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Pervasive memory, locative narratives

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Abstract

Locative media as a term shares with another term, the 'Internet of Things', the very state of the art attempt to define the technical and cultural shift anticipated in the society as it moves to a ubiquitous form of computing in which every device is 'on', and in some way connected to the Internet. Through different location based technologies, we create a data sphere for the Internet that offers up new possibilities to locate or 'attach' the digital to objects, space and people.

This is the starting point for rethinking our relationship with the physical and material world; we can begin to imagine scenarios where the physical and digital spheres collapse onto each other. One important element in the equation refers to the kind of agency objects and spaces will have in this relationship. As a case study the article will present a project titled *Remember me*. This project part of a larger UK research grant called *Tales of Things* aims to explore how personal or collective stories coupled to objects and/or spaces could transform our current value system across communities and society. *Tales of Things* main aim is to investigate in practical terms the emerging field of the 'Internet of Things' culturally and technologically.

Introduction

The proliferation of different terminologies if, on one side, helps to frame and focus new emerging practices, technology or phenomena on the other it creates distinction or borders that are fictitious or useless to understand the whole picture.

Locative media, as a definition, represent a complex field of different technologies which boundaries are not strictly defined. Locative technologies include not only specific location-positioning tools like GPS (Global Positioning System) but also wireless communication technologies typical of digital mobility. The wireless cloud around us includes telecommunication system at different geographical scale: global, local and personal.

As Bruce Sterling, a science fiction writer and design journalist, proposed proposed there are different locative media technologies, the Global Positioning System and Local Positioning System (Wi-Fi, Bluetooth, RFID, ZigBee). The Local Positioning System is definition conceived for short-range technologies that could communicate among each other, with people and environments. According to Nicholas Nova, locative media are:

those that use geographically defined or location-based information in order to create new types of content or services, through their ability to locate, track, map, visualise and attach information to physical location. Locative technologies deals with physical location as well other contextual cues.

(Nova, 2004)

Locative technologies provide a bridge between two worlds, highlighting the tension between digital world of data and physical world both on a global scale and on a local one. The implications are, therefore, huge in cultural, social and political terms; enabling information to be tied to geographical space it allows a new digital morphology to grow overlapping the real one – a *data sphere* enacted wirelessly by information and communication technologies.

Although the article starts by using the locative media framework we would like to shift to a broader terminology. Locative media is not just about where you are, but also the context.

Thirteen years ago, in an article for Scientific American, the late Mark Weiser outlined his bold vision of "ubiquitous computing": *small computers would be embedded in everyday objects all around us and, using wireless connections, would respond to our presence, desires and needs without being actively manipulated*

This vision is getting into reality nowadays; the idea behind the scenario was that computational processing power can be embedded in the world, in places and objects instead merely in a computer, it provides a more "natural" way to interact between human-computer, utilizing notions of how we interact with the physical world. Although driven by technology this vision has a cultural and social background that is the one we would like to empathize in the article.

Given this historical context a new framework arise helping to include in the picture the idea of network and this has been called Internet of Things.

From an interaction design perspective the Internet of Things provides a hybrid design space that on one hand poses a unique set of methodological, ethical and philosophical design challenges. On the other hand it also provides opportunities to design new locative media systems that augment the way we experience our environment and that provide novel ways to access social memory. This is the context and terminology that will be used across the whole article.

Locating you inside of the network

The Internet of Things (IOT) is evolving as a conceptual framework for understanding how physical objects, once connected to a network, will inherited the capability to report on the world around them, and on themselves. When we think of the kind of social networks that the Internet facilitates, we think of human agents participating in an exchange of ideas, centered on meaningful topics, whatever they may be. Until

now, objects and things have been conspicuously absent from this sphere of contributing to culture. The IOT could be viewed as just a world of RFID tags and networked sensors, in which case it would seem to have little value to a social space beyond the characteristics/benefits to an economic process. However if indeed the IOT changes the way we cohabit physical space with Things, then what will happen if it's not only humans contributing to the social network, but also our Things that can upload, download, broadcast and stream meaningful and meaningful-making information. When we co inhabit in a world where Things can all of a sudden be viewed as having more than a mandatory value, how do they start to matter in terms of actors in a social network?

