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The Persuasive Qualities of Maps

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ABSTRACT

In this article we explore the persuasive qualities of maps that connect people's behavior and emotions to location. We introduce Actor-Network Theory (ANT) [Latour 2005] to grasp the many actors involved in persuasive design processes. We argue that these many types of actors should be integrated into the design process, and we suggest the idea of 'persuasive platforms' to do this. These new insights are employed in connection with an empirical study at Aalborg Zoo, Denmark.

Keywords

Actor-Network Theory, map, Geographic Information Systems (GIS), GPS, SMS, emotions, zoo, persuasive platforms, research by design

1. INTRODUCTION

The aim of this article is to explore the persuasive qualities of maps that connect people's behavior and emotions to location. Moreover, we introduce Actor-Network Theory (ANT) to the emerging research field concerning persuasive technologies. This research field has been referred to as 'captology' [Fogg 2003] or 'Persuasive Design' (PD) [Hasle and Christensen 2008]. In the following we will use the latter term in reference to research in persuasive qualities of technologies. As the field of PD is still relatively new, it seems fruitful to explore different approaches inspired by a wide variety of disciplines. Indeed, when we review the literature, many such explorations can be found ranging from Social Psychology, Human-Computer Interaction (HCI) [Fogg 2003] to Rhetoric, Computer Mediated Communication (CMC) [Hasle and Christensen 2008] and Postphenomenology [Verbeek 2006].

However, so far perspectives from studies of Science Technology Society (STS) have been very limited. By introducing ANT, our ambition is therefore to contribute to the further broadening of the field.

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Even though maps can be considered particularly suited instruments for persuasion [Gronim 2001], they have rarely been the objects of study within Persuasive Design. By definition a map is "a visual representation of an area—a symbolic depiction highlighting relationships between elements of that space such as objects, regions, and themes" [Wikipedia 2008]. Maps are made in different scales, have different orientations and focus on different attributes. Mapping is thus a careful selection of what information fits the purpose the map is supposed to support. Therefore, maps are not simply mirroring the world. Rather, the world is displayed as we see it and sometimes also as we wish others to see it, e.g. as propaganda [Pickles 1992]. Examples of this is the medieval map Hereford Mappa Mundi, which shows Jerusalem as its centre [Denholm-Young 1957] and a contemporary map made by Saul Steinberg that shows the world as seen by New Yorkers. In the latter example Manhattan is magnified while the rest of the world is receding according to its cultural distance to New York [Klare 2000].

Within urban planning Geographic Information Systems (GIS) has been used to plan how to intervene in urban environments. Here, GIS is used as a technology to gain insight into complex relations in big amounts of data. By the use of GIS, it is possible to design maps that visualize the geographical environment and moving patterns of people. The maps are often created to fit the aims of a specific project, whether it is used to develop a design strategy with a goal of making young people exercise more, or to convince the city council that a redesign of the urban space is needed to keep the drunks away from the benches in the centre of the city. Mapping is here representing the world in a way that best fits the purpose of the kind of action one wishes to carry out or wishes others to carry out.

A fundamental characteristic of PD is to intervene with an intention of changing people's behaviors or attitudes. This intervention can be described as a relationship between a persuader, persuasive technologies and a persuaded person [Berdichewsky and Neuenschwander 1999:54]. This basic model has been augmented [e.g. Verbeek 2006], and by introducing ANT we want to further nuance this relationship. We argue that the persuader, i.e. designers and stakeholders, are not the only ones doing something. To adequately describe the relationship, it is useful to expand the understanding of persuasion to include several other actors, including the persuasive technologies and the persuaded person. Consequently, persuasion can be understood as

something, which is continuously negotiated and resisted in the use situation. ANT, as described by Bruno Latour [2005], stresses that every communication situation consists of several actors all doing something, which means that there are also other types of agencies than intentional human ones. This makes the communication situation complex and the persuasive intention less manageable. ANT provides a perspective, which offers a way of understanding persuasive intentions as well as the act of persuasion. Consequently, this perspective bridges the gap between designers and users - persuader and persuaded person - by inviting the user into the design process.

