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CYBERNETIC SOCIAL SPACE:
A THEORETICAL COMPARISON OF MEDIATED SPACES IN
DIGITAL CULTURE

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In this essay I will argue for the inclusion of cybernetic space as a model for the production of space within contemporary society. I will attempt to merge Henri Lefebvre's triad of "Social Space" with Ananda Mithra and Rae Lynn Schwartz's "Cybernetic Space" and suggest the addition and similar organization of social spaces within cyberspace; these I will call digital analogues of social space, or cybernetic social spaces. I will also add two native cybernetic spaces which I believe facilitate the mixing of real space and cyberspace. With these points considered I will present examples on how Cybernetic Space relates to the politics and aesthetics within contemporary society and offer examples of how these improve, and in some cases promote, the mingling of real space and cyberspace. Furthermore, I will analyze examples of how artists and activists have used digital spaces in conjunction with material spaces in order to better explore the conceived space that the Situationists began questioning in the 1960s through urban space's abstract use of space, and the contemporary meshwork of spaces produced through the joint use of digital media, cyber art and activist initiatives.

Introduction

Areas of art, politics and mapping create new opportunities for interpreting our everyday spaces of work and play. When digital media and traditional media are applied to ubiquitous

computing technologies they create new interpretations of the social spaces we have created as we socially organize our societies (Lefebvre 1991). With these new interpretations follow new practices on how we conduct ourselves. New ideas on how these social spaces should be presented to better understand the effects digital media and ubiquitous computing has on contemporary society's production of social spaces (Mitra and Schwartz, 2001). I will attempt to connect Henri Lefebvre's classical interpretations of social space with digital analogues of social space produced out of the interactions between the digital and material realms.

"Cybernetic space", as Mitra and Schwartz has called the emerging collaboration and tense relation between real space and cyberspace, in our increasingly mediated society, is a model which seeks to unify the digital and material production of social space. Aside from presenting digital analogues to the classical social spaces I will also suggest the existence of two emergent spaces, the monitorial and the situational spaces, significant as they have emerged as a consequence of tensions between social space and cybernetic space. Ubiquitous computing and convergent practices operate in spaces produced digitally and materially through physical and mental feedback loops of impressions received from our digital and material surroundings.

Designers give visual form to the interconnections of money, power, and cultural ideas. By creating images of a consolidated world, designers put into play a powerful set of metaphors that shape common understandings of our complex global environment. Devising graphic forms that communicated multiplicity but avoid [sic] clichés, trendy effects, and bland generalizations can be difficult (Drucker and McVarish 2013, 332).

As the mediation of culture becomes more and more present we find that it shapes our world, a world that we perceive through our senses coupled with the complex impressions we receive when our senses are not only materially expressed through traditional media, but

further extended through digital technology. Digital media partly has a role in representing contemporary space and place; in an age of global communication the designer must take their own, as well as other cultures' different expressions, among those of space, into account and appropriate it accordingly to better abridge the communication between societies (Drucker and McVarish 2013, 331-332). Drucker and McVarish conclusively argue that “[a]s agents of global communication systems, designers contribute to networked conditions that affect lived local realities” (2013, 332). Not only are societies changing through a constant global discourse, but digital media also allows for new mixed expressions of space to take form. Users of digital media engage in discourses within digital environments different from our material environment, but these are both connected and patched together through our wish to control our material and digital spaces. According to Lefebvre the act of taking control of a space is either through the act of “domination” where “technology introduces a new form into a pre-existing space” through a “rectilinear [having many straight lines, or straight connections] or rectangular form such as a meshwork or a chequerwork” (Lefebvre 1991, 165) or through appropriation by “turning the world on its head” which “may (virtually) achieve dominion over domination, as the imaginary and the utopian incorporate (or are incorporated into) the real” (Lefebvre 1991, 348).

Wherever virtual space represents a physical location there is added digital spatial information that allows the user's perception of space to appropriate and at times dominate their environment as they see through the eyes of a unified material and virtual presence (Mitra and Schwartz, 2001). This presence challenges concepts in geography, mapping, and navigation as our private and public spaces have facilitated a production of spaces within the real space, but now struggle to define a discourse fraught with almost instantaneous global communication “where users experiment with multiple subjectivities; where stories lose concrete beginnings, middles, and ends; where the rules of games shift, are overwritten, and

sometimes even disappear” (Johnsson 1998, 186). When content generated by amateurs - not experts in the traditional sense - become known to larger anonymous audiences, through networked media such as the Internet and its “interest communities” (Jenkins 2006), the spaces we socially organize our culture and society within and between take a life of their own. Through a mix of the human, her ubiquitous technologies and her interchangeable media new social practices alter how we create, understand and feel towards society. This mutually productive mix between the virtual and material production of space is prevalent in ubiquitous technologies, something Klamt describes as “everywhere, omnipresent”. Klamt continues by describing how “ubiquitous computing suggests some technological kind of tracing, some kind of information, surveillance, or control, that can be found everywhere and that may be ‘captures’ all the space” (2007, 344). I would argue that the increasing ubiquity and mobility which the smartphone offers has “pushed us increasingly towards living in a synthetic space where the "virtual" and the "real" synthesize to create a "cybernetic" space that we tend to dwell in” (Mitra 2003, 1).

(...) ubiquitous computing, or Ubicomp, which ‘takes into account the natural human environment and allows the computers themselves to vanish into the background’ (Galloway 2004, 385).

The effect digital media has on social space is very similar to transitions made by earlier revolutionary media forms such as writing and printing but as the influence of digital media is still being explored, appropriated and refined the social implications of digital media on the social production of space has yet to be fully envisioned. In many cases the intermingling between real spaces and cyberspaces give rise to hybrid interpretations of space existing in and between the real and cyberspace, what I have come to call “native cybernetic spaces” operating through the spaces produced in the real, the digital analogues of real spaces and

through the human's appropriation of the real through digital technologies a change has happened in our relation to space, as Johndan Johnsson aptly suggests

(...) another, more recent part of us lives in space, in a place where things happen on the surface in a state of continuous simulation. We experience things not at depth but on the surface; not a slow accretion but an everything-all-at-once shout. We do not pass tales linearly, but experience them multiply, simultaneously, across global communication networks (Johnsson 1998, 185).

The smartphone's mobility allows its user to move within and between both the real and cyberspace. The smartphone extends our perception of space beyond the confines of our physical bodies - and in return this new perception of space is interrogated by, for instance, contemporary art and politics as they struggle to understand and control what is produced from the social interaction between human and machine (Elwood and Leszczynski 2013).

1. Social Space and the Production of Cybernetic Space

The advantages of the concepts of social space should (...) be given thought to. One might as know, what would be the proper space concept? We wouldn't really have to raise that question if it was already answered with satisfying results. Therefore, I also have to state, I don't know (...) (Klamt 2007, 347).

This section will introduce Henri Lefebvre's ideas on "social space" to describe the production of spaces within society, coupled with Ananda Mitra's and Rae Lynn Schwartz's "cybernetic space" to argue that cyberspace's digital spaces and the material real social spaces extensively collaborate to form a unified "cybernetic" production of spaces.

To begin this analysis as well as our comparison of the social production of spaces between real space and cyberspace it is important that the difference between real space and

cyberspace is properly defined. Cyberspace is on many occasions defined through what it either lacks in relation to real space, or in what way cyberspace directly or indirectly benefits real space. The reason behind this distinction of cyberspace as centered on real space can be swiftly explained by considering that the technology which runs cyberspace, the devices which accesses cyberspace, and the people who access the devices all exist in the material world

I think we should urgently set about dis-illusioning ourselves. There is no alternative and more perfect future world of cyberspace and virtual reality. We are living in a real world, and we must recognize that it is indeed the case that we cannot make of it whatever we wish. [Emphasis mine] The institutions developing and promoting the new technologies exist solidly in this world. We should make sense of them in terms of its social and political realities, and it is in this context that we must assess their significance (Burrows 1996, 137).

William Gibson is regarded as being the one who first brought the term “cyberspace” into popular culture with his 1984 novel “Neuromancer” garnering a cult-following. In Neuromancer cyberspace was described as

(...) A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from banks of every computer in the human system. Unthinkable complexity. [sic] Lines of light ranged in the nonspace [sic] of the mind, clusters and constellations of data. Like city lights, receding (Gibson, 1984).

In 1995 William Gibson again describes his definition of cyberspace in an interview with Dan Josefsson; eleven years later it is now slightly updated, grounded in the discussion which sprung up around the term

Cyberspace is a metaphor that allows us to grasp this place where since about the time of the second world war we've increasingly done so many of the things that we think of as civilization. [Emphasis mine] (...) It's where the stock market actually takes place, it doesn't occur [sic] so much any more [sic] on the floor of the exchange but in the electronic communication between the worlds [sic] stock-exchanges. (...) So I think that since so much of what we do is happening digitally and electronically, it's useful to have an expression that allows that all to be part of the territory. I think it makes it easier for us to visualize what we're doing with this stuff (Josefsson 1995, 1).

