

## ElasticMapping: Implications of a GPS drawing robot in times of locative media

*How working with (nomadic) dairy transporters in Nigeria results in the need for software that makes GPS data flexible.*

*To scale is not yet to edit. Editing begins when scaling can be balanced and adjusted to differed, chosen parts of data, to make pace for a choreography. This will give data an interval, a rhythm and a tone: in brief: a style.*

(Polakpic01.tif caption: NomadicMILK Cameroon version; courtesy Foundation Beelddiktee)

As an artist I have been working with GPS<sup>1</sup> since 2002 in a series of projects. My engagement with GPS data means that I am an artist working in the field of locative media. As it is very difficult to find a solid definition for “locative media”, I borrow a description by Mark Tuters and Kazys Varnelis: “Broadly speaking, locative media projects can be categorized under one of two types of mapping, either annotative—virtually tagging the world—or phenomenological—tracing the action of the subject in the world.”<sup>2</sup> For me, my main interest has always been slightly different still. Although I do trace subjects in the world, my focus is to create new visualizations of these tracks and see what new kinds of experiences of space these visualizations bring about. The newness of the medium is very important to me.

To see this in a perspective that makes sense, I like to compare the radical new possibilities of GPS data collection and visualization with the invention of photography around 1825-1838. It fascinates me to have the opportunity to witness a new visualization tool acquire a place in the world. During this process one could argue that all visualization tools undergo a comparable evolution: from a representation of the world that is as realistic as possible, towards a fictional story-telling tool, to finally becoming a medium for autonomous representation and art.

Let us assume for a moment that this evolution might also take place *with* GPS data visualization. If that is the case, it is now in an extreme early stage. Working with GPS data means that I have the opportunity to make evolutionary giant steps within the medium with relative ease. To illustrate the early stage we are in, where collected and visualized GPS data is seen as a fundamental print of

---

<sup>1</sup> After a development phase of about twenty-five years, the NAVSAT GPS satellite system was fully launched between 1989 and 1993 for military use by the US army. The signal was only released at full accuracy for civilian use in 2000 by president Clinton, so general access to the technology is not even 10 years old now.

[http://en.wikipedia.org/wiki/Global\\_Positioning\\_System](http://en.wikipedia.org/wiki/Global_Positioning_System)

<sup>2</sup> Beyond locative media

[http://networkedpublics.org/locative\\_media/beyond\\_locative\\_media](http://networkedpublics.org/locative_media/beyond_locative_media)

reality, I like to quote some reflections of artist Jeremy Wood<sup>3</sup>:

*I make maps of my tracks to contribute to the field of personal cartography. The act of tracing one's movements will be commonplace as it is such a rich source of information for business and government. (...) but perhaps it's most important for the public to have access to records of their own movements. I once considered providing an alibi to the police with GPS data after receiving a speeding ticket. I wanted to prove with my evidence that although I was there at the time; I was traveling at a different speed. The ticket was issued by a fixed camera on a motorway so I checked its position against the speed recorded in the GPS data at the corresponding position.*

*Unfortunately the results were the same.*

*Jeremy Wood, July 10 2008 on Synapse list*

What strikes me in the text is that although Jeremy Wood has already worked with GPS for years, (he is one of the founding fathers of locative media with his [www.gpsdrawing.com](http://www.gpsdrawing.com) project) he still totally trusts the data as an unquestionable representation of the real world, to the point that you could even use it as legal, juridic proof.

## **GPS and Surveillance**

It is not surprising that issues addressed by locative media projects often are determined by the fact that the medium produces actual data, connecting an set of coordinates with exact time, thus providing accurate information on speed, acceleration, elevation, accessibility of terrain, accuracy of satellite signal and so on<sup>4</sup>. The surveillance issues that come with the unquestionable realism of GPS data have been widely discussed in newspaper articles, thorough theoretical articles and in "locative media" (art) projects. The fact that this might be a stage that will be left behind (and weakened) in time is not often acknowledged.

What does this mean for my own practice as a "locative media" artist? Instead of engaging with the surveillance issues I have always been more curious about the experience of space that GPS visualization brings about and about its power as story telling tool. In this context too I depend on its realism to do my projects: it makes my participants (and audience) experience GPS-tracks as being an accurate portrait of themselves, almost as a part of their body, and certainly physical proof of their very existence.