To fulfill this ambition, it is necessary to create a framework that allows users to create their own content. Here we suggest maps working as 'persuasive platforms'. This platform works as both a method to gather data by and as a product of that method. Therefore, to explore the persuasive qualities of maps working as persuasive platforms, we need to discuss and analyze the whole design process. To do this we suggest that we do research by design, which means that we constantly combine technologies in new ways and introduce them into the field to see what changes. This view entails that persuasive technologies, rather than being finished entities, can be considered as ongoing experiments.

This article explores, analyzes and develops the idea that mapping, as a strategic tool, holds persuasive potentials. The connection between ANT and PD is used to discuss a survey done in Aalborg Zoo in the autumn of 2008 as a collaborative work between the research group 'Diverse Urban Spaces', Aalborg University and Aalborg Zoo. The survey was conducted in order to find out where, when and why people spend time in specific areas in the zoo looking at specific animals. In the survey respondents were asked to wear a technology called a 'lommy' with a built-in GPS while at the same time sending SMSes, telling us what they were doing at different locations and how they felt about it. Furthermore, they were asked to fill out an online questionnaire. Using GIS this set-up enabled us to create a SMS map showing people's emotions and behavior in different locations in the zoo.

From the analysis of the SMS map we argue that maps - like the SMS map - has persuasive qualities that lies in their ability to display heterogeneous actor-networks. It is argued that to be able to persuade we need to know about actors' accounts of what they are doing and what makes them act. These accounts include objects and experiences such as emotions, hopes, and intentions. Therefore, we argue that we need to display these as actors in the world. The SMS map in itself is not a traditional persuasive technology. Rather, it is designed in a way that allows us to create persuasive products from it that visualizes the diversity in agency, while at the same time supporting our persuasive intentions.

After this introduction we discuss ANT to develop a set of theoretical concepts. In the third section we relate these to PD and explore how this perspective gives new insights into the act of persuasion. In the fourth section we discuss the method of the empirical research done in Aalborg Zoo, using the conceptual framework developed in the previous section. In the fifth section we explore the persuasive qualities of the SMS map developed during the empirical work in Aalborg Zoo.

2. ACTOR-NETWORK THEORY

ANT is a practice-oriented method concerned with tracing new associations between actors in a network. In ANT a network is a tool or concept to help describe *something* - not what is being described: "a network is not what is represented in the text, but what readies the text to take the relay of actors as mediators" [Latour 2005:131]. This means that we need to conceive actors as transforming or translating something, e.g. a message, instead of simply transporting it. According to Latour, this can only be done if we build on a metaphysics that take as its foundation the actors' metaphysics and follow the traces they leave behind.

Therefore, ANT adopts a constructivist approach to nature and society. This does, however, not mean that there are multiple symbolic representations of the same nature, but simply that the thing itself is deployed as multiple, since it has more than one agency [Latour 2005: 115-116]. Therefore, we need to reassemble the network every time we encounter a new territory. To establish this shift Latour introduces 'matters of concern' which is what ANT seeks to trace. 'Matters of concern' as opposed to 'matters of facts' is defined as highly uncertain, disputed, real, and objective agencies, which are not to be taken as objects, but as gatherings or 'assemblings' [Latour 2005: 114]. This metaphysics provides a different view on groups, action and actors and therefore offers a new perspective on what it means to persuade, as will be further discussed in section three. In the following we will elaborate further on ANT.

2.1 Heterogeneous Actor-Networks

Tracing matters of concern means that groups constantly have to be performed. The object of a performative definition disappears when it is not performed, since there is no social force or object behind the performance. Consequently, it requires a lot of work for a group to sustain its existence [Latour 2005: 34-35]. To reproduce or construct a group requires a number of tools. Since groups and asymmetries are constantly renegotiated, human actors need things to render them longer lasting [Latour 2005: 68]. An actor is thus defined as any *thing* that modifies a state of affairs by making a difference, i.e. changes the course of action for another agent [Latour 2005: 71].