The real space is simply the material world we live in, our material reality. Our reality ultimately consists of our body which basically processes information from our senses stored in our subconscious which then filters necessary information to our conscious mind. The conscious mind contains our cognition which consists of our ability to think, understand, learn and remember. Our cognition, meta-cognition (knowing what we are good at and not so good at), curiosity and abstract thinking has lead us to invent complex tools that make our lives more comfortable and safer; in some cases our extensive use of tools has led to drastic changes in how we communicate.

In use, technologies are neither completely neutral nor all-powerful – they are somewhere in between and beyond. Those of us raised in history are uneasy with computer technologies because we attempt to do things with them as if they were simple tools; our ways of working and living do not fit. We need to admit that other

ways of working and living do not fit. We need to admit that other ways of working with these same technologies open different doorways (Johnsson 1998, 190).

Beginning from our first language, symbolic images, the written word, the printing press, the telegraph, telephone, radio, television, the computer and cyberspace; a global meshwork of communication technologies able to mix and match all media technologies through an almost boundless and instantaneous virtual space. Cyberspace tends to be everywhere in contemporary western civilization. Accessibility to cyberspace slowly spreads to other societies as the global communication network gains new nodes. In some cases the cyberspace is separated from global communications through censorship, in many cases it exists parallel to our everyday life as we walk past devices “jacked up” to the Internet. In all cases cyberspace seeks to be another filter to our cognition which manages the vast knowledge of our environment we have gathered over many millennium in order for us to better adapt to the real material space we live in.

In its simplest manifestation, the process of "reading" a text in the analog world often means reading from beginning to end with the inherent temporal-spatial metaphor of "beginning" and "end" being central to the reading experience; on the web, however, the experience is often non-linear, and the location of a beginning and an end could be arbitrarily decided, and thus relatively meaningless (Mitra and Cohen 1999) (Mitra 2003, 3).

As we communicate through multiple modes communication, arbitrarily chosen, our present situation within both digital and real becomes more important as each participant struggles to find a position of power in order to empower themselves.

The focus of our technological evolution would be less on how we manage and adapt to our physical world, and do more on how we manage and adapt to the

immense amount of knowledge we've created. We can call it the Nöocene epoch, from Pierre Teilhard de Chaudin's concept of the Nöosphere, a collective consciousness created by the deepening interaction of human minds. As that epoch draws closer, the world is becoming a very different place (Cascio 2009, 18).

The digital form of the book, say a tablet such as the iPad, presupposes these social spaces, but as computing has become increasingly ubiquitous we take for granted that this tablet contains many different avenues for producing space, such as GPS, video, audio, and the multitude of other texts one may contain within. You can't order a ticket on-the-fly with a book; you can't play a song or watch a video with a book. One could state that we are still at the stage where we perceive the tablet as a mere tool just as we do with a book and not an augmentation of consciousness. Caisco discusses this resistance where we are "still biased toward looking for near-term, simple threats" (Caisco 2009, 2) such as the changes which digital media brought with it. "Subtle, long-term risks particularly those involving complex, global processes" Caisco suggests "remain devilishly hard for us to manage". Johnsson also lays an interesting piece to the puzzle when he discusses why we interpret cyberspace and the devices we use to access cyberspace as a tool

At one level, it is profitable and productive to think of our technologies as tools; if we do, it follows that we should take responsibility for our use of them. But at another level, contemporary systems of technological development and use are so intricately meshed that it is impossible to tell where one single, concrete technology use ends and another begins: not every technology affords every sort of activity completely (Johnsson-Eilola 1998, 189).

This separation could at times lead to displacements where the content is more or less single-handedly represented in cyberspace or real space. Mitra argues against this displacement when she describes how cybernetic space works within institutions

(...) I would argue, such strategies of either creating a home page or collaborating with a real life institution are not sufficient for organizations to reside in cybernetic space because there always appears to be a disconnect between the cyber-face of the institution and its manifestation in real life calling into question the issues of trust and authenticity. On the other hand, a more apt existence of an institution in cybernetic space is one where the operations that happen in the real space of the institution are duplicated or supplemented in cyber space [Emphasis mine] (Mitra 2003, 8).

The reader of a book on a smartphone, or a tablet may conduct the practice of reading or watching media, but as we interact with increasingly ubiquitous computing our spatial practices of reading a book or watching television change

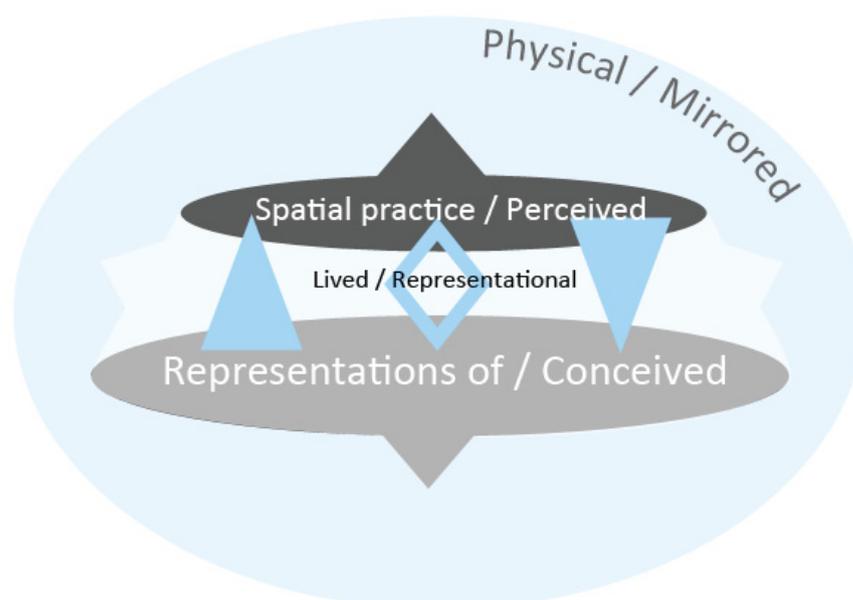
As Negroponte (1995) pointed out, we have now moved from the atom-based real space to the bit-based virtual space where the movement of bits is far more unrestricted than the more cumbersome transportation of atoms over great distances. [Emphasis mine] Yet we remain fundamentally atom-based beings placed in an atom-based environment. Because of this we are constantly reminded of the contradictions inherent in living with one foot in the atom-based reality and another foot in the bit-based virtuality (Mitra and Schwartz, 2001, n.page).

Katherine Hayles (2012) explores how the technological advance of digital media form our mental faculties and this, in turn, changes the architecture of our brains in order for us to more successfully adapt to our technology.

Rather, contemporary technogenesis is about adaptation, the fit between organisms and their environments, recognizing that both sides of the engagement (humans and technologies) are undergoing coordinated transformations. [Emphasis mine] Already this situation is more complex than a more simplistic Darwinian scenario that sees the environment as static while change happens mostly within the organism. The complexities do not end there, however, for the instruments by which one might attempt to measure these changes are themselves part of the technical environment and so are also involved in dynamic transformations (Hayles 2012, 81).

As our frame of reference towards how we relate to changes in social space change, and as the slow progression of routines and tasks of perceived space accommodates the use of ubiquitous technologies our evolution and survival as a species is influenced; as our technology evolves with us and us with it our brains change in order to adapt to our technology and media environment. With each new media invention our perception of space is changing; sometimes minutely and other times in great leaps.

Lefebvrian social space



(...) itself the outcome of past actions, social space is what permits fresh actions to occur, while suggesting others and prohibiting yet others (Lefebvre 1991, 73).

To understand the basis of social space a short introduction to the originator of the theory would be necessary. In 1947 the sociologist and Marxist Henri Lefebvre published a theory on how space is produced socially in his book *Production of Space*. In it he proposes how humans perceive the physical space and through this interaction between physical space and human cognition, space is produced. Lefebvre saw space as ideological; spaces are given functions according to what social activity each space is supposed to contain, formed both publicly and privately by appropriating or dominating the social production of space. How space is socially defined depends both on our perceptions of space, as bio-morphic, produced through the perceptions and activity of life, and auto-morphic, how inanimate objects behave according to us as they occupy space (Lefebvre, 172). A human-centered social process of handling spaces is only one part of what Lefebvre attempts to argue for; he talks about both how natural and human powers form space and discounts symmetry as equal to divinity. What we perceive is what we know about space, not necessarily what space is. A more complete answer to what socially constructed space is, and how it functions, comes when Lefebvre presents the triad of spatial categories where the organization of space, behavior according to space and active participation as the “representational space”, “representations of space” and “spatial practice” of social space (Lefebvre, 38-39) and as Lefebvre names these categories “a triad” it underlines the point that these spaces are close and interconnect, not competing but collaborating, to produce space together.

