California State University, Northridge

GPS: Is it Affecting our Sense of Place? A Case Study

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By

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California State University, Northridge

DEDICATION

This thesis and my entire education are dedicated to my family.

"The mountains are calling, and I must go." - John Muir

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ABSTRACT

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This study investigates whether GPS affects our sense of place. GPS is integrated into many technological devices that we use now. Additionally, GPS has become a part of our daily habits. Is GPS affecting our sense of place? In this technology-driven age, this study finds that GPS has begun to affect our sense of place in many different ways. Instead of being an agent of technology, it brings with it losses and opportunities that shed light on many questions in regards to our sense of place.

Chapter I

Introduction

1.1 GPS: The Big Picture

In the 1970s, Yi-Fun Tuan was among those who presented to geographers the importance of awareness in the senses of constructing sense of place. Today, geographers are worried that new technologies may interfere with our sensory contact with the world. What will this do to our sense of place? "Place is security, while space is freedom" (Tuan, 1977, 1). Tuan explains that we are attached to the one, and long-for the other. Place, being the attached object, and space, the one to search for. Place is significant, it is what defines us and what we call home. The importance of a sense of place is what drives humans to call a place "home." Places are centers of value to humans. A sense of place keeps people grounded and localized. Place is a special kind of object. It is an object where we can live (Tuan, 1977). Space is movement and is defined by our objects and places not associated with our home. Space also provides freedom and adventure from our home, which is embraced by some and worrisome to others.

Some geographers worry that sense of place is diminishing in the modern world. The main reason is that humans have constructed bland commercial landscapes, modern cities, and homogenous environments that created differentiated places. But an additional cause has been the rapid proliferation of technologies that allow people to become less attentive and aware of their environments. The chief technology of this movement is GPS.

The Global Positioning System (GPS) was created in 1973 by the United States Department of Defense. Integrating twenty-four satellites to overcome the lack of past

navigational systems, GPS became fully operational in 1994. It was first used for military operations by the Department of Defense. In the 21st century, GPS is now a common tool that can be accessed by a variety of different smart technology. GPS uses the satellites to give the user a correct point navigation of where they are on the earth. GPS shows this location on a map in regards to the person's location and where the person wants to go. A simple input of an address or commercial name allows GPS software, to use the coordinates supplied by the GPS unit to map out a route to that destination. Additionally, the device verbally tells a person how to proceed on the route displayed. Web-based applications, mobile apps, and popular GPS devices have the technology embedded as their core purpose. People use this technology to tell them where they are, how to proceed to their destination and estimate when they'll arrive.

Like the Internet, GPS is an essential element of the global information infrastructure. The free, open, and dependable nature of GPS has led to the development of hundreds of applications affecting every aspect of modern life. GPS technology is now in everything from cell phones and wristwatches to bulldozers, shipping containers, and ATM's. GPS boosts productivity across a wide swath of the economy, including farming, construction, mining, surveying, package delivery, and logistical supply chain management (GPS.gov, 2013). Major communications networks, banking systems, financial markets, and power grids depend heavily on GPS for precise time synchronization. Some wireless services cannot operate without it.

This study examines the impact of the commercial application of global positioning systems (GPS) technology on sense of place. Does GPS in computers, cars, tablets, and mobile devices such as Garmin GPS units, Ipads, and Iphones influence sense of place? This study aims to initiate research into this topic. It establishes a theoretical background and conducts a case study to ascertain whether dependence on GPS technology impacts perception of the

environment and places. Is it a new factor to include in the rise of placeless geography? At the same time, can GPS become something that can improve sense of place?

1.2 Previous Work on GPS and Sense of Place

There has been limited research on how GPS affects the sense of place of those who have come to depend on it for information. A recent study was conducted by a team of students from Cornell in New York. They tested the observation of ten people driving and using GPS in the greater New York City limits and Seattle (Leshed, 2008).

This conference proceeding document was an introduction on how to conduct a project related to GPS and cars. They recorded how subjects were engaged and disengaged from the environment as a result of the GPS unit being in the car that they were driving. The team conducted a field study with GPS users and studied their experience within their cars (Leshed, 2008). The test subjects were interviewed during route following, putting in coordinates, asking for locations from the GPS unit, etc. They also focused on new and old areas of the city of New York to see how the experience would affect the subject driving the car. They were able to test people's awareness in familiar and unfamiliar places by how engaged or disengaged they were during the test sessions.

The results were broken down into 6 categories. The categories were; pre-navigation/route choice, orientation in unfamiliar areas, orientation in familiar areas, social interactions around the GPS, treating the GPS as an active agent, and interaction with the external environment and locals. The study found that the use of the GPS unit altered how people interpret, learn, navigate, and experience spaces and places. It was noted that there is evidence for loss of environmental engagement. With the GPS, you no longer need to know where you are

and where your destination is, attend to physical landmarks along the way, or get assistance from other people in the car and outside of it (Leshed, 2008). "The reduced need to feel oriented, keep track of locations and maintain social interactions regarding navigation issues inhibit the process of experiencing the physical world by navigation through it. As such, the process of interpreting the world, adding value to it, and turning space into place is reduced to a certain extent and drivers remain detached from the indifferent environments that surround them" (Leshed, 2008, 1680). The study also identified that GPS did produce new opportunities for "engagement" with the environment. GPS showed landmarks that were inaccessible from the road, exposed unknown areas and places, and created a sense of security in those unaware areas. This suggested that GPS can promote environmental "engagement" and accelerate their awareness of space.

While Leshed's study was significant, it was not conclusive. Additional empirical work on the issue is necessary as GPS has become increasingly ubiquitous. This thesis undertakes to do this by further investigating the effect of GPS on sense of place. This thesis establishes a theoretical background on sense of place and why it is important. Then it conducts a case study on the effect of GPS on sense of place through the analysis of people's mental maps.

Chapter II

Literature Review

2.1 Sense of Place

Yi Fi Tuan wrote *Space and Place: The Perspective of Experience* in 1977. Tuan explores the idea of space and place. The two subjects intertwine as he defines them. We are attached to place, but we long for space. For place to be a place, space needs to exist to make the place secure. Stability is what makes a place. In contrast, space is open and free, which causes it to be a threat. This feeling is much like having to go out of one's personal space. Venturing out into the unknown areas of space, we search for places of security. "Furthermore, if we think of space as that which allows movement, then place is pause; each pause in movement makes it possible for location to be transformed into place" (Tuan, 1977, 6). In summary, place equals security and stillness. Space equals insecurity, movement, and the unknown.

The security of place offers a chance for an integrated, stable, and meaningful identity. Place has meaning, memories, activities, and comfort. Ultimately, place is a foundation for our identity. Everything that revolves around a place creates our identity. We turn an environment into a place. "They are important sources of individual and communal identity, and are profound centres of human existence to which people have deep emotional and psychological ties" (Relph, 2008, 45). People relate places to a feeling inside. Whether it is a memory, or an experience they have every day. For example, a coffee shop is a place that people go to for a commodity, but also a place where they want to have an experience or have an identity. Place offers a basis for identity. The importance of place and space is that the interaction between the two creates the sense of place.

An additional relevant concept raised by Tuan is ‘sense of place.’ So what is ‘sense of place’? Relph (2008) and Tuan (1977) used the terms “insideness” and “outsideness” to describe people's feelings of being part of a place. Tuan (1977) separated between “sense of place” and “rootedness,” where sense of place is described as an awareness of a positive feeling for a place, and rootedness as a feeling of being home. A sense of place is the ability to recognize different places and different identities of place. Tuan discusses the foundation of place and how it is a human trait to have a sense of home. The home is the stationary and rootedness of human nature. For example, Tuan states “To the young child the parent is his/hers primary ‘place’. The caring adult is for him a source of nurture and a haven of stability” (Tuan, 1977, 138). It is the same feeling that adult humans associate with home. Home is a place of refuge and healing from the unknown areas of space. To be aware of that sense of place and to know the difference between places is what makes us modern humans. To have an existing alienation to other places is what establishes the “home” complex. This is less rooted and diminished from earlier human societies. With the rise of the modern world and the change in human culture the “home” complex of Tuan has become diminished. Sense of place is indeed a significant part to the sophisticated, globalized, and complex world we live in. Now, home is where modern people can feel rootedness, while surrounded by space and many other places that create their sense of place due to their awareness of their rootedness. This rootedness though is beginning to diminish due to our exposure to diverse and changing places.

2.2 Alienation and Placelessness

In this section, I will discuss that exposure to diverse and changing places increases alienation; At the same time, I will suggest that people may be more rooted and place-bound than geographers recognize. Finally, I will point out that GPS is an additional threat to place. "Humanistic geographers argue that the alienation implied by 'sense of place' increases in the modern context" (Fleming, 2009, 35). This is due to a greater outcome of connections to non-local places, the rapid pace of change in the environment, and the overexposure to unlimited amounts of information of modern world culture. Modern world culture has promoted a normality of having access and being exposed to a vast amount of data from the internet, phone, billboards, televisions, and other forms of media. Humanistic geographers might be overanalyzing the situation. In fact, people still retain strong local connections and bonds to places. But a new threat to people's connection to their place is GPS.