To theorize on why Things in the context of the IOT matter we can draw patterns from the theory behind *Cybrids*, the first weak signal regarding the relationship between objects and spaces we inhabit, and more recently *Spimes* and *Blogjects*, which relate directly to the importance of Things in a social network.

The theory of *Cybrids* is mainly applied to architectural spaces, investigating how cyberspace can work in a way that is native to ways we think and live with space. *Cybrids*, termed by Peter Anders, represent a link between concrete objects and abstract data, producing a hybrid of physical and electronic spaces. Although the research into *Cybrids* relates more to the construction of the built environment, and not objects in a social network, it does relate to the issue of the merger between the digital and the real and the resulting relationship that can be generated between them. Anders (2006) talks of a "cybrid reality", which could easy be interpreted as an early vision of an IOT, in which "I have a physical object here that notes my handling of it and displays its contents to me in this way". The importance of the *Cybrid* is the close connection between the physical and non-physical spaces.

Secondly Bruce Sterling coined the term *Spime*, for a currently theoretical object that can be tracked through space and time, and throughout the lifetime of the object. Sterling sees *Spimes* as coming through the convergence of emerging technologies, related to both the manufacturing process for consumer goods, and through identification and location technologies. These technologies are specific to constructing the framework that is the IOT and would allow us track the entire existence of an object, from before it was made (its virtual representation), through its manufacture, its ownership history, its physical location, until its eventual obsolescence and breaking-down back into raw material to be used for new instantiations of objects. If recorded, the lifetime of the object can be archived, and searched for; "a *Spime* is, by definition, the protagonist of a document process. It is an historical entity with an accessible, precise trajectory through space and time" Sterling (2005, p.77).

Sterling predicts how the presence of *Spimes*, in the IOT, will completely change our relationships with our possessions; "I have an Internet of Things with a search engine. So I no longer hunt anxiously for my missing shoes in the morning. I just Google them." Sterling (2005, p.93-94). Objects within the IOT, connected to a host of machines that can crunch the complexities of the patterns of relationships formed

between person and object, and objects themselves, will allow for the relationships you have with them to appear simpler and more immediate.

Thirdly Julian Bleecker uses the term *Blogjects* in order to distinguish between Things connected to the Internet from "Things" participating within the Internet of social networks. "Blogjects don't just publish, they circulate conversations. Blogjects become first-class a-list producers of conversations in the same way that human bloggers do — by starting, maintaining and being critical attractors in conversations around topics that have relevance and meaning to others who have a stake in that discussion" (2006, p.4). Bleecker extends Sterlings proposal of a *Spime* by adding agency to its characteristic.

Agency is about having an ability to be decisive and articulate, to encourage action. *Blogject's* intellect is their ability to effect change. Their agency attains through the consequence of their assertions, and through the significant perspective they deliver to meaningful conversations. In the Internet of Things, this kind of agency happens within the arena of the networked public; streams, feeds, track-backs, permalinks, Wiki inscriptions and blog posts. Things that matter inflect the course of social debate and discussion, and cannot help inflicting local and global change. If an object can comment on the world around it, and through that commenting create change, then the agency between subject and object, human and non-human is completely transformed.

So what is the result of having the ability to access this network of objects from any location at anytime? It means you are part of the global network. Immersed in a ubiquitous environment saturated with RFID tags, and readers, both you and objects are a blank field in a database, waiting to be filled in. In the attempt to develop an ever more detailed semantic structure for the Internet, we will in increasing detail intensively map the real world onto cyberspace, and visa versa.   As people, objects and space become tracked, traced and saved, via an infrastructure of readers and tags everywhere in our environment, we will become mere descriptions of the things we carry with us, the spaces we move through. The Internet of Things is a strange space, since it's use will lead to three results: "there will be no more public space; there will be no more memory loss and there will be no more people, just dataclouds" (Kranenburgh, van R. 2006. Mediamatic). In other words we don't describe the data; the data will describe us.