As a result, ANT is concerned with heterogeneous actor-networks, i.e. associations or relations between actors, human as well as non-human, e.g. animals, technology, things, concepts etc. This means that actions are not limited to what intentional humans do [Latour 2005: 71]. In relation to this it makes a difference whether actors are seen as intermediaries or as mediators. An intermediary is defined as something, which transports a meaning or a force without transforming it. If we know the input, we can deduct the output. Mediators are defined as something, which transforms or translates the meaning or elements they transport, which means the output cannot as easily be deduced from the input [Latour 2005: 39]. The performative definition as mentioned in the beginning of this section therefore entails that all actors in ANT do something. Therefore actors in ANT are conceived as mediators.

2.2 Action is Dislocated

As a consequence of the view that all actors are mediators, actions are not fully controllable for the actor, rather, they are part of a conglomerate of different sets of agencies. This means that it is never completely clear whom and what is acting, since an actor is never alone when acting [Latour 2005: 44]. In other words, the actor is part of an actor-network [Latour 2005: 46] and, accordingly, action is dislocated. [Latour 2005: 46]. This does, however, not mean that the actors do not know what they are doing. Since groups are constantly formed and destructed, actors are constantly engaging in giving accounts for theirs and others' actions. Thus, we should not only take these accounts at face value, but as our foundation [Latour 2005: 47]. Accordingly, our task is not to decide how the actors should be made to act, but to follow the actors and retrace the different worlds they elaborate for one another. As researchers we should be involved in empirical metaphysics [Latour 2005: 51], which studies agencies according to 1) accounts, 2) figurations, and 3) theories of action:

Firstly, agency is always presented in an account as doing something. If there is no account to be made, the agency is not doing anything, which means it is not truly an agency. An account is made when it is possible to make it explicit which trials have produced which observable traces [Latour, 2005: 53].

Secondly, agency has a figuration. This is demonstrated by the following example of accounts: 'Culture forbids having kids out of wedlock' and 'my mother in law wants me to marry her daughter'. Both of these make actors do things, but their figurations are not the same. In the first, the figuration is culture and in the second the figuration is an individual [Latour 2005: 53]. To agree that different kinds of figurations can make us do things makes it possible for us to compare accounts on different scales, the cultural as well as the individual. Furthermore, it makes it possible for us to take all figurations that make people do things as our foundation, e.g. 'I was carried away by emotion' and 'good intentions made me do it'. What made the person in the first sentence 'get carried away' are emotions and not some force behind the account explained by theories of e.g. dispositional traits or characteristics.

Thirdly, actors have their own theories of action [Latour 2005: 58]. To find the theory of action, *which* agency in *what* figuration is not as important as *how* we see them act: as mediators or intermediaries. This means that even though the figuration of an agency is intentionality, if used to carry out meaning as an intermediary, it will do less than a more abstract figuration carrying meaning as a mediator. In this way ANT mirrors a world made of concatenations of mediators, which all can be said to act [Latour 2005: 59]. For instance animals, buildings and people might have relations with each other of such a kind that they make others do unexpected things [Latour 2005: 106]. When a force persuades another, it is not a cause generating effects, since it can also trigger other things to act unexpected [Latour 2005: 60]. From this follows that if we accept that action is overtaken, we accept that there is a dislocation in making someone do something [Latour 2005: 58].

2.3 Translation

As we have seen, actor-networks 'translate' and Latour therefore refers to ANT as 'sociology of translations' [Latour 2005: 106]. Translation is defined as: "a relation that does not transport causality but induces two mediators into coexistence" [Latour 2005: 108]. In ANT the dichotomy between micro- and macro levels are thus transcended. This means that no actors are bigger than others, except through several translations, which is any kind of negotiation, persuasion, manipulation, or act of violence where an actor comes to stand as entitled to speak on the behalf of other actors [Olesen and Kroustrup, 2007: 79f]. Consequently, actor-networks translate observations and people's interests into statements, which fit the purpose of promoting certain causes.

Latour [1988] presents three dimensions of translation:

1. A translation begins with an imbalance between language games and interests, and strives to end with a balance between two statements or opinions.
2. The strategic meaning is that the translation defines a passage place, which the actors must cross. By doing that they promote the translators' interests.
3. The linguistic meaning is that one language game seeks to translate all other language games and substitute them with the 'actual' meaning of the subject.