Unlike early human societies, the modern world forces itself on human beings to diminish the context of "home" and replace it with non-local places and places with unlimited amounts of information that stimulates constant interaction. A Global Sense of Place by Doreen Massey (1994) supports this notion of overexposure. "Time-space compression refers to movement and communication across space, to the geographical stretching-out of social relations, and to our experience of all this" (Massey, 1994, 2). This stretches people from place, giving them an increasingly alienated sense of it. This increases their sense of place, but this also diminishes it because of the vast number of places. This overwhelms the local rootedness of "home." All the connections with places that matter the most are decaying. Again, "We take them for granted" (Tuan, 1977, 1). Tuan warns of the alienation from place. At the same time we have produced globalized, homogenous, bland places, and modern cities that critics find

"placeless." As humans interact with the modern city, there are two experiences within that have become more important. There is the geography of places, and then there is a placeless geography. Placelessness is being an endless black hole of similarity and place being a varietal foundation of meaning and uniqueness. Relph thinks that placeless geography has more influence right now. "The prospects for a geography of places are uncertain, but on possibility is the transcending of placelessness through the formulation and application of an approach for the design of a lived-world of significant places" (Relph, 2008, 63). The question presented is, "Is placeless geography or placelessness inevitable?"

Relph describes placelessness as "both an environment without significant places and the underlying attitude which does not acknowledge significance in places" (Relph, 2008, 65). Suburban neighborhoods are a good example of this phenomenon. The massive genre to our post-modern places, suburbia is a force of placeless geography. It is so uniform and plain. Endless cul de sacs of houses that have the same cookie cutter attribute. Suburbia sprawls throughout the Los Angeles area. Los Angeles is a shining example of a metropolis that is becoming placeless. Relph says, "it reaches back into deepest levels of place, cutting roots, eroding symbols, replacing diversity with uniformity and experimental order with conceptual order" (Relph, 2008, 80). There is no variety in this future of placeless geography. It attacks our inside feeling of place. Relph proposes that placelessness is inevitable, but rather it is man's choice to whether or not it will indeed happen. Will eventually 'place geography' be extinct and 'placelessness' be the only thing we know? Relph states, "It is certain that loss of attachment to places and the decline of the ability to make places authentically do constitute real deprivations, and that the redevelopment of such attachments and abilities is essential if we are to create environments that do not have to be ignored or endured" (Relph, 2008, 81). If Relph is correct in

his assumptions, how does GPS factor into this slide toward universal placelessness? Does it allow us to ignore our surroundings and let us move across space and place? Will it further the force of placeless geography?

2.3 Cities, Globalization, and Sense of Place

Before we answer these questions, we must first look at how our cities have encouraged placelessness through rapid globalization. Our cities have become what they are by cultural shifts more than industrial advances. There is no significant date to say when the world shifted into this culture, but David Fleming has a few theories into why our cities evolved into what they are today. David Fleming dwells in the realm of political theory and public space in America. He states that there are "three key spatial features of the cultural movement" (Fleming, 2009, 34). The first is globalization. The thought of that we are connected…always. Any point in the network is connected to all the others. That sounds like the description of the average American in 2014. We are always connected whether it is by phone, computer, tablet, car, TV, radio, or any other medium. "The way transnational organizations and permeable borders now facilitate the rapid deployment of capital, labor, information, and products across space" (Fleming, 2009, 34). Take for example Apple, Inc., it is a presence in the technological world. Apple distributes its culture and information on the human race, pushing forward the cloud platform. "Our location in such a world is decidedly interstitial, known more by what we are connected to than by where we actually are" (Fleming, 2009, 35). This is becoming the normal human life. We are distracted by trying to be connected such that it actually disconnects us.

Fleming's second spatial feature is diaspora. Its meaning is the large movements and demographic changes of postindustrial life (Fleming, 2009). Fleming describes the changes of having an influence on migration, nomadism, and tourism. Fleming says, the "hyperactivity" and

flow of post- industrial life has enhanced the interest in these subjects. Knowing where you are in a city is important. In all cases GPS is a product within "hyperactivity" (Fleming, 2009). GPS guides us through "hyperactivity." But, do we pay attention while we are following GPS through "hyperactivity"? We listen to the commands to street names, and maybe do not realize that we missed a beautiful and significant landmark within the city. Do we even care where we are, as long as our GPS can tell us?

Fleming's last spatial feature is multipositionality, our identity is becoming fragmented into a culture of increased heterogeneity (Fleming, 2009). Fleming does express the importance of place in contrast to his views of our cities. Fleming argues that places matter. "The postmodern landscape is comprised of 'valuable' spaces that are increasingly linked together and 'devalued' spaces that are more and more isolated and separated both from each other and from the valuable spaces" (Fleming, 2009, 30). He believes that new technology has not made place irrelevant in our lives or fundamentally altered our place in the physical world. The answer that Fleming thinks is the key is that people inhabit communities where they can flourish. Fleming believes that our sense of place and community are defined by 'social spaces' or 'common places'. He lists the three essential attributes for spaces. We need to be grounded, unitary, and official (Fleming, 2009). Only then will we be able to live in this rapid globalization era.

2.4 Construction of a Placeless Environment: A Glance at Los Angeles

Los Angeles exemplifies many "placeless" trends that Relph warns us about. The city, as we see it today, is dominated by cars, freeways, and time. Time is a precious thing to most people, especially in Los Angeles. Since the study will take place in a major portion of Los Angeles, it would be best to look into why our cities have influence on our sense of place. Edward Relph explores why our society and cities have evolved into these "placelessness"

environments (Relph, 2008). Relph argues that localism and variety of places and landscapes that were popular in preindustrial societies are being diminished altogether with the rise of what he calls “flatscape.” “Flatscape” is lack of depth and providing possibilities only for the commonplace and mediocre experiences (Relph, 2008, 79). Are our cities becoming mediocre places that we experience? Gordon Cullen wrote in his book the “The Concise Townscape,” “we appear to be forsaking nodal points for a thinly spread coast to coast continuity of people, food, power, and entertainment; a universal wasteland …chromium-plated chaos” (Cullen, 1971, 59). Cities are now dominated by freeways, cars, time, entertainment, and power. Relph would say that the once thriving city would be a place of “placelessness geography” (Relph, 2008).Would Relph identify Los Angeles as a city of “placelessness geography?

Is Los Angeles becoming placelessness? Is it changing from a place of diverse landscapes and significant places and molding into one “universal wasteland”? (Cullen, 1971, 59) Los Angeles is dominated by freeways. Cars are the way of transportation for the vast area that Los Angeles covers. Globalization of the city has increased the alienation of the people that live in it. Modern Los Angeles is constructed of the factors that Cullen and Relph have described. Relph argues that humans are losing to the forms of placelessness and as a whole losing their sense of place. This begs to question whether or not GPS is a form or cause of placelessness. In particular, is GPS guiding us through our wasteland and blinding us from the fact that we are becoming more and more a uniform landscape? If a visitor came to Los Angeles to see the diverse places of the city, would they be disappointed? Would they imagine Los Angeles to be how Relph describes our preindustrial city? Would GPS hinder or help this?

Richard Hoggart describes this feeling, “To a visitor they are understandably depressing, street after street of shoddily uniform houses intersected” (Hoggart, 1959, 52). Visitors might

feel that same feeling of depression, with no significant landmarks, just mediocre places. Does GPS enhance this feeling by guiding us through this “depression”? Do the instructions from the voice on the dashboard of the car enhance the disengagement of places, further pushing us towards a world of placelessness, where we listen to the nice commanding voice of our computerized cars, eagerly trying to beat time, unknowingly ignoring our own places?

2.5 Mental Maps and Sense of Place

Mental maps are the way we identify our sense of place. Mental maps illustrate our perception of our surrounding environment. They show what we value and perceive in our existing cities. Peter Gould published “Mental Maps” in 1968. This book became a popular key note for human geography much like Tuan in 1977. Gould asks a question of the reader, “where would you really like to live?” (Gould, 1968, 1) Gould says that we first are aware of the difference between “here” and “there.” One is the known and the other is the unknown. Gould describes the unknown as the exciting feeling of escape to form the limits of your present environment. Gould encourages the reader to seek out space to be aware of the world other than the present place. “Differences between the attributes of ‘here’ and ‘there’ have always been of great interest to human geographers, because it is precisely the differences between places that generate movements of goods, people, and information. Such movements produce the traffic jams in cities, crowds on summertime beaches, vast flows of letters and electronic messages, and the great networks of pipelines that crisscross, nation after nation. To analyze such complex patterns produced by man on the surface of the Earth, geographers are increasingly looking at questions of relative location” (Gould, 1968, 2). Gould further states that because of the limit for the demand at the local place, it is the root cause for this massive pattern of exchanges which he states is spatial interaction.

Elspeth Graham denotes previous studies claiming that their research, work, and studies have not led to a successful theory construction (Graham, 1976). Graham cites numerous geographers who have stated their opinion on the idea of mental maps yet he does not agree with their perception of the subject. Graham says that a mental map is an image of our larger environment. “It provides for the orientation, comfort, and movement of man within his environment” (Graham, 1976, 259). Asking a series of questions that are deep within the root theme for mental maps, Graham says that if we are going to characterize mental maps then we will have to find the kind of answers that are appropriate for the particular research.