The Internet of Things has moved beyond Marc Weisers (Greenfield: 2006, p.11) view of anywhere, anytime, always-on communications, and transforms the semantic, social network as we know it today. When we connect inanimate objects and things to communications networks, we will further facilitate the dawn of ubiquitous networking, by most importantly including anything to his equation. RFID will prove to be a catalyst for the development of The Internet of Things. Moreover, RFID in combination with sensors and mobile phones can create a truly "ubiquitous environment", one in which the status of users and "smart objects" will be continually determined, monitored and communicated. This generates a switch in the way we view and interact with the Internet. Now we are caught inside of the

net, in an always-on, invisible stream of data transfer. No longer are we outside this mass of information, curating its content in a web 2.0 model of tags, keywords and trackbacks, instead we share the network with objects that contribute not only to the social web, but also the physical world. The IOT is one way in which we can merge the physical world with the digital world, where our environment becomes a conduit of information transfer between people to people, people to things, and things themselves. However with the Internet of Things, it will not be simply enough for humans to apply the context of the object and its meaning, instead we will see a real world where networked objects generate meaning for data. Whereas the Internet of Non-Things was limited to human agents, in the Internet of Things objects are actors in the network; participants in the creation, maintenance and knitting together of social networks.

Pervasive Memory

A way of create and maintain together this mixed social network lays on the ability through tracking, locating and collecting data of developing a *memory system*, physically or virtually, attached to the place, object or body.

Baudrillard (1996) discuses the capacity for objects to evoke memories within us and the complexity of the relationship between human and object, connoting the 'emotional value' objects take on; 'What gives houses of our childhood such depth and resonance in memory is clearly the complex structure of interiority, and the objects within it serve for us as boundary markers of the symbolic configuration known as home. In their anthropomorphism the objects that furnish it become household gods, spatial incarnations of the emotional bonds and the permanence of the family group'. He terms these objects *technemes*, items which consider not only their technical function but also the ideas, values, and fetishes connected to them, and describes them as being in a 'perpetual flight from technical structure towards their secondary meanings, from technological system towards a cultural system'.

In his most influential book, *Orality and Literacy*, Walter Ong describes the evolution of technology in terms of cultural technologies starting from the technology of *word*; The man develops it to transmit knowledge and culture and in the same time influencing as in a loop the human perception.

Ong identifies three phases as milestones in the developments of culture and knowledge according to three cultural technologies used to transmit information:

- orality, by means of the spoken word,
- chirography, by means of the written word,
- typography, by means of the printed word.

All those threes have a profound influence on the way we think mainly because of the way they reshape and organize memory, in the final pages of *Orality and Literacy* the author introduces in the argument the computer as the next cultural technology

pointing out the similarities with oral culture. The *technemes* idea reconnects the interrupted track started by Ong and then abandoned by cultural and media theorists to show how is possible to inform the design of the Internet of Things with a cultural perspective.

In an oral culture, memory is transmitted by mean of air; it is actual, performative, narrative, discursive and spatial or situated. Memory, with the technology of the spoken word, is based on a inter-subjectivity model, this model is strongly opposed to the mathematical model of communication that simplifies human communication in three elements (sender, receiver and communication channel) mainly informative while the inter-subjective model considers human communication as a performative phenomenon. The spoken word is always present, therefore actual and it involves the audience; the memory with the technology of spoken word is dynamic, never fixed on a static and external object (paper, book) it is narrative because to be remembered needs events, characters and places. These are the elements recollected, how they are connected together is part of the performative, narrative process of memory in an oral culture. The spoken word cannot be considered a medium in the sense of the material culture started at the time of chirography until the twenty century when memory became more and more a mediated memory: photographs, video and other kind of media forms. Most of the digital technologies or media stays in this line, until the paradigmatic shift represented by ubiquitous computing. This distinction is fundamental because if reality is considered a medium then in terms of interaction design the logical consequence is thinking just in terms of the interface. It is at this stage that the concept of pervasive memory claims its relevance.