Representations of space, or conceived space are what Lefebvre defines as the space of concepts where “scientists, planners, urbanists, technocratic subdividers and social engineers” organize space and through scientific measurement and standardization influence the production of space. Also, with the help of a system of verbal signs those focused on

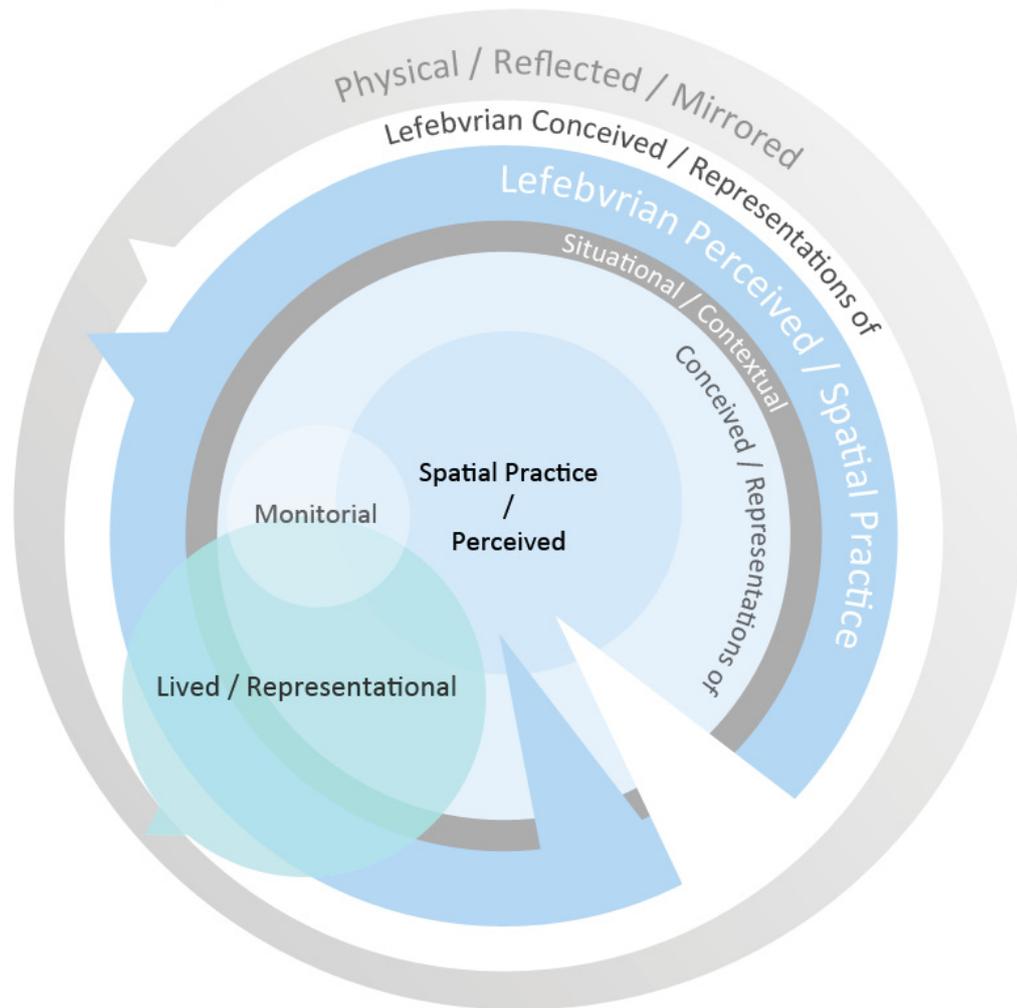
intellectual practices seek to describe space and make it concrete in order to shape it.

According to Lefebvre the representational space is the dominant space in any society and defines the structure of each society's social space. (Lefebvre, 38-39)

Representational space, or lived space is space "as directly *lived*", taking impressions from surrounding space in order to describe a subjective, personal interpretation of our relationship with the other spaces. Because lived space is "descriptive" it is a dominated space "passively experienced" by us appropriated and changed by our imagination. (Lefebvre, 38-39)

Spatial practice, or perceived space, is where we live our daily lives as we make assumptions about our society's space. Compared to the abstract conceived space perceived space bases itself in a materialist outlook, what we could interpret as hard reality. In this sense perceived and conceived spaces are both extreme opposites as conceived space deals with intellectual thought and signage, while perceived space deals with a material reality of acting within space which is not always cohesive yet strives to be so. (Lefebvre, 38-39)

Cybernetic social space



Focusing primarily on technology, one of the central constructs of the idea of cybernetics was the analysis of a whole system within the context of a relationship between the parts that would make up the system. Cybernetics has been described as concerned with, “the analysis of ‘whole’ systems, their complexity of goals and hierarchies within contexts of perpetual change” (Watson & Hill, 1993) (...) (Mitra and Rae Lynn, 2001).

In *From Cyber Space to Cybernetic Space Rethinking the Relationship between Real and Virtual Spaces* Ananda Mitra and Rae Lynn Schwartz (2001) suggest a new definition of

space concerning real space and cyberspace; cybernetic space, as a unified - instead of a dualistic - interpretation of the production of space, encompassing all interaction between both material and virtual agency within the material and digital spaces of culture. Mitra extends upon the definition of cybernetic space in *Cybernetic Space: Bringing the Real and Virtual Together*

Cybernetic space is produced in the intersection of the real and the virtual, where the experience of the virtual is dependent on location in the real. Yet once the real provides the conduit to the virtual, the user enters this synthetic space where the experience of the virtual is made possible by the opportunities of the real space but the very entrance into the virtual begins to expose the constraints of the real (Mitra 2003, 4-5).

In the introduction of their book *Performing Mixed Reality* Steve Benford and Gabriella Giannachi states “whereas the virtuality continuum remains a useful means to understand the broad relationship between reality and virtuality, a more rhizomatic model would allow for the real and virtual to be overlaid or juxtaposed rather than opposed to one another” (Benford and Giannachi 2011, 3). Virtuality and reality both describe the sensation of the real in digital and material spaces, something the digital and material lived spaces encompass, intersected by technology permits sensations to be augmented or deterred within digital and material spaces. As was mentioned earlier Lefebvre argued similarly in relation to his social space, as permitting “fresh actions to occur while suggesting others and prohibiting yet others” (Lefebvre, 73).

For the sake of the argument, the virtual and material spaces are demoted as subjected to the cybernetic space. Even though material space determines the properties of virtual or digital space, what distinguishes the duality is that they are often argued as being oppositional, or as

mirroring one another. This presents a problem when attempting to find the intermediate point, or the connections between material and virtual spaces in search of a holistic approach on the cybernetic production of space. Lefebvre took this non-dualistic standpoint into account when the production of social spaces were planned out and described

Relations with two elements boil down to oppositions, contrasts or antagonisms.

[Emphasis mine] They are defined by significant effects: echoes, repercussions, mirror effects. (...) 'Binary' theories of this sort no longer have anything whatsoever in common with the Manichaeic conception of a bitter struggle between two cosmic principles; their dualism is entirely mental, and strips everything which makes for living activity from life, thought and society (i.e. from the physical, mental and social, as from the lived, perceived and conceived) [Emphasis mine] (Lefebvre, 39-40).

Nonetheless, the digital and material spaces hold dominion over different spaces. Even as the Internet of things develops with the release of smart-phones, smart-televisions and even smart-houses, ubiquitous computing isn't yet encompassing the real spaces enough to be understood as a wholesome model for the production of space. Cybernetic space is so far supporting our social space but, according to Cascio, sometimes to a detrimental degree as the tools we use to dominate and appropriate cybernetic space has yet to mature in order to become part of an invisible – ubiquitous - ensemble of cybernetic spaces (Cascio 2013, 19).

An analysis of cybernetic space requires a holistic approach to analyze the process of its production in material and virtual environments. To take an example from another media form, Mitra and Schwartz discuss the introduction of the television into homes. Both furniture and the placement of furniture were converted to accommodate the new technology: couches were grouped around the gadget and the den, later the living room became the norm

for watching television. The same happened with the introduction of the personal computer which has grown from being limited to simpler tasks such as writing and calculating to a wider array of uses, in work, as a potential stand-in for old media such as the radio, television and the book, for mobilizing private or public collaboration through global communication networks, and so on. Depending on the extent digital technology is used as a conveyor of media the private space - as in the sphere of private life - is more or less changed: desktops are formed to accommodate a computer, so are the placements of electrical- and, foremost, internet sockets. Email accounts, or services hosting your account are all part of a cybernetic private space where your material and virtual identities exist simultaneously, organizing your virtual life in order to accommodate your material life, and then organizing your material life to accommodate virtual sessions of play or work. To now center this on mobile technology, its small size, and the smartphone's successful decade-old place on the open market has not left much physical impact on the material reality of the private space as much as it has left on the virtual private space. Together with new options for limitless wireless internet the user gains access to an intersecting private space wherever there is coverage for as long as there is battery-time. The conceived space should take precedence as conceived, or representations of space, is the most fundamental part in the production of space according to Lefebvre.