Graham focuses on where the locations of mental maps are stored. Are they within the brain? Are they part of a bigger sense of being? The location is very elusive and there is no way of pinning it down to one particular thing. This phenomenon that occurs is very much tied to the person’s own unique geography. The point is that, since each person’s mental map is unique then they wouldn’t be able to tell the difference between a written map of London and a written map of New York (Graham, 1976). It could be almost identical with the right people. Graham then goes on to explain how this is tied to regular human behavior and how two different people might have a different interpretation of a mental map. If you were going from point A to point B and two people compared their answers, what if A and B were illustrated with a shorter more time-saving route for person 1 than person 2? How do you the compare the two? What value does that show from person to person? This goes to question how people will perceive their mental map in regards to the study? Will we see the same results like Graham’s study?

Paul Richards documents Immanuel Kant, a geographer as well as a philosopher, and his contribution goes into Kant’s study and his quote of Tolman on mental maps and comparing it to testing rats in mazes (Richards, 1974). Richards says that Kant believed that the stimulus of the

brain was origin and how we are selective in how our mental maps are subjective to our personal view of the environment.

Richards states that "the mental map derives its significance in geography from a problem which, as we have already seen, had exercised Kant's mind" (Richards, 1974, 3). The world with which we have to deal extends far beyond the bounds of our perception at any given moment. Richards also goes into the value of mental map as a theoretical concept. Mental maps play a huge part in the GPS and sense of place discussion. If you have no mental map of the area that you travel then how could you possibly be engaged with your environment?

2.6 GPS and Sense of Place

Mental Maps is the foundation of how people navigate through space and places. GPS has entered this discussion due to technology's rise into everyday life. How does GPS affect sense of place? Where does GPS play within Tuan's ideas? GPS allows us to move through space. Tuan writes,

> "The range of experience or knowledge. Experience can be direct and intimate, or it can be indirect and conceptual, mediated by symbols. We know our home intimately; we can only know about our country if it is very large. A longtime resident of Minneapolis knows the city, a cabdriver learns to find his way in it, a geographer studies Minneapolis and knows the city conceptually. These are three kinds of experiencing. One person may know a place intimately as well as conceptually. He can articulate ideas, but he has difficulty expressing what he knows through his senses of touch, taste, smell, hearing, and even vision" (Tuan, 1977, 6).

As geographers, we would like to know a place intimately and also conceptually. In regards to GPS, most people would probably play the role of the cabdriver that Tuan cites, eagerly trying to find his or her way within a metropolis, but does he or she pause and develop a sense of place within the city? Is there an experience that GPS can provide that can develop a sense of place for people? Tuan suggests that it is all within the "experience", within the

perspective of the beholder. Also, deep place awareness takes sensory contact over time. Does GPS hinder the buildup of awareness?

Ari Schulman argues that GPS has changed the way we move through the world. Schulman describes GPS as a tool for the 21st century discovery, much like the open road in the 1950's, when freeways first provided freedom via the automobile. Schulman describes that GPS is like a mediator now between us and the physical world (Schulman, 2011), guiding us through places with ease, with no decision making by us, or no objection to the direction the GPS is telling us to go. Schulman talks about being in a post- modern world where there are no signs or signposts. Thus, due to our ever reliability on GPS, we become unaware of our surroundings and just follow the voice from the square box in our cars. If GPS has started to change the way we move through the world, then how does that affect the experience that Tuan talks about? Our intimate and direct experience might not be what GPS is returning when we use it to navigate the world. Could our experience be more indirect and conceptual now in regards to us knowing our way through our cities?

Schulman increasingly shows that America has had periods of discovery, though he questions what the new age of discovery and freedom will be like with GPS in our cars. Will it be an actual freedom or just a shade of virtual reality that has found itself, into our cars, phones, and computers (Schulman, 2011). It is too early to tell, but Schulman argues cogently that GPS affords us a new strange sort of freedom that Americans need to be aware of.

Kevin Lynch describes a scenario of 'sense of place' when it comes to the modern city. It relates to the current state that GPS has inserted itself into. This is in regards to navigation and people's sense of place. Again, Tuan states that place is identity and value (Tuan, 1977). Kevin

Lynch states that, “To become completely lost is perhaps a rather rare experience for most people in the modern city. We are supported by the presence of others and by special way-finding devices: maps, street numbers, route signs, and bus placards. But let the mishap of disorientation occur, and the sense of anxiety and even terror that accompanies it reveals to us how closely it is linked to our sense of balance and well-being. The very word “lost” in our language means much more than simple geographical uncertainty; it carries overtones of utter disaster” (Lynch, 1960, 4). Lynch describes the feeling of human emotion that comes when we step into space described by Tuan. The feeling of being lost can decay our sense of place. Since we are lost then we have no place or “home.” So is GPS helping in providing us the sense of security that we will never get lost? Lynch describes a dark scenario. GPS could be helping us from feeling lost, but at the same time could it be encouraging the loss of place? This result would encourage a false sense of security.

2.7 GPS Effect on Mental Maps

Has GPS become so much of a necessity that it is affecting the way we think/navigate through space to place? Sense of place is the core idea and mental maps is a way of identifying the rootedness of our place or shedding light on our awareness of place, but is GPS affecting our brains in regards to our mental maps? Ian White, a founder of Urban Mapping Inc., thinks that we have developed laziness for using technology. “When we develop a crutch for technology, we lose the ability to do that which we did previously, it couldn't be more true. People become more and more reliant, and their expectations get bigger and bigger, and if technology doesn't deliver, they get frustrated” (Shasha, 2008, 1) Is GPS taking over how we navigate? Mental maps are the brain’s navigational foundation, but is there concern that in the future we might be more inclined to be lazy and not care of where we are? Since technology isn’t going to stop growing, are we

going to adapt to the changes that it brings? GPS is going to be in every form of digital device in the future. “Any human activity takes place somewhere. I think we could see GPS units in our watches, in credit cards, or for any human activity that relies on knowing where you are or planning where you're going to go” (Shasha, 2008, 1). If GPS is going to be a daily device in everything how will humans continue to keep the rootedness, “home”, and to be aware of their environment? Kevin Salvin, a director of a GPS-driven company, says that being lost or the feeling of being lost is the answer. “There is a social function of being lost, and that social function of being lost will itself be lost. Think about how many times in the last month or so you have asked somebody for directions, or somebody has asked you for directions. That bit of social communication, in which a stranger and native meet at some point will slowly ebb away. The question is: Will we feel ourselves to be natives everywhere, or to be strangers everywhere?” (Shasha, 2008, 1). This question relates to what Tuan describes will we continue on this path of alienation where we no longer know if we’re the native or the stranger? Will people in the future require any sense of direction? For example, if you pulled out an Iphone and searched for the nearest 5-star sushi bar, it would eliminate your time to search for places you didn’t know existed, but in doing so, it eliminates the human interaction of exploration. Space and place are basic parts of the modern world. “We take them for granted. When we think about them, however, they may assume unexpected meanings and raise questions we have not thought to ask” (Tuan, 1977, 1). Will we lose the desire to explore? This study wants to answer these questions, in regards to GPS effect on our mental maps and sense of place.

2.8 Automobile and Wireless GPS

GPS technology is becoming a standard feature in all modern devices. In order to understand its effects, we need to know how it works. The following section explores two GPS companies, and the aspects of how their product works and affects its customers. The slogan goes “Bring it with you” (The Economist, 2007). It’s the motto for the now popular car devices that are attached to a, or within a, car’s infrastructure in most models sold after 2011. Not many people could have anticipated the rise and accessibility of this technology when it was first commercially introduced in 1994. The sheer number of ways that GPS has found itself in almost every technological product that has smart technology is daunting. GPS is changing its role from a device that navigates you to your desired destination. The device now allows people to find things of interest along the way to their destination. This could be a department store, a coffee shop, or a monument. The device puts these locations on the map that is navigating you through the city. “That makes the route as much of an input as an output—and the journey at least as important as the destination” (The Economist, 2007). GPS has become increasingly interactive with the rise of mobile applications like Yelp and Waze. Yelp, originally a website that people access to rate their favorite restaurants, businesses, and services, has mobile GPS capability to show you where points of interest are in relation to your location and how to get there. This solidifies the idea that the journey is not just getting from point A to point B. These services allow humans to find places that they might never visit without the help of the application.

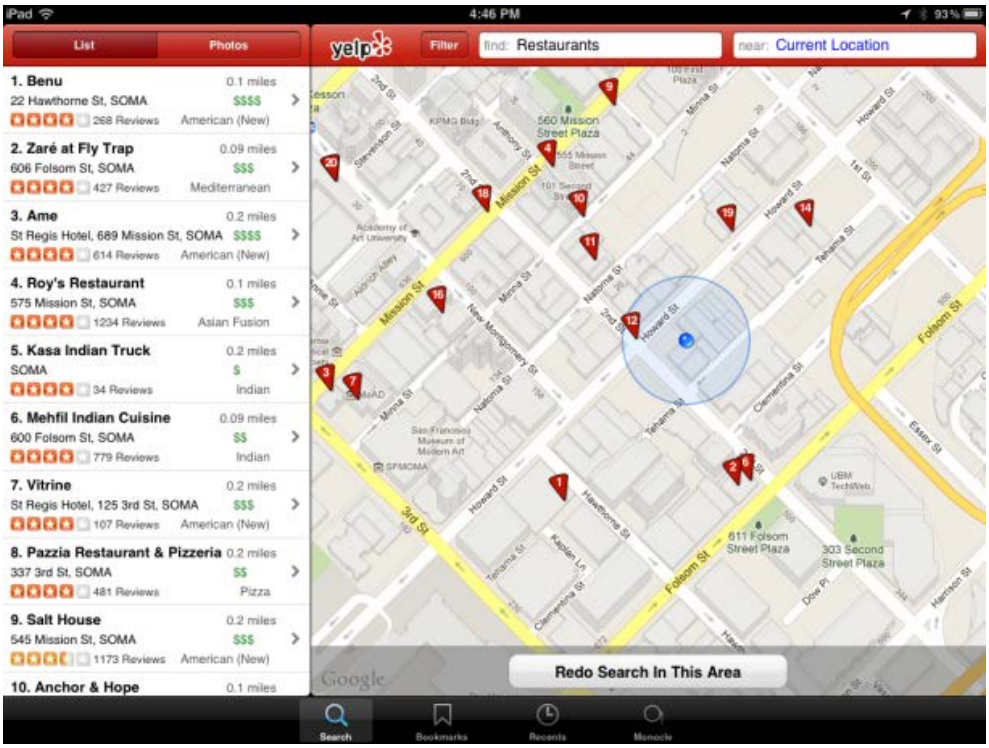

Figure 1: Yelp Search Page: GPS Location Services and List of Restaurants.

