

Man Versus Platform Versus Designer.

How New Media Technology and Design Steer Behavior.

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Abstract

Users of a new media technology often feel empowered and in total control of the platform or device they are operating. But is this really the case or is this a mere feeling? Are users fully controlling the technology and its design or is this just perceived and is the agency of the technology and its design generally being overlooked? This paper questions users' perceived agency by looking at how the technology itself and its design are possibly influencing, or even steering, its users' behavior. Using theories focused on technological and societal agency, questions of control, premediation, design, gamification, commercial goals and distribution of agency this paper aims to get a better understanding of the complex reality of the process of steering behavior. Based on these theories this thesis will analyze how the agency between the user, the technology and the designer is distributed, and how the steering works through, the case studies Apple Maps, Foursquare and Google Glass. It can be expected that the agency in the process of steering behavior is not distributed symmetrically between users, technology and design and that the process of steering differs between objects. This paper will also stress the need for more knowledge among users about this process in order to be able to make a well substantiated choice whether to use a certain technology or not, because if it is true that technology and design are not only empowering users but also able to steer human behavior, users should be able to critically evaluate whether using a certain technology is worth it.

Keywords: Technological Determinism; Sociological Constructivism; Users; Technology; Design; Distributed Agency; Steering Behavior; Data; Platform Studies; Cybernetics; Affordances; Constraints; Apple Maps; Foursquare; Google Glass

1. Introduction

New media technologies are increasingly surrounding us in our everyday lives. One of the most obvious new media objects more and more people are using throughout the day, every day, the whole day, is the Smartphone. Everywhere you go, you will get confronted with people sucked into the little screens they are holding in their hands. In the train they use it to work or read the latest news, in the club they use it to see when to catch the last night bus and in the supermarket they use it to see what the shortest routes to their groceries are. All kinds of daily chores and hassles are made easier through applications one can access with one's Smartphone. We, the users, feel in control. More than ever we can get the information we need and send out information that we need to share at every moment in time and from

anywhere we are. Hence, we feel in control of all the things we need to do every day through this new media technology, because there seems to really be an app for everything you will ever need.

But are we really? Do we have the control we think we have? As a user myself, I would say: Yes! With my Smartphone I check the weather, read the news, tell my friend that I am late again, schedule meetings, email, work, make payments, blog, keep up my social contacts with several social media apps and so much more. I can do all this all day, every day and everywhere: On the toilet, in the train, on the couch while watching television and in between meetings. In this way my Smartphone is not only an extension of me, but a part of me. Anyhow, as a new media scholar I would say: No, not quite! Not the user decides what people are capable of doing with their new media technologies, the technologies and their design are in control of their affordances. They decide what a user can do with them and thus what the user does with them.

This is exactly what this thesis is about. As users we feel in control by using all kinds of new media technologies, but in fact the design of these technologies enables and constrains what we are capable of doing with it in the first place. It can steer our behavior in the physical world. For example when you visit a city you have never been to before and you want to bring some flowers to your appointment, you will probably use the navigation app on your phone to search for the nearest florist. You will not look for a florist yourself by wandering the streets - like people did back in the old days when phones were only meant for making phone calls-, no you will probably go the florist given to you by Apple Maps, even when this one is not necessarily closer than one that is not included in the app. Apple, in this case, decides what is on the map and what is literally off the map. Of course, users do have some agency and influence on the design and use of the app. But how much? Agency in steering behavior of people is distributed between users, technology and its designers. This does not mean this agency is distributed symmetrical. So this thesis asks, how does the process of steering behavior through new media technologies work? And what are the relations between the distributed agencies?

Section two will exist of an account of the historical context of this issue. It will deal with and nuance the classic recurrent debate in new media studies between technological determinism and sociological constructivism. Focusing on the theories of Gilles Deleuze this section will also give a philosophical account on questions of control. Then, the third section will offer more insight on the process of steering behavior by focusing on the theories of some

major names in media studies, new media, design and platform studies. It will take a look into some key concepts like cybernetics; prediction of behavior; premediation; design of everyday things; architecture; affordances; gamification; information and data collection and personalized targeting.

After this I will be able to analyze my case studies according to these theories to seek some better understanding of these complex realities that new media technologies bring us. The first case study is Apple Maps. While one could argue every new media technology is able to steer behavior, an app like this illustrates it very well, because it contains maps and physical directions for users to follow in the offline world. Foursquare then, takes it a step further by implementing social networking more and gamification of locations in the offline world. The last case study is Google Glass and is interesting to consider because it imposes a virtual layer on the physical world to be used on an everyday basis. Because this technology is not available to all yet and still in the stage of development, this case study will basically just offer a glimpse in the future based on the information that is available.

These case studies are not only able to steer users' behavior towards the technology itself in terms of usage, but also their users' physical behavior in the offline world, that is why I have chosen for the term steering instead of the weaker term influencing or the stronger term dictating. Of course the technology influences its users' use of it, but influence as a term does not seem to fully grasp the ability to direct users' physical actions in the offline world. Dictating on the other hand is far too strong of a term to describe the way technology directs the way users use it and their physical behavior in the offline world, because dictating implies that this behavior is forced on users and they have absolutely no agency or choice at all. Because this directing is often not done in an explicit way, the use of the term steering of behavior seems most meaningful.

My methodological approach will be to first let the theories discussed in section two guide my analysis and reflection of the chosen platforms Apple Maps, Foursquare and Google Glass. In this way the case studies will be connected back to the used theories. Using three different objects the differences between them will not only illustrate that the agency between users, technology and design in the process of steering behavior is distributed asymmetrically, but also that these distributions of agency differ between different objects. Because not all the theories discussed were written with objects like these in mind, the next step will be to search for the instances where the theory is not enough and the objects provide for more questions using a platform focused approach, in addition to seek understanding of

these three objects by analyzing them through the previously discussed theories. But also, what happens when users go beyond the designed affordances by experimenting with these objects? How do these objects steer our behavior and how do they add to the existing theories? Combining the historical context, the theories on steering behavior and the three case studies I will be able to conclude how the process of steering behavior works and how the agency on steering behavior between the user, technology and designer is distributed in the final section of this thesis.

2. Historical context

2.1 Technological Determinism versus Social Constructivism

To be able to understand the process of steering of behavior by new media technologies, knowledge of the classical -ever present- debate between Marshall McLuhan and Raymond Williams is desirable. Does technology shapes and determines society? Or does society shapes and determines technology? Every media scholar has to deal with this debate and in this section I will claim that this debate should have a nuanced conclusion. Because yes, people have influence on the technologies that are invented. But yes, the technology invented also has its influence on how society develops.

Even though McLuhan died in 1980, he still is an authority in media studies today (McLuhan.ca 2012). His most famous claim is that the medium is the message. Because of this claim, he is called a technological determinist. For McLuhan not the content of a medium is the message, but the medium itself. Not the content changes society, but the medium does. So for McLuhan it is technology that shapes and determines society and not the other way around. McLuhan even goes so far to call media the extensions of our bodies. To illustrate this, he uses the hammer as his example. It extends one's arm and increases one's strength. In this way technology is able to extend our senses. Media are capable of extending our smell, sight, hearing and touch. They thus not only extend our bodies, but they also transform them (Lister 82-84).

The Gutenberg press and the electric light are two well known examples, McLuhan used to explain how technology can change society and how the contents of these technologies distract us and conceal how technology changes society. The Gutenberg press brought print and caused the shift from an oral culture to a written mass communication one. This technology thus brought a major shift in Western thought and society (McLuhan 193). But

also something smaller is capable of changing everyday life. A second example of McLuhan is the electrical light. Before, people were depended on daylight for the things they wanted to do. The technique of electrical light changed this and caused a shift in the way people experience day and night. Because the content is so diverse, McLuhan argues that it again is not the content which is the message, but the medium is. A surgeon uses it to be able to operate and see inside the human body, while a reader uses it to read a book at night. This content cannot exist without the technology, while the technology can exist without the content. For McLuhan it is the medium itself that determines its uses and content and therefore the medium changes society and determines the scale and form of human action and identification of its uses (203).

A third concept of McLuhan reads that the content of every new medium is another medium. This again illustrates how technology determines, because it also determines new technologies. Jay Bolter and Richard Grusin appropriated this idea and named it remediation. They explain the medium as something that necessarily remediates. Every new medium tries to reshape and outdo an older medium, by claiming it is more real and authentic, through taking the form, social aspects and techniques of older media. In this way they and thus the technology, change what is considered as authentic and real. Bolter and Grusin acknowledge the remediating power of media and therefore, even though they do not agree entirely with McLuhan's technological determinism, recognize his importance to the field of media studies (Lister 82-83). To be able to comprehend and better understand media technologies, McLuhan recommends to become aware of the fact that content is distracting us and we should consciously look at the technology. Because in the technology lies the power and the changes happen (McLuhan 203).

The other side of this debate is represented by the ideas of Raymond Williams. Being a major influencer of media studies also, he critiqued McLuhan and his technological determinism (*MBC* 2012). His visions generally are labeled as social constructivism. He warns for technological determinism, because according to him it denies social, political and economic intention: It denies human agency. For him not technology is what determines, but society is. Which media technologies are being designed and invented, is not defined by technology itself, but by intention. According to Williams earlier inventions and societal conditions influence what is needed, what is envisioned and what is invented (Williams 123). Therefore his main issue with McLuhan's ideas is that they deny human agency and ascertains technology is created by technology itself. His approach is to bring the concept of intention to

research and development. Purposes and practices of people, that are based on their conscious social need, are inventing new technologies and not the other way around (5-7).

For Williams, the uses of television are proof of his idea that technology does not predetermine all effects. Predicted was the effect of people becoming inactive passive couch potatoes by watching television, because the technique of television afforded only that use. According to Williams nothing is further from the truth, because contrary to the prediction, television in practice got different uses and definitions too. A young radical underground refused to stay passive and experimented with this new technology actively. This radical underground existed of young people, extremely familiar with the device, because they were raised with it. Something like for example a multi-screen play differs from the orthodox way of watching television inside one frame of one television set. Because the experimental uses of television are as much of an effect as the predicted uses are, not technology is what shapes society, but society is what shapes technology. Not all uses are predetermined, because people have the agency to appropriate technologies in the way they want to (126-127).

Stuart Hall, a third big name in the field of media studies, is also a critic of technological determinism. Hall, a cultural theorist and sociologist, explains in his essay 'Encoding/decoding', how media never have one predetermined effect. Technology and media can have and encode a preferred meaning, but this does not mean this meaning is also decoded by its interpreter. While it is possible to encode a certain meaning, it is not possible to predict how the reader is going to decode it. It is not only technology that encodes the preferred meaning, this encoded message is always influenced by ideological processes and worldviews of the encoder. This illustrates how society always plays a role, even though this is not always experienced consciously by the encoder. This also means that the decoder finds himself in certain societal influences and ideological processes. When these correspond with those of the encoder there is a quite big chance he will encode it in the preferred way. This is the first of three different modes of decoding defined by Hall. The second mode produces a negotiated meaning and the third an oppositional meaning. For Hall not the medium is the message, but the content and the interpretation is. This emphasizes how media do not have one predetermined effect, but can have multiple ones and thus shows how media do not shape the world, but how the content and its interpretation is mainly important to how a user sees the world (Hall 128-139). Hall claims that media reproduce dominant culture and therefore society shapes the media, contrary to McLuhan's vision (Laughey 63-65).

Both sides of this debate seem viable when one reads the arguments, but they are so

extremely oppositional that they are incompatible. Either one excludes the other. That is why I think a nuanced look on this debate is needed. This issue is not as black and white as this debate lets it be believed to be. Technology does shape society and society also shapes technology. It is a circular interaction, rather than a crude opposition. The history of SMS (Short Messaging Service) illustrates this idea. With the mobile phone it was not only possible to make phone calls, it was also possible to send small amounts of data in the form of a SMS. A SMS consists of 160 characters because of limitations set by bandwidth of the signaling layer and the common standard imposed on it. Another limitation was the old type pad of mobile phones, which made it pretty hard and time consuming to construct a message. This limited SMS thus was not seen as the core business of selling and using mobile phones. The only use envisioned and marketed was for businesses to send people information about their credit or short ads. Nobody predicted the major pickup by young people that saw it as chance to send cheap messages to each other (Taylor & Vincent 76-81). In this way society thus shaped this technology into a new use that was not envisioned beforehand. But, this technology had its influence on the users too. It forced them to be creative and put what they wanted to say into 160 characters. Before SMS people were not used to be limited to 160 characters, so this technology influenced a whole new way of communicating.