Translation can therefore be understood as a process where the identities of the actors, their possible ways for interaction, and the range of the frames for this interaction are negotiated and delimited. The translation process is constituted by the designation of spokespersons and the formation of obligatory passage places [Olesen and Kroustrup, 2007: 77]. A spokesperson is an actor who is given permission to speak on behalf of the many and, thus, represent other actors. Every time a translation is successful, the actor acts more and more on behalf of the many. Through a series of translations and alignments a homogenization can be observed in statements, which express that things are done or should be done 'for the common good'. As a result of this, all actors must go through the spokesperson to get their will, which further empowers the spokesperson. The spokesperson has now become an obligatory passage place and as a result of that controls the plans and actions of the many [Olesen and Kroustrup, 2007: 78].

An example that illustrates chains of translations between actors is when a scientist speaks on behalf of a statistics on young people's moving patterns in the city. The statistics speak on behalf of a survey that speaks on behalf of individual statements made by young people. For every step, a translation is carried out. To create an obligatory passage place the scientist can formulate a problem in a way that relates to the many. For example he can say that 'young people are our future' while at the same time defining himself as the one who can provide us with information on young people's moving patterns.

To create translations we often use inscription devices. An inscription device is defined as a composition of devices, which can transform a material substance to a figure or a diagram. Latour and Wolgar [1986] stress that we need to focus on these inscription devices, since they make it possible for us to describe a series of processes without being disturbed by their complex

material form. Inscription devices are thus tools that can make it possible for the researcher not to make the usual interpretations of scientific work. However, it is important to establish where and when such devices are used for different types of inscriptions [Olesen and Kroustrup, 2007: 68-69].

3. PERSUASIVE PLATFORMS

As we have seen in the above, groups have to be constantly performed. Consequently, even when we have succeeded in persuading people to change their behaviors and/or attitudes, whether it is to stop fighting at the international peace day (September 21) or to start exercising, we must constantly work to keep the engagement. Moreover, other groups are performed at the same time, struggling against our persuasive intentions. The result is that persuasion does not only concern creating an asymmetry connecting as many other actors as possible. It also, and more importantly, concerns rendering those connections longer lasting and longer ranging. In the following we will develop these ideas in the context of persuasive platforms by connecting ANT and PD.

3.1 Expanding Persuasion

To facilitate connections, humans use things. However, these things are not limited to technologies made by humans with an intention of changing behaviors or attitudes. Using ANT we propose a broad definition of persuasive technologies, which takes into account that there are other types of agency than intentional human agencies, and that every actor in an actor-network is doing something. This leads away from the cause-effect thinking where a single actor causes an effect on several other actors and as such challenges the persuasive intention.

Connecting ANT and PD means that the persuasive intention is no longer a force, which is transported more or less unmodified through different actors. It is negotiated, resisted, and translated by other actors than the persuasive designers, stakeholders and technologies. ANT therefore demonstrates that there is no direct line from idea to realization, from persuasive strategies to persuasion. To understand persuasion from an ANT point of view does, however, not render persuasion impossible, rather, it brings a new perspective to the discussion of what it means to intervene in order to change something.

3.2 Producing an Ongoing Design Process

A consequence of the expanded concept of persuasion is that our understanding of intervention must be expanded as well. It is not sufficient only to focus on whether persuasive technologies indeed have the intended effects, as it is not possible to isolate all 'matters of facts' and then develop a strategy of persuasion.

ANT, as we saw, speaks in favor of changing the focus to 'matters of concern'. However, this can seem as a conflict in relation to making design with the intent of persuading, since 'matters of concern' are constantly disputed and, as a result of this, actions are dislocated. How do we combine a view where everything is disputed, including our persuasive intentions, with a view that seeks to conclude into rules of thumbs to create persuasive design?

In his influential book *Persuasive Technology – How Computers Change What we Think and Do* [2003], B.J. Fogg argues that designing for change involves a reduction of complexity [p. 33f].

Thus, tasks need to be made simpler to describe persuasive strategies. Leaning on ANT, we suggest an approach, which involves an iterative, experimental design process. Here, the focus is on how to understand the design process as continuously produced.

