

Walking The Cognisphere

-Navigation and Digital Media on The Go

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How mobile are mobile media? How are media developed for navigation used when moving on foot? By looking at the combination of locomotion and media use, some of the crucial questions concerning the cultural dimensions of media use can be scrutinized.

Navigation is a goal-oriented movement, it can be described as the process or activity of accurately ascertaining one's position and planning and following a route. Different kinds of technologies have through the years been used for navigation or wayfinding. Maps, chronometers, sextants, compasses, itineraries and today the more widespread use of the GPS-system (short for Navigation Satellite Timing and Ranging *Global Positioning System*) are some examples of navigation technologies. In this text I will mainly concentrate on use of GPS-devices.

The american satellite-navigation system GPS is used in a number of contexts. Objects are equipped with GPS-receivers or transmitters that communicate with the 30 satellites that are operating within the system. GPS can be combined with other kinds of technological systems to be used for identification, positioning and handling of information. To be able to use GPS-equipped devices you are dependent on a complex system of digital technology, satellites and the whole industry that is running it all. To approach uses of this complex system N Katherine Hayles' ideas about a *cognisphere* can be an useful entrance.¹

¹ Hayles has drawn the concept from Thomas Whalen, who 2000 presented a text on knowledge spaces, in which he used the term cognosphere: "The earth provides us with an atmosphere, a hydrosphere, and a biosphere. We have created, for ourselves, a knowledge sphere. Maybe, for aesthetic purposes, we should call it the cognosphere."(Whalen 2000:1).

In highly developed and networked societies like the US, human awareness comprises the tip of a huge pyramid of data flows, most of which occur between machines. (...) Expanded to include not only the Internet but also networked and programmable systems that feed into it, including wired and wireless data flows across the electromagnetic spectrum, the cognisphere gives a name and shape to the globally interconnected cognitive systems in which humans are increasingly embedded (Hayles 2006:161).

Advanced technological systems are intertwined with human exercises. What interests me is the use of an extremely advanced technological system to enhance mundane practices like walking and wayfinding. The technology make new actions possible, but at the same time it frame possibilities. The geographer Nigel Thrift has written about these prerequisites and notes how digital media and technologies with embedded software become part of invisible or unconscious technological patterns and structures. Technology become a kind of *epistemic wallpaper* (2004:585). Extremely complex systems can be integrated in our lives and be experienced as uncomplicated ingredients of everyday life. In an industrialized society we at a daily basis use systems which we just understand fractions of (jfr Willim 2006).

I will now look at some cultural dimensions of media or technology enhanced navigation and walking, and I will take my departure point in uses of the GPS. A lot of what has been written on navigation is coupled to shipping or other kinds of vehicular mobility. However, when concentrating on the ways that navigational technologies are combined with locomotion and with walking and excursions on foot, the navigational augmentations of the body can be examined in relation to the bodily practices of movement and the experiences of place.

TECHNOLOGIES AND LOCOMOTION

Navigation media like the GPS, are by their nature meant to be used when moving around, or to track the movements of actors and objects. When this is written GPS-receivers are divided into a number of categories, for different kinds of usage. Depending on models they have been developed for mounting in different vehicles, for use with laptops or mobile phones or to be used when on foot. The various areas of use for GPS-devices are however in flux. New applications and convergences of technologies are being developed at high speed. Yet GPS-equipment haven't become obvious parts of most people's everyday lives. It's a kind of

technology which haven't yet slipped into the "technological unconscious" (Thrift 2004:585). GPS-equipment is however spread more and more and is turning into one of these complex systems that are domesticated, and day by day habits and corporeal routinizations are growing in connection to the technology. Therefore it is especially interesting to look at this kind of technology which is still often considered as a future technology but which is on the brink of becoming integrated in everyday practices.