2.2 Questions of control

Considering the previous discussed debate and the conclusion that technology shapes society, but society in turn also shapes technology, it is important to take a look at questions of control between users and technology concerning new media objects. Media like our Smartphones and the apps on it, give us a sense of control. But while something can feel and really be liberating, it is, at the same time, possible that this something also enslaves us. Gilles Deleuze contemplated on the questions of control.

Firstly, he recognized a shift from disciplinary societies, described by Michel Foucault, to societies of control. The disciplinary societies of the eighteenth and nineteenth century, institute the organization of enclosed spaces. This means that individuals were disciplined as a mass through enclosed spaces. Every stage in one's life consisted of an enclosed disciplinary space: The family, then the transition to school, to barracks, the factory, sometimes the hospital and possibly jail. Every one of these spaces has its own laws to discipline, but these laws are a very recognizable just as the controlling authority one has to obey (Deleuze 3).

According to Deleuze, society has shifted to one of control in which the institutions of

the disciplinary societies are finished and now are just waiting to be replaced by the new forces produced by societies of control. These societies of control take all kind of forms and shapes, but Deleuze raises that it is of no use to investigate which one is the most sturdy and which one is the most tolerable regime, because within every regime forces that liberate us and forces that enslave us confront each other. He uses the example of the hospital to illustrate this. When this enclosed institution finds itself in crisis, new solutions can rise, such as: Free clinics, neighborhood policlinics and daycare centers. At first they will feel and be indeed liberating, but at the same time these forces have the power to control and enslave us. Fear and hope are seen as unnecessary by Deleuze, instead he calls for new weapons to challenge these new forms of control (3-4).

While during the disciplinary society an individual was a number in the crowd, in the societies of control one cannot rely on the mass anymore to challenge those in power. Before, people worked in a factory and earned the same salary as their colleague. When people were unhappy with the conditions in the factory, they united to protest and demand better conditions. Now people are controlled and kept in rail by companies by treating them all like individuals. Salaries are not unified anymore, they are based on one's efforts, so people are competing with their colleagues and will not likely join forces to challenge their bosses. It is every man for himself. Deleuze calls enclosures molds and controls modulations. This is because in the societies of control one is never finished. Everyone has to keep developing and training himself to keep up (4-6).

Machines are objects that mirror society well, because they express those social forms generating and using them. In the societies of sovereignty the machines were simple, like clocks. In the disciplinary societies machines were producing energy and products. In the societies of control our machines are mainly computers. This follows the ideas of capitalism quite well. In the societies of control it is not about producing a product anymore, producing products is left to Third World countries. It is about higher-order production: It wants to sell services and buy stocks. It is a capitalism for the product to be sold and marketed. In reality people are not enclosed anymore, they are free to go wherever they want, but they are being monitored everywhere they go. Everyone and especially young people are controlled in this society by feeling the need to keep on learning and being trained, without a final state. This is where, according to Deleuze, one has to discover for oneself what one's made to serve. Just like people in the disciplinary societies had to learn the specific laws of the enclosed spaces (6-7).

This illustrates how the debate between technological determinism and social constructivism really should be nuanced. Deleuze's ideas teach us to be critical about technologies that seem to only liberate us and give us control. Because, while it can give us liberation, it can at the same time enslave and control us. Society thus steers technology, but technology also steers society. While Deleuze was not talking about new media technologies similar as those discussed in this thesis, his ideas still make sense. People should be critical about using new media technologies such as Smartphones and their apps, because they do not only give users control over their environment, they also track their users behavior and locations and steer them into profitable behavior.

3. Steering Behavior

But how does the process of steering behavior work? And how is the agency of steering distributed across users, technologies and designers? A lot has been written about how technologies are capable of steering user behavior. Also, human agency versus the control technologies can have over people has been debated on abundantly. That is why this section will exist of a discussion of several theories on these subjects, so it will be easier to understand the complex realities of and to interrogate the case studies Apple Maps, Foursquare and Google Glass in the following section.

3.1 New technologies and their power to transform reality

Katherine Hayles wrote on the concept of the posthuman. According to her this concept is most associated with biology and cybernetics. But, in her text "The Posthuman Body" she gives prominence to cybernetics. Possessive individualism is what makes a liberal human. That means that the liberal human has property and possesses free will to choose. With the posthuman there is a shift in subjectivity. This does not mean that posthumans are enslaved, but they complicate individual agency. The posthuman is conceived as being a system that is being controlled through the information flow that flows through it. It is a computational subject, which does not mean it is unfree, but it is computed or steered. This concept is not only applicable to artificial life, it is also applicable to humans, because all humans are indeed computational to a certain point. Which means not all human behavior is nature, a lot of it is socially nurtured as it were code (240-244).

Because Hayles believes computers have become complex systems that, by producing

conditions, assumptions, practices and ideologies, constitute reality, she claims that computers are not only just tools anymore. As people are not always consciously aware of this and how software works, the danger exists that big software companies are able to indoctrinate users. People should not accept them at face value, they have to keep questioning them. They should not ignore code or let code be the exclusive concern of programmers. Hayles draws on Wendy Chun to offer an example to illustrate how software is able to be an ideology and in Louis Althusser's definition of ideology, it is the representation of an imaginary relationship between the real aspects of existence and the subject. Software is needed to create this imaginary relationship between the user and the complex command core of the computer. An example are the icons on the desktop. They give users the idea of controlling the computer, but in fact it is the code that determines what the affordances and constraints for the user are. In this way it is the user that is controlled by the technology and not the other way around. This interpellation of the user into the system does not have to be a conscious process. Actually, according to Althusser, interpellation is stronger without recognition of being interpellated. Hayles is not only negative, because this bond between human thought and intelligent machines does not only come with dangers and complexities, it also comes with liberations and possibilities, just like Deleuze suggested, it works both ways (Hayles, *My Mother Was a Computer* 59-61).

Hayles claims that new technologies are able to transform the conditions of reality and life for millions of people. While she thinks the concept of the cyborg of Donna Haraway is too farfetched, because the concept was made up to shock by envisioning a human body with cybermechanical implant, something more subtle is happening. New networked and programmable technologies are invading our everyday lives more and more and are able to form humans quite unnoticeable. Relatively new developments include the internet and its World Wide Web, GPS, cell phones and other networked information gathering devices. These technologies are impacting political discourse and non-conscious cognitive processing, because we humans intertwine and live in these networks at the same time (Hayles, "Unfinished Work" 159-161). According to Hayles, the borders between machine's and human's cognition are blurring. Machines are getting more intelligent and therefore get more important in cognitive constructions. The National Security Agency's (NSA) intelligent computers were, during the Bush administration, capable to gather and interpret 2 million pieces of communication data hourly. This of course, is too much data to sift through by people manually. In turn, their intelligent machines were able to sift and interpret through all this data legally. When, like in

this situation, intelligent machines get this important to the cognisphere, human agency, rationality and affective capacities have to be reevaluated. Hayles concludes that technologies and tools are influencing humans and who and what they are, as much as humans influence what tools are made and what they can do (Hayles, "Unfinished Work" 161-164).

3.2 Predicting behavior

Hayles, by stating intelligent machines are getting more and more important to the cognisphere and therefore putting human agency and rationality into question, suggests technology has agency. But how can we allocate agency to inanimate technologies? Cybernetics is a field of study that investigates on this topic. Technologies are getting better and better at gathering all kinds of data and making predictions based on this data.

During World War II, Norbert Wiener designed the antiaircraft predictor. This machine opens up the categories of man and machine to new questions, because it predicts behavior of man and machine, without being interested in backgrounds and psychology. Both, for man and machine, data about past actions is being used to predict future actions. Because in war it is worthwhile to be able to predict the actions of the enemy, military technologies gave rise to cybernetics. The antiaircraft was one of those military technologies. It was designed to predict not only the future actions of the enemy's plane, but also of the pilot flying it. The problem with shooting combat airplanes is of course, that they generally fly too fast to aim perfect. Combining the prediction of the course of the plane and the behavior of the pilot, the antiaircraft was able to predict the movement and anticipate on it (Galison 228-230).

For cybernetics, it is not interesting to differentiate between man and machine as objects of study, because it focuses on the act of communication and man and machine are both able to communicate. Because communication means being able to give and act with purpose on feedback. Cybernetic therefore focuses on the human mind, communication technology, nonlinear processes and feedback mechanisms (232). During the second Industrial Revolution digital computing machines were being designed with the goal to eliminate the need for human workers in factories. By connecting these machines with each other and its own different parts through wires, it was possible for every machine to give and receive feedback from another machine in the production process and decide on its next step by acting upon the received feedback. Through this communication with its own parts and other machines, these machines in the automated factory were thus able to self-regulate the production process. These humanlike qualities causes these machines to take over the tasks of

human workers. Wiener warns for this though, because this is not only all good. It can cause unemployment and that is why Wiener finds that new technologies bring new social responsibilities, because they can be used for both doing good and wrong (Wiener, *The Human Use of Human Beings* 140-144 & 162).

Wiener claims that it does not stop here, it goes further: Not only it is possible to construct machine with a certain purpose, but in the future he predicted, that it is possible to create machines that can conceive their own purpose without human intervention. This machine will not only take over a human task, but is able to learn from the past, avoid mistakes and come up with better approaches and purposes: It can progress (37-38). An example is the chess game. It is not hard to create a machine that plays chess against a human player following the rules of the game. But, without progress it will be easy to beat this system, because after a few games it will be easy to discover a pattern and predict the machine's next move. But when a machine is created that can learn from past situations, it will get better on its own (Wiener, *Cybernetics* 171-172).

Cybernetics thus entails the idea that man and machine are alike and their behavior can be calculated by focusing on their past actions. Bruno Latour envisions a danger in this, because when cybernetic machines get successful it is possible that they become invisible. Cybernetic machines are called black boxes, because one is often able to understand the input and output of a machine, but the workings of the machine are too complex to grasp. This is not necessarily a problem, because when a user puts in the right input, in the right black box, he will get the right results. Not knowing what goes on inside thus not means that the user does not have any control (Von Hilgers 42-45). The danger though, according to Latour, is when a machine is so successful in what it does, that it becomes so popular and no one bothers to pay attention on what is going on inside and thus in this way becomes obscure, because no one is critically questioning it anymore (Latour 303-304).

Richard Grusin is not only known for his contribution to the field of media studies with the concept of remediation, shortly discussed in the second section of this thesis, but also for his concept of premediation. Premediation goes beyond mere prediction, because it is not focused on getting the future right, but on imagining multiple futures to anticipate on. Its immediacy is not, as with remediation, about liveness and authenticity of the mediation, but about unconstrained connectivity. And its hypermediacy is not about screens taking over our environment, but about network connectivities that rely on affective participation in and distribution of one's networked (virtual) identity (Grusin, *Premediation* 2). Premediation

should not be confused with prediction, but does involve imagining the future. The goal to premeditate the future is not new, but according to Grusin it intensified after the attacks on New York's Twin Towers on 9/11. With enough data about the past it should be possible to premeditate every possible future to be able to prevent disaster or at least prelude such a disaster to come as a surprise again. This is why after 9/11 it has become even more relevant to maintain a low level of fear and anxiety through premediation. This method is also used by governments and journalists. Before, journalists focused on the recent past events, now journalism increasingly focuses on the possible, often threatening future, in order to be able to refashion it when needed. This also happened in the run-up to the Iraq war. The US government and media focused on what could happen when they would not go to war, this seemed so threatening that this war got support of most of the people, because for them this war seemed inevitable (1-2 & 41-45). In this way premediation thus caused people to behave in a certain way by supporting this premediated war that did not happen yet.