However, it is necessary to clarify how an ongoing design process can be useful, as it seems to imply that persuasive technologies should contain all connections between all actors in the territory. Consequently, we would end up creating a map of the territory on a scale of mile to mile. Such a map would obviously be useless as a navigation tool to suggest a path or course of action, since what makes a good map is its ability to provide an overview and, as such, reduce complexity [Brodersen 1998]. Furthermore, image technologies, e.g. maps, are framed and lack depth, and they are thus reductive compared to a full sensory experience [Ihde 1998: 91]. This means that not only is a 1:1 representation not useful when we need to guide a user, it is simply impossible to create.

To overcome this problem, the micro/macro dichotomy must be dissolved. Accordingly, persuasive technologies are not a frame we create around the territory; rather it is an actor in the territory. Therefore, being true to the actors' theory of action, it is not a question of whether the persuasive technologies can contain the territory, but rather how they act as mediators. Here, we suggest that persuasive technologies are used as experiments [Nold, personal communication]. When we design and introduce new technologies, many negotiations take place, which inform us about social dynamics: What changes? What do people feel? What is important to them?

The result is that persuasive technologies become experiments, which makes it possible to see what is going on in a given territory. This is an important step in the process of creating translations and obligatory passage points in a given territory and thus persuasive design. Consequently, our proposal is for the persuasive designer to engage in an iterative process, continuously creating experiments to see what changes in the relations between the actors.

3.3 Persuasive Technologies as Translations

The double role of being a designer-sociologist¹, as implied in the connection between ANT and PD, has a built-in conflict between wanting to build entirely on actors' theories of action while trying to change that same action. When we design strategies for persuasive technologies, we engage in processes governed by our persuasive intentions - even in the first stages of the design process when we select and categorize, we translate actors' theories of action to support our intentions [Iversen and Partou, 2008]. The question is then how we make sure that the actors are not lost in translation. Do we have to separate the process of gathering the traces in the territory and the process of designing the persuasive product?

¹ Michel Callon [1986] coined the term engineer-sociologist to describe the role engineers play when they construct hypotheses and forms of argument where they analyse the participants sociologically. These circumstances are also present for a designer cf. the term designer-sociologist.

The dissolution of the macro/micro dichotomy implies that the persuasive designer is an actor in the territory on the same conditions as other actors. This means that it does not make any sense to isolate our actions from other actors' actions. Instead, we can trace the translations from the actors' theories of action to the persuasive products we create on our way to producing persuasive technologies. In this way the actors are not cut off from the persuasive designer or the persuasive technologies.

To embrace this understanding, we propose that actors should be involved in the creation of persuasive products and technologies. However, to support our persuasive intentions we must at the same time create an obligatory passage place, i.e. a persuasive platform, from where the actors can express their theories of action by generating content. Social network sites on the web, e.g. Facebook, are examples of such platforms governed through translations in the form of applications supporting the persuasive intentions².

Persuasive technologies are experiments as well as platforms, and this opens towards a perspective where persuasive technologies serve a double role as both being a method to gather traces between actors *and* a product of that same method. To understand the persuasive qualities of this kind of persuasive technologies, we must therefore understand the design process as a whole. In the next section we will explain how we have used the concept of persuasive platforms to do research by design in a concrete case at Aalborg Zoo.

4. THE ZOO CASE

In this section we will focus on the method used to develop a map that connects emotions and behavior to location, namely the SMS map. Since the SMS map plays a double role as both being a method to gather data by and a product of that method, the methodological discussion of the SMS map will enable us to explore the persuasive qualities of maps. The SMS map is based on empirical work done in Aalborg Zoo with a sample of 249 respondents answering the questionnaire, 203 respondents answering the questionnaire and wearing the GPS and 161 respondents answering the questionnaire, wearing the GPS and sending SMSes to the research team.

4.1 Mapping Emotion and Behavior

During meaning condensations of interviews done with the zookeepers, there was a general consensus that the guests visited some animals more than others. Therefore, the animals were by some of the zoo personnel categorized into 'hit' and 'shit' animals. The 'shit' animals were defined as those considered being the least popular among the guests and the 'hit' animals were defined as the most popular.

