

## TREKKING, LIMINALITY AND CARTOGRAPHY

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### ABSTRACT

Every serious journey, pilgrimage or trek into nature depends for their success on the participant fully engaging with his surroundings. Technology in the shape of GPS and Google Earth, and modern social attitudes toward outdoor experience, are making engagement with the outdoors on an intimate level more difficult for the current and new generations.

Engagement with landscape is vital for all of us - when we are engaged, we cannot be indifferent. Cartography is a tool to foster this engagement, and there may well be new ways in the use of this tool to encourage this.

Liminality - a 'threshold of change' is the desired state in a successful hike, trek or pilgrimage.

The opportunity to attain this is reduced by the use of GPS, but can be enhanced with suitable cartography.

When we find our way in the world, we rely on one of two strategies. One is spatial strategy, in which we build cognitive maps using relationships between landmarks. The other one is a stimulus response strategy - which is kind of an autopilot mode. When you use a GPS you don't necessarily use your spatial strategy.

It could be useful to look at ways of building a cognitive map before the pilgrimage or trek as a way of helping to ensure the best outcome possible.

Key words: gps, spatial skills, wayfinding, printed maps, liminality

### INTRODUCTION

In 2001, a cousin of my late father-in-law republished a book of his wartime exploits. In this book he needed some maps, and he asked me to draw them for him.<sup>1</sup>

The maps concerned part of Greece known as Mount Athos, which is the spiritual hub of the Orthodox Christian faith. The terrain is wild and natural, there are 20 huge monasteries, many smaller buildings, monks, and no women have been allowed there for over 1000 years. This is a unique environment.

I managed to get myself to this place as part of a team clearing footpaths between the monasteries. I was asked what got me interested in this place, and I said I had drawn some maps of the area for a book. I was then handed a CD with GPS tracks on and told that they needed a map. This started the process some five or six years ago. What I had imagined would be a six week process has since filled all my time.

The map was intended to be a replacement for an earlier map done by an Austrian Pilgrim, and to produce something similar with additional material. Thanks to enthusiasm from friends the map has turned into something else and now is probably going to form the basis of a full GIS package, because of the additional buildings, paths, and roads that we have identified and the relationships fostered with the Holy Community, and the input provided by them.

Although what has now been produced is a significant advance on what had been available previously, and has been warmly received it occurred to me that if the true need was for

something for pilgrims then perhaps the format of the map should be investigated. Pilgrims (and, by definition, all visitors are pilgrims) come to the Holy Mountain from all over the Orthodox world. These numbers could well approach 300,000 per year in the near future. Since the millennium celebrations in 1963, and the arrival of the first vehicles, pilgrims often take the easy way and get rides on their travels around the peninsula between the monasteries. The community on the Holy Mountain feel that this is not satisfactory, as part of the pilgrimage process involves walking between the monasteries and soaking in the atmosphere.

A successful pilgrimage (or, dare I say it, 'adventure') embodies 'liminality' - the idea of being in a threshold state where change can happen. This really only happens when the participant fully engages with his surroundings. This not only happens in religious situations!

Technology in the shape of GPS and Google Earth; and modern social attitudes toward outdoor experience, are making engagement with the outdoors on an intimate level more difficult for the current and new generations. It is important to examine methods by which paper cartography can be developed to encourage new relationships with the outdoors.

I suppose that here in New Zealand, on average, we have a greater awareness of and better relationship with the outdoors than people in many other countries, but when visiting the monastic republic of Mount Athos, we are able to observe groups of pilgrims from many different cultures.

What I found a little disturbing was that most of these groups had little obvious experience in such an environment. They were in general ill-prepared and ill-equipped, and unaware of the scope of the walk they were undertaking.

There are two concerns here, the first is that, should difficulties arise, there are none of the rescue and recovery services available in other places. Secondly and perhaps more importantly, their visit to this place is generally a form of pilgrimage. A successful outcome to the pilgrimage effort depends very much on the impact of the Pilgrim's relationship with their environment.