The word pervasive etymologically means "to spread in the space in an immaterial way" or 'go through" from the Latin origin but nowadays pervasive is synonymous of ubiquitous and tangible computing. Using the word pervasive therefore reinforces the similarities with orality; like air computation is spread in the space in an immaterial way and like the word is embedded in human mind also computation is embedded in objects, in places and in human body.

In the word of the French philosopher Bernard Stiegler we are creating a "global mnemotechnical system" … with such mnemotechnical system in place, information never leave the world. It just keeps accumulating, simultaneously more explicit, more available, and more persistent than anything we had ever experienced.

How to deal with this global mnemotechnical system is where the cultural framework of pervasive memory attempts to give a contribution to define interaction design strategies for spime, sentient objects, *blogjects* or whatever they are going to be called.

Pervasive memory it is real, situated or localized, inter-subjective, discursive, narrative and performative like memory in an oral culture.

It is mainly a performative and narrative process as part of an interspecies discourse; it is not delegated to a symbolic or representative object, a medium whatever we consider it, but because is permanently embedded in object and places it becomes part of the physical nature of the thing, part of the physical digital ecosystem. As an exemplification of this cultural narrative approach two interconnected projects, *Tales of Things* and *Remember me* will be presented. *Remember me* has been publicly performed at FutureEverything digital arts festival in Manchester, Uk in May 2010.

Tales of Things and Remember me project

It has been suggested that people surround themselves with between 1,000 and 5,000 objects. Of those thousands of objects many of them are probably not truly cared for and end up in rubbish bins or in storage. But for every owner, in almost every household there are a selection of objects that hold significant resonance, and will already connect them to an Internet of memory and meaning. An intrinsic human trait is the process of imbuing meaning onto objects so that they provide connections to people, events and environments.

Remember me project, developed in collaboration with the Oxfam charity shop in the student quarter of Manchester, a creative/technical intervention explored how memories that are attached to objects can affect consumer habits. Oxfam are a charity that has 700 shops in towns and cities across the UK. The shops receive donations of clothes and artefacts from people, and sell them on to new owners as second-hand goods. A research associate worked for one week in the Oxfam shop in Manchester and asked people that dropped things off to tell a brief story about the object into a microphone e.g. where they acquired it, what memories it brings back and any associated stories. These audio tracks were then uploaded and linked to newly created stories on the *Tales of Things* website[1]. One week later, with the permission of people involved, this audio track was linked to two-dimensional barcodes and RFID tags that were attached to the objects in the shop with a custom *RememberMe* label. Two dimensional barcodes, commonly known as QR codes (Quick Response) are a printed paper barcode that is able to contain an internet address, and like RFID Tags can easily be associated with information or data files.
People browsed the shop used bespoke RFID readers and the Tales of Things iPhone and Android phone based applications to scan the labels. Once triggered, speakers located in the shop played back the audio stories associated with the label.
Although the team anticipated an interest in the stories, we were surprised at how affective the very individual voices were upon visitors to the shop. The actual sound of somebody's voice associated with an object offered a supernatural extension to handling an artefact. People visiting the shop, browsing the objects and scanning the tagged donated items spoke of the "personal connections" made as artefacts conjured an actual voice that gave the object additional meaning.

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[1] http://www.talesofthings.com/

The projects emphasis upon personal stories and not quantitative data such as price, temperature or other logistical data, offered a rich immaterial dimension to each objects material instantiation. The result of this supplementary information meant that every object (approximately 50 in total) was sold, even the types that are notoriously hard for a second hand shop to sell.