The guests tended to only visit some animals. This posed a huge problem for Aalborg Zoo, since the aim was not only to provide the frame for a good experience, but also to teach the guests about animal diversity. This is crucial to promote the importance of nature protection. Therefore, Aalborg Zoo wanted to develop a

² A similar point about the persuasive qualities of social network sites has been made by Fogg & Iizawa [2008], however, from a different approach.

strategy to persuade people to visit the 'shit' animals more than what had been the case. To develop this strategy, Aalborg Zoo in collaboration with Diverse Urban Spaces decided to further explore what was going on in the zoo. Which animals and areas were popular and which ones were not so popular and why?

To answer this question the research team decided to create a method that would render it possible to create maps showing people's behavior and emotions in Aalborg Zoo. Part of the method was to create an inscription device consisting of an online questionnaire, 50 lommys with built-in GPSes, mobile phones, and a modem from where the research team could receive SMSes. This made it possible to create four different types of maps:

1. A flow map showing how much time the guests overall spend in different areas.
2. Four maps showing where different age groups spend their time.
3. Three maps showing where people were at different times of day.
4. A SMS map displaying SMSes connected to location, describing what people were looking at, what they were doing as well as their emotions.

In the following we will focus on the SMS map.

4.2 The SMS Map

The first eight maps only showed where and for how long and not *why* the guests spent time in the different areas. Our hypothesis was that the time spent in a given area depends on the experience the person has at the given spot. This hypothesis builds on the idea that humans through time and all over the world have connected location to experience.

An example of this is the 'songline' of Australian Aborigines. The aborigines practice a rite of passage, which they call the 'walkabout', and here they trace the songlines of their ancestors. A songline is a dreaming and journeying trace, which is embodied in animals, plants, people, natural phenomena and inanimate objects, and the idea, is that the spirits' shapes and the landscape are revealed through the walkabout [Wikipedia 2008]. In a similar way, we connect experiences to location. Within architecture and design this thought has been developed to estimate how the city is used and experienced. People move in certain patterns because they have different songlines [Marling, 2003: 236]. From this we argue that connecting experience and location can help us to explore why the guests in Aalborg Zoo move as they do.

To build on this understanding we needed to develop a method that connects location and experience. Using the concept developed earlier, this method had to meet specific requirements. First of all it had to have as its foundation the respondents' theories of action and this afforded qualitative methods. Secondly, we were interested in exploring the actors' metaphysics on a quantitative scale. Therefore, we had to bridge the gap between qualitative and quantitative methods when mapping. Thirdly, we found it to be important for the respondents to be able to communicate their emotions in the moment where they experienced them to avoid post-rationalizations.

From these demands the concept of an SMS map as a persuasive platform was developed. This map, on a quantitative scale, should

display SMSes from the guests in Aalborg Zoo at the coordinates from where they were sent. To connect the experiences to specific locations, we ended up creating a method where the zoo guests were asked to wear lommys and send us SMSes. Since the lommy can register location, time and speed, and since we were able to see at what time we received a given SMS, we could use time as the common denominator to connect a given SMS message to the coordinates it was sent from. Of course, this presupposed that the time the SMS was sent and the time it was received were not too far apart. We chose to use Google Earth to display the data, since it enabled us to navigate and zoom in the map.

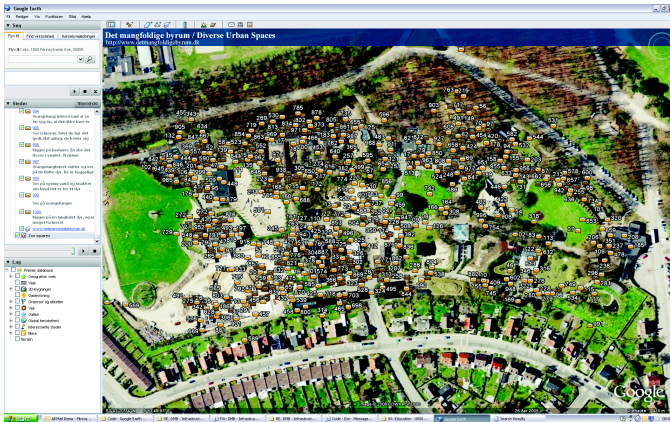


Image 1: A screenshot of the SMS map displaying 1166 SMSes sent from Aalborg Zoo as yellow envelopes. GPS data and SMS messages are here displayed in Google Earth [Harder, Tradisaukas, Glud 2009].