The traumatic shock caused by 9/11 did not only change the behavior of governments and journalists towards the use of media, everybody felt the ever-present level of fear and the need to produce enough data to be able to premeditate every possible future. That is why constant connectivity has proliferated. Leaving multiple traces of yourself on social networks feels necessary and desirable. It gives a sense of security knowing what everybody is up to. People therefore nowadays interact with multiple media in almost every aspect of their daily lives. This interactivity with a variety of networked and mobile media is not only cognitive, but also affective. Humans co-evolve with technology, because tools and culture are not only products of, but also determine our culture (90-93). Content of course is important, because that is what makes premediation of the future possible, but for that content to exist and be shared technology that makes sharing that content easy and desirable is needed. Premediation is thus about both technology and content. Technology steers content production and distribution, and content is needed for premediation.

Gilles Deleuze and Félix Guattari even go as far to describe the relation between man and machine as machinic enslavement. They explain their concept by using the 'television-machine' as their example. In this enslavement there is no distinction between the machine and oneself. The body of the user is connected with the body of the machine and together they connect to be able to play and watch television: The user has to push the right buttons, before the television gives feedback to the ears and eyes of the user by turning on. People learn to work with machines and move their bodies 'with it' using interactive feedback loops,

therefore people function as nodes in the machinic assemblage of human and nonhuman affect (99-107). Deleuze and Guattari maybe go a little further than Grusin, but they do acknowledge the need for human and machine interaction in order to get and share the content needed for premediation.

After 9/11 the coverage of it through media technology had a collective affect on people: All bodies reacted because they shared the same central nervousness about the disastrous event, but how this translated somatically varied body to body. According to Grusin this affective live of media entails complex and heterogeneous ways in which our everyday individual and collective affect are being transformed, steered and distributed through media constantly (118-119). Premediation works when enough data is ensured to be able to premeditate future possible events. The desire for security affects people to mark their tracks actively everywhere they go, for example through social media apps like Facebook and Foursquare. People actively engage in these everyday media transactions because they give a sense of security and its pleasurable feeling of being connected everywhere and anytime. Because this everyday premediation promotes and depends upon the mutually anticipatory gestural relation between human and technical media, anticipation is the state fostered by the premediated everyday and is what drives people to remain in constant interactivity. In today's world of social networking and always-on media, one keeps updating one's statuses on Facebook in the anticipation of connectivity in the form of a like, comment or share. But people are also constantly anticipating to receive emails, Tweets and all kinds of other content via the networks they are active on. Media thus operate to encourage, make possible and proliferate an ongoing flow of everyday media transactions in order to have enough data to premeditate the future with. Because media objects have preformatted or premediated uses, people are also steered in using them in a certain way. In the case of social networking platforms this entails updating statuses on ones physical state almost constantly and interacting with others in one's network. Privacy has made way for the feeling of security and the need to be connected 24/7 (124-139).

To conclude this concept of premediation, Grusin makes a clear distinction between prediction and premediation. Prediction has its main goal to predict one correct future, premediation is not at all about getting the future right, but about keeping a constant flow of human and media interactivity to be able to capture enough data to premeditate multiple possible futures, in order to prevent people of having to experience a future that comes as a surprise like the disaster of 9/11 (46). This process of premediation is thus as much about

predicting possible future behaviors as about to steer present behavior in order to maintain the interactivity and connectivity between man and machine that is needed to predict those possible futures.

3.3 The power of design

To answer the question how design of new media technologies can influence behavior, but also to look at how technology itself influences what can be designed and what thus can be done with it, this section will exist of theories focused on key concepts like architecture, design, affordances and constraints.

James Gibson focuses on information that is present in the environment. He developed an interactionist view of perception and action. Agent-situation interactions are needed for people to perceive what their environment affords and what it thus constrains. Key concepts of Gibson are affordances and ability (Greeno 336). Gibson starts with his notion of how the environment affords animals and humans. To perceive a certain surface is thus to perceive what it affords. This implies for Gibson that values and meanings of objects are at least for a part external to the perceiver. The environment decides what users can use it for and what they cannot use it for. A floor affords to sit on, to walk on, but it also denies the option of falling to the floor beneath. Affordances of an environment are thus what it offers the subject to do. Not only objects and surfaces have affordances, also other animals and humans offer affordances, such as: Interaction, play, communication, sex and cooperation. To recognize what objects and other people afford us to do, people pay closest attention to optical and acoustic information (Gibson 127-128).

A fact about affordances is that they are, in contrast to meanings and values, objective, physical and real. For example, fact is that plants and water had to exist before animals could evolve. On the other hand they are subjective, because they need people to give them their meaning and value. An affordance points both to the subjective observer and to the objective environment. This means that the behavior of the observer is steered by how he perceives his environment and its affordances. Observers in this way depends on their environment for their life, but this does not go both ways, because the environment does not depend on the observers to exist. This does not mean that humans do not have any control on their environment. People are in fact able to manipulate and alter their environment, at least as far as the environment affords to be altered. They do this to change the affordances to what they need them to be and lessen the negative affordances. This does not create a new environment

though, because every animal and human lives in this same, potentially altered, environment. According to Gibson we are all formed and created by the environment we live in (128-130).

While most affordances are easy and directly grasped, in some cases it is possible to misperceive. Two examples Gibson gives are when someone interprets glass as air. When a glass floor is put over a ravine, babies will not crawl over it, because they think it is air and thus affords them to fall. Similarly, it is possible to perceive a glass door as air and walk right into it. Gibson concludes that the way of life of people is inseparably connected to their environment, because the environment enables and constrains what they can do. People can alter their environment as far as it affords it to be altered, but remain a creatures of their situation (142-143).

Another author who wrote about how our environment enables and constrains our behavior is Lawrence Lessig. Instead of emphasizing affordances, Lessig mainly looks at how constraints steer our behavior. He claims that our behavior is steered by four constraints, being: Law, market, social norms and architecture. These four different constraints regulate our behavior in different ways. When one does not follow the law, one will get arrested or get a fine. Law thus regulates direct by using punishments when one goes beyond the behavior which is accepted. The market regulates by determining value in monetary terms and competition. Depending on one's situation and income, the market decides what one can earn and buy. For example someone like Lady Gaga is able to make more money through singing, than someone unknown is able to. Social norms go further than laws can go, because they are internalized. Unlike law, social norms do not need a central enforcer, because they regulate through shared expectations and understandings on how one should behave. An example of a social norm constraining behavior is the general western expectation that women should wear tops and cannot show their breasts in public. Lessig's fourth constrain architecture, corresponds with Gibson's idea that environments afford what one can do. Unlike the market which regulates knowingly, architecture regulates by nature, even when this architecture is constructed by men. It constrains by the world being how it is. A baby cannot climb the stairs, much like a person in a wheelchair cannot go to the floor above without an elevator. Architecture thus also constrains what a person can do (Lessig, *The Laws of Cyberspace* 2-3).

These four constraints all regulate in a different way and on a different level, but they do interact. They all work together at the same time and our behavior is thus steered by the sum of the four. They can undermine and enforce each other and are, as Hayles described technology, able to control and at the same time free us. This is why, according to Lessig, one

should evaluate all four constraints to really grasp one's freedom at any given time. An example of this is driving a car. It gives you freedom to move, but it is controlled by law like speed limits, social norms that prescribe how a good driver behaves, the market that controls whether you are able to afford a car in the first place and architecture like speed bumps (Lessig, *Free Culture* 122-123).

Lessig claims that also in cyberspace architecture constrains our behavior. This is why he objects the beliefs of the cyberlibertarian, who claims that cyberspace is unavoidable and therefore no nation can deny it, but also that this place is not regulatable. Cyberspace is not a place where individuals are free from any sovereign power. As early as 1998, Lessig recognized a shift in cyberspace as a place of freedom to a place of constraints. Looking at cyberspace as a place of freedom hides the fact that this place is highly regulated (Lessig, *The Laws of Cyberspace* 3-4). The architecture of this place is not at all natural, but coded and code is political. Manmade code and protocols involve choices of the makers and prove that the internet from 1995 is not set in stone. It is changeable and therefore regulatable. The code of cyberspace enables and constrains what users can do with it. It dictates its own use. Lessig already predicted that cyberspace would become more controlling of human behavior, because monitoring and tracking of users would become easier and cheaper. But even of more concern: Invisible and more effective. This is why Lessig wants users to become more critical of the sovereign of the cyberspace: The coders, the United State of America and big internet corporations. The users should, just as they do with sovereign powers in the physical world, set limits to it and prevent that only one or a few take control over the code and thus the architecture of the web. Lessig claims that no company, nation or government should get the monopoly of these technologies of control (5 & 7-15).

Philip Agre wrote about this constant monitoring and tracking of users Lessig is referring to by studying human behavior in combination with computational social science (Wikipedia 2010). He explains two models of privacy. The first is surveillance and is based on visual metaphors and originates from secret police surveillance. It entails that all people are being watched constantly. The second model is the one of capturing and Agre claims this model better fits the act of tracking. Whichever model, fact is that human behavior is constantly being observed, recorded and tracked to research human activity, but also to steer it (Agre 101).

To be able to track human activity by using the capture model, information is what has to be captured. Information though, has two different meanings. The first being pure data that

in its form gets captured, the second being the meaning of this information. By gathering information on human activity it is possible to make a systematic representation of an organization and thus it is possible to make a computer be a model of the human organizational activities. This tracking of human activities for the purpose of mapping systems has as a goal to automate human tasks. But it can also be used for research to come up with an organized and reproduced approach, these information technologies can then be applied to impose methods, language, paradigms of good practice and training regimens. This all happens through linguistic metaphors: In the capture model human activities are treated and represented in formal language that can be parsed by computers. In this way human activities are thus language and this is what Agre means by his key concept 'grammar of actions'. These grammar of actions make it possible for computers to process human activities, but it also makes it possible to build systems based on these activities and steer the activities of people using those systems. For example the Dutch public transportation 'chip-card' makes it possible to track humans' use of it and to track their locations, it also dictates that people have to use this card and scan it before they can enter their train. Another example are basically all user interfaces, that are built with tracked information about human activity, but also steer behavior by affording certain unitary actions to be able to use this interface (107-108).

The capture model describes the situation when grammar of actions are imposed upon human activities, and when these new reorganized activities are represented by computers real-time. This process happens in the five stages of: Analysis of activities, articulation of these activities into sensible grammar of actions, imposition of the articulated grammar of actions by given it a normative force, instrumentation into social and technical means and finally elaboration by storing, inspecting, auditing and merging with other records of these new imposed activities. Capturing will continue to 'listen to' the ongoing activities for the purposes of error detection, advice giving, performance measurement and so forth. Grammar of actions always involve an imposer and a participant that follows the imposed behavior. It is important to recognize that machinery almost never captures information by itself, but needs human participation to take its measurements. Also people of whom data is being captured, are most likely also the users of the capturing system and therefore probably will adjust their behavior in such a way to make it easy for the system to capture their activity. Agre claims, therefore, that capture always happens social technically and never pure technically. For example when users use a navigation app, they allow the app to capture information about their location and surroundings for the app to be able to navigate and be useful to them. When a capture system

is successful and works, it is the whole sociopolitical structure that works, not just the technical system, because without human use the technical system is of no use. The technologies that result from tracking always go beyond machinery and involve the empirical project of analysis, the ontological project of articulation and the social project of imposition (108-113).

Agre takes market pressure as leading factor in deciding the manner in which information about human activity is being captured. In 1994, when he published his text, Agre takes making the workplace and the activity of workers more efficient as main reason to capture and steer human activity, but he also predicts, just like Lessig, that in the future this will happen also in the public space, because information about human activity will be easier to capture in all phases of human life. When we look at this prediction now, in 2013, he has been proven right indeed, because personal information about people in their everyday lives is becoming more and more valuable to an increasing amount of businesses (122-123). But when this capturing of information goes beyond making the workplace more efficient and goes into the capturing of data about our everyday lives, what will happen to our privacy? According to Agre the danger exists that people do not recognize the invasion of their privacy and the steering of their behavior, because it lacks the overt horrors of Orwell's dystopia in which surveillance is used for total control. So genuine worrisome about the capture model and its grammar of actions invading all parts of our lives (work, consumption, leisure, travel, healthcare and so forth) can seem not so bad because it seems less serious than Orwell's "Big Brother is watching you" threat (115-116). It appears that Agre himself takes this invading of his privacy by being tracked in every aspect of his life quite serious. Since 2009 Agre disappeared from the net entirely. His family and friends looked for him after reporting him missing, but apparently he told the police, and later one contact, that he wanted to be left alone and stay "offline" forever (Hoonte). His ideas stay relevant and influencing in media studies, but when one searches for him online, he as a person has left the internet-building quite literally.

