly.

A methodology for the liquid museum concept?

Actor-Network-Theory provides us with sparkling and innovative ideas that can be deployed in a Living Lab context and that might be a significant alternative for the aforementioned more functional user testing. However, a study on the plausibility and the feasibility of a liquid museum concept would undermine this methodology immediately because this model is a new 'framework' or 'context' that has been created by a social scientist. Although we would focus on the movements and the actions that appear and disappear between the different kinds of actors, describe them carefully and "re-assemble the museal", this would not be a 'pure' implementation of ANT. Generally, social scientific researchers conclude their work with a list of recommendations. In our study we might want to make recommendations as well e.g. on altering the organizational model of a museum. Again, this is contradictory to an ANT approach where these 'explanations' cannot be made.

Subsequently, we cannot set up a research framework to study the liquid museum concept that is "solid ANT" or "solid Living Lab" for that matter. The Living Lab context and research cycle is appropriate as a setting and is an eye-opener concerning innovation but it's focus on user research is too restricted. ANT provides us with a wonderful ethnographic alternative that focuses on narratives and the dynamic assemblages of actors (people, objects and spaces). The strength of ANT is its capacity to detract ourselves from a social reality (or at least it pretends to be capable of doing this) and subsequently to provide us with alternative realities. However, ANT does not allow us to frame these new realities and this is very confusing for a social scientist for who this is almost a mandatory practice. Our suggestion would be to develop a methodology that combines elements of the Living Lab setting and research cycle with the useful ANT components.

References

Altec, 2009. Study on the potential of the Living Labs approach including its relation to experimental facilities for future internet related technologies. Final report. European Commission, DG Information Society and Media.

Bauman, Z. 2006. Liquid Modernity. Cambridge: Polity.

Bennett, T. 2005. "Civic Laboratories. Museums, cultural objecthood and the governance of the social" Cultural Studies, vol. 19, n° 5, 521-547.

Berman, M. 1983. All that is solid melts into air: the experience of modernity. Londen: Verso.

Castells, M. 1996. The Rise of the Network Society. Oxford: Blackwell.

Castells, M. 1997. The Power of Identity. Oxford: Blackwell.

Castells, M. 2000. End of Millennium. Oxford: Blackwell.

Chambers, I. & Curi, L., eds. 1996. The Post-Colonial Question. London/New York: Routledge.

Chesbrough, H. 2003. Open Innovation. Boston: Harvard Business School Press.

Chesbrough, H. 2006. Open Business Models. How To Thrive In The New Innovation Landscape. Boston: Harvard Business School Press.

Coenen, T., Mostmans, L. & Naessens, K. 2011. "Scroll it, tap it and match it: lessons from a serious and pervasive museum game" Conference Paper (Apollon Research Project).

Cressman, D. 2009. "A Brief Overview of Actor-Network Theory: Punctualization, Heterogeneous Engineering & Translation". ACT Lab/Centre for Policy Research on Science & Technology (CPROST) (Simon Fraser University).

Dalton, J. 2010. "Can Structured Metadata Play Nice with Tagging Systems? Parsing New Meanings from Classification-Based Descriptions on Flickr Commons" Archives & Museum Informatics (http://www.archimuse.com/mw2010/papers/dalton/dalton.html).

Desvallées, A., & Mairesse, F., eds. 2010. Key Concepts Of Museology. Paris: ICOM & André Colin.

Gane, N., & Beer, D. 2008. New Media. The Key Concepts. Oxford, New York: Berg.

Gardner, E., & Mars, M. 2011. "Tracing Concepts" (Jan Van Eyck Academy) Archis. Volume Internet of Things, 2011, n°2.

Gielen, P. 2010. "The Biennale: A Post-Institution for Immaterial Labor" Open 16: The Art Biennial as a Global Phenomenon. Strategies in Neo-Political Times.

Golding, V. 2009. Learning at the Museum Frontiers: Identity, Race and Power. Farnham / Burlington: Ashgate.

Graham, B. & Cook, S. 2010. Rethinking Curating. Art After New Media. MITPress.

Greenfield, A. 2006. Everyware. The dawning Age of Ubiquitous Computing.

Hein, H. 2000. The Museum in Transition: A Philosophical Perspective. Washington/London: Smithsonian Institute Press.

Hooper-Greenhill, E., ed. 1994. The Educational Role of the Museum. Londen & New York: Routledge.

Inglis, D., & Hughson, J. 2003. Confronting Culture: Sociological Vistas. Cambridge/Oxford: Polity Press/Blackwell.

Lash, S. 2003. “Reflexivity as Non-Linearity” Theory, Culture & Society 20 (2): 49-57.

Latour, B. 1993. We have never been modern. Harlow: Longman.

Latour, B. 2005. Reassembling the Social. An Introduction to Actor-Network-Theory. Oxford: University Press.

Laughey, D. 2007. Key Themes in Media Theory. Berkshire: Open University Press, McGraw-Hill.

Law, J. 2004. After method. Mess in Social Science Research. London/New York: Routledge.

Lister, M., Dovey, J., Giddings, S., Grant, I. & Kelly, K. 2003. New Media: a Critical Introduction. London / New York: Routledge.

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

McLuhan, E. & Zingrone, F. 1995. Essential McLuhan. New York: BasicBooks.

New Media Consortium & Marcus Institute for Digital Education in the Arts. 2011. The NMC Horizon Report: 2011 Museum Edition.

Parry, R. 2007. Recoding the Museum: Digital Heritage and the Technologies of Change. London / New York: Routledge.

Parry, R., ed. 2010. Museums in a Digital Age. London / New York: Routledge.

Pierson, J. & Lievens, B. 2005. “Configuring living labs for a “thick” understanding of innovation”

Prior, N. 2002. Museums and Modernity. Oxford & New York: Berg.

Ross, M. 2004. “Interpreting the new museology” Museum and Society, vol. 2, n° 2, 83-103.

Sterling, B. 2005. Shaping Things. Cambridge, MA: MIT Press.

van den Heuvel, C., Spruit, S., Breure, L., & Voorbij, H. 2010. “Annotators and Agents in a Web-based Collaboratory: Disclosing Cartographical Collections” Archives & Museum Informatics (http://www.archimuse.com/mw2010/papers/heuvel/heuvel.html).

Vergo, P. ed. 1989. The New Museology. London: Reaktion Books.

Van Oost, O. 2009. The Museum Question: a study of the art museum concept in modernity from a theoretical and historical perspective and a comparative analysis of museum policies in Flanders and the Netherlands and casestudies. Brussels, Vrije Universiteit Brussel (Free University Brussels. Unpublished PhD-thesis (in Dutch)

Van Oost, O. 2011. “Musea 2020” FARO Tijdschrift PRISMA. 4, n °3. Brussel: Pharo Publishing, 44-52.

Van Oost, O. 2012. “Rethinking the Museum: Cultural Heritage and the Internet of Things (‘the liquid museum’)” Akker, C. van den, ed. Museum Transfigurations. Curation and Co-Curation of Collections in the Digital Age. Berghahn Books (to be published).