In Chesher's *Converging Mediations of Space* (Chesher, 2009) the relative oneness of digital media converge with graphics and locative media to generate a locative media tool within the simulated environment of the Multiplayer Online Game "Grand Theft Auto V" (GTA V). This virtual tool is a construct made to adapt the player to the virtual environment, a virtual version of the material map. It is a digital artifact, not digitized, born in code through the game's architecture. What connects it to the material is its representations of space appropriated from geography and the visual similarities of GPS applications as the navigation system of the game constantly follows its avatar and seamlessly updates the current position

of the avatar. To frame the computer game either as an art piece or as a technical and artistic use of the digital (“hacking”) the game situates it in a consistent field of art similar to spatial media applications, only the virtual navigation is embedded inside the game. Looking at these comparisons Chesher’s virtual depiction of space is valuable as he problematizes the virtual environment of the GTA V’s virtual navigation system. Together with the social and physical interactions the social space which Lefebvre’s triad underlines: perceived, conceived and lived space should be appropriated to involve the spaces represented on the computer screen. As Chesher argues when he refers to Henri Lefebvre’s *Production of Space*, “... space is always socially produced: ‘every society... produces a space, its own space...’” (Lefebvre, 31) Chesher then continues by saying “... Space is not only a social product, but something that changes (...).”

Chesher’s example could also be said to be produced in a material context. To do this we may look at geography and mapping as they have both helped with organizing social space through the visualization, segregation and socialization of spaces. The GTA V navigation system bases itself on the norms created by geography and the practices of mapping. It shows that the appropriation of geography and mapping still plays a large role when representing locations in digital media, shaped through mixed methods of traditional geography and mapping in collaboration with digital media. Klamt highlights this perceived division of spaces and discounts it in favor of a change in our relation with space following our ubiquitous experience of real space through ubiquitous computing.

Some say, electronic media are eliminating geographical space (cp. [Ka07], p.101).

But on the contrary, space is actually opened up in the first place. So it is more accurately to assume a change of the relation between space and time and of the meaning of space not as a great obstacle anymore. However, space matters not only in everyday life but especially regarding surveillance and control (Klamt 2007, 344).

Through the digitization of maps, the digital projection of maps (through systems such as GIS (Geographical Information Systems)) or the construction of virtual maps (shown by the virtual map and navigation system in GTA V) the traditional depiction of space provides authority to these virtual systems, allowing for a digital production of social space.

Real time information infrastructures such as GPS bring ‘conceived’ spaces into direct real time connection with the ‘perceived’ spaces of everyday life. Games are not actual spaces, but they provide a medium for experimenting with different ‘lived’ spaces. However, they often fall back to follow dominant frameworks of ‘conceived’ space. The dynamic that has emerged between the simulated spaces of games and realtime mediated actual spaces of digital navigation systems illustrates a wider process of historical change in social spatial practices (Chesher 2009, 2).

This suggested cybernetic space theory could be viewed as an appropriation of the production of social space as it seeks to situate itself in a context where digital media is intimately connected with the spaces Lefebvre proposed. The graphical map of spaces contained in cybernetic space contains the classical Lefebvrian social spaces, but with a new twist. The digital and material spaces can be seen as separate from its digital counterparts, but as humans delve in both spaces they also seek to appropriate their digital experience into their situation in the material space. These situations work as an intermediary for overlooking, enforcing and suggesting the wholesome production of cybernetic space. By exchanging different types of information the material and digital work through a process which Katherine Hayles named “contemporary technogenesis” (Hayles 2012, 81). Hayles describes this as being about adaptation, where both humans and technologies mutually transform to benefit a symbiotic relationship for the evolution of the former, and the continued development and progression of the latter.

1.1. Cybernetic Conceived Space

With help of Zhongyuan Zhang's *What is Lived Space?* (2006) we can get a better understanding of the production of social space in cybernetic spaces of digital and material character, in this case by clarifying conceived space. Zhang's definitions are clearly situated in business as both his examples and educational background show but his reductions and further clarifications of Elden's analysis on Lefebvre's social production of space improve our chances of defining the properties of cybernetic social space. Zhang argues that conceived space is "(...) an abstract space of pure mathematical figures and verbal messages – manifested in the design of offices, organizational rules and symbols, and so on (...)" (Zhang, 2006).

Putting aside the social in space and looking at it from a technical standpoint, the wording "pure mathematical figures and verbal messages" could for example describe various levels of algorithms - "(...) set[s] of specific instructions that describes a form fundamentally and completely" (Drucker and McVarish 2013, 315) - making mobile technology easier to access and use. The manifestation is a bit trickier, but possible cybernetic analogs could be the placement and design of material and virtual objects (the floppy disk as a save icon and website-influenced newspapers), our growing digital organizational patterns interface both virtual and material organization (grid streetlamps programmed to respond at "correct" times and email as the standard for formal mailing).

1.2. Cybernetic Perceived Space

Among the concepts of space that this essay is concerned with, Zhang's concept of indifferent space relates to Lefebvre's notion of spatial practices. Zhang argues perceived space as being:

(...) an all-too-material, and therefore *indifferent* space, consisting of the flows of labor, money, information (Harvey, 1990) and every physical movement of employees: their opening doors, sipping coffee, and etc. (Zhang 2006, 221).

In this case the distinction could be easily made between the information conduits of cybernetic space as information is what digital technology is specialized in. It is the higher processes of cybernetic conceived space mentioned before: programs, and algorithms. Does that include all programs? The metaphor for opening doors would be the “handshake” web services make with their users’ personal computer as an account is created, or it could involve social conventions where it is socially acceptable to update your Facebook status in a group of friends as many have accepted that this to be a productive social practice. In this case the cybernetic equivalent of spatial practices - perceived space - is the acceptance mobile technology in social gatherings. Earlier versions have been local area network (LAN) parties where friends socialize through their screens, through vocal communication or by physically spectating a friend’s progress. The material side of cybernetic space could very well include the servers and their protocols support and relaying of the network of programs, and content deciphered with programs (image-, audio-, textual to name the basic labels). The interconnectivity of the Web is ripe with social-, autonomous connections and the physical manifestations of these networks as optical fiber relays. With the adaptation of computers into the spatial practices of material space the spatial practices of digital technology take care of organizing spaces in the development of the information technologies.

1.3. Cybernetic Lived Space

As lived space intersects the conceived space and the perceived space, and so does cybernetic lived space intersect cyberspace and embed itself in cybernetic perceived and cybernetic conceived spaces. Textual, auditory and visual content in digital technologies traces the

imprints left by the appropriation of our imagination where lived space spends an elusive existence as it blankets both the digital and material equivalents of social space. Whether lived space changes character as it transitions between the real and digital is open for discussion, but the differences between our virtual immersion into cyberspace and our situation in material space speak of lived space as changing in the translation between them. To better wrap our head around cyberspace as harboring a space virtually similar to Lefebvre's lived space it is perhaps useful to consider Winnicott's "potential space", 'the third area of human living' (1971), presented in a technological light by Roger Burrows as he ponders on the imagination we sustain through our technologies,

(...) neither inside the individual nor outside in the world of shared reality, the space of creative playing and cultural experience. In elaborating his ideas, Winnicott drew attention to the continuity between the potential space that supports infantile illusions of magical creative power, and that which is associated with mature aesthetic or spiritual creativity [Emphasis mine] (Burrows 1996, 145).

Burrows calls potential space a transitional space, and lived space's ephemeral nature could also be viewed as transitional as it exists to appropriate each space, as long as we feel and question our environment. Even though Lefebvre does not appear to advocate a continuity as Winnicott does, the lived space can be said to contain the seeds to Winnicott's explanation on the ludic "infantile illusions of magical creative power" and the "mature aesthetic or spiritual creativity" in the form of lived space's reactive character to the influence of other spaces. Winnicott is rather hands-on in defining potential space as opposed to Lefebvre's abstractions of lived space. If we consider potential space and lived space as one and the same Winnicott provides an extended definition to how lived space functions within cyberspace. The infantile illusions of magical creative power can encompass cyberspace, game environments and modular design projects as the ludic component of gaming, although steered, provides a

release for creative power, so does the combination of global communication and the flexible virtual canvas of digital applications which cyberspace rests on. The modular design projects could very well be said to strive towards Winnicott's opposing side of the continuum, the mature aesthetic or spiritual creativity. The aesthetics of contemporary design will be extended upon later on as part of the discussion on the aesthetics of cybernetic space.

As the symbols and labeling of social spaces become concretized in the digital space the social space gains more complexity. Physical space becomes further remote from the user's material body as conceived space, not physical space, *is* the foundation digital immersion rests on. The same happens with the cybernetic analog of perceived space, gaining complexity as it washes into the realm of material perceived space and together they ebb and flood, exchanging spatial practices as tension between them is negotiated to adjust to each one's characteristics. The force creating this tension of ebbs and floods is the intense production of social space brought on by humans. The transition between the abstractly constructed cyberspace and the materially anchored real space hosts conceived-, perceived- and lived spaces and in unison they produce cybernetic space. Like the social production of space is automated by human beings and their perceived, conceived and lived ideas of space so is cybernetic space socially produced through the automatic subjective and random interactions between material and digital spaces.

2. Native Cybernetic Spaces

As the production of digital and material spaces socially intersects the spaces of digital and material origin require a higher organization of spaces. What I suggest is that as the digitally and materially mediated society seeks to appropriate and dominate two spaces have emerged to observe and ease the communication between them, the monitorial space, inspired by

networked media's open surveillance, and the situational space, inspired by the increasing spontaneous and designed situations for ubiquitous and stationary digital technology.