Waze, a map application purchased by Google, helps users find the best way to get through traffic to their destination. “Waze is a third-party GPS app--and was competitor to Google's and Apple's map software--that relies on crowdsourcing to improve its data and offer live updates on local traffic, speed traps and alternative routes. It also taps users to gather information on gas-station locations and fuel prices” (Teicher, 2012, 1). It is a social application along with helping you outsmart traffic. “Outsmarting Traffic. Together” (Teicher, 2012, 1). Waze is becoming a necessary tool for people in metropolitan areas. The more users the application has and the more social input it can collect, the better the results. It will reroute the

user if reports say there is heavy traffic on the current desired route.

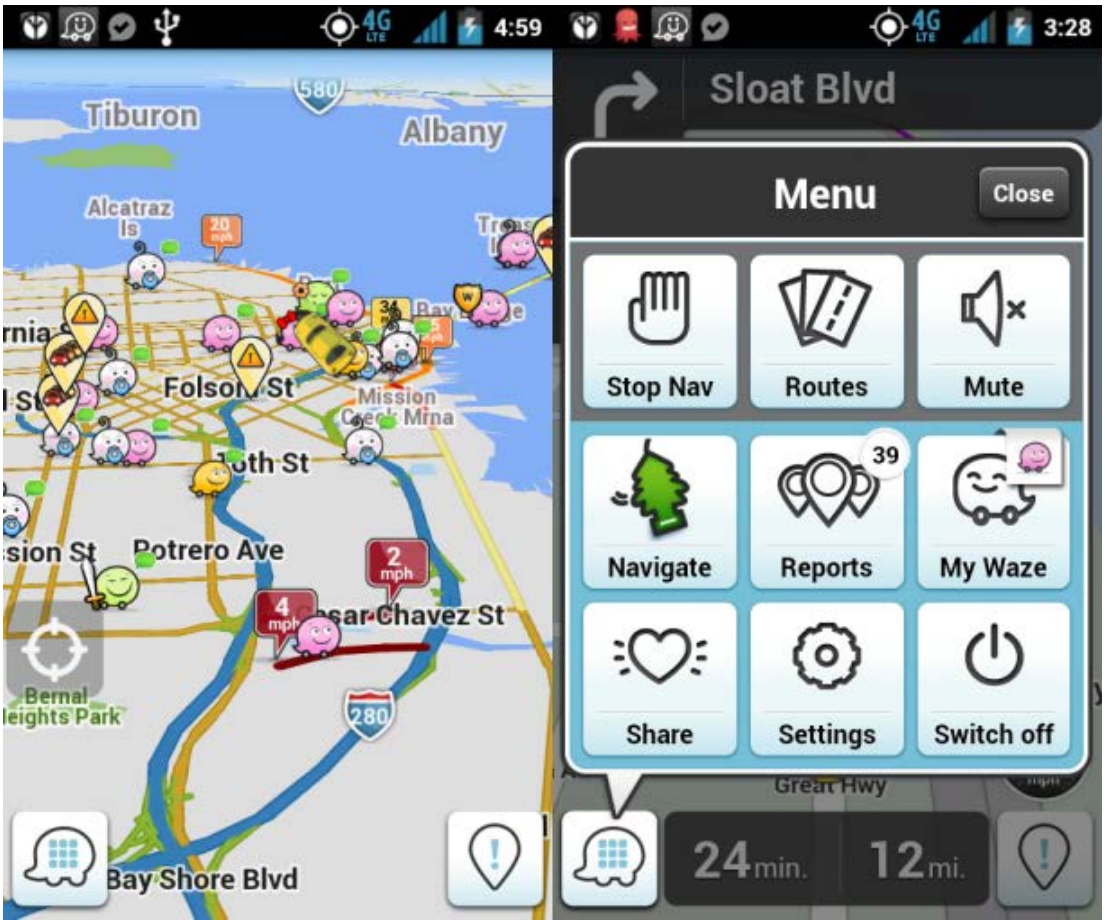

Figure 2: Waze Application Menu with real time updates displayed and social users on map.

Soon, Waze will be incorporated into GPS within the car infrastructure (Teicher, 2012). Mobile cell networks can provide the coverage for GPS when GPS cannot locate very well. The areas in which would be most helpful would be in metropolitan areas that have skyscrapers, tunnels, and overpasses that block the GPS signal. The question is, “are these new interactive applications helping or hindering our sense of place?” (Teicher, 2012, 1) Some may say that it enhances the journey to the desired destination. But, it is still unclear if these applications are either helping placeless geography or are improving geography of place.

2.9 Summary

Geographers have made their impact on place and the parameters around why it is important today. Tuan, Relph, and Fleming have published their opinions and insight on space, place, placelessness, and identity. GPS is a new, rapidly rising, technology that has not been researched enough on its effects on humans. Human geography has yet to explore the interactions between us and the technology when it comes to navigating ourselves through space and place. It is still uncertain of how GPS is affecting our sense of place. This study aims to fill that void by conducting a case study to attempt to discover if GPS affecting our sense of place. Are people still having a core rootedness/home feeling of place? Is place decaying to the overall rise in GPS technology?

Chapter III

Methods

3.1 Data

This study seeks to answer whether a person's mental maps reflect his or her sense of place. Is one's sense of place influenced by GPS? By looking at the mental maps of people who use GPS regularly compared to people who don't use GPS at all, we hope to find if the technology is affecting their sense of place. The results should bring to light factors relating to the overall impact of GPS.

The data will be obtained by interviewing and surveying a group of thirty people to achieve a small, but substantial sample. This study could be a prelude to further studies on GPS effects on humans. The sample and study will be conducted qualitatively. Originally, the study was going to compare a user of GPS to a nonuser of GPS. After initial tests, it was determined that the majority of the population use GPS in some form. The subjects will be compared in the same age range. The closer the subjects are in similarity, the better chance that the results will show a significance when it comes to GPS effect on sense of place.

3.2 Study Area

The study will be centered on the San Fernando Valley area (SFV). This valley is cut into a square, bounded by its geographic terrain, the freeways 27, 101,118, and 405**.** It is uniquely square for mental map drawings. Figure 3 shows the specific map used in analyzing people's mental maps within this area. The San Fernando Valley has a lot of different cultures and demographics. It can be reasonably assumed that GPS plays a significant role in the daily lives of the population of this area because it is densely populated and a moderately affluent community.

This reduced area of Los Angeles helps the subjects to visualize something smaller and more concise than the entire LA metropolis. Since the scale is small, it should yield better results in regards to map drawing, landmarks, and location awareness. With the SFV being surrounded by major freeways, it puts the person's mental map context within the clear bounds of the major freeways.