Discussed earlier, Gibson stated the environment steers behavior by offering affordances and constraints, but also that these environments can be manipulated by men. Another author who focused on this manipulation is Donald Norman. He researches how the design of objects can steer human behavior through its constraints and affordances. His main focus lays on human-centered design (*Jnd.org* 2007-2013). Norman claims that he is known for stuff that does not work like it is supposed to. When one finds a 'Norman's door', this refers to

an object that is designed badly and therefore does not work in the way that naturally comes across. When one cannot open a door, because one pulls instead of pushes, this is not necessarily the stupidity of the user, but the stupidity of the design. People use all kinds of objects every day like it comes naturally and what they have in common is that they all are products of human design. Without explanation or consciously contemplating how something works, one knows how to turn on a faucet, open a door, use a stair, sit on a chair and so forth. When these objects are used in the way that was intended by the designer, the design was successful in transmitting its affordances and constraints, and thus in directing its user's behavior towards it (vii-xv).

The fact that poor design leads to people failing in using the object, proves how objects are able to steer human behavior. When the design is done well this steering becomes invisible, because its use comes naturally to the user (34-35). Affordances contain strong clues on how to use an object. For example a chair has a surface at knee-height and therefore affords support and thus sitting. Glass affords seeing through and breaking it. When people interpret these affordances in the right way, they will act in the appropriate way towards the object, without needing any extra instructions (9). Norman discovered four classes of constraints when he let people build a Lego motorcycle without telling them what to build or giving them a manual. All of the people built the same motorcycle by just looking at the 13 different parts. This is possible because the affordances of the different parts (size and shape) steered their behavior into logically operating them. The four constraints further steering people's behavior are physical, semantic, cultural and logical. Physical constraints constrain possible operations by physical limitation, such as a large peg that does not fit in a small hole. Visibility of these constraints will make the use of it in the right way more natural. Semantic constraints rely upon our knowledge of the situation and the world. In the example of the Lego motorcycle, this knowledge leads people to let the rider face the front of the motorcycle and place the windshield in front of him. Cultural constraints are guided by the guidelines for cultural behavior that are represented in the mind through knowledge schemas. These schemas guide human behavior in all situations, even when one has never been in that exact situation before. In the case of the Lego motorcycle people chose to put the part with the word 'police' on it with the right side up, because signs are culturally meant to be read. Last, the logical constraints guide human behavior by natural mapping. The motorcycle semantically constrained the use of the red stoplight and guided the builders to put it on the back. But most of the people do not semantically know where a blue light has to go on a motorcycle. Logic

guided them to put it on the front, because there was no other logical place left and logic guided them to use all 13 pieces (82-87). Constraints and affordances work best when an object makes them visible and gives immediate feedback. When it is visible how to use a certain object and it then does what one envisioned it to do, it gives one the feedback that it had been used in the right way and one should use it in the same way the next time. When it gives an immediate error users know that they have to change their behavior towards the object to use it in the right way and get the right results (99).

In short the design and its constraints, affordances, visibility and feedback are what steers the behavior of its human users. In the design of an object three parties are involved: The client who gives the designer the instruction to design a certain product. The designer who designs in the first place for his client and in the second for the user of the end product. Clients are not necessarily also the users of the product, so they are mostly concerned with time, costs and eventual profit. Designers in the first place are trying to satisfy their client, but are also interested in designing an useful product for the end user. This drive is not always enough, because designers are most of the time experts on the product they are designing and therefore it is likely they will not recognize all the problems an inexperienced user can have with their product. Users have the least power in the design process of a product, but their wishes are relevant to the salability of the eventual product. Norman, being interested in human-centered design, proposes to give users more influence in the design process in order to make products as perfect in use as possible (151-158). Looking at new media design, which is focused on data mining and the steering of user behavior, the users' wishes are important, because the salability of a product of course provides for the success of a technology. The more people buy and use it, the better they can be steered into profitable behavior and the more data can be mined.

While Norman was mainly, but not only, focused on the design of physical objects, new media design often consists of designing platforms, apps and interfaces instead of physical objects. This is why it is interesting to take a look at design and technology from a platform studies perspective. Platform studies are a new focus for new media studies, that exists of a set of approaches which examines the underlying computer systems that support creative work. It has been introduced in 2007 at the Digital Arts and Cultures Conference. But according to Ian Bogost and Nick Montfort it exists long enough for it to be misconceived in many ways. That is why they aim to clarify the field (Bogost & Montfort 1). As discussed in section 3.2, Latour argued that by not looking at the technology behind a device, it brings the danger of it

becoming obscure, because no one is critically looking at its workings and thus not recognizing its influence on the device and the people using it. Platform studies opens this black box and researches the relationship between the hard- and software of computing systems and the creative works produced through these platforms. Creative new media works that are created on platforms are versatile and contain apps, games, media art, programs, virtual environments and so forth. A platform constrains what a new media creator can create on it, so by choosing a certain platform one simplifies development and delivery in many ways. For an example they take a monochrome platform which cannot display color and a gaming console without a keyboard which cannot take text as input. Another level of constraint is the code lying beneath the platform. These technical constraints guide technical development, because they determine what one can do with it, they also encourage to discover how far one can go with it. Platforms are not of course only technically determined, the nature of it is culturally positioned. All kinds of influences guide their development, such as business goals, the economy, social factors etcetera. Platform studies thus not only study how platforms influence the new media creations that are being created on them, but also how these platforms got their particular shape. A user's experience of the influence of a platform is being mediated through code, the formal behavior of the program and the interface. But just like Latour claimed the workings and thus the influence of a black box, in this case the platform, can be easily overlooked because it is, as Bogost and Montfort call it, 'far away' from the user's experience with a certain device (5-6). Platform studies thus are focused on the workings of platforms that are beneath media creations and how these platforms came into being and steer the behavior of the creator and its user.

All these theories combined show how the design of new media objects is able to steer the behavior of its users through its affordances and constraints. But platforms interface a variety of actors and goals. This variety shows that it is more complicated and the user influences the design and the business behind it too. Also, as a third party in this agency relationship, business goals influence the design and thus the behavior of its users.

3.4 Commercial goals

Business goals are mostly commercial and because business goals also steer the development of the new media object, commercial goals are a factor in the steering of the behavior of its users. What behavior of users is most beneficial to a company's business plan?

Tarleton Gillespie wrote a piece about how platforms like YouTube have to take their

users', advertisers', clients' and their own wishes into account at the same time. These wishes may differ and even clash, but by using the positive discourse of the word 'platform' to take the various perspectives into account, they manage to keep everybody happy. For users this platform suggests an open space where they can freely share their own content in contrast to their possibilities with traditional media. For advertisers this suggests a selling platform on which they can target their audience directly, by getting access to the data the platform gathered from and about its users. For original mainstream content creators, the clients, this is a platform on which they can reach and engage with their targeted audience, which they, again, can reach through the data the platform gathered about its users. Thus, YouTube has to speak in these three registers, while linking it to their own single agenda. Gillespie claims that by using the word platform this can be achieved (Gillespie 6-9).

YouTube, and platforms alike, strive to be looked at as neutral, because this means they can project themselves as being a very important factor in making information accessible and open to all, while projecting themselves as being the intermediary middle that just offers the platform and is not liable for the content. Profiting from the users' and clients' content, while remaining free of liability of this content is why it is also favorable for a platform to interfere with law and policymakers (9-11). These platforms in this way have influence on public discourse. The word platform does not only reveal what it is and how it has to be understood and used, it also hides certain aspects. According to Gillespie, platforms like YouTube are, despite their promises to users, more like traditional media than they like to admit. They have business goals and when they have to choose between the wishes of nonpaying users and paying advertisers and clients, it is likely they will give more value to the wishes of the paying parties (13).

As illustrated by Agre's theory described in section 3.3 user behavior is constantly being tracked by new media devices. Joseph Turow describes how this tracking is used for targeted advertising. The tracking of user behavior of course provides for a lot of data about users and even some data directly from users, this data is crucial to be able to target consumers for advertising. According to Turow an often proclaimed idea is that the Web2.0 empowers consumers, but he finds the opposite is true. Not consumers control their media use and experience, but marketers and media do. Every consumer's behavior is being tracked, online and across different new media devices constantly, in order to create a social profile to be used for targeted advertising. Targeted advertising is useful for marketers, because its goal is to activate buying impulses, steer consumer behavior and sell more efficiently by only

delivering to particular interesting individuals. Through data gathering about individuals and their behaviors it is possible to only advertise to targets and ignore the people that will not bring in enough money, also known as the waste. This tactic thus discriminates between consumers and has a consequence that one might get better or worse deals than one's friends. These data scrapers do not only estimate one's worth to certain businesses, they also establish people's social worth, image of themselves and their image for social peers. When one's tracked behavior and resulting profile is considered as less desirable for marketers, their opportunities are literally narrowed. Not only advertisements are based on data people do not know is collected about them, also news and entertainment is increasingly being customized through this knowledge they have. This intensively customized content is a social problem according to Turow. People are being labeled as target and waste and this is all happening behind the back of the consumer. The collected data about consumers is labeled as anonymous and personal by platforms selling and advertisers using it, but this means these two concepts are deprived of their traditional meaning, because continuous tracking of one's behavior in order to create a social profile can hardly be called anonymous or private in the traditional sense of the words. Most consumers are not aware of the fact that their every move is being tracked and how much these marketers know of them. Turow claims that this creates a knowledge and power imbalance and responsible marketing and complementing regulations have to be created (Turow 1-9).

An especially interesting device for advertisers are mobile devices, because they can transmit their users' locations automatically. Social apps can be used to track users' behavior by letting them check in, show their friends where they are and letting them earn points or badges for interacting with the app, while discretely gathering valuable data (151-152). One of the ways to track user behavior, but also to engage and steer behavior through mobile devices is gamification in non-gaming contexts. Sebastian Deterding et al. wrote about this concept that is increasingly proliferating into mass-market consumer software. Through gamification a technology can persuade and shape the behavior of its users according to what the designer intended. The enjoyment the users experience by using a gamified technology motivates for example to enter their location, do work like tagging and go to recommended places. Also incentive design, like rewarding the users through badges when they act out what the technology wants, contribute to user experience and the willingness to actively use the technology (Deterding et al. "Gamification", 2-3).

This is exactly what Judd Antin and Elizabeth Churchill explain about badges that are

being used as incentives in social media. Badges are goods, represented virtually, that engage and motivate users to interact with them. Antin and Churchill discuss five social psychological functions of badges. First, badges motivate by setting goals. When users meet the goal set by the designer of the system they receive a badge. It works best when users are able to see their own progression. Second, badges steer behavior by giving instruction by giving an idea of which activities and interactivities are afforded by the application and which are valued highest. In this way it socially shapes the users' activities. The third social psychological function is reputation. Through earned badges it is possible to see what exactly interests a certain user and this leads to engagement. Connected to this is one's status and affirmation. Badges show how much a user has achieved, without bragging about it. It also affirms users themselves in what they have achieved in the past and why they should try to earn more badges. The final function Antin and Churchill mention is group identification. Through badges one can see which users are on the same level and share activities. The higher group identification is, the higher is also cooperation with the system (Antin & Churchill 1-3).

Because gamification entails rules, goals and badges, it is complementary but distinct from play. Play is entirely open and free, while game means there is something to gain or to lose, but in a enjoyable situation. Therefore gamification fits well in the age of ludification, where the goal is to make activities or tasks more enjoyable to increase production. It increasingly suffuses society and everyday life, because gamification can be used in any human-computer interaction system. It is mostly used for its persuasiveness in engaging and motivating user activity. Location-based systems take this gamification into the public place. Also augmented reality can enter the public space by laying an gaming-interface on top of it. Gamification of systems can happen on different levels. On the level of game interface design patterns, one can for instance earn badges, see a leaderboard and is able to level up. On the level of game design patterns and mechanics, a system can use time constraint, limited resources and unexpected turns. A third level is game design principles and heuristics, which can mean enduring play, clear goals and choose from a variety of game styles. Fourth, are game models that conceptualize components of games or game experience, like fantasy and curiosity. The final level Deterding et al, discuss is game design methods, such as playtesting, playcentric design and value consciousness. Gamification of systems through these levels is used to increase the joy of use, engage its users and shape its experience. Commercial gamified systems rapidly proliferate, because it promises easy access to more ecologically valid user data and increased interaction with these systems, which of course is good for profit

(Deterding et al. "From Game Design Elements to Gamefulness", 1-6).