My efforts during the last three years have been to create a new map to assist these pilgrims in their way-finding. I now realise that at the outset of the work I had forgotten a lesson I learnt early in my career - (I was writing up the instruction manuals for a power station) that I was making this map from a position of privilege, that is, I could easily read and understand a map. The users, I should have assumed, cannot. Recently, however, I have become aware that this cartographic incompetence is not an isolated, singular phenomenon, but an increasing one. I am concerned that the type of map I am producing, using classical practices, is now not as useful as it could be. This could well be in part because of the rise of photorealism, Google Earth, and other devices that make us more 'observers' of our world rather than direct participants in it.

What I would like to hear discussed is whether there is a way, a format, or a manner of creating or presenting a map that will encourage proper engagement with the surroundings by people who have no experience or expectation.

Recently I was talking with a retired helicopter pilot and discussing map reading. He explained that during training the pilot was told to look at and understand the landscape he was flying over, and then match it to the map. Any attempt to do it the other way always ended in confusion. What we have here is the decoding of the map by the user. In doing that, the user owns the image he has created for himself from the map. This then helps him engage with the landscape. (It also reflects the skills of the cartographer in encoding that landscape onto a printed map.) This is similar to the way a good writer, by prose alone, can get us to create an image in our heads.

When it comes to my interest, which is the pilgrimage or transformational journey, this engagement with the landscape is absolutely vital for the endeavour to obtain the outcome the pilgrim desires. Engagement can only happen when the user makes sense of the landscape by relating the map that they have studied and the landscape features. The matching of photographs, for instance, does not have the same impact. Similarly, you cannot satisfy hunger just by looking at pictures of food!

The most important outcome is that when you engage with landscape, **you cannot, thereafter, be indifferent to any landscape.**

## TECHNOLOGY

The pervasive view of technology is that it is there to lead us toward a life of greater fulfilment. However, in examining this statement we quickly realise that in fact the outcome of technology can often be the exact opposite: fulfilment for the average person involves a life rich in relationship, with people, landscape, and work. Technology can actually distance us from this! This is the phenomenon behind the philosophy of the '*device paradigm*'. This term was introduced into the literature of the philosophy of technology by Albert Borgmann<sup>2</sup>. It was introduced to explain the hidden nature and power of technological devices operating in our world. According to him, postmodern culture is infused with technological devices to such an extent that humans are incapable of perceiving how badly human life has been affected by this hidden model of living. He believes some people are now unable to live the good life promised by the technology.

In the world of cartography, GPS technology has certainly increased convenience, but this technology, like that of Google Earth, has in fact forced us back from direct engagement, and made us all dispassionate observers, rather than the mud-encrusted hunters we like to pretend we are! What started life as a tool has become (like other technology), a crutch. A keyboard has removed the need for effective handwriting, and television has removed the need for creative entertainment.

In an article in December 2005, by Claudio Aporta and Eric Higgs<sup>3</sup> called "*Satellite culture: Global positioning systems, Inuit way finding, and the need for a new account of technology*", the authors discuss what happens when traditional methods of maintaining geographic knowledge become affected by the adoption of new technologies. What social and cultural losses are incurred, they ask, when traditional methods of life-ways are altered by the use of modern technologies?

Today, GPS receivers are capable of real-time accuracy within centimetres in three dimensions. GPS receivers are so common today they are found as equipment in new automobiles and used in GPS orienteering games. Adopting GPS technology is part of a

trend that involves a loss of engagement with the environment. Using GPS technology, the authors (of the paper mentioned above) believe, risks turning the landscape into a constructed environment, and reduces intimate experiences of land, people, and local knowledge.

Traditionally, way-finding was a mode of travel made possible by intimate social and cultural knowledge of the geography of a region. This knowledge was not originally written down, but rather transferred from generation to generation by experience, for example, during hunting expeditions. Cartography developed as a means of encoding this information, more or less, through a series of rules and conventions. The cartographer 'encoded' his impression of the landscape, according to conventions and rules that were gradually developed. The user then decoded this map within that landscape. There was intellectual effort involved by the user in this practice but the interpretation was the user's own. People now depend on gps - few know the traditional navigation skills.

<sup>4</sup>"The world's global positioning industry watched in disbelief on April 2, 2014, as all of the 24 GLONASS satellites that make up Russia's equivalent of the GPS system failed at once. This unprecedented and deeply worrying total disruption of what is one half of the world's operational global navigation satellite constellations shook the industry, and unequivocally confirmed the public warnings that have been voiced for years by Locata Corporation and other prominent industry experts.