San Fernando Valley

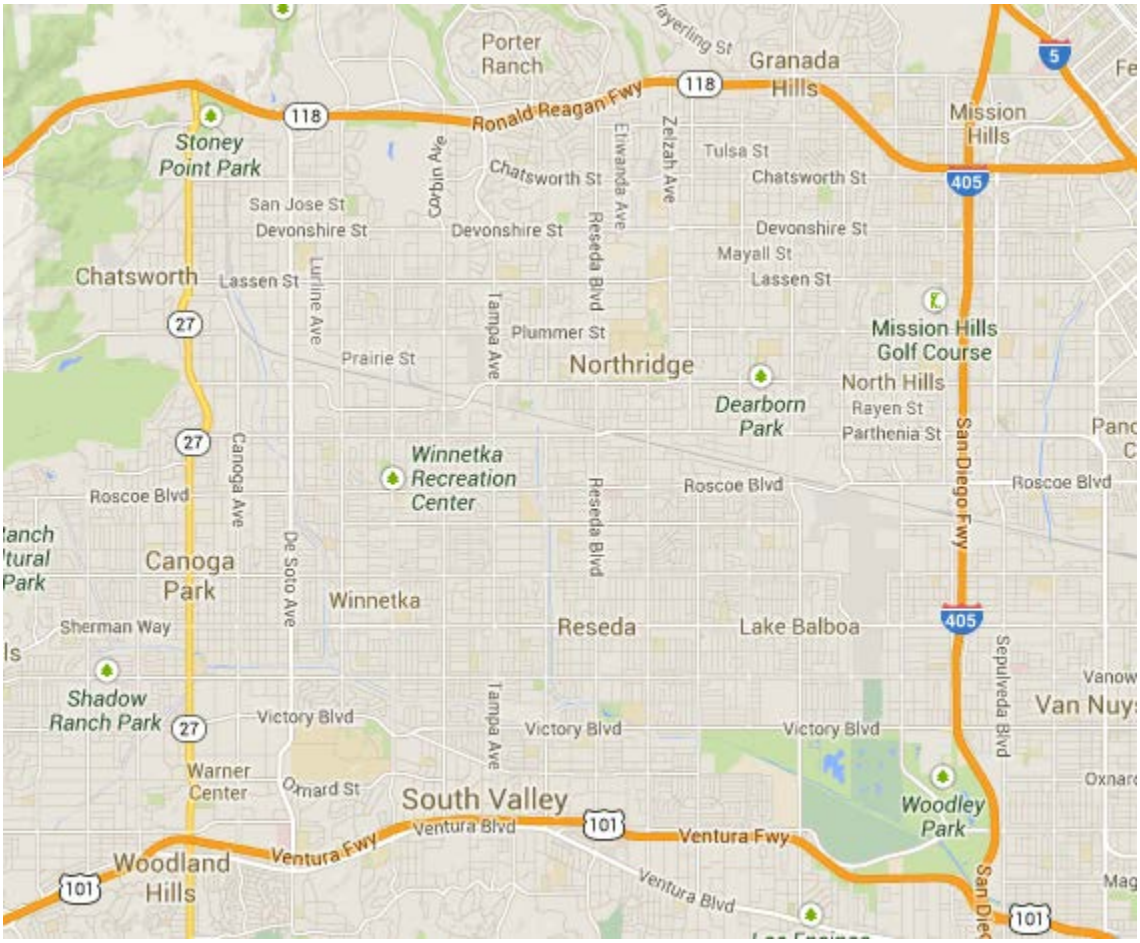

Figure 3

It will be interesting to understand how people's mental maps will illustrate the area of the San Fernando Valley. Will there be more awareness of amenities by people who use GPS

compared to people that don't? The smaller area will help focus the study to make a qualitative statement and identifying future avenues of research.

3.3 Methods

Thirty users were interviewed (after an initial survey) where they were asked to draw a detailed mental map and answer written questions of the San Fernando Valley. After finishing the mental map, the users were asked several questions pertaining to their sense of place and the details they included in their mental maps. This should show some form of influence from GPS on people that use it regularly in contrast to users that don't use it often. In Appendix A, the full survey is shown.

Here's a look into the interview/survey process:

1. The interviewee was approached and asked if they would like to participate in the study along with giving permission to the interviewer to record and use their answers.
2. The interviewee was given a sheet with instructions and a square or blank space to draw their mental map of the San Fernando Valley. There was an additional written question responses page attached to the mental map section.
3. The interviewee was asked to describe their mental maps and their insight and feelings towards what they illustrated.
4. The interviewee was asked about their use of GPS. They were subject to specific questions on how it affects their sense of place.
5. The interviewer asked the level of dependence they had on GPS or navigational devices.

6. The interviewer collected all the mental maps and responses from questions to create a qualitative result of GPS effect on sense of place through our mental maps.

Once all the users were interviewed and surveys have been completed, the study looked to see if there was a difference within the mental maps. Do the GPS users that are more reliant on the technology have less detail in there maps and more location points? Do people that use GPS less frequently have a better sense of place or rootedness in there maps? The study will conclude whether or not GPS is indeed influencing people's mental maps and ultimately their sense of place.

Chapter IV

Results & Discussion

4.1 Results

In the following results, the study analyzes GPS usage, mental maps, and sense of place. Thirty individuals were interviewed in a ratio of seventeen males to thirteen females. Only one out of thirty people interviewed claimed that they didn't use GPS at all. Seven people claimed that they used every form of GPS that was asked on the survey. In order to show the effect of GPS on our sense of place through mental maps, the study divided the results into the following categories: Losses versus Opportunities: GPS Effect on Mental Maps, Rootedness- The "Home Complex", Traveling through Space: Overexposure and Less Awareness, and The Fear and Freedom of Being Lost.

4.2 Losses Versus Opportunities: GPS Effect on Mental Maps

With GPS there are losses and opportunities when it comes to interaction with the environment. A loss is any way the user loses their awareness/interaction with the environment. An opportunity is a gain or increase of interaction and knowledge of the environment. This is important to one's sense of place as, in order to have a sense of place, we must interact and be aware of our environment. GPS provides myriad of opportunities and losses in regards to the study topic.

Many of the subjects claimed they use GPS because it is more economical for them. The less time they have to spend figuring out where or how to get somewhere, the better. Time was one of the most important reasons in justifying use of GPS. Time is an important asset to LA citizens. This commodity is more apparent in LA than in other parts of the United States. This is

due to the amount of time people spend in their cars. Time is precious and GPS offers the subjects the benefit of getting to their destination in the shortest possible time. Saving time in Los Angeles is directly related to GPS's function of traffic control. Traffic control takes real-time traffic updates and directs the user to the fastest route from A to B. Subject 10 said "I used to get lost going home when I had to stop for groceries for my family. I spent hours trying to find my way home. Now I don't need to do that." For time and money savings, Subject 10 relies on GPS daily, though the subject revealed that he also relies on his wife who uses her mental map of the area. Subject 16, who doesn't use GPS, relies more on terrain and landmarks to get around. "It gives me the freedom to explore." Subject 16 also said, "I know my way around and GPS doesn't influence where I go." When asked if they thought traffic control was important, they replied "Not really, I know how long it takes roughly to get to the places I need to be." The two subjects' mental maps are shown below.