Knowledge about users and their behavior is thus very profitable for content producers and advertisers. It is not only valuable in order to profile consumers, but also to steer their behavior into actions profitable for business and shaping their view of the brand. This knowledge can also be valuable because it can get a company third-party clients that are interested to sell something to their users. Profitable behavior is of course buying products, but it also entails user engagement, loyalty and ongoing interactivity with the specific system. Knowledge about the user and steering behavior can happen through different approaches, such as tracking, but it can also happen more directly by stimulating users to give their data themselves through gamification of the system.

3.5 Distributed agency

Previous discussed theories show that a simple division between agency of users, technology and designers is not possible, because every one of these factors influence the others, but this does not necessarily mean agency is distributed evenly.

Ganaele Langlois et al. wrote a text about the commercial Web2.0. Web2.0 is often defined through its relation with user generated content. Langlois et al. mention two theoretical oppositional perspectives that seem incompatible, but according to Langlois et al. these two should be put together to get a full grasp of what the commercial Web2.0 exactly entails. Henry Jenkins sees the democratic potential for user generated content on Web2.0, while Tiziana Terranova argues for a post-Marxist perspective which sees Web2.0 as a place of cultural colonization and expansion of new forms of capitalization on culture, affect and knowledge. According to Langlois et al. both theories are applicable to the commercial Web2.0. It really does empower consumers by giving them space to express themselves, in fact Web2.0 exists only because users generate its content. But this does not make Terranova's claim any less true, because the content users generate for free is being appropriated by businesses and also their user activity is being monetized. Web2.0 in the first place, relies on users producing content and therefore offer user-friendly designs through complex technical processes to support this. When looking from the user-perspective Web2.0 is build up from platforms and interfaces which they can use to publish their content on. But behind this interface are complex technological workings that decide the conditions within which users and their content can exist. This is thus where one can discover more about the shaping of power dynamics in online spaces. Web2.0 is dominated by aggressive business models and

goals that results into a negotiation of privacy within this online space of personal publicity. Businesses do not create their subjects, workers and consumers, but they do create the world in which they can exist. Businesses make use of users' free work online. They do this by offering them a service, in change for the right to re-use the information provided about and by their users. In this way they attract users and can sell them as an audience to third parties. The Terms of Service are used in order to alienate users from their own content by re-using it in different contexts. These processes of alienation are kept invisible for them. Finally by re-articulating the dynamics of alienation they make alienation disappear as a whole, because there is no difference anymore between the marketing of user information and the experience of enrichment for users (Langlois et al.).

This section illustrated how behavior of people is being steered by new media technologies, but it also showed that the agency in this steering process is not exclusively technological, because, among even more factors like content, users and the design have influence on this process too. That all these three factors have agency, does not mean this agency is distributed symmetrical and this distribution can differ within every technological object. This is why the distribution of this steering agency should be investigated and reexamined for multiple new media objects to get a sense of its workings.

Multiple factors influence the process of steering behavior through new media objects. As discussed in section 3.1 technological development has made humanlike intelligent machines possible and human agency, rationality and affective capacities should be reexamined. Hayles claims that technologies and tools influence what and who humans are as much as the other way around. Section 3.2 was about predicting of behavior. Because computers get more intelligent it is possible to predict human behavior by looking at past actions. This can then be used to shape human behavior in order to prevent certain possible futures. Because prediction could be very valuable gathering data of individuals is important. Design of objects also influences behavior, because it determines what behavior is afforded and what behavior is constrained. Furthermore commercial goals are what shape new media technologies and thus are a factor in the steering of user behavior. Finally, Langlois et al. show that agency really is divided between users, technology and businesses, how this distribution is not equal and how the technology behind objects have to be investigated to get to know more about these power relations.

Bluntly said, technology steers its users through what it affords and constrains them to do with it, but it also steers its designers, because not everything what can be imagined can be technically made (yet). Users steer technology by using it in unpremeditated ways and steer the designers through their needs and wishes, because those are what makes them buy the products. Designers steer technology, because they create technology that is valuable to them and they steer users because the design of a technology decides what behavior is afforded and what is constrained. These agencies are not distributed symmetrically and they all work at the same time and thus overlap each other.

4. Case-studies

4.1 Methodological considerations

After discussing multiple academic theories and positions on the process of steering behavior through technology it is interesting to see whether these are applicable in practice. In this section the case studies will be discussed with recourse on the theory and see to which extend they resonate, how the theory allows to make sense of the steering dynamics in the context of these objects or if these objects open up new questions and lines of inquiry. So in other words these three objects will be analyzed to investigate how the steering process through each of these objects work, how the of agency between users, technology and design are distributed and related, how they follow the theory and where they deviate from the theory and bring up new questions.

A platform based approach will be used to connect the case studies back to the discussed theory. Looking at the platform, its interface, its design and its grammar of actions will inform how the case studies will be analyzed. In terms of asymmetries in agency and steering, focus will be placed on who has agency in what moments, what forms of agency, what form of agency is offered to the users, how the agencies align and connect to each other and what the value is of data mining through these objects for users, designers and third parties.

The first case study is Apple Maps. While one could argue every new media technology is able to steer behavior, an app like this illustrates it very well, because it contains maps and physical directions for users to follow in the offline world. Foursquare then, takes it a step further by implementing social networking more and gamification of locations in the offline world. The last case study is Google Glass and is interesting to consider because it imposes a

virtual layer on the physical world to be used on an everyday basis. Because this technology is not available to all yet and still in the stage of development, this case study will basically just offer a glimpse in the future based on the information that is available now. To discuss every key term and every theory for each object will make this thesis unnecessarily long and therefore the focus will lie only on the most relevant and noticeable parts of these objects in regard to the process and agency of steering behavior through technology.

4.2 Apple Maps

20 September 2012, Apple replaced the Google Maps app, which came standard on the iPhone, with Apple Maps. For existing iPhone owners this meant the app was replaced after updating from iOS 5 to iOS6 (*Apple* 2013). This was a rather surprising move, because users were happy with Google Maps and Apple Maps was still experiencing some growing pains. Apple is a commercial business and therefore driven by profit. This app does not however, generate direct profit because it is free and comes standard since iOS6. Still, this is profitable because Apple generates most of its profits through hardware instead of apps and content. Apple does make money with content and its App Store, but this is so little, it is insignificant compared to its profits via the selling of hardware. Because selling hardware is Apple's core business it is profitable to make this hardware more valuable through free apps and other services like Apple Maps (Frommer). In the fiscal year of 2012 Apple generated a net profit of over 41 billion dollars. The 2.1 billion revenues on iTunes thus is not a large part of Apple's profit (Dilger). A good navigation tool is a desirable service for many and thus makes having an iPhone more desirable and results into more consumers buying an Apple product. Something like iCloud, a service that backs up almost all data of Apple users, also makes an iPhone more valuable, because it ensures that no data is lost when one loses or breaks one's device. In addition, it makes an Apple user more loyal to the brand, because it also allows for data to be transferred from an old device to a new device. Apple's main goal is to sell more high profit hardware and optimizes its business and pricing in order to achieve this. This leads to Apple's other services and products to be designed in order to support those sales (Frommer).

But, Google has far more and longer experience in the process of mapping the entire world for online services. This app thus already made the iPhone valuable in terms of having a good navigation tool. One reason for Apple to make its own app and use it to replace the high quality Google Maps app, is to make the brand more valuable by offering a native app. Michael Rose also describes a second reason. Since 2009 Google Maps offered turn-by-turn navigation

for Android phones, but did not offer this same service for third parties like Apple. Google's API license agreement made this service impossible to integrate in third-party apps. Because turn-by-turn navigation is a valuable option when using one's phone for real-time navigation (mostly when driving), Apple decided to develop its own app in order to be able to compete with Android Smartphones (Rose).

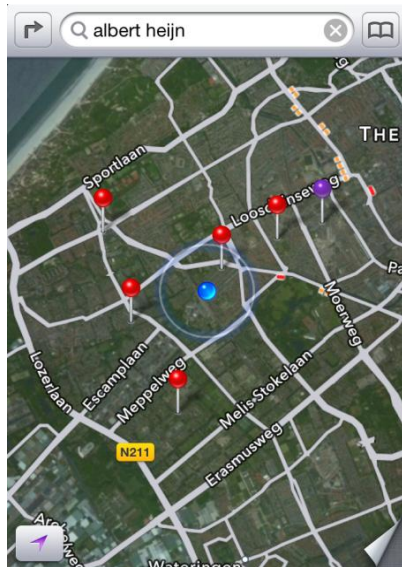


Image 1. Apple Maps - Local Search

Features of Apple Maps include: Flyover, 3D views, scaling, zooming, spoken turn-by-turn directions, interactivity and Local Search. The Flyover feature is an aesthetic one and offers the possibilities to zoom, tilt, rotate and pan around certain cities and their landmarks in high resolution. The navigation option provides turn-by-turn spoken directions, while a user drives one's car. In addition, it offers 3D view, standard map, satellite map, hybrid map, real-time traffic information, the time left to reach one's destination and the way is shown through arrows on the map. Just as with other navigation tools, this app reroutes automatically when one takes the wrong turn, it also offers an alternative route when it notices a traffic jam. When one opens Apple Maps, it will automatically open at the location of the user, so one can immediately get a route to a desired destination or use the Local Search function. When one taps the location one's interested in it is possible to discover its surroundings by searching for services in the top search field. Possible places to search for are florists, restaurants, cinemas and supermarkets. When one finds the wanted location, one can tap it and look at pictures, call the phone number, get the address, go to its homepage and get a route to or from one's current location (Apple 2013). Apple Maps offers three different styles of directions: Car, walk or public transport. The public transport route however, opens the App Store and shows one local public transport apps to download. Also, it is possible to share your location through mail, SMS and social apps like Facebook and Twitter or save it as a bookmark. When a business is found and registered at Yelp, the user can see its ratings, some reviews and special discounts inside Apple Maps. When a user wants to know more, one can open Yelp's app. As a business owner one can report directly via the map when something is wrong with one's location or information (Apple Maps 2013).

Because Apple is new in mapping the world and navigation, this app contained a lot of

beginning errors and immediately became controversial after its forced entry. These errors are being addressed while this app is already up and running. One error with major consequences was the fact that a place called Mildura in Australia was placed 70 kilometers south on Apple Maps from its real location. This error caused multiple iPhone users to get stuck in the middle of a national park without gasoline and water and where the temperature can rise up to 46 degrees Celsius. Some of them were only saved after spending 24 hours without food and water in the burning sun. This error thus was proven to be possibly life threatening and forced the Australian police to warn citizens not to use Apple Maps until further notice (ANP). This error was fixed when Apple updated its app (Van Hoek, "Apple Updatet 'Levensgevaarlijke' Australische Kaarten.>"). This instance illustrates Hayles' claim that humans are computational to a certain point. These Australian users that got stuck in the wilderness, fully trusted this app and followed the directions uncritically as if they were code.

Looking at this app through McLuhan's eyes, this app can be considered as an extension of our senses. It produces the possibility to efficiently and error free navigate through spaces one has never been before. In this way it thus shapes human association and action and therefore this medium is the message. This app dictates where a user should go and when a location is not on the map, it could just as well not exist. The way it allows its users to live a faster life, is a shift in society which is hidden through its content. Previously, one had to plan ahead to move efficiently through space, but with navigation apps like this one, it is possible to skip that step and navigate only at the moment one is already moving through space. This shift was not recognized by the Australian users that got lost, they relied on the tool so much, that they did not suspect they were going the wrong way until they stranded. This app could also be considered a remediation, because it remediates older media like TomTom and paper maps. It claims to be more authentic and real than its forerunners through its features like 3D view, easy scaling, real-time navigation and Local Search.