2.1. The Watchful: Monitorial Space

Undertones of Orson Welles dystopic novel "1984" lingers, yet serves as an extreme reflection on the society we live in today as near complete surveillance and control of citizens is far from the grasp of contemporary governments today. With the rise of social media more information than ever is materially and digitally stored, documented and 'never' forgotten. Dislocated from the need for time, location or even identity the cybernetic society reinvents itself through the motivations of its spaces.

Monitorial space, inspired by Michael Schudson's "monitorial citizen" extended upon by Henry Jenkins (Jenkins 2006, 208) consists of the digital, or technological, awareness on which our environments are situated within. It works through sensors, data miners, the surveillance of the public and the public's surveillance of its government as a conscious and automated relation to space. Schudson suggests that the "monitorial citizen" is a paradigm-shift from the informed citizen. The monitorial citizen is selectively attentive to the vast data-flow for information of social or political significance the informed citizen has sought to include all perspectives before deciding on an opinion. Schudson also denies the critique that the monitorial citizen could be a mere "laid-back" version of the informed citizen; the monitorial citizen is vigilant, collaborative rather than proactive, individualistic as the informed citizen is. This paradigm shift could also be viewed as a response to the mental fatigue and long hours one would experience if one were to attempt informing oneself on all the facets of an event across digital media and old media. The monitorial space is selective as the information contained in today's networked media is so vast, and so often repeated that it

must be filtered; some of this information is contained in informed individual, other information is contained within today's digital and material databases.

A likely sensation of the monitorial space could be likened to that of Foucault's "panopticon", but our ubiquitous use of communication technologies within familiar or open environments allows us to appropriate it instead of becoming dominated by it. As Friedberg argues through Foucault

Foucault uses the panoptic model to illustrate how, when power enters the visual register, it 'tends to the non-corporeal.' In the panopticon prison, confinement was successfully maintained by the barrier walls of the prison, but the subjective changes in the inmate were to be produced by the incorporation of the imagined and permanent gaze of the jailer (Friedberg 2002, 397).

In our spaces we use the monitorial space to both experiences the role of the inmate or that of the jailer. What the panopticon did differently in his time compared to normal prison surveillance was to establish a permanent gaze in the prison through the use of mechanic surveillance such as the video camera. The panopticon was a "building machine' that, through its spatial arrangement, established scopic control over its inhabitants" (Friedberg 2002, 397).

The monitorial space originates from a vast information economy and the increasing abilities for what can be monitored as technology progresses to encompass more possibilities for observing space. Similar to how lived space has a close, almost non-verbal, connection to the physical space monitorial space exists to describe its digital and material foundation: the conceived space of its code and the conceived functions given to it through its production through material social space. The divergence among interest groups in politics and culture - or 'virtual communities' as Roger Burrows calls them (Burrows 1996, 136) when referring to

Rhinegold - has increased with the continued inclusion of digital media, and so this divergence fosters selectiveness which supports the practices of the growing monitorial space (Jenkins 2006, 236). Content connected to monitorial practices are automatically, socially recorded and responsive to patterns of direct or indirect activity through the use of visual, auditory and textual surveillance. Monitorial space is directed; its perspectives are controlled by those who produce it, and those who produce it attach themselves to the production of social space.

2.2. The Integral: Situational Space

Situational space centers on the proximity, density of interaction across space, and in what situations digital technology is used or considered. The graphic of cybernetic space shows situational space as a medium, or border between basic social space and its' embedded, intermingling cybernetic namesakes. Situational space works to abridge the material and digital spaces, with politics working within and outside the sphere of influence of digital media. To discern what situational spaces contribute the cybernetic space must be looked at as socially and technologically produced. This relationship returns us to Hayles' theory of "contemporary technogenesis", and now also Elwood's "knowledge politics" extended upon by Elwood and Leszczynski (2012). Elwood defines her knowledge politics as

(...) the ways in which individuals and institutions leverage digital spatial data and spatial technologies in negotiating social, political, and economic processes, often doing so in ways that rely upon the differential influence and authority [Emphasis mine] that is granted to particular forms of knowledge or representations (Elwood 2010, 352).

According to Elwood the politics of space change as new forms of media enter the scene.

Knowledge politics contains the struggle of how we use these technologies to gain

knowledge on how we perceive space and act on our understanding of space, and it gives an inkling of the dynamic of situational space, as both gatekeeper and producer between the digital and material realms. A tension between authority and individuality is the initial step to engaging in situational space; in this space both monitorial and informed citizens engage within both traditional and participative media and their success on spreading or receiving information depends on how their material and digital resources are managed according to their situation in the cybernetic space. As organizations migrate their services to the digital space, citizens who limit themselves from using ubiquitous technologies may find their situation, or position in society more limited as the digital and material production of social spaces are not only socially and technically negotiated, but also depends on our situation within cyberspace and real space.

To further clarify the nature of situational space I will attempt to explain it through a slightly morbid metaphor: Picture a lake with a vast reservoir of unexplainable thick liquid (this will be the medium of cyberspace), where many people amass and congregate in constant discourse. Because of their limited swimming ability in this liquid most people are below the surface and therefore cannot properly communicate with the mass. In order for these people to communicate they must position themselves appropriately position themselves in the lake; they must find a stone which significantly raises them above the surface. The stones stay in their place until they sink from the weight of people who wish to make their voices heard; in this case the authority or authenticity of the situation becomes “watered down” and soon part of the sediment. If you swim in the lake your foothold - or situation - is important to consider.

(...) another, more recent part of us lives in space, in a place where things happen on the surface in a state of continuous simulation. We experience things not at depth but on the surface; not a slow accretion but an everything-all-at-once shout. We do

not pass tales linearly, but experience them multiply, simultaneously, across global communication networks (Johnsson 1998, 185).

3. Aesthetics and Politics of Cybernetic Space

This section contains an analysis of the political application “Ushahidi” and the aesthetic application used in Blast Theory’s “Uncle Roy All-Around You” urban project. Both applications represent space through aesthetic and political methods to inform the user’s impressions and experiences of space. The spaces within social space which constitute the material realm have been defined as Lefebvre’s triad producing society’s space; the conceived, perceived and lived spaces. The spaces within the digital realm which tie abstractly or directly to the material realm have been defined as the cybernetic conceived, cybernetic perceived and cybernetic lived spaces. Also, two native cybernetic spaces have been defined which manage and overlook this connection between the digital and material social spaces; monitorial and situational spaces. The discussion in each section will provide a context to each case study, and each section’s following analysis will then give examples of cybernetic space’s role in each case study.

3.1. Aesthetics of Cybernetic Space and Uncle Roy All-Around You

This section discusses the characteristics of art in digital media and how art depicts the relation between material and digital spaces. Correlations between 1960’s Situationism and contemporary cyber art will be discussed as they give clues to what could be a new perspective on space and art.

The convergence of digital media and traditional media has not only influenced the mixing of our social spaces but how artists relate to these, and how they mix traditional mix digital media and traditional media. Contemporary art borrows many elements from past periods such as Post-modernist dynamism and reconfiguration of historical visual symbolism,

Classical and modernist monumentalism and mathematical aestheticism, and the organic forms and juxtapositions of Arts & Crafts and Art Nouveau. These parts often manifest themselves in an eclectic, or modular design where each art style the media contains is balanced to promote its purpose. Let us focus on the modular as it has been used as a buzzword when describing digital media. Samara argues that when one deals with “extremely complex projects” a “modular grid may be the most useful choice” and that “[b]etween the 1950s and 1980s, the modular grid became associated with ideal social or political order”, Samara then continue stating that “[d]esigners who embrace these ideals sometimes use modular grids to convey this rationalism as an interpretive overlay to a given communication”. I can only agree with Samara’s points made concerning the function and use of the modular grid, but as projects become increasingly complex the modular design becomes more useful. Samara explains what he calls the “modular grid”, as being “essentially a column grid with a large number of horizontal flowlines that subdivide the columns into rows, creating a matrix of cells called *modules* [Emphasis author]. Each module defines a small chunk of informational space. Grouped together, these modules define areas called *spatial zones* [Emphasis other] to which specific roles may be assigned. The degree of control within the grid depends on the size of the modules. Smaller middles provide more flexibility and greater precision, but too many subdivisions can become confusing or redundant” (Samara 2005, 26). If we define a design project as a modular grid we see the individuals and their smart devices as modules, these modules then merge into teams which have specific roles. Smaller projects have more flexibility and creative freedom, while larger projects may become confusing to their participants if no central idea connects the roles each team, or spatial zone, brings to the design. The end product may become redundant through this confusion and disrupt the “fragile ecology” (Drucker and McVarish 2013, 341) graphics designers face in each project dealing with the complexities of globalism (Drucker and McVarish 2013, 333).

The term “modular” ties to the present media landscape where different modes of visual, auditory and textual media are tied together through digital technology, bringing us to the plural term “digital media”. The use of art in digital media is used both in a utilitarian and aesthetic sense as the use of global communication requires the need for effective solutions to how participants should share information across cultural contexts and mix graphic styles able to be individually interpreted through various cultural contexts but still remain generally legible to a larger global audience.