I will now concentrate on the kind of devices that are used to position yourself and find your way when on foot. And then especially the kind of products with graphical user interfaces (GUI) equipped with maps and representations of different kinds of spatial information. In the following description from the company Garmin, some of the features of such a GPS for outdoor use, are mentioned:

On the road, on the trail, or on the water, the Garmin GPSMAP®60 series is your ideal guide to the great outdoors. Both the 60Cx and 60CSx versions are rugged, waterproof, full-color navigators that feature a built-in autorouting basemap and include a 64 MB microSD card for storage of optional MapSource®topo, marine or city street map detail. High-sensitivity GPS receivers assure improved reception in tree cover or canyons. And both units feature auto-save of track data to help guide you back to any point along your route. In addition, the "sensor version" 60CSx includes an electronic compass and barometric altimeter – making it the trailblazing tool of choice for hikers and climbers. (Specifications for Garmin GPSMAP60CSx www.garmin.com)

This map-equipped GPS is marketed as something "for the outdoor enthusiast on the go" (www.garmin.com). It is a fairly advanced technology which also encourages locomotion and bodily mobility. But locomotion and advanced technologies haven't always been compatible. The anthropologist Tim Ingold has written about walking in different cultural settings (2004). He writes about the "sitting society" which has characterized the last 200 years of the Western world. He accentuates the role technologies like the boot and the chair have had in these societies. Footwear like shoes and boots have diminished the movability of our toes and have thereby reduced the lower extremities to a kind of "stepping machines". The chair have also contributed to an increased value of mind over the body. He writes about a dominant mindset of the Western world, about a split, "an imagined separation between the activities of a mind at rest and a body in transit, between cognition and locomotion" (ibid:321). He continues to critically describe this mindset:

Only when the mind is set at rest. No longer jolted and jarred by the physical displacements of its bodily housing, can it operate properly. As long as it is in between one point of observation and another, it is effectively disabled (ibid:322).

When taking the point of departure from these thoughts it is especially interesting to analyse the role that navigation technologies play when people are moving around. A number of electrical and digital artefacts are developed and designed having a sitting user in mind. The chair or similar furniture are expected to be used when using artefacts like personal computer, game consoles or TV-sets. The chair or the sofa has become a natural property in connection with consumer electronics. But even when the computer is designed to be mobile, in the form of laptops, the user is expected to sit when using it. Otherwise the laptop would be hard to have in the lap² Ingold argues that the chair is central if we are to explain our relations to corporeality and how we value different senses in the Western world. The chair "illustrates the value placed upon a sedentary perception of the world, mediated by the allegedly superior senses of vision and hearing, and unimpeded by any haptic or kinaesthetic sensation through the feet (ibid:323).

It is, as mentioned, when taking departure point in these thoughts that it becomes highly interesting to analyse how a complex digital technology like the GPS is used. Its user interface is to a high degree visual. The visual (or graphical) information presented on a screen shall then be coordinated with other bodily perceptions and with the moving body. How is this done in practice?

² There are of course exceptions to this design principle. Some workplaces are equipped with vertical adjustable tables which makes computer based work more ergonomic. In the end of 2006 Nintendo launched the game console Wii, which have motion sensitive game controllers designed for bodily movement. The gamer is encouraged to leave the sofa and move around when playing. In this way more parts of the body than the hands are used. Eg. when playing a tennis game the gamer is expected to move and hit an imagined ball with the game controller.

CACHING IN

Geocaching is an outdoor treasure-hunting game in which the participants use a Global Positioning System (GPS) receiver or other navigational techniques to hide and seek containers (called "geocaches" or "caches") anywhere in the world. A typical cache is a small waterproof container containing a logbook and "treasure", usually toys or trinkets of little monetary value (www.wikipedia.org)

To analyse the use of GPS I've taken part in the practices of *geocaching*, and also discussed these practices with experienced geocachers. Geocaching is a phenomenon that has grown in a number of countries. It started 2000 in USA, and have become a widespread movement (Kelley 2006). By using websites like *geocaching.com* the exact coordinates for different points over the world can be presented. At these points small boxes or containers, so called caches, can be hidden. The coordinates can be downloaded to a GPS-receiver, after which the hunt for caches can take place in the landscape.

Geocaching is a good example of how advanced digital technology have moved out in the terrain. At one occasion I followed the geocacher Scrapman on a tour through the landscape in southern Sweden hunting for small boxes. We both brought a Garmin GPS-receiver, but also paper prints from *geocaching.com* that described the caches. The coordinates for the different caches had been downloaded from the web and were stored in the GPS-devices like *waypoints*.