Hayles would even go as far as to look at this app as constituting reality, instead of only remediating it. Local Search for example constitutes reality by discovering and introducing the environment to its user. One can search for and find a pub in one's direct environment, even when one has never been there before. Apple Maps will show the user the closest pubs, but only the ones that are indexed in the app. Pubs that are not on Apple Maps, are off its radar and often that means they are also off the radar of the uncritical user. User rely on the information given by the app and are not willing to lose time by searching for a pub on their own when there are options given by Apple. In this way Apple Maps affords and constrains the

options and thus the actions and behavior of the user. The need of the user, searching for unknown locations in unknown areas, formed Local Search, but Local Search also formed the user's need for it, because why would one search for it oneself, when one can find enough places through this app?

The incident that happened to the stranded Australians, but also the instances when this app offers the right directions, show this app can be seen as a black box. Most users understand its input, do not have the knowledge to understand its inside workings, but do understand and thus rely on the output uncritically. Another interesting cybernetic concept this app seems to follow are its humanlike qualities. It cannot make predictions as big as Wiener envisioned, but is able to remember locations, preferences and routes to make it easier for the user to use in the future. It is also able to communicate, give and receive feedback and act with a purpose. When one takes the wrong turn, it immediately responds by giving a revised route.

Lessig's four constraints are also applicable to this app. Firstly, this app constrains through law, because before one is able to use Apple's services, one has to sign the Terms of Service. Secondly, social norms are not necessarily prominent in this object, but it does offer the possibility to share one's location. This thus follows the social norm Grusin described as the will and need to be connected constantly. The market constrains, because not everybody is able to afford an iPhone in the first place, price thus decides who can use this service of Apple. Lastly, the code, architecture, constrains for what this app can be used and for what it cannot be used. Because this code is designed by people it is political and has the potential to change. For example the function to generate a route for travelling by bike can be added or the iPhone can be designed in such a way that it does not support third-party apps anymore and force the user to use Apple Maps only to navigate. While a user feels in control of one's environment and one's navigation through using this tool, Apple Maps' design of its interface is what decides its affordances and constraints, like Chun explained.

What certainly is valuable for Apple, is that this app is as accurate as can be and therefore it integrated the commercial service Yelp. Yelp is an established successful review app and partnering up with this service makes building a review platform inside Apple by Apple itself unnecessary. Yelp's valuable content exists of detailed contact information about businesses, reviews and special discounts. This is valuable to Apple because it offers Apple Maps more locations to integrate in its system without having to find this locations itself, but it also makes Apple Maps more desirable to use for its users. The more data from its users, but



Image 2. Apple Maps - Yelp reviews

also from services like Yelp, the more useful Apple Maps will get. This partnership is valuable to Yelp, because it automatically generates a huge new audience that exists of a large amount of iPhone and thus Apple Maps users. Apple Maps does not only steer the behavior of its direct users with the integration of the Yelp platform, it also steers the behavior of local businesses. Apple sold 47.8 million iPhones in the last three months of 2012 alone, which is a growth of 23 percent compared to the previous period (Crook). This fact illustrates that the iPhone and thus Apple Maps, are being used by a very large part of the global market and it is thus valuable for a business to

appear on the map. When one's business is not already on it through Yelp, it is necessary to take action and register it on Apple Maps and Yelp in order to not lose potential customers to local competitors who are already on it. This data again helps Apple to make its app more complete. While it is likely this app does not yet track the paths of its users to gather data about individuals, the technology is able to do it and can do it when the designers decide that it is valuable to do. This again is an example of the code being political and thus affords potential change to it, according to its designers wishes.



That big green blob is in a 5th Avenue bus lane. I think it's gonna attack the NYC Apple Store. RUUUUUUN!

Image 3. Tumblr. - The Amazing iOS6 Maps

Even though the above descriptions seem to be arguing the designers and the technology have all agency in the process of steering the behavior of its users, the users do have some agency as well. The app's serious errors did not only cause users to uncritically follow them and get lost, but also to numerous memes and tumblr.'s full of screenshots making fun of the errors and distortions in the map. Errors included places in the wrong location, but also distortions that suggested one should ride of a bridge to get to one's location. It became a quest for some critical consumers to search the funniest errors and laugh at them. The positive image of Apple as a brand decreased because of these errors for its users,

especially for those users unaware of them before they updated to iOS6 and were forced to use the app, because Google had not yet made an alternative (Rose). But the news of these errors and the forced use of Apple Maps after the update to iOS6 travelled fast and a lot of users decided to wait with this update until Google Maps would come with an alternative for iOS6. They showed their agency by updating en masse, after Google eventually came with a new app for iOS6. On that day the users of iOS6 grew with 29% (Van Hoek, “ iPhones Massaal Geupdatet nu Google Apps beschikbaar is.”).

This analysis shows how the process of steering behavior through Apple Maps works. It illustrates how the technology’s grammar of actions steer its users behavior in the offline world by following its directions uncritically, but also how they encourage users to provide data through Yelp to make the app better. It also shows how code is political and thus how the designers at Apple decide what is valuable and what is being designed. And thus what the technology affords and constrains its users and third parties to do with it. But the designers do not only steer, they are also steered by technology. Because Apple is years behind on Google in mapping the world, Apple Maps was introduced with and still contains a lot of errors. It also dictates which features the designers could implement in the first place, because not everything one could imagine can be coded yet. Also the user’s needs steer what is valuable for Apple and thus for the designers to design. Users can be critical and have some agency, but still, the technology and the design have the most agency in steering behavior. When one wants to use this very usable service to navigate through space efficiently, one has to use it in the way that is envisioned by its designers and is afforded by its technology.

4.3 Foursquare

Near the end of 2008 the building of the first version of Foursquare began, in March 2009 co-founders Dennis Crowley and Naveen Selvadurai launched it (*Foursquare* “About Foursquare” 2013). For Crowley this project was not his first experience with building a mobile social service based on location. He was also the co-founder of *dodgeball.com* which was bought by Google in 2005 (*Foursquare* “Team Foursquare” 2013). Foursquare is a free app and its goal is to offer its users the possibility to discover one’s environment fully through this app, even when it is a new environment for the user. It calls itself the perfect companion, because it claims it can help the user plan a trip around the world, an evening out or search for good food in one’s one neighborhood. It is a social app, because it lets the user share and save places one

visits. It also gives personalized recommendations on what to do next and offers special deals based on one's Foursquare history, friends and other people with similar tastes. In terms of figures, the app has over 30 million users globally, there have been more than 3 billion check-ins and this number grows with millions every day and over a million businesses use Foursquare's Merchant Platform (*Foursquare "About Foursquare" 2013*)

Foursquare's features and design are built upon life as a game ideas (*Foursquare "A*



Image 4. Foursquare - Explore

Brief History of Foursquare" 2013). Its features include the function to explore nearby one's current location, checking in at places, getting deals, keeping up a personal profile, adding pictures, earning badges, becoming mayor, getting points, sharing places with friends, giving tips, saving top places, keeping up a to-do list, subscribing to other lists, liking a place, connecting to one's other social profiles such as Facebook and Twitter and seeing one's own and other's history, badges and statistics (*Foursquare 2013*). This app thus has three major reasons for a user to use it intensively. First it is an app to use for exploring one's surroundings, getting recommendations about places, being able to read

reviews and getting discounts through special deals. Second it is fun, because it makes a game out of exploring one's surroundings, one can earn points, badges and mayorship by visiting places and checking in. This gets extra fun to do, because thirdly, this app is social and lets one compare one's achievements with friends, but also lets one share tips with friends. These three uses of this app all produce data and this is what is valuable for Foursquare.

When one starts to use this app, one has to, just as is the case with most apps, devices and services, agree to the Terms of Use. The Terms that consider user content, Foursquare content and user submissions are especially interesting for this case study. The part called Content states that all content posted or transmitted through the app, public or private, is the sole responsibility of the person from whom the content originates. Therefore Foursquare is not in any way liable for content of users and businesses. The part about Foursquare Content states that all content produced by Foursquare is copyrighted and cannot in any way be used by users for commercial purposes without Foursquare's permission, it can be used and reproduced by users for personal use. The third interesting part is about User Submissions and states that when a user submits content to the service, one also grants Foursquare

automatically a global, non-exclusive, royalty-free, transferable, sublicensable and fully paid license to use it anyway Foursquare wants. It can for example use, edit, reproduce, alter, copy, distribute, perform and display the content provided by its users or exploit it in any other conceivable way. A user also allows other users of the service and third-party businesses to access the content. The user does still own the content and is still liable for it. One can choose to delete one's user submissions from the service, but Foursquare still holds the right to keep them in backup copies for a reasonable, but undefined, time (*Foursquare* "Foursquare Labs, Inc. Terms of Use" 2013).

These Terms of Use stress the need for user generated data, in addition to Foursquare's content, for this app to be valuable for its users and profitable for Foursquare and businesses active on the service. Agre claimed that tracking of human activity and thus data, is not only a technological process, but a social technological process. For a machine to track human activity, it almost always needs human participation. To keep its users participating and in constant interactivity with the app voluntarily, but not necessarily knowingly, providing it with personal data at least three grammar of actions are used: Personification, social connectivity and gamification. For personification data about the user is needed, this is why Foursquare is tracking its users activities, built its system upon the grammar of action of these activities and steers the activities by imposing grammar of actions upon the people using this app. People go to places and want to know where the good places are, Foursquare took this as the core of its system and steers its users to check in on those places to make the app more valuable for themselves but also for Foursquare. The resulting data can be fed back to the user and be used to personalize the user's experience and the recommendation and the deals one receives through the app. It can also help Foursquare to get to know more about one's friends and make the connection and thus connectivity between users stronger. The more data, the more interactivity and the more sharing gets more users engaged with the app. Just as Grusin stated, a social norm is to stay in constant connectivity and this is possible on Foursquare by checking in on locations and sharing these places with friends. Foursquare as a capture system works, because it imposes certain behavior on the human participant who follows the imposed behavior. Without the users and their data producing activities, this system would be nonexistent.

Another great incentive to use this service intensively, is the design that makes navigating through one's environment and discovering and visiting places into a real life everyday game. Norman's ideas about how good design needs no manual to transmit its

affordances and constraints to its user are applicable to this case. Its entire interface is built so that it puts some logical steps, some grammar of actions, forward. First one should use the app to discover one's environment, then one should visit the place, check in and share it with



Image 5. Foursquare - Badges

friends. The personal page exists of a collection of one's badges, mayorships, points, friends, statistics, photos, tips and lists. This page thus reminds a user of one's accomplishments and also of the accomplishments that have not yet been reached. It shows one which actions will get one a certain badge and whether or not one had visited a certain place enough to become the mayor of it. In this way the badges and the design of the interface predetermine desired behavior and thus impose grammar of actions to be able to participate in this game, involve one's friends to compete and share and visit certain places in the offline world. The constraints and affordances of this app work,

because by giving badges, points, mayorships and social sharing possibilities it immediately makes it visible and gives feedback when a user acted in the way that was envisioned by its design. In this case the five psychological functions of the badges described by Antin and Churchill of course come into action. They motivate by setting goals, giving instructions of desirable behavior, letting a user build a reputation, giving affirmation and status and providing for group identification which makes it social again. Through this motivation Foursquare is able to, as Deterding claimed, persuade and shape the behavior of its user according to what it intended, which is discretely gathering valuable data. By making it valuable to the user to provide Foursquare with data and more importantly, making it fun by making a game out of it, Foursquare successively ludifies the generating of this data. Instead of spending a lot of money on paying employees to gather data about users and locations to make the app better, Foursquare sets its users to work on this without them even realizing it.

This constant activity of its users providing data is commercially valuable for Foursquare. But, because it is not possible to go through all this data that is constantly being produced by its users, it is too risky to just claim ownership over it. That is why the Terms of Use are quite similar to that of YouTube that were described by Gillespie. Foursquare also has three agendas to keep happy: The one of its users, the one of the commercial businesses

active on the service and its own. That is why it takes a similar neutral position like YouTube and lets the users keep their ownership over their content and with that all the liability. It does however makes the users accept the condition that Foursquare gets a license to use their content in any commercial way as it sees fit. In this way Foursquare can take advantage of all the user generated content without running any legal and financial risk. It can use all data provided through the app and it can also provide third parties with this data. This data is valuable to commercial businesses active on Foursquare, because it makes targeted advertising that much easier and efficient.