(Polakpic02.jpg caption: AmsterdamREALTIME courtesy private collection)

---

<sup>3</sup> Jeremy Wood; Synapse list July 11 2008  
<http://lists.synapse.net.au/pipermail/elist/2008-July/000136.html>

<sup>4</sup> See for a list of relevant projects  
<http://delicious.com/locativeNL>

## **AmsterdamREALTIME**

In my first project, AmsterdamREALTIME, 2002<sup>5</sup> we gave GPS devices to 60 people and transmitted the data via the mobile GPRS network. From these data a map of Amsterdam constructed itself in real-time in the exhibition space. In addition, we visualized the data of each participant individually. In the project we inverted the surveillance situation by setting up the project so that our participants were on center stage. We decided not to show the real-time visualization on the website: the audience had to come to the exhibition space to see. There they could sit down and watch the tracks unfolding, or fill a playful form to apply for participating themselves. This resulted in the audience identifying with, rather than observing (*observing correctly implies that*) the participants. After they took part in the project we gave each participant a printout of his or her own route. What surprised me was the emotional reaction of the participants to their own personal tracks: one of them even stated: "I am going to show this print to my grandchildren." My conclusion was that people experienced their GPS tracks as part of their identities. At that moment it was not clear for me how, though : as a portrait, a diary, a story, a part of their physical being even?

## **MILKproject**

In the next project, MILKproject 2004<sup>6</sup>, I wanted to investigate this further, and decided to focus totally on the reactions of participants to their own tracks. We followed one dairy transport from the udder of a Latvian cow to the mouth of the Dutch consumer. All participants involved got a GPS device for one day. We developed special visualization software that totally focused on appearing as recognizable as possible for the participants. At that point I was very interested in the simultaneous presentation of different media: GPS visualization combined with photography, texts or sound<sup>7</sup>. In MILKproject the participants where confronted with GPS visualization for the first time in their lives. Sound recordings of their direct and personal reactions, in combination with still images of them watching their own tracks and being engaged in their personal life, formed the heart of the project. It was telling that participants made comments on their daily life on both a micro and a macro level: comments on the path to the water well as comments on how time goes fast, what their expectations had been 20 years ago and how life turned out now... Apparently this was the kind of reflection our current GPS visualization brought about.

(Polakpic03.jpg caption: NomadicMILK Nigerian version courtesy Foundation Beelddiktee)

---

5 <http://realtime.waag.org/>

6 <http://www.milkproject.net>

7 MILKproject: Sources of Inspiration, Esther Polak 2005  
<http://www.beelddiktee.nl/projects/GPS-projects/milk/Artist-statement-EP-eng.htm>

## NomadicMILK

For the recent and not yet finished project NomadicMILK<sup>8</sup> I wanted to focus on this idea of micro versus macro that seemed so important to the MILK participants. I wanted to focus on people for whom mobility is an intrinsic part of their economy and daily life. Also I choose to work in a setting where the existence of the micro versus the macro was strongly present: economies that where interwoven in global and local structures. I found this situation in Nigeria, where two dairy economies exist side by side: Fulani nomadic cow herders and truck drivers transporting canned or powdered dairy products. They both depend on mobility for economic survival.

As the people I planned to work with lead a life along the road I needed a new visualization tool independent of indoor shelter or power supply. To meet those needs we developed a GPS sand-drawing robot. The robot draws pre-recorded GPS tracks directly on the ground by potting them to a chosen spatio-temporal scale. In the previous projects I totally respected the GPS-data and their visualization as a form of realism. This now started to shift when working with the robot.

### Real footage cannot tell the story

I used the robot sand drawings to present the tracks to the participants in small workshops on location in the camp, parking lot or beside the road. The robot functions as a performative tool, making the GPS tracks tangible and physically present. Drawing the tracks took on an autonomous quality of its own: as a performance it started to stand on its own feet, less needing to be combined with other media.

Each time I make a robot-drawing like this the tracks need to be adjusted to the contexts: available space and social setting: how many people will be present, light conditions, color of the ground and sand available. To be able to do this effectively I had to develop experience with the way the robot draws tracks and the way people react to it. This approach brought about new needs in drawing: I found that radical manipulation (a choreography) of the tracks was needed. The representation of both time and space had to be compressed, scaled and deformed in order to make the robot draw a sand line that could function as a representation to which the participants and audiences could relate in a direct manner.