Elias draws similarities between the digital culture and situationist philosophy such as “the opposite works of art” (Elias 2010, 824): not to conduct art to frame, or catch human experience but to release creative expression through the process of human experience. As digital surveillance is more subtle than direct scrutiny, it means that artists have a greater chance of analyzing human experience. The digital and humanist tools we use to monitor this release in human experience become more easily available to governments, businesses and private persons. If human experience can be monitored and analyzed through digital media without much disturbance the opposition to established art, not to frame or catch human experience, seems useless.

The space networked media exudes, such as the World Wide Web, isn’t so different from urban space. Each has a sense of “cosmopolitanism” (Elias 2010) as Elias puts it when she discusses the potential of using Guy Debord’s situationist *dérive* in digital space:

The spatial field of the web surfer may be either delimited according to search parameters or openly processual according to linked pathways, and so too, the spatial field of the *dérive* “may be precisely delimited or vague, depending on whether the activities aimed at studying a terrain or at emotional disorientation (...) (Elias 2010, 822).

To the uninitiated the *dérive* can be defined as drifting aimlessly through space while you analyze what features in each space repels you from journeying into them, attracts you to walk further inside them and drains you from walking any further into them, or from leaving them. To further argue the similarity between digital and material space Elias turns to criticize the perception of digital space as “ephemeral”, arguing instead that this ephemerality is an illusion consisting of “sometimes permanent, always pre-constructed databases, and maintained and uploaded files” (Elias 2010, 822). The pre-constructed space which Elias points out could be tied to the cybernetic conceived space I mentioned earlier in this essay.

The avant-garde Situationism Internationale movement of the 1960-70s brings up interesting points when it is compared with contemporary Cyber art. The Situationists observed social space from a distance and sought to influence social space, especially the conceived space in urban space created out of consumerist society and the empty promise of commodity fetishism by implicating their own meaning on it through *detournement* and the *dérive*, *detournement* here defined by Elias as

(...) “the reuse of preexisting artistic elements in a new ensemble,” (...) It was a method of interpretation and reinterpretation: reordering preexisting materials in order to expose their banality or their function within a system of spectacular control and creatively reconstructing them in the service of authenticity (Elias 2010, 824).

Situationists sought to situate the human outside the structures which, to them, alienated human experience. Cyber artists observe cybernetic space by exploring the relation between digital and material space; their agenda is similar to Situationism’s wish of situating human experience, but they operate inside cybernetic space as the issue of alienation I believe has moved on to concern itself with failure to balance our digital and material everyday lives. It

focuses less on consumerist society as the critiques the Situationists introduced are today so commonly used that they have become part of mainstream culture.

The main difference between the Situationists and today's cyber artists is that Situationists sought to change society from outside; the cyber artist "works 'within the belly of the beast' where it seeks to rehumanize and politicize the virtual spaces of digital media" (Elias 2010, 822). Elias thought of cyberspace as a second level of social space, but she didn't agree that it gave the person more freedom within the space, in fact she found cyberspace even more delimiting than the traditional urban space she compared cyberspace with

(...) a dehumanized space of commerce, work, and diversionary entertainment; like urban territory, it now cordons off "neighborhoods" and gated communities that effectively limit wandering (Elias, 2010, 822).

This presents an issue, where the human is free to interact within the frame of cyberspace, which I define as an aspect of digital space beside other methods of using media, in order to question the conceived space of society. Elias implies that our society is becoming even more structured than those societies of the Situationist era. What can be discerned from the ubiquitous technology projects below is that even though there is great opportunity for control and structure brought on by the digital revolution there are also great opportunities for change and creativity to reform structures that societies and digital media depend upon. As Tanaka and Gemeinboeck put it

(...) as governments have gained surveillance powers, so has the public. (...) The question of balancing of power, or tension between powers, respectively, and its potential inversion of observer and observed create the second dynamic we wished to put in place in the work (Tanaka and Gemeinboeck 2006, 5).

3.1.1. Uncle Roy All-Around You: Digital Aesthetics of Urban Space

At the end of this section I will attempt to provide the reader with an analysis of Uncle Roy All-Around You's organization of cybernetic space. To start this analysis I will begin by describing Blast Theory's purpose behind Uncle Roy All-Around you and then move on to argue how the technical construction of the game could be seen as experimenting with cybernetic space.

In *The Frame of the Game: Blurring the Boundary between Fiction and Reality in Mobile Experiences* (Benford, et al., 2006) Benford, et al., analyzes and explains the social implications behind the social engineering of Blast Theory's game "Uncle Roy All-Around You". Its locative media application is formed to defamiliarize the "player's" experience by making him/her uncertain about the surrounding urban space and the game's digital elements. Players playing the game "Uncle Roy All-Around You" (URAY) gives rise to a synthetic atmosphere where the virtual space, from within the urban environment was both interpreted by its users and partly dictated by its directors. Each player of the game was given a mobile phone which received text messages. These messages either gave a clue to where their quarry could be, the elusive character "Uncle Roy", or the message was so cryptic that it completely set the player off course. Each player also had one participant remotely viewing their GPS-location; these remote players had their own separate objectives, to have their on-site players go to places assigned to the remote-players by the directors of the game. The remote players had an over-looking perspective on the frame of the game where both their places and the places the on-site players needed to go to access information about Uncle Roy was. Remote and on-site players could collaborate, or the remote player could trick its on-site player to go to the places he/she needed to be at in order to win their separate game. This either enforced the trust among remote and on-site player or, if there had been trickery, made the on-site player very suspicious of future collaboration with remote players.

Uncle Roy's technical and functional framing have many similarities to Atau Tanaka's and Petra Gemeinboeck's study *A Framework for Spatial Interaction in Locative Media* (Tanaka and Gemeinboeck, 2006). The project used remotely present participants which served as guides for other participants located in a park area. The remotely present participants communicated with on-location participants through text-messages, viewing what the on-location participant saw through a strap-on camera. Connected with a database, through a WIFI network, everything was recorded. Actions between server and human were directed between both participating groups. Tanaka and Gemeinboeck's project was conducted in a similar fashion to Uncle Roy. The difference lies in the scale of each project: URAY broadcasted its exhibit over an entire city while the exhibit Tanaka & Gemeinboeck used a WIFI network constrained to a park area. An interesting observation to mention is how Tanaka & Gemeinboeck connects their framework with the idea of the *dérive* where "[p]articipants, however, don't only leave and receive traces but can also choose to conspire and to co-navigate themselves through the neighborhood. The path reveals itself through puzzle pieces that appear on the screen, weaving threads of the past into the urban present". Both Uncle Roy and Tanaka & Gemeinboeck's project use the defamiliarization of urban space intersected with digital space as their theme. They use different strategies for exploring the participants' experience with digital- and material conceived spaces. Both use locative media and ubiquitous computing as a tool to defamiliarize the conceived space of urban space by letting participants remotely control the interaction and narrative within conceived space. Uncle Roy All-Around You, and Tanaka and Gemeinboeck's project could be seen to follow the Situationist model of *detournement*. Uncle Roy All-Around You and Tanaka and Gemeinboeck's project used their digital tools and their structure of digital remote-viewing, on-site acting and recording depending on events to promote a slightly distorted perspective of reality. To take a couple of examples from each project: Uncle Roy All-Around You

increased the anxiety and otherworldliness of its on-site players by implying that everyone could be Uncle Roy or an actor steering their journey. This made players either avoid people more or get out of their bubble and actively engage people n asking whether they were Uncle Roy, or whether they knew where Uncle Roy was. Gemeinboeck and Tanaka's project, also heavily directed, made players collaborate to fool the surveillance of the database and come to the conclusion that if the computer can control them through surveillance then they could control what is being monitored. The control imposed on the on-site participant by the remote-viewing participant could also lead on-site participants to random meetings with other participants as the remote-viewing participants steered them onto the same nodes, which might spark a conversation about the content of that node. These projects present not only a different way of seeing and experiencing things but also reconstructs the urban space around each participant as the game requires the participant to engage with the environment in order to meet the goals of the game.

3.1.2 Analyzing Uncle Roy All-Around You's Cybernetic Space

This section explains the circumstances behind Uncle Roy All-Around You's spatial gymnastics and how its interaction grounded both in the real and cyberspace affected its participants. The following analysis will argue how Uncle Roy All-Around You's social production of digital and material spaces collaborates to form a cybernetic space.

Social Space

- Conceived: urban space, mobile phone, stationary exhibition
- Perceived: engaging strangers, moving within urban space
- Lived: uncertainty, altruism

Cybernetic Social Space

- Cybernetic Conceived: wifi network, server's interface, appropriation of spatial method through monitorial practices
- Cybernetic Perceived: exchange of virtual discourse, remote control
- Cybernetic Lived: game environment, infantile creative power, induced disruption of dominance

Native Cybernetic

- Monitorial: dynamic interchange between watcher and watched
- Situational: digital and material negotiation of space and place

McGonigal (...) goes on to discuss how Blast Theory's Uncle Roy All Around You's command-and-control structure raised criticism by Marc Tuters, who in his essay "The Locative Utopia" states that the design of the work has concerned those who feel that it represents "an unwelcome substitution of military logic over the 'real' world" [Emphasis mine] (in McGonigal 2007a, 257). We will show here that although mixed reality performances and other similar experiences are designed in such a way that they do involve a certain degree of steering, they also facilitate emergent creativity and play and stimulate thought about the consequences of performing with "command-and-control" technologies [Emphasis mine] (Benford and Giannachi, 2011, 7).