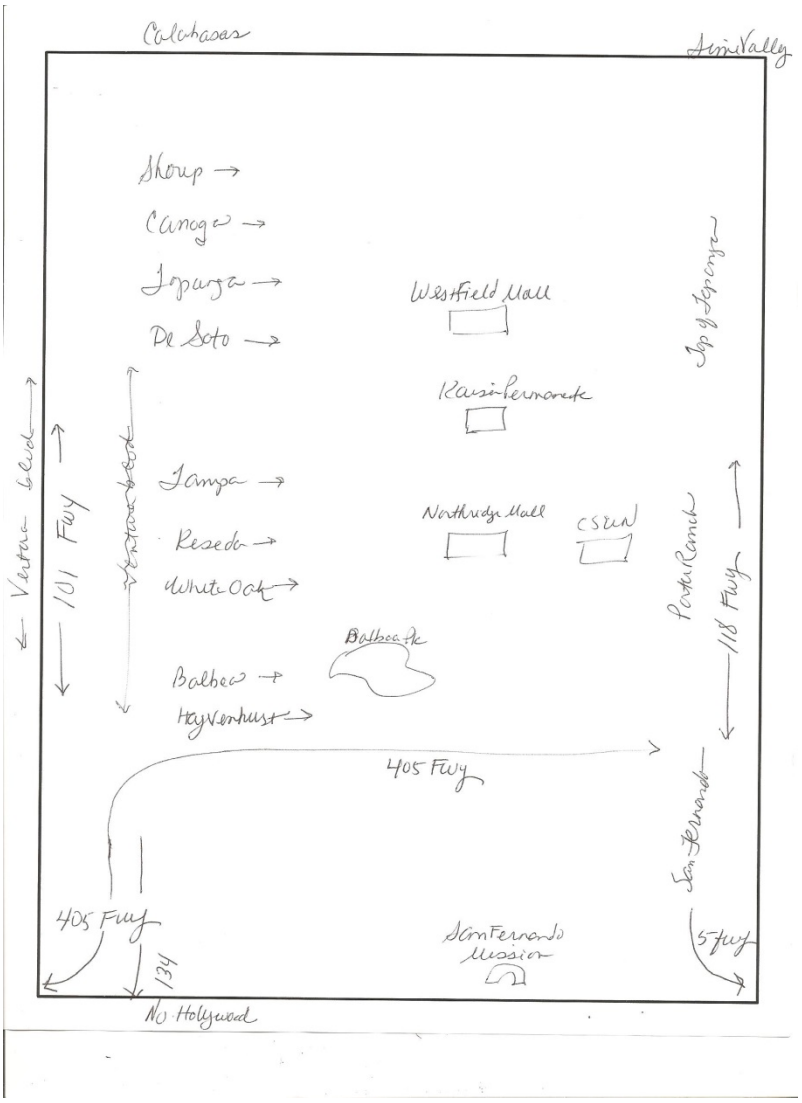

Figure 4: Subject 16

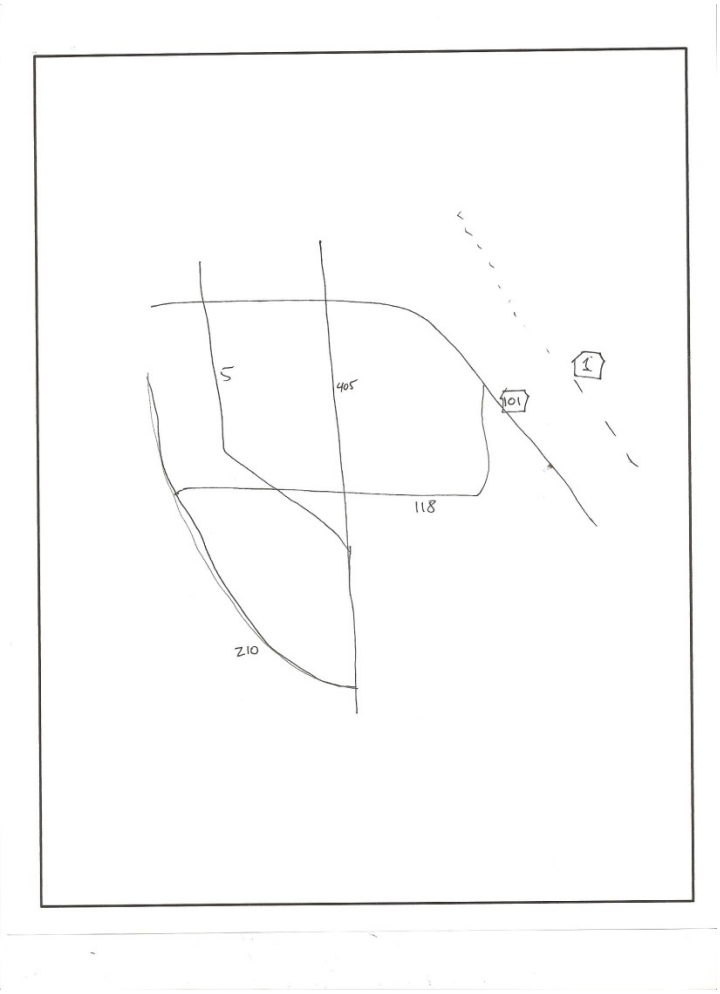

Figure 5: Subject 10

Comparing Figure 4 and Figure 5, Subject 10's map shows much less detail for landmarks of the SFV and includes just lines of major streets and freeways. While Subject 16's area is much wider, it is clear that they had a greater sense of where they were than Subject 10. It shows that GPS might be affecting Subject 10's mental map in that they are more focused on reducing time and money, and taking the quickest route as determined by GPS. Subject 10's mental map is rather sparse as the GPS is providing the details needed to navigate. GPS takes over for Subject 10 and guides them to their home. These two subjects highlight how the reliance of GPS impacts the level of detail and robustness of a user's mental map. Additional research

could focus on specific questions on how well users are aware of certain obvious landmarks that aren't roads or specific streets.

Other opportunities that GPS provides that the subjects described were street navigation, not getting lost, the ability to "zone out", traveling on long vacation trips, comfort level in unfamiliar places, and providing the freedom to not worry about where to go. GPS does present the opportunity to have the freedom to rely solely on it to guide you. This was chosen by many subjects so they didn't have to think about where, when, or how, just as long as they arrive at their destination. The subjects that relied heavily on GPS showed less knowledge in the study area. In the survey the subjects were asked how often they used GPS and what forms of technology they used that had GPS. If the subjects checked off three or more forms of technology along with selecting usage of 3-4 times a week to daily, they were considered a heavy user. It was reflected on the map portion and during the audio interview. Figure 6 through Figure 9 shows these maps.