We started by car. When we approached the caches we started our search on foot. The colour screen of a Garmin GPSmap 60 CS showed a map on which a small arrow was moving along the map representation as we moved through the landscape. By oscillating between the information from the screen and our perceptions of our physical surroundings we could move until the arrow was close to the waypoint on the screen. Then Scrapman switched the device to a mode where numbers indicated the distance to the cache... 7 meters, 4 meters... By moving around and trying different directions we could soon home in on the target. This cache was hidden in a small hole in a tree. We opened the box, checked the log book stored in it, and wrote a note that we had found the cache.

COORDINATION

What does this kind of practices, and the use of these technologies, mean for the ways people experience places? How are the technology-based experiences entwined with the experiences of place. The GPS-receivers are parts of a complex system, extremely hard to grasp entirely. When we move around in our surroundings aided by GPS we are dependent on the representations shown on the screen of our device. The interface of the screen is integrated in the experience of place. Signs on the screen are compared, related to and coordinated with perceptions from the physical landscape. The screen and the technology requires "certain kinds of structural engagement, which are both geophysical and also phenomenological in that they may alter our understanding of space, time and movement" (Thrift2004:585).

It is important to accentuate that even if this to a high degree is a visual coordination of perceptions from the screen and the surrounding landscape, it is also a practice involving large parts of the human body, not least the feet. Tim Ingold remind us that we seldom perceive from a fixed point, but more often from "a continuous itinerary of movements (...) if perception is thus a function of movement, then what we perceive must, at least in part, depend on how we move (Ingold 2004:331)". When it comes to wayfinding, and the experiences of spatiality that is coupled to these activities, it is especially important to emphasize how locomotion is connected to perceptual activity. Cognition and locomotion are tightly connected, and "cognition should not be *set off* from locomotion, along the lines of a division between head and heels, since walking is itself a form of circumambulatory knowing"(ibid).

When me and Scrapman moved through the landscape in hunt for caches it became obvious that large parts of our bodies were engaged in the search. And the technology was integral to the practice. Not least whe we came close to our goal we experienced an evident coordination between, not only bodily coordination and what we could see in the surroundings, but also a coordination with the information that was offered by the GPS. Bodily movement, visual perception and information from the human-machine cognisphere were integrated.

In one of my discussions, with a group called Team Global, we recurred to a certain peculiarity of the GPS-devices we used. If you don't move around, the GPS will most likely start to present strange information. Standing still and just slightly moving the hand holding the device would lead to peculiar info on the screen. To get the correct information you have

to take some steps, so the device can fetch accurate information from the satellites. Using the GPS-devices at the time this is written require locomotion. You have to walk to be synchronized with the cognisphere. This is an interesting break with the logic of the sitting society of the Western world that Ingold describe.

WHO'S THE GUIDE?

When I was moving around in the landscape with Scrapman we weren't alone in the terrain. We had company. A questions emerged: Who guides who? N Katherine Hayles writes about a subtle change in subjectivity that the cognisphere is bringing about.

Incorporation of intelligent machines into everyday practices creates distributed cognitive systems that include human and non-human actors; distributed cognition in turn is linked to a dispersed sense of self, with human awareness acting as the limited resource that artificial cognitive systems help to preserve and extend (Hayles 2006:162)

The waypoints we had in our GPS-devices can be compared to the crosses that mark a hidden treasure on a map. In fictitious treasure hunts some protagonist is trying to interpret some mapmakers signs and symbols. The mapmaker is present on the treasure hunt through the map, through the representation of the world.. This presence make the map a technology of power. Doreen Massey have discussed the role of the map and its relations to geography and space. Maps are selective, and "...through their codes and conventions and their taxonomic and ordering procedures, maps operate as a technology of power (2005:106).

In a similar fashion the one who has placed a cache is present in the practices of homing in on the waypoint that represent the location of the cache. When publishing a cache on Geocaching.com the user can also publish additional hints that combined with the geographical coordinates can be an aid in the search. The coordinates and the hints are working as guidance. The map, the software and the interface of the GPS-device, the satellite system and the hints from the website are aids during the search. So, who is or what is the guide? It is hard to exactly put the finger on who's doing what in these situations. And if we talk about maps as technologies of power, who's in control in this distributed system? The human carrying the GPS-device is enmeshed in the interlacements of the cognisphere. As part of this distributed system of cognition and actions you may feel like part of something greater,

something which is hard to grasp in its entirety. Human awareness is the limited resource that the artificial cognitive system, highlighted through the points of interaction at websites and in handheld devices, help to preserve and extend.