We informed the respondents to write the following in every SMS they sent us:

1. What they were looking at, since the coordinates extracted from the GPS would not tell us if a respondent standing at the lion's cage was perhaps looking at the sparrows in front of the cage.
2. What they were doing, since playing at the playground or watching others play at the playground is two different experiences.
3. What they were feeling in connection to this.



Image 2: Screenshot of a section of the SMS map showing the text from one of the SMSes. It is possible to display the text of each envelope by clicking on it. The text displayed here says: "I'm playing at the playground...mum has the GPS. She is standing...I'm having fun climbing and sliding. And I feel happy...Best regards Maja Jacobsen [Harder, Tradisaukas, Glud 2009]."

4.3 Observations from the Survey Days

To begin with the aim of the survey was to look at the individual. Therefore every 25th guest was asked to wear a GPS and send us SMSes. However, on the survey day the research team observed that the individual task was in practice turned into a group activity.

Firstly, the guests selected for the survey were not necessarily the ones wearing the GPS. When a person was showed to the table, the group the person was in company of followed. The research team tried to ensure that the chosen person was actually the one wearing the GPS by pointing them out in the line and asking who was pointed out at the table where the GPSes was handed out. However, the general observation was that the group appointed the job of wearing the GPS to the member in the group best suited for this task depending on e.g. who wanted it the most and who were the most responsible. These observations indicated that the guests saw the participation in the survey as something concerning the whole group and not just the individual chosen by us.

Secondly, the chosen person would often look to the other members in the group for help to answer the questionnaire and the others often provided this help. In some cases the adult rephrased the questions for the children in the group. When an adult was asked questions, he or she would typically look at the children asking: "What animals do you want to see today?". In this way the respondents made the task of filling out the questionnaire into a collaborative activity.

Thirdly, when the guests handed in the GPSEs, they often told us that one person had been writing the SMSes while another one had been wearing the lommy. Thus, the group distributed the different tasks in the survey among its members.

Other observations from the day concerned the participation in the survey in relation to the experience of visiting the zoo. Many guests asked if they could also wear a GPS and send SMSes to us, even though they were not selected at the entrance. They simply saw the experiment as part of the zoo experience equal to other events in the zoo. We see all these moves by the respondents and the guests as ways to integrate the participation in the survey and the zoo experience. Furthermore, in the questionnaires we found that the choices of which places to go and what animals to see often depended on what other members in the group wanted to see [Glud et al. 2009]. Moreover, some of the respondents told us they had fun participating in the survey and that they became more aware of what they were feeling and looking at simply because they had to write it in an SMS.

From these observations it was evident for us that our attempt to look at the individual failed simply because the respondents had a theory of action that concerned the group rather than the individual. They saw the visit at Aalborg Zoo as a group experience and our experiment as part of going to Aalborg Zoo. Therefore, our experiment for them became a group experience.

5. THE PERSUASIVE QUALITIES OF THE SMS MAP

As mentioned, a map is a visual representation of an area highlighting chosen features and relationships between elements in the landscape or urban environment. However, this ability has often been confused with the understanding that it represents matters of facts and thus shows the world as it is. As we have seen, all actors in an actor-network work as mediators. Consequently, the map is also an actor and should not be confused with the territory it covers [Latour 2005: 17]. Rather, it should be understood as an actor in the territory. Therefore, ANT also brings a new perspective to cartography. In the following we will use the concept developed in section three to analyze the SMS map to explore its persuasive qualities.

5.1 Reintroducing Technologies

We have argued that the SMS map can work as a platform. However, we found that in order for the SMS map to be a persuasive platform, it needs to be supported by translations, which support the persuasive intention of teaching zoo guests about animal diversity. These translations are design iterations of the SMS map and are, thus, new products. However, to suggest a course of action in our translations we need to take into consideration the actors' theories of action. These become traceable in negotiations, which happen when new technologies are introduced into the territory. Consequently, we suggest using persuasive technologies as experiments and thus perform research by design.