"There is no way you can misinterpret this clear sign of the elephant in the room," said Nunzio Gambale, CEO of Locata Corporation. "We have been telling the industry for years that you cannot have a critically important capability like GPS without also having a backup! What is Plan B if the satellite systems fail? What replaces the space signal when there is a problem? If anyone needed a sign to understand why Locata has spent years inventing and developing the world's first local terrestrial equivalent of the GPS system, then Wednesday's meltdown of a complete global satellite navigation system is it. This event should terrify every nation, government, and company that depends on navigation satellites for their business or, in some cases, their very lives."

A useful paper from Cornell University <sup>5</sup> argues that GPS-based car navigation might disengage people from their surrounding environment, but also has the potential to open up novel ways to engage with it. They present an ethnographically-informed study with GPS users, showing evidence for practices of disengagement as well as new opportunities for engagement, illustrating their findings using rich descriptions from the field. In their observations they propose design principles for GPS systems that support richer experiences of driving. They argue that for a fuller understanding of issues of disengagement and engagement with the environment we need to move beyond a focus on the redesign of GPS devices, and they point to future directions of work that embrace a broader perspective.

The problem is obviously recognised but no easy solution has presented as yet.

#### CHILDHOOD EXPERIENCES

Another factor for consideration is the pilgrim's own experience, often in childhood, of nature and the outdoors, playing or enjoying recreational activities. This situation has certainly changed from the almost feral childhood we were able to enjoy here in New Zealand, more than fifty years ago!

The matter is well discussed in "Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder" by Richard Louv<sup>6</sup>. "Today, kids are well aware of the global threats to the environment, but their physical contact, their intimacy with nature on a day-to-day basis, is fading. A fifth-grader in a San Diego classroom put it succinctly: 'I like to play indoors better because that's where all the electrical outlets are.' Our institutions, urban/suburban design, and cultural attitudes unconsciously associate nature with doom, while disassociating the outdoors from joy and solitude. Well-meaning public-school systems, media and parents are scaring children straight out of the woods and fields. Many parents are aware of the change, and they sense its importance. When asked, they cite a number of everyday reasons why their children spend less time in nature than they themselves did, including disappearing access to natural areas, competition from television and computers, dangerous traffic, more homework and other time pressures. Most of all, parents cite fear of stranger-danger, as round-the-clock news coverage conditions them to believe in an epidemic of child-snatchings, despite evidence that the number has been falling for years."

As a result, children's worlds, limitless in cyberspace, are shrinking in reality. As the nature deficit grows, new studies demonstrate just how important direct contact with the outdoors is to healthy human development. Most of the new evidence that connects nature to well-being and restoration has focused on adults, but during the past decade, scientists have begun to study the impact of nearby nature on child development.

Our society is teaching young people to avoid direct experience in nature. That unintended message is delivered to schools, families, even organizations devoted to the outdoors, and codified into legal and regulatory structures, effectively banning much of the kind of play that we enjoyed as children. As the nature deficit grows, new studies demonstrate just how important direct contact with the outdoors is to healthy human development.

George Monbiot<sup>7</sup>, the Guardian columnist, recently wrote (in effect) that there was no point in our generation being concerned about the environment, because the coming generation has never really been outdoors!

In the journal 'Nature' of March this year, there is an important paper by Roger McKinlay<sup>8</sup>, who states "Human spatial memory is outstanding. In Ancient Greece, orators visualized their speeches as a mansion, placing topics in each room, then retrieving them while taking an imagined route through the building. But navigation is a 'use-it-or-lose-it' skill. Drivers in a simulator who follow satellite-navigation instructions find it more difficult to work out where they have been than those who use maps. Instructed drivers also fail to notice that they have been led past the same point twice. Mountain-rescue teams are tired of searching for people with drained smartphone batteries, no sense of direction and no paper map."

McKinlay goes on to suggest useful developments in the navigation systems we use; but our interest is in the user, and trying to ensure that the results of his forays into nature produce the outcomes he wishes.