BEING ON THE SCREEN

Images of maps and other kinds of information from wayfinding technologies have to be coordinated with the perceptions we get from different places. In a GPS-receiver the static map become something fluid. The image is updated as the user move through physical space. To an unexperienced user this gradual change can feel confusing. If you are used to do the visual walking on a static paper map, then it can be an awkward experience with a gradually updated image on a screen. But also this kind of technology and this interface is domesticated. After a while the interface of a gadget may turn into what is experienced as a natural extension of the body. To an experienced user, screens and other parts of the equipment is transformed into the fabric of everyday life. The technology become part of the technological unconscious and is turned into a kind of epistemic wallpaper (Thrift 2004:585). But also for experienced users this domesticated technology can offer kicks.

Scrapman talked about what he called microscopic kicks when he was moving around in the landscape with his map-equipped GPS. On the screen you can follow your own movement. You see a small cursor moving over the screen, how it is passing through a map representing the surrounding landscape. You see how a path is meandering in the landscape in front of you. On the screen the path is rendered, and some centimeters from the cursor a winding blue line crosses the representation of the path. The cursor approaches the blue line, you hear a rippling sound, and when you raise your eye from the screen you can see how you move toward a small creek. It is this kind of situations that can give Scrapman small kicks. Light is shed on the almost magical complexities of the cognisphere. It can be fascinating to experience how your bodily movement and your locomotion is mediated through a complex technological system to be represented as occurrences on a small colorful LCD-screen.

To make the cursor move, bodily movement is required, and the exact workings of the GPS communicating in realtime with three or four satellites is also necessary. Then the software in the device can render your movements on the screen. There's a suggestive gravitation in this kind of prosaic technology use. Marshall McLuhan have written about how "men at once

become fascinated by any extension of themselves in any material other than themselves”(McLuhan 1964/1994:41). The question is however how gender-specific this fascination is? There can be a generally human fascination in experiencing how movements and actions are represented in our surroundings, not least when it is all mediated through an advanced system. Related situations occur through use of a number of screen based interfaces, where the actions of the user is mediated through a complex and opaque technological system, to be represented in events on the screen. (jfr Willim 2002:84ff).

Now we approach the question about which technologies that are experienced as intriguing or as part of a bland mundane ”epistemic wallpaper”. When this is written map-based GPS-devices still have a quite small dispersion. Car mounted variants are however installed in more and more vehicles. Not least taxi’s are equipped with GPS-devices. When riding in the backseat of a taxi-car, looking at the screen of the GPS, you can see how the car is moving through a maze of streets. Sometimes the driver is guided by an electronically generated voice which tells him the distance to different landmarks and when to turn. After a while the fascination for this system fades away. It is just another hi-tech-system integrated with another advanced technological system. The car is in itself a conglomerate of technological systems, operated within the frames of the traffic system, which is continuously dependent on coordination and maintenance. The GPS is a technological artefact, integrated with the system of the car which often considered as a mundane part of modern life .

Another system which offer information about the location of a moving passenger is the inflight-system of airliners. On screens mounted in front of the passenger seats the movements of the airplane can be followed. Dots representing cities like Ulan Bator and Nuuk can be noted on the screen, whereafter you can lean towards the window to get an aerial view of the geography. The fascination felt in these situations is maybe not primarily based on the fact that the movement of the airplane can be represented on a screen, it may rather be fuelled by the possibility to be 10 000 meters above Greenland or Mongolia and at the same time be seated comfortably eating snacks. There can be a slight feeling of chimera as you during a nightflight sit in the hum of the dark cabin trying to sleep, looking at the planes’ movement on the screen. You could as well sit at home in your armchair. ”Am I really above Sibiria now?”

If we compare these uses of positioning technologies with the uses of GPS when on foot, there can be a more evident contrast when the satellite navigation system is used as you step

by step plod your way forward on a trail through the woods. This contrasting effect can be effective to maintain a fascination for the technology. But as this use of the technology is more spread, and as it is more integrated in everyday lives of people, also this fascination will probably fade into the unnoticed backdrops of daily practice.