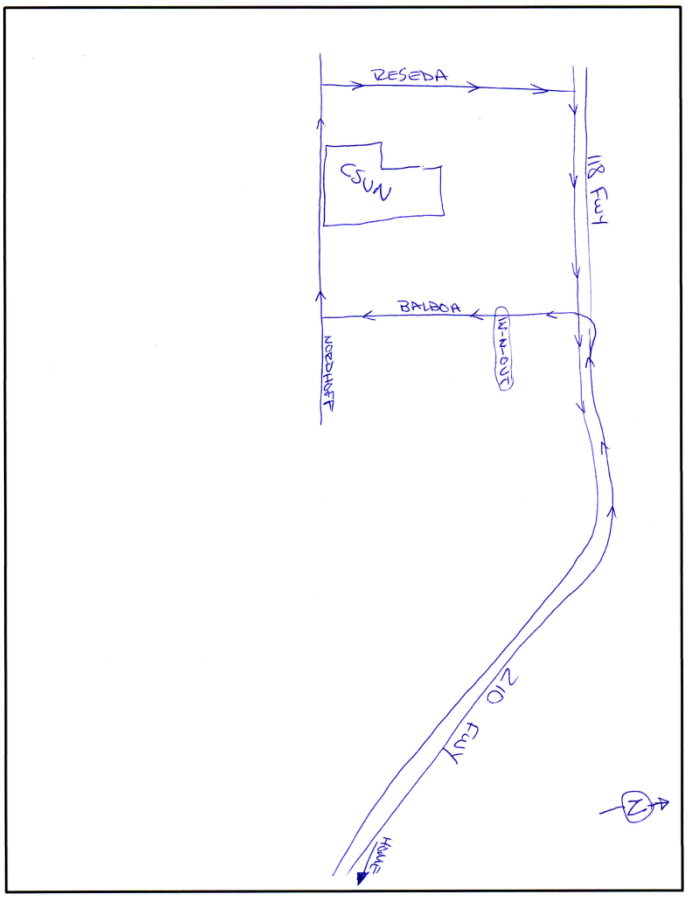

Figure 6: Subject 26

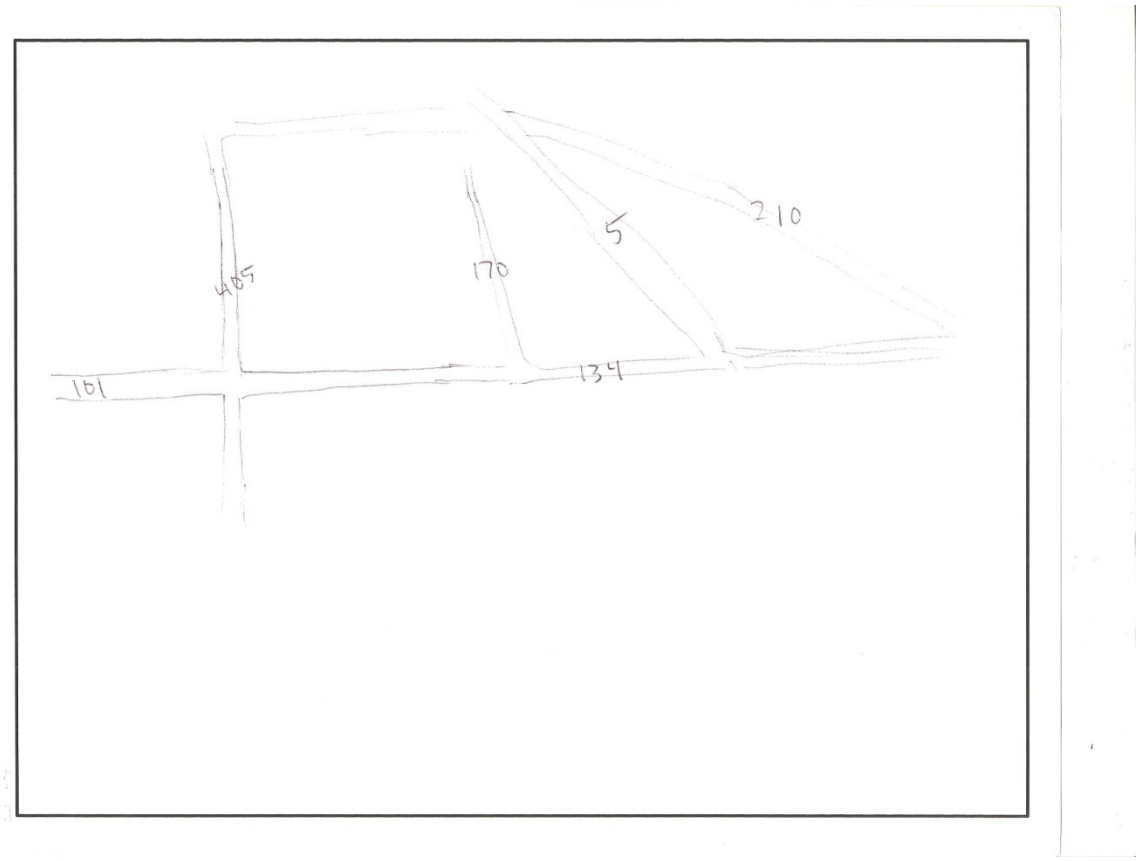

Figure 7: Subject 3

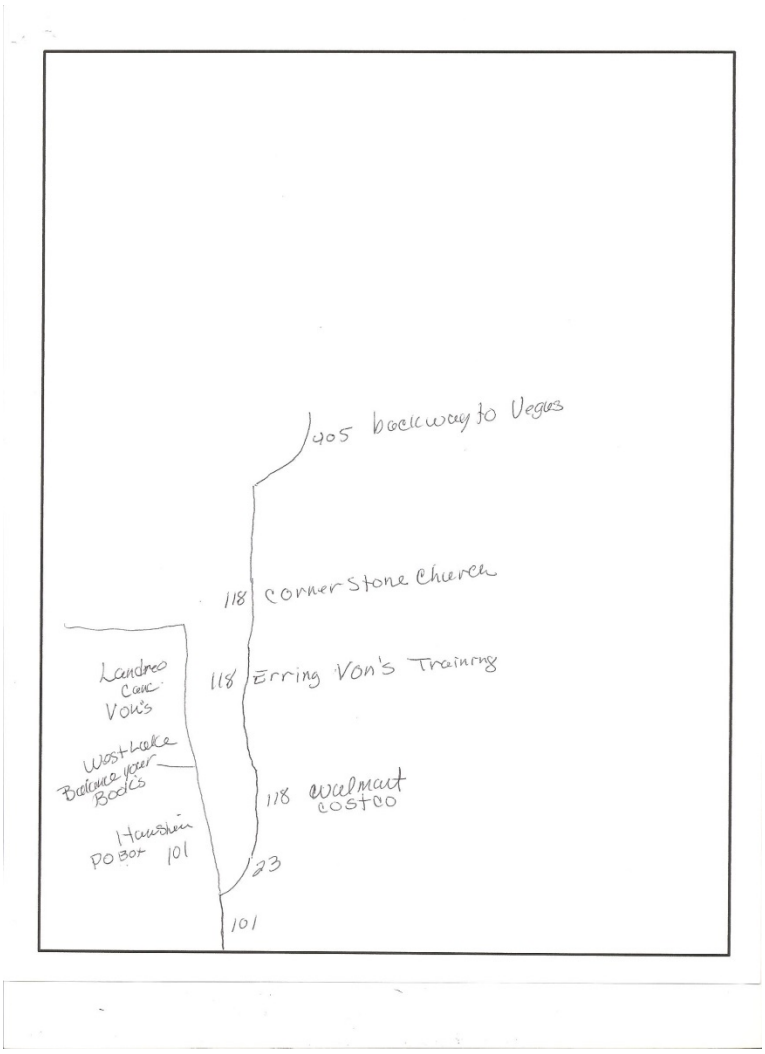

Figure 8: Subject 8

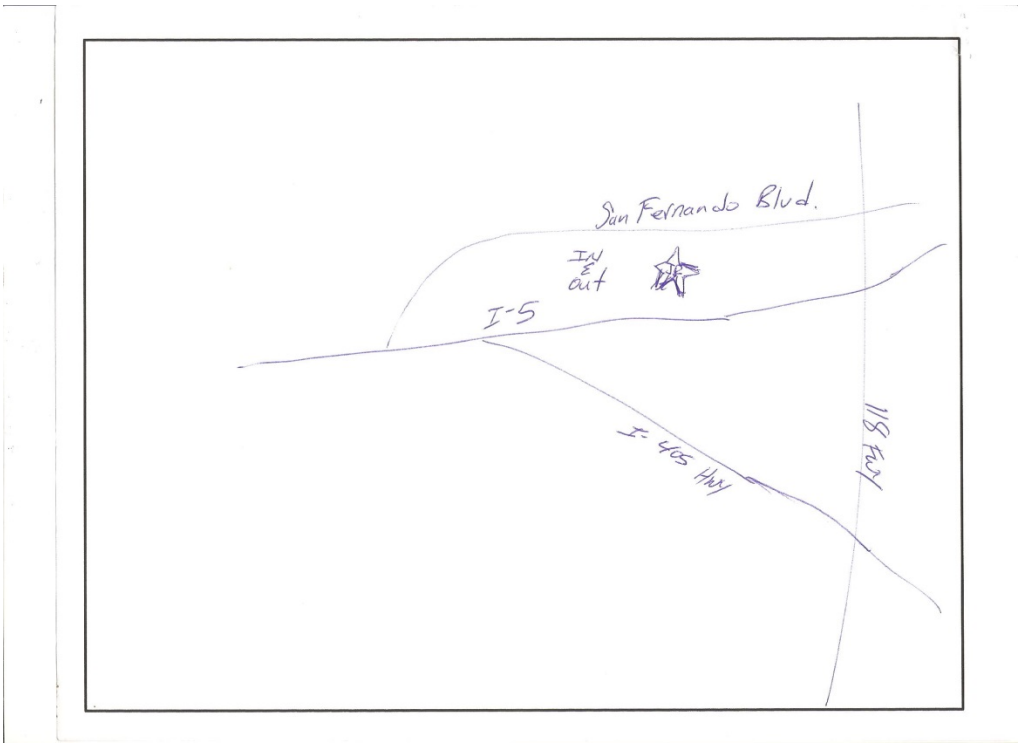

Figure 9: Subject 14

The detail in each of these maps is extremely sparse. Obvious landmarks and major roads aren't reflected in these maps, but are included in others. This suggests that GPS has definitely impacted these individuals and their mental maps. So, though GPS has given opportunities, it shows from the subjects highlighted that it is affecting people's mental maps and their sense of place. The loss of interaction with the environment may be due to GPS taking over the responsibility of navigation. Loss of freedom to navigate gives many opportunities for mental map decay and loss of awareness.

4.3 Rootedness-The "Home Complex"

The study discovered that the subjects' mental maps didn't always start from the center of the SFV, as the study area suggests. Subject 1, 5, 6, 7, 8, 12, and 24 all started their mental maps with their home. Home to them was the starting point of how they identified themselves with the

SFV. Home was how they related to the study area. To recall, Tuan says sense of place is described as an awareness of a positive feeling for a place, and rootedness as a feeling of being home. These subjects showed that rootedness still exists regardless of how our modern cities, technology, and GPS have influenced their movement from their homes. Figures 10 through 14 show some of these home-oriented mental maps.