As opposed to Ushahidi, the project I will be discussing in the next section, Uncle Roy isn't situated in a strong real world context. The analysis will be focusing on the 'virtual' aspect of Uncle Roy as the analysis of Ushahidi has focused more on the influence of real social spaces

within cybernetic space. Uncle Roy is a social experiment which analyses the intricacies of what they call a “mixed reality”, a mix of digital and real technical components.

In many ways the concept of mixed reality is very similar to cybernetic social space but one striking difference is shown when Benford explains mixed reality through the ““virtuality continuum” as covering a spectrum of different forms of mixed reality from purely physical, real environments at one extreme to purely virtual environments at the other (...)” (Benford and Giannachi 2011). Mixed reality analyzes the spaces which mediated society creates, more closely related to engineering and design; meanwhile the cybernetic social space analyzes our relation to space within mediated society, more closely related to sociology and philosophy. By describing cybernetic social space I have chosen to distance myself from the technical and instead sought to grapple with the ““non-technical’ or broader social and cultural aspects of ubiquitous computing” as they “remain insufficiently explored and represented in the design process” (Galloway 2004, 386).

The model of Uncle Roy’s social production of spaces is often dominated the monitorial aspect of spaces, of feeling watched not only through the real space but through the virtual gaze’s active participation in influencing the conditions of cybernetic social space. A disembodied meshwork of GPS and transmitted text-messages monitor the urban players and are scrutinized by remote players and the game’s directors. The authority and authenticity of Uncle Roy’s monitorial spaces can be negotiated through the situational space where each individual creatively reacts to the events which unfold as the embodied urban players interact with the disembodied remote players. A third actor is the technical component abridging the embodied and disembodied player, taking part in the defamiliarization of the urban space but it does not negotiate the terms with either remote or urban player. The cybernetic conceived space consists of the unswerving collective influence of the server, Wi-Fi and software that dominates through the embodied and disembodied player’s dependence on technical

guidance, effectively steering the players' experiences in urban space. The transitions situational and monitorial space negotiates between digital and real give rise to the automatic process mentioned in cybernetic lived space. The 'virtual' sense of surveillance (Winnicott's "infantile illusions") and the social complexities of urban space induce a "magical creative power" into the disembodied and embodied player's process of moving through urban space, temporarily changing the conditions at which the real lived space of each player is produced. The cybernetic conceived and cybernetic perceived spaces are appropriated through the temporary disruption of lived space, influenced by the cybernetic native monitorial and situational space.

3.2. Politics of Cybernetic Space and Ushahidi

This section will discuss the politics of digital media, ubiquitous technology and how they relate to cybernetic space. The mash-up crowd-sourced activist project Ushahidi will serve as an example as it played a large part in shaping Kenyan- as well as international opinion on Kenya's 2007 post-election crisis. At the end of this section I will attempt to provide the reader with a small analysis of Ushahidi's cybernetic spaces as they weave in and out between the digital and material.

In his book *Convergence Culture: Where Old and New Media Collide* Henry Jenkins discusses the different interactions between old media (television foremost) and new media (websites, flash-videos and multiplayer online games) where political actors, while comparing the 1960s underground- and mainstream culture, gave rise to convergent practices between popular culture and presidential politics in a media landscape consisting of narrowcast media such as the blogosphere "pulling" people in to participate to form opinions on political agendas, general societal issues and broadcast media such as television "pushing" formed opinions out to a larger non-participating public; an example Jenkins presents for this

are the 2004 USA presidential campaigns (Jenkins 2008,). These “pull” and “push” actions have different manifestations throughout digital media. In this case the grassroots narrowcast media is the broadcaster to more limited and participatory communities where direct civilian action across digital media become those who form opinion, like editors of Wikipedia articles or concerned voters mapping sensitive elections such as in the Ushahidi mobile application.

In *New Spatial Media, New Knowledge Politics* Sarah Elwood and Agnieszka Leszczynski give examples of four digital activist projects, among them Ushahidi, working under varied “knowledge politics”. They describe knowledge politics as being “the ways in which individuals and institutions leverage digital spatial data and spatial technologies in negotiating social, political, and economic processes, often doing so in ways that rely upon the differential influence and authority that is granted to particular forms of knowledge or representations (Elwood 2010, 352)” (Elwood and Leszczynski, 2011). When describing activism within digital media they borrow the term “digital activism” from Lievrouw’s definition, “as constituted by the use of ’communication artifacts, practices, and social arrangements of new information and communication technologies to challenge or alter dominant, expected or accepted ways of conducting society, culture, and politics. (2011, 19)” (Elwood and Leszczynski, 2011). According to each project’s agenda knowledge politics of spatial media work closely together with politics to affect the users’ perception of space. These knowledge politics are no longer centralized by governments and commercial interests but also used by private- and NGO (None government organization) enterprises such as art collectives and digital activists. Diverse political and aesthetic agendas lead to a melting-pot of different impressions and expressions for their consumers, mirroring the vast amount of interest groups maintained through the World Wide Web. These agendas steer the graphical and technical content to form knowledge politics. These knowledge politics are aimed at

influencing the consumption of information and in turn affecting the knowledge-formation of its users.

The selected literature on approaches to political and artist genres of spatial media suggests that they tend to intersect; what seems to be the main difference is the politically focused media's larger focus on socially impacting the politics of the material world, often focusing on participatory actions such as crowdsourcing information to guard fair political elections (Ushahidi using citizens reporting on the state of electoral regions during Kenyan elections) or deter destructive resource acquisition (FracTracker mapping illegal fracking worldwide through often anonymous reports by its users). Elwood and Leszczynski give examples of four digital activist projects which each work under varied "knowledge politics"; knowledge politics they describe as being "the ways in which individuals and institutions leverage digital spatial data and spatial technologies in negotiating social, political, and economic processes with methods that rely upon the differential influence (as in 'varying according to circumstances or relevant factors') and authority that is granted to particular forms of knowledge or representations (Elwood 2010, 352)" depending on the situation in which it is used. (Elwood and Leszczynski, 2011) When describing activism within digital media Elwood and Leszczynski borrow the term "digital activism" from Lievrouw's definition, "as constituted by the use of 'communication artifacts, practices, and social arrangements of new information and communication technologies to challenge or alter dominant, expected or accepted ways of conducting society, culture, and politics. (2011, 19)'" (Elwood and Leszczynski, 2011). According to each project's agenda knowledge politics of new spatial media work closely together with politics to affect the users' perception of space.

3.2.1. Ushahidi: The Activist Mash-up Application

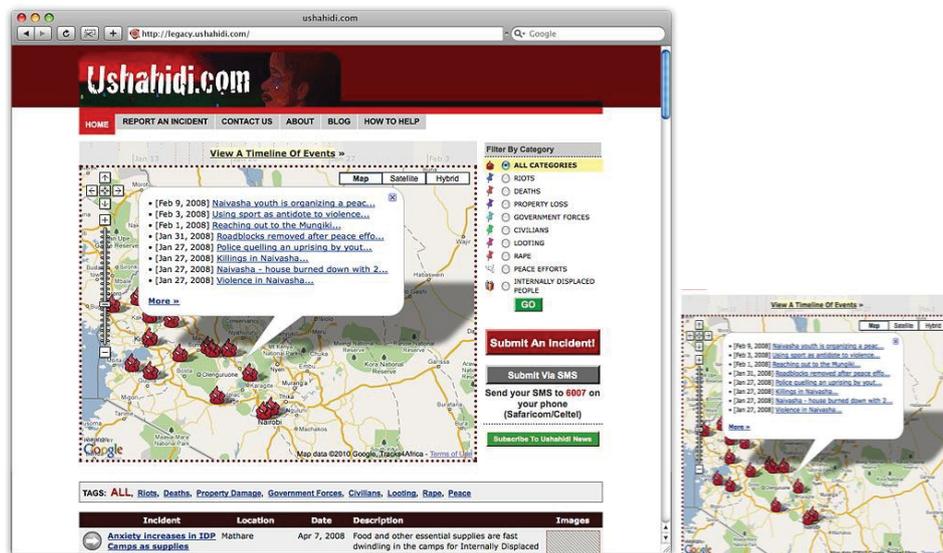
This section explains the circumstances behind the creation of the Ushahidi crowd-sourced mash-up project and how it became involved in the politics of Kenya in the crisis of the 2007 democratic elections. The following analysis will argue how Ushahidi's success in the real world and in cyberspace could be due to a social production of spaces which together forms a cybernetic space.