Conclusion

This paper set out to question how the Internet of Things can be the starting for rethinking our relationship with the physical world, and it is clear that it provides a technological framework in which we can attach content directly onto spaces, peoples and things; thus allowing us to access the digital sphere wherever we may be.   It offers new possibilities that extend beyond our traditional understanding of the role of technology, and how we access information and visualize relationships. Personal computers dealt with the assumption that everything one needed was stored locally. Networked computers built upon that, assuming everything one needed could be made universally accessible on the Internet. Locative computing furthered this notion allowing you to take the Internet with you out into the real world, accessible through a new array of technological devices. When we look at what could be described as Thing centered computing, in the context of an Internet of Things, we begin to imagine a world where the information I want to access, and the relationships I want to form, are not only based on where I am, but more increasingly importantly, what and who is around me.

As objects in the Internet of Things have more visible roles in the arena of memory and agency, new connections arise in the networked spaces we inhabit; objects become actors in society as they take on the characteristics of an agent. An object in the Internet of Things seems to fulfill this character set. The merger of a Cybrid, Spime and Blogject would see a Thing that has its own memory, can identify what is and what is in its environment, and can react accordingly to this information.

A crucial feature of objects as agents in the Internet of Things, is that they can interact, that is, they can pass informational messages to each other and act on the basis of what they learn from these messages. The messages may represent a dialogue between people, or a more indirect means of information flow, such as the observation of another objects, or the detection of effects on another object or persons actions. It is important to note that this dialogue takes place directly within our environment; creating new spaces which link agents - people and things - together in a network in which the only indication of an agent's relationship to other agents is the list of the agents to which it is connected by network links. Latour, Law and Hassard have all discussed the role of non-human agents in a network. As objects go online that create a new layer of complex relationships that were previously not visible in our networks. By allowing us to examine the objective pattern of interactions represented by how people to people, people to things, and things themselves are connected to one another, we will gain insights into the

structure of social interactions. The structure of a network, the relations among network members, and the location of a member within a network are critical factor in understanding social behavior.

Complex, dynamic social systems are analysed in terms of stabilising and destabilising mechanisms, and traditionally it was only human agents whom played strategic roles in these processes. Institutions and cultural formations of society carried by, transmitted, and reformed through individual and collective actions and interactions. Social structures help to create and recreate themselves in an ongoing developmental process in which collective agents play constructive as well as destructive and transformative roles in the context of complex sociocultural arrangements.

In other words in the context of the Internet of Things, it will not only be human agents, but also object agents which constitute and reconstitute time, space, place and cultural forms through their interactions.

Bibbliography

Anders, P. 2001. Cybrid Landscape [online] Available: http://www.uoc.edu/caiia-star-2001/eng/articles/anders0302/anders0302.html [date accessed: 20 August 2010]

Baudrillard, J. 1996. *System of Objects*, London: Verso

Bleeker, J. 2006. A Manifesto for Networked Objects – Cohabitating with Pigeons, Arphids and Aibos in the Internet of Things, California: University of Southern California

Greenfield, A. 2006. Everyware, The dawning age of ubiquitous computing. Berkley: New Riders

Latour, B., 2005. Reassembling the social. An introduction to Actor-Network-Theory. Oxford: Oxford University Press
Ong,W., 1982, Orality and Literacy, New York: Routledge.

Nova, N., 2004. Locative Media : a literature review [online] Available: http://wiki.commres.org/pds/Project_7eNrf2010/Locative Media %3B a literature review.PDF [date accessed: 20 August 2010]

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

Stiegler, B., 2010, Education and the Global Mnemotechnical System [online] Available: http://culturemachine.tees.ac.uk/cmach/backissues/j005/Articles/Stiegler.htm [date accessed: 20 August 2010]