This was carried out, by designing an inscription device consisting of lommies, mobile phones, online questionnaires, GIS and Google Earth. In this way we combined familiar technologies in new ways, making them unfamiliar, e.g. we used the mobile phone as a logging technology to send SMSes that described

emotions and behaviors. Doing this we reintroduced the mobile phone in the territory and as a result, the map was reintroduced as a geographic log [geo-log]. As we have observed in the survey, the persuasive technologies, when used in a new inscription device, made people negotiate the meaning of the technologies and the roles of the members in the groups in relation to the technologies. For example the members in the groups negotiated who was going to wear the lommy and who was going to write the SMSes. Furthermore, we observed that writing the SMSes made people more aware of what they were looking at.

By reintroducing the mobile phone as a logging technology, it became obvious that the technology transformed the zoo experience into a more focused activity. However, it also worked the other way around. The zoo experience as a group experience transformed the task of writing SMSes and wearing the GPS into a group task. Reintroducing technologies therefore made it possible to make actions take the relay of mediators in our accounts of what was going on in the zoo. Using ANT, these observations make it clear that all actors in the network [e.g. lommies, mobile phones, and respondents] actually do something, as they transform our persuasive intentions and change the planned course of action.

However, we need not perceive this as sources of error, or as something that necessarily conflicts with our persuasive intentions. Building on ANT, the reintroduction of technologies makes it possible for us to better see how different actors are connected and which theories of action are at play in the territory. The understanding that all actors in the network do something influences how we put the SMS map at use and create translations from it to make it persuasive.

5.2 Visualizing Actor-Networks

Taking ANT at face value, behavior, expressed emotions, and geography are all actors. This means that emotions are actors that do something, not just forces running through the world, which we can use as theories to explain it by.

As we have seen, the SMS map connects behavior and emotions to location and thus provides a way to display heterogeneous actor-networks. The SMS map visualizes communicated emotions, behavior, and geography as actors in the world. In this way it concretizes the view expressed in ANT. The qualities of the SMS map then resides in its ability to display heterogeneous actors as connected side by side rather than as abstractions of each other. Accordingly, to support ANT and build on the SMS map in the translations, emotions should not be placed as a superstructure on the geography or vice versa. This understanding is important when we wish to design translations and support our persuasive intentions.

As mentioned, this does not mean that we need to simplify the communication situation by reducing the actors to e.g. intentional humans. Rather, the challenge for these translations resides in their ability to display diversity when it comes to actors while at the same time reducing large amounts of information by focusing on the part of the network that supports the persuasive intention. The SMS map makes this possible simply because it provides an overview of 1166 SMSes while at the same time making it possible to magnify or zoom in on individual SMSes. By placing emotions as actors in the map, we accentuate that the world does

not only consist of 'matters of facts', but also 'matters of concern' such as emotions, dreams, wishes etc. In this way a map that builds on ANT not only reduces and magnifies; it also adds something. In part, because the map *does* something, it transforms the network and, in part, because it takes into account many types of actors.

As we have seen, the main concern in the zoo case is how to teach the guests about diversity. In connection to this the SMS map is useful when we need to get an overview of complex and holistic networks such as ecosystems. Translations – if building on the SMS map – are excellent for this purpose, because they display heterogeneous actor-networks while still supporting our persuasive intentions.

6. CONCLUSION

By connecting ANT and PD we developed a set of theoretical concepts, which gave new insight into the act of persuasion. First of all, the broad definition of persuasive technologies entailed that all actors *do* something. As a result of that the persuasive intention was challenged. This had consequences on how we design interventions. ANT's focus on matters of concern and PD's demand of reduction made it obvious that the map could not contain the territory, rather, it was an actor *in* the territory. This means that persuasive technologies can be used as an experiment to facilitate negotiations between actors in the territory, making it visible how different actors in the territory is connected.

To embrace this understanding we suggested that we engage in research by design using the persuasive technologies as experiments in an iterative design process. For this purpose we believe that platforms are especially useful, since they both serve as methods and products. The SMS map created in the zoo case is such a platform. It is not a traditional persuasive technology, however, it is has persuasive qualities because it is designed in a way that makes it possible to display diversity in agency. Consequently, we can connect emotions to places and build on actors' accounts of agency. From this we argue that maps like the ones mentioned can bring us in a better position to design interventions with the purpose of changing attitudes and behavior.

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