In 2014 the Nobel Prize for physiology<sup>9</sup> was awarded jointly to three researchers for their work that discovered that the brain contains specific cells that contain the sense of 'place' that we all need to navigate and know our position in the world. Their endeavours are part of extraordinary work trying to understand how we understand our sense of place. At the beginning of the twentieth century behavioural scientists first hypothesized that animals

carry an abstract map of space inside their heads. The discoveries of grid cells finally proved that this was true and astonished and thrilled theoreticians, because the hexagonal pattern is the optimal arrangement for achieving the highest-possible spatial resolution with a minimum number of grid cells. This saves energy, showing how beautifully efficient the brain can sometimes be. The appealing simplicity gives hope that the entire brain uses computational principles that scientists may eventually understand.

The grid code is valuable because it exists high up in the brain's hierarchy, with no direct input of sensory information. Unlike the visual cortex, say, whose coding will be influenced by light falling onto the retina, the entorhinal cortex creates the hexagonal pattern entirely internally, by integrating whatever information about the environment is received by other areas of the brain. (Mirsky)

This would seem to suggest that the internal concept of sense of place can be informed by our own expectations that when we seek a liminal experience, anticipation is important.

McGill University researchers<sup>10</sup> by have presented three studies suggesting depending on GPS to navigate may have a negative effect on brain function, especially on the hippocampus, which is involved in memory and navigation processes.

There are two major ways of navigating: by spatial navigation or by stimulus-response methods. The spatial method uses landmarks and visual cues to develop cognitive maps that enable us to know where we are and how to get where we want to go. The second method relies on repeatedly traveling by the most efficient route, as though on auto-pilot. The second method will be familiar to those using GPS.

Functional magnetic resonance imaging (fMRI) scans were taken of older adults who were GPS and non-GPS users. The subjects accustomed to navigating by spatial means were found to have higher activity and a greater volume of grey matter in the hippocampus than those used to relying on GPS. These adults also did better on a standardized test used in the diagnosis of mild cognitive impairment, which often precedes the onset of Alzheimer's disease.

The hippocampus is believed to be involved in memory and in navigation processes such as the ability to find new routes and identify short cuts. It is one of the first areas of the brain to be affected by Alzheimer's disease, which results in memory loss and difficulties in spatial orientation.

An earlier study by University of London researchers showed that in London taxi drivers, who spend three years learning their way around London by spatial methods rather than GPS), part of their hippocampus is larger than in a control group of non-taxi drivers. As in the current research, the presence of a link does not necessarily show causality, and in the London cabbies, the sheer volume of knowledge they must gather may also be involved.

Neuroscientist Veronique Bohbot of McGill University in Montreal, Canada, said the results of the studies suggest using spatial memory regularly may improve the function of the hippocampus and could help ward off cognitive impairment as we age.<sup>11</sup>

Bohbot suggested it may be wise to restrict GPS use to an aid in finding the way to a new destination, but to turn it off on the way back or when going somewhere that is not new.

Building cognitive maps takes time and effort, but with the hippocampus, it may be a case of “use it or lose it,” and Bohbot said she does have fears that reducing the use of spatial navigation strategies may lead to earlier onset of Alzheimer’s or dementia.

#### PERSUASIVE CARTOGRAPHY

‘Persuasive Cartography’ (or ‘illustrated maps’) refers to maps intended primarily to influence opinions or beliefs. They are designed to send or reinforce messages rather than to communicate objective geographic information. Maps of this sort have also been described as “suggestive cartography,” “rhetorical cartography” and “propaganda maps” (a less apt term, because the word “propaganda” has become a pejorative).

The outstanding collection at Cornell University<sup>12</sup> reflects a variety of persuasive tools: allegorical, elective inclusion or exclusion; unusual use of projections, color, graphics and text; and intentional deception.

In fact, no map provides an entirely objective view of reality. Even the best-intended cartographer must decide what projection to use, what features to include and what to exclude, what colors, what shading, what text, what images – all of which shape the message communicated by the finished product. Every map is somewhere along a spectrum from objective to subjective, from science to art. We deal here with maps that have crossed a line - itself admittedly subjective - into the preference for communicating some message other than objective geographic information.

Why maps? The answer is that a map is different from other forms of communication because it is uniquely presumed to be a source of honest, objective information.