DIGITAL MEDIA ON THE GO

How do uses of this mobile technology affect our relationships to bodily movement? Tim Ingold have, as mentioned before, been critical to the low status of practices of walking in Western societies.

”the reduction of pedestrian experience that has perhaps reached its peak in the present era of the car, is the culmination of a trend that was already established with the boot’s mechanization of the foot, the proliferation of the chair, and the advent of destination-oriented travel (Ingold 2004:329).

Can it be that the development of new digital mobile technologies lead to a reconciliation between cognition and locomotion? When we are using advanced systems like the GPS to navigate when we are moving on foot, we are not only walking through the landscape, we are also walking the cognisphere. The human body move through its surroundings and through systems in which it co-evolves with different kinds of technologies.

Nigel Thrift (2004) have discussed the consequences of the spread of new technologies based on secluded processes of calculation. He accentuates new ways of localisation and the uses of coordinate-systems. The ways that the GPS is used when this is written, is just a forebear to the development he describes. He points at how experience and knowledge of places varies quiet a lot between different cultures. Therefore, it is probable that the use of new GPS and Internet connected devices also will contribute to new ways for people to relate to places. The cognisphere is transformed and expanded as new technologies are used. Thrift accentuates eg how a new vocabulary describing spatial configurations is emerging as much greater cognitive assistance is routinely available (Thrift 2004:599f). To walk the landscape, aided by digital media connected to different kinds of networks, will also be to walk the cognisphere.

These navigational technologies stem from, or partly remediate, earlier map technologies (cf Bolter & Grusin 2000). Does this mean that pros and cons of the map as a technology of

power is transduced to the new applications? Does eg the panoptic gaze of the map move into the new contexts? The panoptic view from outside/above has been widely criticized as oppressive. Not the least Michel de Certeaus ideas based on the dichotomy of strategy and tactics is a often cited example (1984).

Certeau links "strategies" with institutions and structures of power, while "tactics" are utilized by individuals to create space for themselves in environments defined by strategies. In the influential chapter "Walking in the City," he describes "the city" as a "concept," generated by the strategic maneuvering of governments, corporations, and other institutional bodies who produce things like maps that describe the city as a unified whole, as it might be experienced by someone looking down from high above. By contrast, the walker at street level moves in ways that are tactical and never fully determined by the plans of organizing bodies, taking shortcuts or meandering aimlessly in spite of the utilitarian layout of the grid of streets. This concretely illustrates Certeau's assertion that everyday life works by a process of poaching on the territory of others, recombining the rules and products that already exist in culture in a way that is influenced, but never wholly determined, by those rules and products (wikipedia.org).

In this game between strategies and tactics the map is an instrument to grasp and survey larger areas. But as geographer Doreen Massey points out, this critique can be somewhat simplifying. "Not all views from above are problematic – they are just another way of looking at the world. (...) The problem only comes if you fall into thinking that that vertical distance lends you truth" (ibid:107). Massey goes on to explain how she instead is worried by the ways that maps give the impression that "space is a surface – that it is the sphere of a completed horizontality"(ibid). Instead, she wants to accentuate the spatial as process, as something ongoing and uncompleted in space and time, juxtapositions and chance in an amalgamation that is hard to predict.

The question is if uses of advanced digital systems like the GPS strengthen the accentuations on space as something dynamic that Massey ask for? Something happen when you look at and use a screen that is more than a static eventless surface. Instead you can see your own movements represented on the screen. In continuation of today's uses we may most likely see upcoming technologies whose interfaces become something more dynamic, where you can experience representations of an environment in flux. Your own, as well as others' activities and changing objects may be represented on the screen. The map as a static surface become

something more dynamic. This may in turn lead to transformations in the experiences of space.

This is space as the sphere of dynamic simultaneity, constantly disconnected by new arrivals, constantly waiting to be determined (and therefore always undetermined) by the construction of new relations. It is always being made and always therefore, in a sense, unfinished (except that 'finishing' is not on the agenda). (ibid).

The uses of these more dynamic technologies transform social and cultural patterns and processes. The software-based map of GPS-devices represent space not only as distances and spatial relations but also as rhythmic patterns. These technologies may combine spatial and temporal representations in new ways which highlights human experience of the spatial as something also temporal. "Human beings have always been rhythm-makers as much as place-makers"(Mels 2005:3 cf Highmore 2005). In these new spatio-temporal configurations the questions concerning power, control and subjectivity may change as the cognisphere is transformed and enhanced to include new technologies and actors.