Also this analysis seems to leave no room for user agency outside the agency of the technology and the designers, but Foursquare does leave some room for it. An intentional space for user agency is its open API. This API serves its users and developers from outside Foursquare to hack the app and use its contents and functionalities to build another app. Foursquare even organizes hackathons and gives prizes to the best hacks (*Foursquare Blog* 2013). This allows technical users and developers to build their own ideas on top of Foursquare's platform (*Foursquare "About Foursquare"* 2013). By hosting these hackathons Foursquare actively invites, encourages and thus steers this specific behavior of its users and developers outside the company. In this way Foursquare gives some agency to them, but keeps their activities in sight and within its controlled space. Another use that entails more user agency, but probably unintended, is cheating. A quick Google search can help a user to get to know tricks on how to cheat on earning points, badges and mayorships. This is valuable to a user because through these accomplishments one gets better deals and discounts (Damania). This is commercially unfavorable for Foursquare and the businesses active on Foursquare, because it infects the system with fake check-ins and accomplishments and thus with wrong data about the user. When other users notice the cheating, it can also cause users to drop out, because the game is not fun anymore to participate in as a honest user. In the case of cheating the app is not used in the way it was intentioned by its designers, but its design is used against it.

The analysis of this case study illustrates how the process of steering behavior through Foursquare works. This app also steer its users behavior in the offline world, but focuses more heavily on motivating its users into providing the app with user generated data to make the app commercially better. Getting users to provide the app with as much data as possible is done through grammar of actions aimed at personification, which makes the app more

valuable to its users, gamification, which makes it more fun to participate with the app constantly and social connectivity, which makes it socially relevant to use the app. This all makes the app better and more valuable to the user, but these imposed grammar of actions also ensure Foursquare and the businesses active on the platform with a constant flow of commercially valuable personal data. Users have some agency through its open API and the possibilities to cheat. However, the API is open and Foursquare rewards good hacks because these are also contributing to the commercial worth of Foursquare. A good hack built upon the platform only ensures more users, more traffic and more data for the original app Foursquare. The unintended cheating is not beneficial for Foursquare, but also illustrates how the technology steers the behavior of people. Without this app that makes a game of exploring places in the offline world, this cheating and this behavior would be meaningless. Just as applies to Apple Maps, when a user wants to use this platform for its services, one has to use it in the way that is afforded by its technology and envisioned by its designers.

4.4 Google Glass: A glimpse into the near future

This case study differs from the previous two, because this case study is not yet available to most of the public including me. Google Glass at this point is only available to some lucky Google employees and Google Explorers. Using the information that has been given by Google, the Google Glass developers and some explorers about Glass, which is still in its developing stage, it has to be noted that information about and the features of Glass can be altered anytime between the writing of this thesis and the eventual release of the device for mainstream consumers. This thus is a glimpse into the future based on the information available now.

Google's self proclaimed mission is to organize all of the world's information and make this accessible and useful to all (*Google "About Google" 2013*). Its philosophy is described in ten points, that can be summarized to user-centered, technological, democratic, commercial (but without being evil) and information indexing and spreading ideals (*Google "Ten Things We Know to Be True" 2013*). Just as with Foursquare, the Terms of Service of Google read that a user of Google's products and services keeps the ownership and full liability over one's submitted content, but also gives Google the unprecedented right to use it in any, also commercial, way it sees fit. Google also holds the right to modify and terminate any of the services and features it provides to the user at all time and force updates to their software (*Google "Google Terms of Service" 2013*). The information Google captures from its users is

either the data given by the user oneself or the data Google gets through the user's use of its services. The information gathered through use includes: Device, log, location, unique application numbers, local storage, cookie and anonymous identifier information. Though Google states it will never use this information to do evil, it gathers it nonetheless. What Google exactly considers as doing evil, is not explained and therefore remains opaque. But, expressing this ideal and wording it as to not do evil, makes clear that Google is aware of its practical monopoly on global data and the scope of knowledge it possesses and that this can be used in possibly harmful ways. In its own words Google collects all this information in order to provide, maintain, protect and improve its services (*Google "Privacy Policy" 2013*). This description of Google's general ideas and Terms has been given, because these also apply to the Google Glass device.



Image 6. Google Glass - Design

Google Glass was publicly announced 4 April 2012 on the Google Plus platform (*Project Glass 2012*). Of course Google's developers had been working secretly on the device much longer at their Google X offices. This was a smart move, because now it was public they could wear and test Glass outside the office. Also, this gave the developers the chance to get feedback from its future consumers and use this in its developing stage, which is still going (Rotman Epps). Because the developers take this feedback as very valuable, they opened up the Explorer program. Interested developers and techies got the chance to sign up early at Google's 2012 I/O to make a chance to get the opportunity to buy a Explorer Glass for 1.500 dollars (Chapman). To also get feedback from less technical consumers, one could use the #ifihadglass online application process to get that same chance (*Google "ifihadglass Official Terms" 2013*). At this moment 2000 of the applicants of Google I/O 2012 got their Explorer Glass's and 8000 of the #ifihadglass requests are next in line. When it is ready for all consumers to buy is not clear yet, but the team is aiming for the end of this year (GoogleDevelopers "Google I/O 2013 – Fireside Chat with the Glass Team"). The developers are hoping on as much feedback as they can get. They even gave a keynote at Google I/O 2013 about how to hack Glass and get root access. They do warn the Explorers this will void their warranty, but also state that they want to give them the tools to experiment with it without limits (GoogleDevelopers "Google Google I/O 2013 – Voiding Your Warranty: Hacking Glass"). It is valuable for Google to see what kind of apps these Explorers will come up with through the legal way and through hacking.

Four members of the Glass Team describe at a Google I/O 2013 keynote the goal of

Glass, its design and its features. Glass according to them, is not only a device but also a platform and this platform is aimed at having a big and positive impact on the world. It should drive innovation and therefore they opened the platform up to outside developers and offer them to work with the same API as the Glass Team is working with. The design of Glass is aimed at lightness and simplicity. It should be as light as possible and simplified to one mechanism in terms of usability. It should be wearable for all, so for people with prescription glasses the mechanism of Glass can be removed from the frame and attached to their own glasses (GoogleDevelopers “Google I/O 2013 – Fireside Chat with the Glass Team”). When wearing Glass the sound comes from a little speaker that is right behind the user’s right ear. At

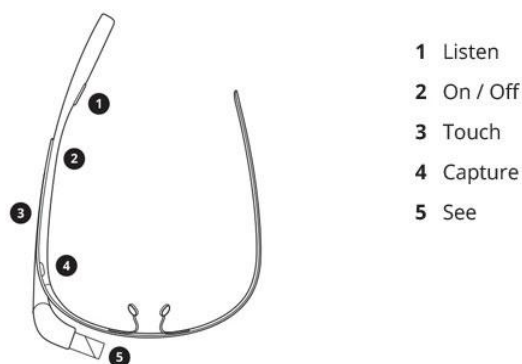


Image 7. Google Glass - Manual

the right temple one finds the touchpad on the frame for navigating through Glass’s timeline, home screen and voice search. Most navigating can also be done through voice recognition. To capture a picture one can press the camera button, to record a video one holds the button down. The other way is through voice recognition. When one says out loud “Ok, Glass”, the device will know it has to take a command, then one could say “Start recording” and it will start recording. The plastic cube slightly above the right corner of one’s eye is the display and will show the interface, emails, current time, video clips, apps and more (Google “Getting to Know Glass” 2013). This display is built in such a way that it seems that everything is projected 7 feet in front of the user. Despite this, it is not built to watch a lengthy movie on or read a book. Glass is built around brief interaction and its intended use is focused on getting technology out of the way when one does not need it. Instead of pausing a run to look at the calories burned, one can now see it immediately while running without interruption through Glass (GoogleDevelopers “Google I/O 2013 – Fireside Chat with the Glass Team”).

A big concern since the announcement of Glass is privacy. Also during the keynote chat with the Glass Team this question is raised again by a journalist. What user generated content made through the device is being kept by Google? This one was answered quickly. Google will keep all the content it would normally keep through its other services, because Google’s general Privacy Policy also applies to Glass. The second question was about the social concern about the privacy of the people around Glass users. How will Google provide that it is

impossible to secretly spy on people and record them without them noticing? First the developers state that to start a record or take a picture a clear social queue is needed. One has to either visibly use the touchpad or say “Ok, Glass. Start recording”. Also, the display lights up visibly for people around the user when recording. The journalist notes that this can be altered when users hack the device. One of the developers then states that this is true, but it is not the intended use, that by design this is impossible and through policy it is forbidden, also for third-party apps. When hackers would do it anyway, it is still not likely people do not notice when a Glass user is recording them, because staring will be necessary to record somebody. The social is also implemented in the device in other ways. The developers wanted to prevent Glass from getting a similar bad reputation like Bluetooth headsets. When Bluetooth headsets were introduced, users would all of a sudden talk loudly while calling through the device in public. This device pulled them out of the here and now into the virtual space of the call and therefore disconnected the user with the people around them. Glass developers state that they recognized this immediately and realized the importance of human eye contact. That is why they placed the display slightly above the right eye. People around a user will know when one is paying attention and when one is interacting with one’s Glass (GoogleDevelopers “Google I/O 2013 – Fireside Chat with the Glass Team”).

Glass of course is a perfect example of a cybernetic device. It is quite literally an extension of one’s senses, namely the eyes and the brain. One can search for and see information projected about stuff happening right in front of them immediately. Also as Hayles claimed, it alters reality. Not just one’s environment is one’s reality, but also all the information projected over it constantly. That being information about the environment or one’s inbox. Even though Glass claims to connect a user better to one’s environment, one can have doubts about this, because the content projected over it, will probably distract the user at least a little. Also, because it is a Google device, it will connect the user automatically to as much other services Google has. The reality will thus not only be changed because content is projected on top of it, it will be changed into a Googleized reality.

Grusin’s concept of constant connectivity because of constant anticipation for interaction applies too. Through Glass it is possible to be in contact and share content with everyone, all the time. This is an incentive to use this device and therefore this device can be successful. In 2012 Grusin wrote a blog on Google and its shift from remediation to premediation. Not surprisingly, this thoughts can be applied to Glass too. Grusin notices a new goal for Google in 2010. It does not focuses on just answering search queries anymore, it

wants to offer users tailored answers and even states that users do not want answers but want to be steered by being told what to do next. Therefore Google has to mobilize its individual users and collective affectivity of anticipation. To be able to offer its users future oriented search results before they even search for it, Google needs all data it can get about the individual users. (Grusin, "Google and the Premediation of Everything."). With constant connectivity and the sharing of content the concern of privacy comes in again and this is a reasonable concern, because just as Foursquare and YouTube, Google made sure that liability for user generated content stays with the user, but at the same time it has all the rights to use it in any way it sees fit. When Google describes its main goal to be making all the information in the World accessible to everyone everywhere, it, deliberately or not, does not mention it therefore has to track and gather all data of all users. This however does happen through direct submission of its users, but also through the use of all services and products Google offers. This is no different in the case of Glass. Even though it claims to do nothing evil with this content it gathers from its user, it is able to do just that and track and keep all kind of privacy infringing information about its users. This is exactly what Agre described as dangerous to the power balance between designers and users. Beyond this device steering behavior through severely changing how users interact with the world, reality and people around them, it will also be an excellent device to steer physical offline behavior through gamification, because it lays an augmented layer on top of the real world and thus is able to make the real world into a game.

The possibility to hack this device is evident and emphasized by the keynote held by Google itself to give instructions on how to hack the device. This thus offers countless possibilities to use Glass in a way that was not intended by its designers. For one, hackers could easily get around the physical queues needed to start recording and thus make it easier to use Glass to spy, without people noticing this. This will be a way to use the Google device to do evil, despite of Google's philosophy. As for now, Glass is not yet secured by any passwords, so in theory it is possible for a hacker to hack stolen Glass's or Glass's that are lying around unsupervised for a moment. This unintended use is empowering the technological user, but also possibly victimizing other users. Another use that is probably not necessarily envisioned by its designers, is the use of Glass to record point of view porn. POV porn is a popular subgenre in the field, but not perfected yet, because it is kind of hard to have sex while having to hold a camera and point it so one shoots the right frames. But with Glass porn makers see possibilities to make POV porn without interrupting the experience of the actors, because they

only have to look where they want to record (Honorof).