(Polakpic04-05-06.png Caption: Milkmachine screenshots. Used track is a fake for privacy reasons)

To give a practical example: one truck drove a long distance from one city to another, but also made very detailed movements within the city. This produced meaningful data, but it proved impossible for the sand-robot to draw it. I had to be able to enlarge the scale of the movements in the city and shrink the distance between the cities with a flexible morphing tool. I also I had to

---

<sup>8</sup> <http://www.nomadicmilk.net>

adjust the duration, as the city experience needed more time for its details to stand out. To my surprise, the manipulated tracks became even more “real” in the experience of the participants ... if being recognizable as belonging to the self is a criterion for realism....

In this context I like to quote Jeremy Wood one more time<sup>9</sup>:

*“Seeing the rhythms and patterns of one's tracks can have the affect of seeing your own ghost. The qualities of line in GPS drawings can reveal a great deal about movement and process. Just like a pencil drawing where smooth lines have a different speed to jagged edges, GPS drawings can detail the elegant lines of a railway and a squiggly walk to the local shops.”*

Seeing your own ghost! How poetic and involved can you get! A GPS ghost! Its exists by the grace of its movements. It can move through walls, grow and shrink if desired. Its appearance is related to routes, travelers, and it exists and does not exist at the same time....

For me this is a beautiful and inspiring metaphor. For me the magic of GPS visualization peaks at the moment of personal identification with the tracks. In the NomadicMILK project the Fulani herder Idiris got very engaged when recognizing his track during our robot performance. This recognition seemed to happen time after time, as if the fact that it is him being represented hits him several times in a row: he slaps me and interpreter Aliyu on the shoulder in surprise, points to the same spots in the sand track again and again, and never stops explaining what had happened.

(Polakpic07.pct NomadicMILK Nigerian version; courtesy foundation Beelddiktee)

The truck driver Usman has a more analytical relation to his route during performance: at a certain moment he points to a small heap of sand representing a bridge where he knows never to stop because of the robberies which frequently occur there. He points to the sand heap, explaining, touching it: at that moment the sand line truly becomes the protagonist: the scary bridge. The story carries both Mr. Usman and me away: we feel scared and I admire Mr. Usman for always have been able to avoid being robbed, for being smart enough, and with the aid of God....

## Editing

I expect many different GPS-editing tools and interfaces will be developed to make drama, drama in sand lines, or otherwise drama in location data.... As soon as GPS data becomes subject to editing its meaningful forms can be emphasized, it can be composed, become song... not only by changing scale or color or adding some additional data, but by changing and manipulating the “true” data itself.

---

<sup>9</sup>

Jeremy Wood; Synapse list July 25 2008

<http://lists.synapse.net.au/pipermail/elist/2008-July/000150.html>

In the process of my project, I found myself conceptualizing and developing a basic editing software tool for GPS data. This actually excites me very much! From now on I am able to adjust my data: their meaning starts to blur between real-time and memorized time. It gains artistic autonomy and poetic potential. Compare it to rough video or film footage that, no matter how real in itself, can tell a “real” story more effectively after editing and manipulation.

## **Surveillance**

From a conceptual level I think GPS editing is also a milestone. It undermines the “trueness” of GPS data, its nasty side as an unchangeable record of surveillance, without denying the beauty of its realism. For now I explore the of original data, with the goal of making the story or expression of this data more intense. It might construct a new medium, a means to construct space bottom up, from the very step-by-step, human and personal perspective that these very special data bring about.

That brings me to another aspect that I am very curious about, and that might be even more relevant from an artistic point of view. This is whether GPS data will develop as a mature medium that can stand on its own feet: that can have value just by itself, by its own expression: be an representational or artistic/poetic tool for expression: Will we soon become so literate in personal/subjective mapping that pure location data can tell stories or be used to write rather abstract spatial-temporal data-poetry?

Will there be a future where people hire professionals to GPS record their wedding day and afterwards do a proper edit that later can be shared with friends and family ? Will GPS data visualizations be part of news features? Will there be GPS-journalists, like there are photo-journalists now? Will there ever be a GPS-Hollywood???