ENTWINEMENTS AND DISCONNECTIONS

To use digital media, as well as a number of other types of advanced technologies, puts us in the cognisphere. In the use of new technologies the situation, the experience and the practices can feel awkward and mystifying. What's really happening, what will happen if I do like this? However, after a while, even the most complex of technologies will be absorbed by everyday life, and can turn into epistemic wallpaper. A central part of the human interactions with the world is the way that technologies are integrated with routines and handlings. Artefacts that feel strange when we first meet them are sucked into the concurrent messyness and inconspicuousness of everyday practices.

N. Katherine Hayles accentuates the role of technologies for human existence. (1999). One of her points is to see "the body as the original prosthesis we all learn to manipulate, so that extending or replacing the body with other prostheses become a continuation of a process that began before we were born (ibid:3). The borders to the cognisphere are not easy to detect. Already in the 1960s Marshall McLuhan pointed at the importance of technologies as a kind of prosthesis. 'Technology work as extensions of our bodies and abilities. When we get

accustomed to these extensions, they simultaneously numb parts of our senses (McLuhan 1964/1996:44). Technologies offer new possibilities, they may augment our bodies, but they simultaneously deprive. This become obvious in relation to navigation technologies. The GPS eg. gives us new possibilities for positioning and wayfinding, but it may numb our competence to navigate without the technology. It's not hard to imagine what would happen if a person who is relying on the guidance of technology in an unknown terrain suddenly is deprived of the abilities offered by the technology. "If we run out of batteries, this war is screwed" as an American soldier in Iraq expressed this dilemma in an article in the magazine *Wired* (2003). The US forces are using more and more handheld and mobile technology to be able to use GPS and Internet out in the fields. Then it is important that the technology works and that the cognisphere is accessible. If the user is shut out from the system, his abilities is numbed.

Now finally, let us make an imaginative journey to a fictitious future world to reflect over what could happen when a technological system is not accessible. In the novel "Down and out in the Magic Kingdom" Cory Doctorow write about a future where humans to a high degree are incorporated in a cognisphere:

In Cory Doctorow's *Down and Out in the Magic Kingdom*, things are not well in the land of Space Mountain. The operations of Disney World, in this glimpse into the near future, are administered by "ad-hocs", volunteer groups devoted to retaining the old-fashioned charms of the amusement park in a society that has otherwise undergone radical change. Now that you can back up the contents of your brain and download it into a fresh clone, death has become obsolete. And rather than acquiring wealth, people are concerned with earning Whuffie, a measure of good will and admiration among your fellow immortals. (From the Amazon.co.uk review)

The protagonist Jules is drawn into a battle about the ways that the different attractions in Disney World should be redesigned. At one occasion he gets disconnected from the systems that maintain a human existence in the society he lives in. The description of the disconnection can convey a feeling of what it means to lose the support of technology.

This is how you hit the bottom. You wake up in your friend's hotel room and you power up your handheld and it won't log on. You press the call-button for the elevator and it gives you an angry buzz in return. You take the stairs to the lobby and no one looks at you as they jostle past you (Doctorow 2003:187).

When Jules is disconnected from the system, his social identity and his ability to navigate through everyday life crackle. Without his technological extensions he has become a non-person. The situation can sound like pure science-fiction, but is in a way fully realistic today. The artefacts that I've discussed here, namely GPS-equipped devices, can help us to navigate in a physical terrain, but the same devices are also social and cultural navigation instruments. More and more models of mobile phones are enhanced with different types of communication applications and tools to organize everyday life. They are also equipped with GPS-receivers. Such a device have functionalities that make them more or less necessary once they are integrated in the everyday.

Combinations of mobility, social interaction and technology use offer new opportunities. The price is dependence. Expanding the cognisphere by use of new digital media open up new possibilities. But it may also numb us, make us vulnerable. Without the technology we might loose our bearings, both geographically and socially. If we run out of batteries, we are screwed. But it is also a reminder that as humans we are unconditionally entwined with our environments, our fellow beings and the technologies with which we co-evolve.

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