In December, 2007, Kenya had its first elections perceived as democratic between Mwai Kibaki and Raila Odinga. On December 27th, as the votes were counted and results were shown over one million were in favor of Raila Odinga. 3 days later, on December 30th, the presidential election went towards its end and the lead Odinga held had strangely morphed into a small margin of victory for Kibaki. Blogger Kenneth Karanja of the blog "Kenyan Pundit" expressed his suspicions and worries in this excerpt on January 10th:

December 27, 2007 and after. [sic] We all kept in touch via phone. Watching KTN, KBC and CNN online and routing each for their preferred party and candidate. When the presidential results were announced, we all felt cheated; our political persuasions notwithstanding. [sic] What had happened to Kenya? We thought we were a democracy. (...) Then I remembered the campaign rhetoric, majimbo [sic] [Author's note: most likely majimboism, Swahili term referring to the aspiration for ethnic groups semi-independently controlling regions of land] this, majimbo that, this time it was going to happen for real. What with the burning of the church. This was not like the clashes of 10 years ago. The events of 1992 and 1997 came to mind (Karanja 2008).

As Kibaki won and entered the post as president of Kenya media and press were restricted from live broadcasting and reporting what was developing inside Kenya. The tensions and

suspensions among Kenyans which had been contained over the past three days erupted into riots and mob violence between different ethnic groups, displacing 500 000 refugees in a Kenyan diaspora and reaching 1000 deaths.



A screenshot of the archived Ushahidi.com map which covered the 2007-2008 crisis in Kenya with a magnification of the Google Map frame (Ushahidi 2007).

Ushahidi began as a crowd-sourced mash-up crisis mapper and sought, together with Kenyan blogs, to fill the journalistic gap left by the restrictions on national journalism to counter the blackout and disinformation from governmental sources downplaying the violence of the crisis. The initial version used SMS-messages and e-mail as the main form for reporting new events by civilians on location. A webpage was arranged to supply updates on current events with a Google Maps page which visualized and located the events. With this map the Ushahidi could geographically situate the viewer in a spatial narrative and with a timeline function attached to the map it told the story of almost daily violence across Kenya (Goldstein and Rotich, 2008, 6). With the help of the crisis map those who visited Ushahidi's homepage could receive a non-governmental perspective on the events unfolding on a national-, instead of local basis. The introduction of Ushahidi into the digital sphere was well-

received among Kenyans. Daudi Were responded to the Ushahidi initiative on his blog Mentalacrobatics, writing:

This is why the Ushahidi project is so relevant and so necessary. We as Kenyans are guilty of having short-term memories. Yesterday's villains are today's heroes. We sweep bad news and difficult decisions under the carpet; we do not confront the issues in our society and get shocked when the country erupts as it did two months ago (Were 2008).

According to Were the Ushahidi mash-up aided in reinforcing this collective memory through the documentation of crisis patterns on a national and chronological basis, affirmed by Ory Okolloh in her first blog post introducing Ushahidi (Ory Okolloh, Kenyan Pundit, "Ushahidi.com", January 9, 2008). Ushahidi aided those who would do anything to avoid the chaos by giving refugees and peace protesters a general pattern of conflicts and in order to discern where it was safe to move about, and where peaceful protests against the violence could take place. Viewers could overview the chronological spread of crisis reports through the timeline function (JavaScript supplied to the Ushahidi team by Nick Rabinowitz) and predict which direction the chaos would spread.

Through the perceived spaces of digital media Ushahidi and many other blogs like Mentalacrobatics, a press stymied by governmental restrictions could live on through the reports citizens and bloggers made on the current situation, the former was double-checked between the Ushahidi team and Red Cross patrols in the area. In many cases Kenyans depended more on bloggers to report current events during the crisis of 2007-2008 as bloggers were private actors and not affected by the governmental restrictions on mainstream media. This led to some blogs reporting news 3-4 days quicker than established media with the influence of Kenyan bloggers ballooning from 5 percent of to 95 percent of Kenyans

when radio broadcasters began to read the posts of influential blogs to their listeners (Goldstein and Rotich, September 2008, 8). A commenter on the blog WhiteAfrican (another blog following the events in Kenya, its author is part of the Ushahidi team) wrote when the blogger presented the Ushahidi timeline to their readers:

JohnofScribbleSheet, January 29, 2008 at 6:05 am

I've said it before but I will say it again. This is a brilliant idea. As a member of the diaspora at least now I can find out what is going on.

My mother who has hardly ever used a computer is now logging on to see what is happening in her homeland. Thanks to everyone involved in this project (Hersman 2008).

The description and background behind Ushahidi was taken from Goldstein and Rotich's *Digitally networked technology in Kenya's 2007–2008 post-election crisis*, the blog posts and comments belong to their authors.

3.2.2 Analyzing Ushahidi's Cybernetic space

The context of Ushahidi's place in politics has been discussed and described. The spaces within social space which constitute the material realm have been defined as Lefebvre's triad producing society's space; the conceived, perceived and lived spaces. The analysis will give short examples of each proposed space's role in Ushahidi. The examples will then be tied into a discussion that shows each spaces role in producing the cybernetic formation of social space, digital space and native cybernetic spaces.

(...) whether aspiring to promote an ethnic-based hate crime or a global human rights campaign, the Internet and mobile phones have lowered the barriers to

participation and increased opportunities for many-to-many communication
(Goldstein and Rotich 2008, 9).

Social Space

- Conceived: Government, majinboism, journalism, Freedom of Speech
- Perceived: Protesting, rioting, observing
- Lived: Hope, Fear, Rage

Cybernetic Social Space

- Cybernetic Conceived: Receiver of reports, Google Maps, Ubiquitous Technology
- Cybernetic Perceived: coding, text-message reporting, blogging
- Cybernetic Lived: the viral potential of communication in cyberspace, a simple user interface and graphical layout

Native Cybernetic

- Monitorial: joint digital and real surveillance
- Situational: disruption of real social spaces and the consolidation of these through cyberspace

The context to which would later lead to Ushahidi began in the corruption of the concept of government. As a center of power and trust the conceived space of government would no longer function as the concepts of majinboism and federalism awoke connotations of ancient tribal lands; the disruption in the concept of government as a centralized power lead to a power vacuum; this lead to the concept of conquering historical land areas, and to national counteractions wishing to regain stability. The restrictions imposed upon media not only decreased the diversity and spread of established conceived space and spatial practices, it also

undermined the freedom of speech and further polarized Kenya. As the different aspects of conceived space sought to dominate one another the spatial practices of civil life had now changed, turning the complex spatial practice of urban space into those of conquest and survival. The general atmosphere of common lived spaces would have been rage, hope or fear as those who partook – or were unlucky to partake – resorted to using their space for riots, for protesting or simply for observing the outcome of the events unfolding from the changed social spaces of the streets. Contrary to the old media the new media in cyberspace remained effectively unrestricted and thus provided new avenues for spreading information, forming knowledge and through those new social spaces where trust and authenticity within cyberspace could be produced. Ushahidi was born in this cybernetic movement of enlightenment and citizen inquiry. The email-receiver and –especially– the text message-receiver allowed people to report on what they saw in the real space and together with mobile technologies the reporting could be conducted in any situation. The Google Map page documented these reports graphically, leading me to believe that the second extreme in the potential space’s continuum was used, that of “mature spiritual creativity” with a layout clearly showing the dire situation, colored in the colors of Kenya’s flag with a simple user interface which sought to include everyone concerned. The cybernetic spatial practices of reporting incidents, organizing and coding the website and Google Map and blogging were the most effective tools for participants who aided in the creation of Ushahidi’s sustainable cybernetic qualities. The mixing of cyberspace and the mature customs of Kenyan social space allowed the lived space - that was transformed in the real - to live on and spread through the digital aspect of cybernetic space; after the crisis in Kenya Ushahidi has been used across the globe where it has covered many different crises to hold perpetrators accountable for their actions. As can be seen from Ushahidi’s agenda both the monitorial and situational space played a large role in shaping the cybernetic meshwork. They both

consolidated the remnants of a disrupted real world social space through the use of ubiquitous technologies (the cellphone and digital media) and the crowd-sourced civilian surveillance of government.

Conclusion

Even though “Uncle Roy All-Around You” and “Ushahidi” may distinguish themselves from each other, with one being creatively involved in steering the exploration of ubiquitous experiences in urban environments and the other possessing a mature political agenda to reform the mediated and real aspect of politically induced violence, but they still share similarities between the two. They both augment and extend the user’s awareness of their environment in a productive mix of real and digitally mediated spaces. Exploring the intricacies of cybernetic space can let us understand our environment where we not only focus on the discerning benefits cyberspace has on the real and vice versa, but clarify what we receive from the transitions we make between cyberspace and reality.

The society which Lefebvre and the Situationists described is different from contemporary digital culture. New social structures and spatial structures emerging from the intense communication - and processing powers - of digital media should be observed as intersecting between one another and with the social production of real space. Through their virtual and material interactions the new spaces open opportunities to affect the production of social space. Society’s spaces may be are becoming more complex and in order for these to be properly analyzed there is need for a higher theoretical understanding of what spaces supports these social complexities. We first need to understand the technical and non-technical spaces which facilitate the process before we can properly situate our own, and technology’s social development.

Cyber art has become the mediated replacement for Situationism as the constant problematizer of the preconceived and modular nature of digital media. As the Situationists and the avant-garde after WWII questioned their own context, so is cyber art influencing our contemporary society in a similar fashion. Together with cyber art, we are able to discuss the connective nature of cybernetic social space, as part of a global debate involving a diverse array of spaces: societies, cultures, and the individuals who intersect them.

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