This form of map - in a mild form is commonly used for depicting skifields and mountain terrain and shows art as a true partner of cartography. A map of this sort can contain only that detail which the cartographer chooses, and will advance the reason for the map; rather than have the reader overwhelmed with the detail present in a Google Earth rendering, or totally underwhelmed with a gps screen.

As Picasso could be misquoted “Illustrated maps are not truth - Illustrated Maps are lies which make us see the truth”

#### CONCLUSION

Where does all this lead us?

A pilgrimage, or transformational journey, has three distinct phases. The preparatory phase, includes physical and mental preparation, study, and purchase of all manner of aids and devices. The second phase is the actual journey, which may be of quite limited duration. The nature of the undertaking means that it will be physical, and in unfamiliar surroundings - not the sort of environment where one can be a dispassionate observer or armchair traveller.

The pilgrim must engage with the environment, much like the helicopter pilot I mentioned earlier. It is this engagement, added to the cognitive map (and the expectations that form part of this) that will provide the background for the catharsis that will occur during the third, reflective phase after the journey.

Given the modern trends of the increasing use of technology, and the increasing isolation of ourselves from our surroundings, how can we use cartography, particularly paper maps, to encourage engagement? We are handicapped with the diminishing ability of people to relate to their outdoor environment, and, in this particular instance, by the normal behaviour of the male gender, in his ability to neither ask for direction, nor admit that he cannot understand maps! What is the best form of map to ensure that the pilgrim gets the most from his adventure?

The key to obtaining the engagement of the pilgrim/trekker is anticipation and excitement for the activity. Perhaps the best device for this is the 'Illustrated Map'. Now that the wayfinding map is complete, it is time to develop the right sort of illustrated 'persuasive' map.

During the completion of this paper, feedback was sought from Morgan Hite - a sometime member of this group. He made some great observations: "*Vis-a-vis map-reading, when I was teaching wilderness travel, and therefore teaching map-reading, I taught that one must first study the landscape and then the map. If you do it the other way around, you can easily convince yourself (wrongly) that the landscape matches what you see on the map. It is harder to convince yourself (wrongly) that the map matches what you see in the landscape. I heard one instructor explain this, somewhat tongue-in-cheek, to students by saying, "The land is God and the map is the Bible. You want to study God and then try to find him/her in the Bible, not the other way around."*

*One good thing to add to your paper is the obvious indelicacy and foolishness one feels following a GPS unit's instructions about how to get to a waypoint through thick bush. The guy with the GPS in hand crashes through the worst places, bent on following his line. He goes straight through thickets, thorns and wetlands. The guy watching him simply walks around the thickets and around the wetlands and gets to the same place dry and unscratched.*

*Re GPS failure, when I worked in air search-and-rescue here in Canada, we were not allowed to use GPS to navigate. It had to be by map. Simply because the GPS could fail.*

*Getting back to the mind-set that allows one to actually see the place where one is.... I think this is why pilgrimage, or the metaphor of pilgrimage, appeals to so many people these days. So it's ironic that you would have pilgrims who aren't sure about how to relate to landscape. I think you can assume they want to learn how, but perhaps don't know how to begin.*

*Something I would like to try (but have not had the courage yet) is to go to a place completely new to me never having looked at a guidebook, but carrying only a collection of maps. My sense is that where a guidebook acts to structure your expectations and create a to-do list, a map invites you to explore in a less directed way. The guidebook in effect gives you blinders (because you think you know what is valuable before you go) whereas the map generally presents all locales equally. (Some tourist maps are the exception, with top ten sites picked out on them and so on.)*

*One idea I have is that engagement with place occurs when one deviates from the plan. In other words, it's not until something unexpected catches the eye that discovery begins. From this point of view, the more you know about what you will see (or think you will see) the more you are insulated from what you really might see. The GPS in this way acts as a handrail: losing it is the beginning of discovery. (On a deeper level, trails act this way.)*

*I also think it's good to ask WHY we want to persuade (as in persuasive cartography). When you make a persuasive map of a place it has consequences, like increased visitation.*

(Also possibly consequences like decreased visitation in areas you portray on the maps as being uninteresting.) Those Heinrich Berann illustrated maps of Europe come to mind.”

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