This analysis of Glass offered a possible glimpse into the future, because Glass is still in its developing phase and not accessible to all. This device will probably steer users behavior mainly by changing the ways users interact with their surroundings, the world, reality, the people around them and their interactions with apps and the internet. While Google claims to augment and mediate the user's connection with reality, it actually will be more likely that it will augment and mediate the user's connection with Google's services. It is also an extremely valuable and efficient device to help Google in its quest to capture all the information in the world, also that of individual users. This is already causing Google to be a superpower in the world, because it holds probably the biggest part of the world's knowledge and Glass will only enlarge this. Technical users can take agency by hacking the device, but realistically this will not be an option for most of the mainstream users. For this device to be valuable to users, most users will have to use it in the way that is afforded by its technology and envisioned by its designers. While it empowers users, because it makes information that bit more accessible everywhere and anytime, the distribution of agency in the steering process of this device will mainly lie in the field of the technology and its designers.

4.5 Discussion: The role of data

These three different new media technologies illustrate how the steering of behavior plays out in different ways across different platforms. Apple Maps does get better from user generated data, but mainly uses its own content and that of Yelp, what of course is user generated data from Yelp users, but not necessarily from Apple Maps users. Because Apple Maps mainly wants to be useful for users in order to sell more hardware and make more profit, in this case on iPhones, it mainly focuses on successfully steering the behavior of its users offline by navigating them where they want to go. This app thus entails much more non digital activity than Fourquare or Google Glass. Apple Maps therefore, does not need to retrieve as much data from its users as these other two platforms and this means it needs less user interactivity with the app.

Foursquare on the other hand, needs user data in order to even exist as a platform. For users it is valuable because their data is being fed back in the form of recommendations and special offers and that is one of the big reasons why one would use Foursquare. It is valuable to third parties, businesses active on the app, because it helps them effectively target their

audience and be found by its audience. Last, it is valuable to Foursquare because it makes for the app's content and usefulness. Grammar of actions are being imposed on its users in order to get them to give Foursquare as much data as possible. Gamification makes it fun for users to use the app, without paying much attention to how they are being steered into providing Foursquare with their valuable data for free.

Finally, Google Glass is, as other Google services are getting more and more, aimed at being tailored to the individual using it. Google takes the view that users desire personalized experiences with their services, in able to achieve this, Google needs all the data about individual users it can get. Glass thus is also aimed at steering user behavior into practices that are profitable to their goal of retrieving data. Glass is designed as an object to use on an everyday, all day basis. When users thus use Glass for every technological and everyday need they have through the day, Google retrieves more data than was possible through other devices such as the Smartphone and the desktop computer. It offers the user to take pictures, retrieve information about one's environment, email, voip, use apps, record, play games etcetera. It steers the user in using more Google services, using them more frequently and thus providing Google with more and better data.

The level of needed data and data retrieving thus are important factors in what grammar of actions are being imposed on users and how their behavior is being steered.

5. Conclusion

Combining all the information, theories and case studies discussed, one can conclude that indeed the agency in the process of steering behavior through new media technology is distributed and that this distribution is not symmetrical. Even though, users mostly feel empowered by the new media technologies they use, when they want to use it for what it is built, their behavior is being steered by what the technology affords and constrains and by the intentions of its designer. Even when the designer did not intend certain uses, or not even thought of possibilities for unintended uses, when a user uses a technology in an unintended way, one is still steered and limited by the technology's affordances and constraints. Of course the wishes of the consumer steer what technology is wanted and what designers design, but in the end there is a big power difference and designers and profit goals have the final say in the matter. As seen in the case studies the need for data and the retrieving of data are important factors in what grammar of actions are being imposed on users and third parties like advertisers, because data in new media technologies is often where the option of

monetization lies.

This thesis is not the first to question the relationship between man and machine. Every media scholar has to deal with the debate between McLuhan and Williams at some point. Does technology shape and steer society or is it the other way around? According to McLuhan the content of media distracts people of the technology and how it changes society. According to Williams society has the agency, because it are people who decide what is being made. These standpoints are complete opposites and in these formulations thus incompatible. That is why a nuanced view is necessary to get a better understanding of this complex reality. Technology does shape society in that it offers new possibilities and people have to adjust to it. But technology does not shape itself and thus needs people to envision their needs, create it and give it a meaningful use. It is not a case of either or, it is a circular relationship in which both influence and steer each other. Technology is capable, as Deleuze claims, to liberate people and give them control even when at the same time it is capable to enslave and control people. New media technology made it possible to work faster, more efficient and practically everywhere and in this way it thus gives the users more control over their work. At the same time it raises the bar, because the capability to work faster, more efficient and from everywhere also provides the expectation that one does exactly that, in this way it thus also steers work habits and controls users.

This question of agency thus lies more complex than one would think at first glance. A clear cut between man and machine concerning the agency of steering behavior does not exist. To get a better understanding on how this agency in the steering of behavior is distributed between the user, technology and the designer, section 3 was focused on how technology can transform reality, how technology has humanlike capabilities in predicting and premediating the future, how design steers behavior and how commercial goals steer technology and its use.

According to Hayles computers are not merely tools anymore, they have the power to change reality and humans are computational to a certain point. This means technologies give users liberations and possibilities, but are also capable of interpellation and control and this works best when it happens unknowingly and hidden behind an interface. Because of cybernetics and artificial intelligence computers indeed are not only tools anymore, they increasingly possess humanlike qualities and are able to predict human behavior and create and act according to their own purposes. This reduces the sharp difference between man and machine and thus complicates human agency. People are not conscious enough about this,

because they do not question a technology if it gives the right output to their input.

Humans co-evolve with technology and as Deleuze and Guattari state, learn to move their bodies with it using interactive feedback loops. People invent technology but to use it to its fullest potential, adjust their behavior towards it. Grusin goes beyond the predicting capability of machines and provides the concept of premediation. Premediation differs from prediction because it is not focused on predicting one future right, but predicting every possible future, so no future comes as a surprise. To do this it needs a constant flow of data and uses the anxiety and anticipation of people to steer their behavior into one of constant connectivity to get a feeling of security. Premediation is thus as much about predicting possible futures as it is about steering current behavior in order to maintain constant interactivity and connectivity between man and machine.

For machines to steer its users into behavior that is desirable for the purpose they are created, design is crucial. Design of a technology is what gives its users the clues of how it should be used and what behavior one should act out. Everything in the world has its affordances and its constraints and these are what dictate what can and what cannot be done with it. This means that designers are able to construct a technology in such a way that the user uses it as envisioned by them, but this also means the designers are limited by what technology affords and constrains them to design in the first place. Unintended uses are possible, but in order to use a technology to get the desired results, one is forced to use it in the intended way. Which is steered by what the technology affords and the designer has envisioned.

What a designer envisions is of course also, or probably mainly, driven by profit and thus by commercial goals. For a technology to work profitable it has to take into account the needs of its users, the needs of its paying users like advertisers and its own business plan. In order to do that Turow claims that a knowledge and power imbalance is created in order to let the users feel in control, while taking advantage of them commercially. This is possible by creating a neutral discourse in which users get a great service in return for valuable information about them, which the designer of that technology can sell to advertisers and other clients. This second part of the deal however happens as discrete as possible. A user does have to agree to these Terms, but hardly ever reads it all and the tracking of one's data happens invisibly behind the service, in order to let the user forget about it.

A user's interactivity and connectivity with such a technology thus is valuable, because only this user behavior ensures the designers with the user data they want to capture. It thus

is valuable to steer the user's behavior towards this goal, a widely used method for this is gamification in non-gaming context. Deterding claims that gamification is able to persuade and steer a user's behavior, because it adds a level of joy and gives the user a goal to earn points and badges. Langlois et al. give the conclusion in this matter and claim that the agency in steering of behavior is distributed across man, platform and designer. Of course the openness of Web2.0 gives users more agency and power to distribute without interference by anyone or anything, but they are also steered by the technology which they use to distribute their empowered behavior on. These services are mainly built by commercially driven designers and thus these services afford for what users can do with them. In order to use them, they have to grant the designers of the technology to re-use their content in any way they see fit. A service thus may seem free, but it is not. It comes at a price, which often exists of a user's generated content or the tracked data on one's behavior.

Analyzing Apple Maps, Foursquare and Google Glass, lets one conclude that the agency in steering of behavior is not distributed the same for every object and the steering is approached in different ways. These case studies thus show one has to evaluate multiple objects in order to get a better understanding about the process of steering behavior and the distributed agencies. Apple Maps is a service to guide people through their offline environments, it thus is built to steer its users' physical behavior in the real world. Users use this service to be able to navigate through unknown environments and thus uncritically follow its directions. Because this app will get better with data about locations in the offline world, it also steers its users to provide it with this information and offers them possibilities to submit it to the app through Yelp. Design and code are political and thus Apple decides what is valuable and what subsequently is being designed and thus what it affords and constrains its users and its third-party clients to do with it. Though, technology also has its influence on the design, simply because it decides what can be designed and what is beyond the possibilities still. Users also do have some influence because the app will only be used, when users find it valuable to use. This also explains why users will more likely let themselves to be steered in their behavior towards the app, instead of taking the agency to use it in an unintended way, because when one finds an app valuable to use and wants the right outcomes, one has to use it in the way its technology affords and Apple has envisioned.

Foursquare also intends to steer the behavior of its users in the physical world, because it is also location based and focused on exploring one's environment, but it focuses more heavily on steering the behavior of its user in interacting with the app to make it better

through data gathering about the user. In order to persuade the user to provide the app with this data, it focuses on social networking and gamification. By making it personal through personification, social connectivity with one's friends and the competition element of gamification it steers their users into providing the app with data without them being fully aware of it. In this way not Foursquare but the users are making the app commercially better, because it exists of more content, information and social aspects which attracts paying third parties and more active users for Foursquare to sell. Again this app can be used in unintended ways by cheating or hacking, but this only happens because Foursquare is a valuable app to use. Even unintended use contributes to Foursquare's goal to make the app commercially better. As for Apple Maps, when users want to use Foursquare for its potentials, it has to be used in the way that is afforded by its technology and envisioned by its designers.

Finally, the information available on Google Glass and its Explorer edition give a glimpse into the future of a technology that is capable of and will steer its users' behavior. It will change the ways in which people interact with the world and their surroundings by placing a virtual layer on top of it. While it empowers its users because it makes information more accessible everywhere and anytime, it will mainly steer the users to interact with Google's services and provide it with commercially valuable data about themselves. While hacking is possible, most of its mainstream users will not be technical enough to do this and will not even want to, because to keep warranty and get the desired results from the device one can best use it, again, in the way that the technology affords and Google has envisioned. All three analyzed objects thus show how agency is distributed across users, technologies and designers, but that this agency is not distributed symmetrically. While these three commercial driven objects differs in the relation in the distributed agencies and in the way behavior is being steered, they show that in these cases the user has the least and technology and its designers are the main forces in this process.

This thesis illustrated how the agency in the process of steering behavior through new media technologies is distributed unsymmetrical, that this differs from object to object and how behavior is being steered through different approaches. Though, for the future one should investigate more factors in this process, because the reality of steering behavior through technology lies more complex and goes beyond the scope of this thesis. For this thesis I have focused on these three entities -user, technology and designer-, because they are the biggest and most recognizable factors in this process, I had to limit my focus according to wordcount and time limits and they gave interesting insights nonetheless. This thesis is thus

aimed at starting to grasp the complexity of it, but the steering of behavior through technology of course is influenced by more factors like the market, advertisers, milieu, time and social norms. An interesting insight that follows from this research is that it strongly suggests the users have agency, but the least and that this is often not recognized by them, because it is masked by the feeling of empowerment and control. This of course is agency in a way, but very little compared to the agency technologies and its designers have. New media technologies certainly have changed society and whether that is a good thing or not, it is so intertwined with our everyday lives, we as users, as McLuhan suggested, often are not conscious of it. This thesis is not aimed to judge whether technologies like Foursquare are using us for evil purposes and their own gain only, but it is aimed to make users more aware of the process of steering behavior and evaluate for themselves whether a service is valuable enough to give it their data in exchange. Users have to realize free services, are not as free as they claim to be and want to be experienced. With the right unbiased information users should be able to evaluate themselves, for each object separately, what the cost of technology is and what they are willing to 'pay' for it. That said, I am going to save up for Glass.

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Image 7. Google Glass – Manual

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