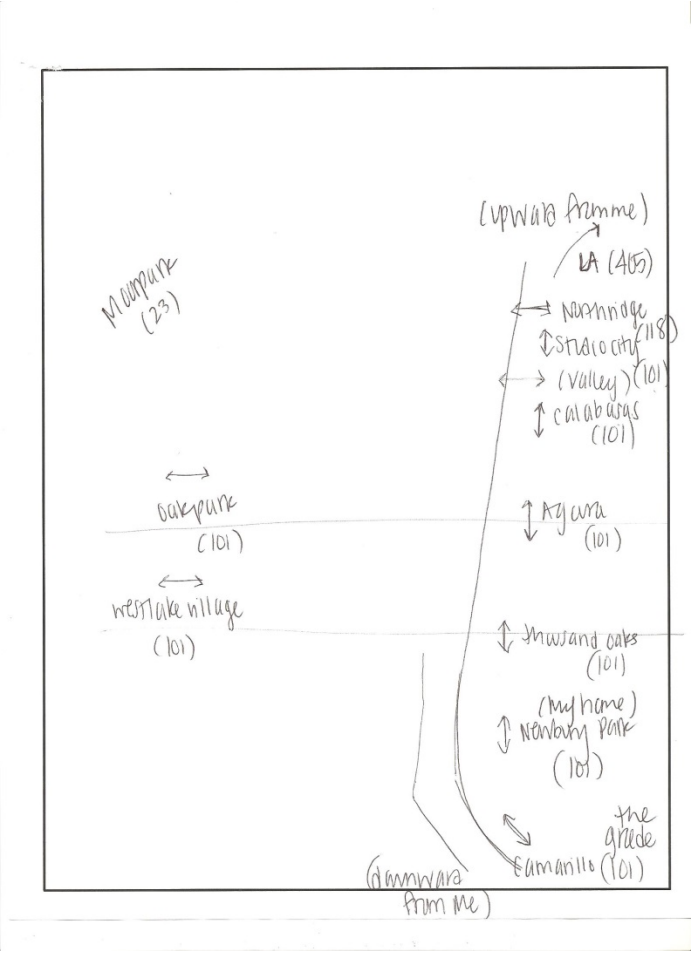

Figure 10: Subject 1

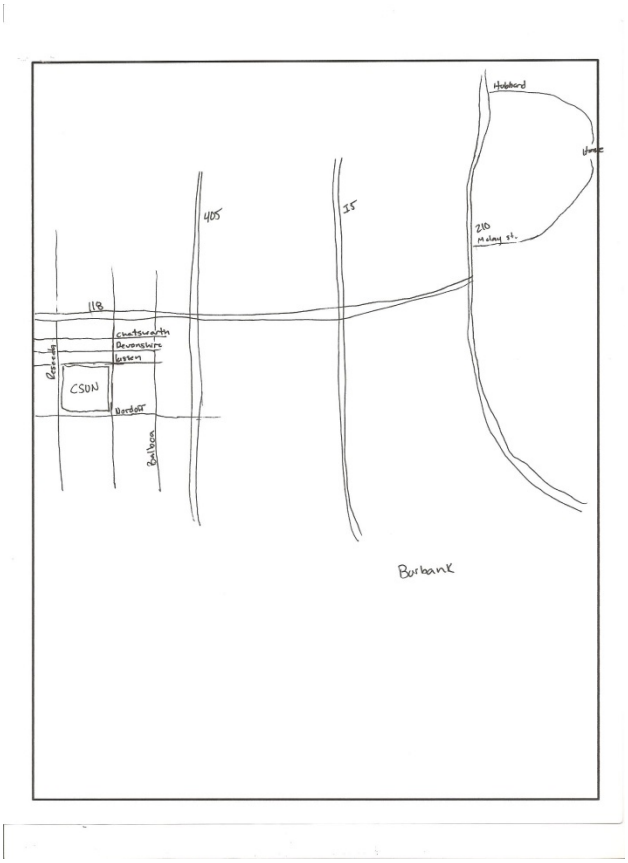

Figure 11: Subject 5

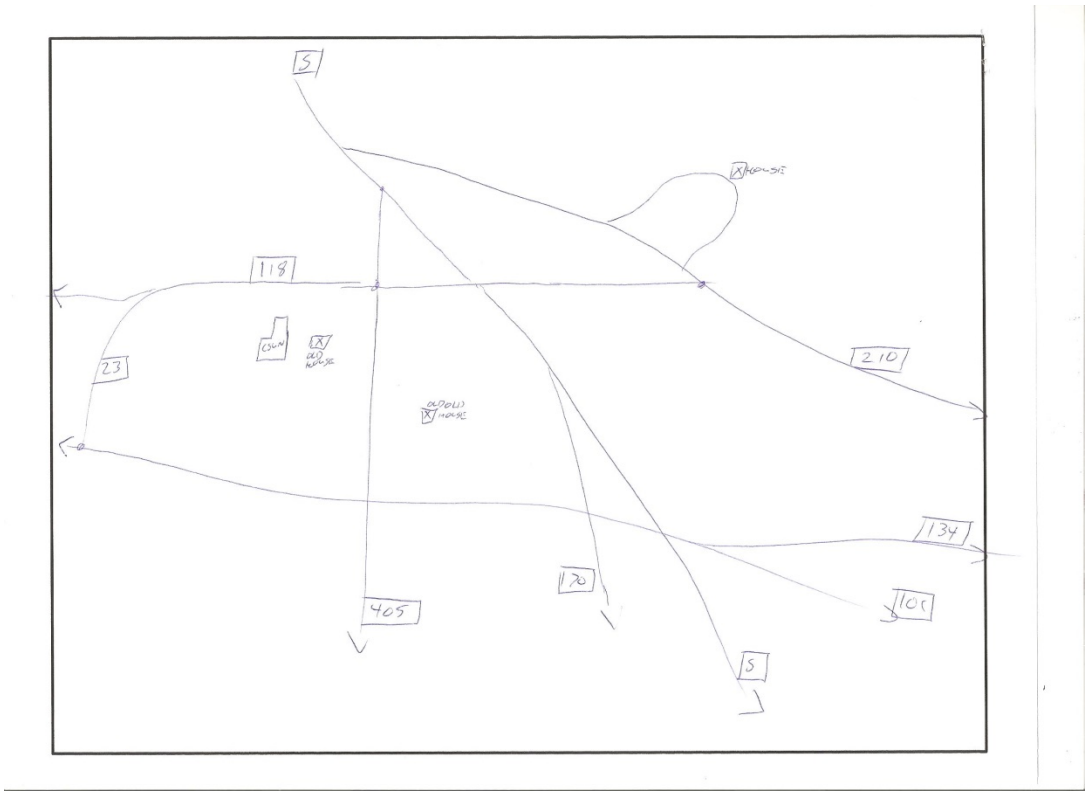

Figure 12: Subject 6

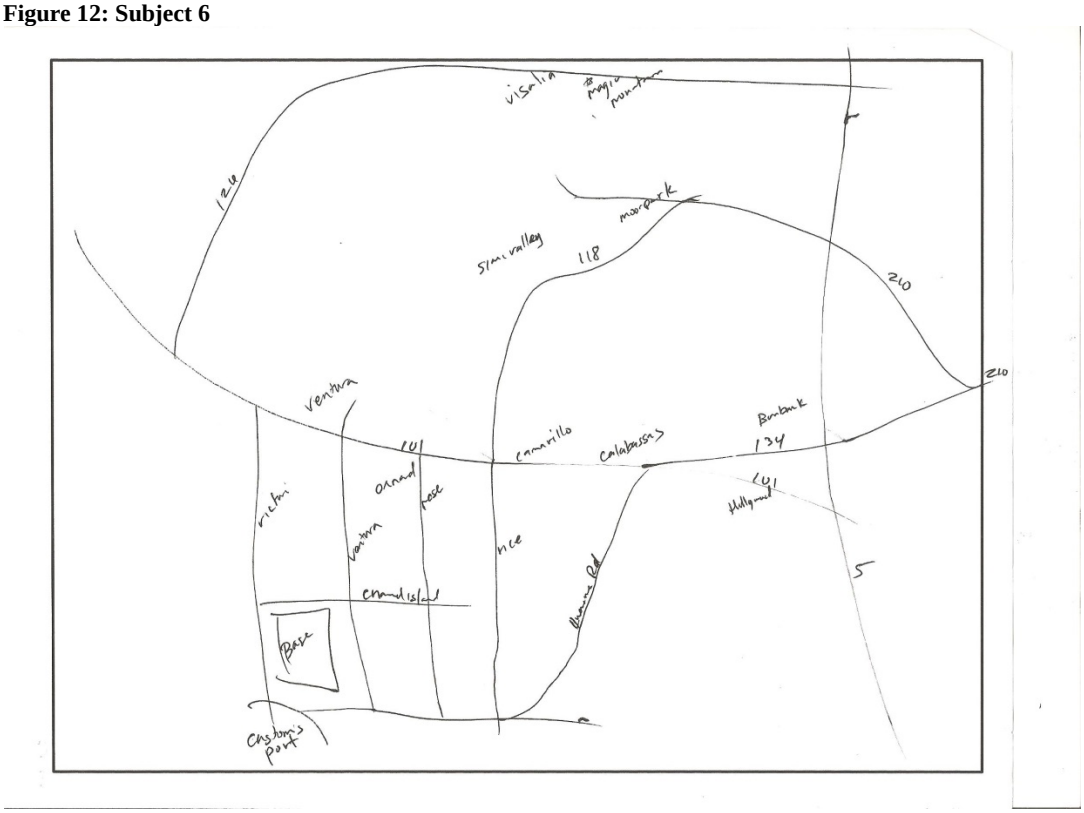

Figure 13: Subject 12

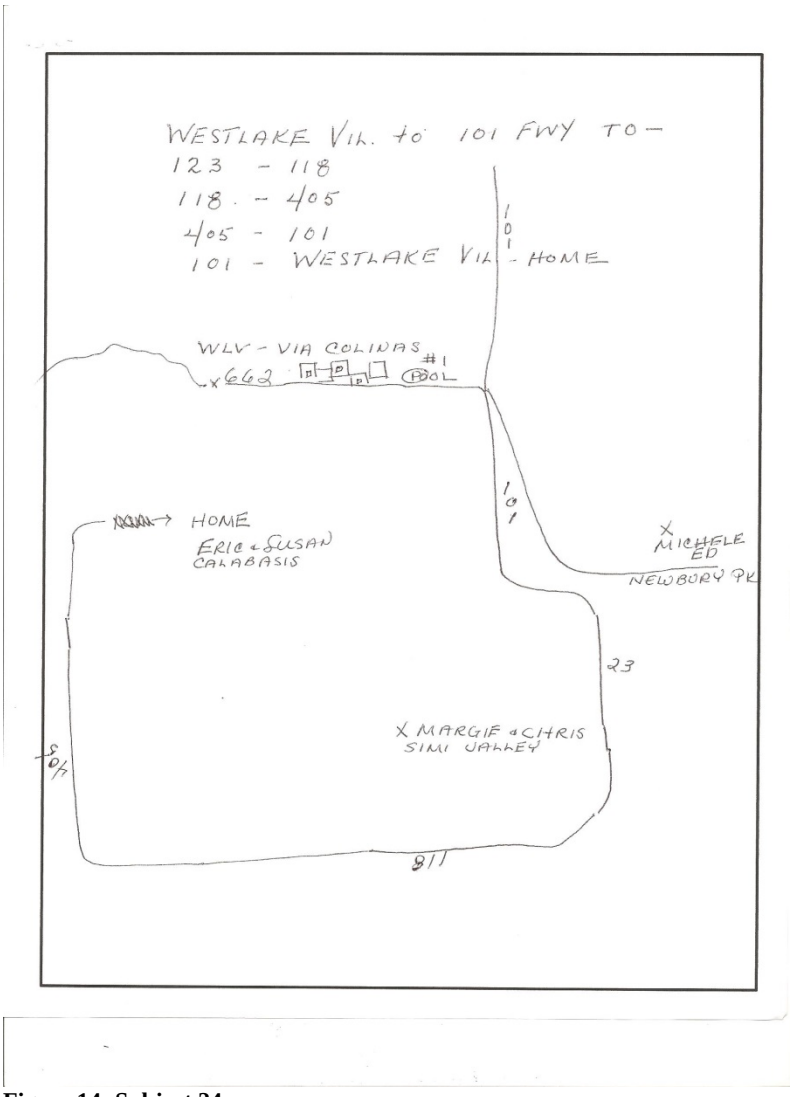

Figure 14: Subject 24

People still identify with home regardless of whether they rely on GPS to guide them through space to other places. Subject 1 said, “I base everything off my house. I associate my mental map with me traveling from my home to the SFV.” Subject 5 said, “The surrounding neighborhood is dangerous so I don’t know much around my area other than my house and my route to work.” Subject 6 was asked, “Why are previous home locations a majority of your landmarks?” To which Subject 6 replied, “I have my old houses drawn because those were the places that I identified with.” Sense of place, the positive feeling for a place and awareness can

be associated with home and rootedness, but sense of place is primarily awareness and not a feeling of being home.

Being aware of one's sense of place is a positive feeling and that positive feeling is transferred when we move from our home to other places. In-between that transfer is space and GPS. GPS guides subjects from their home to other places further extending the positive feeling of sense of place and rootedness, but it is a false/transparent agent. Eleven of thirty subjects' maps lacked detail or awareness/sense of place or home. The main goal was to draw a mental map of the SFV, but it uncovered what Tuan and the other authors had described: GPS acts as an agent to make us feel at home and, in turn, gives us gains and losses, but it does affect our awareness of our environment. This is shown from the drawing of the subject's mental maps.

4.4 Traveling through Space: Overexposure and Less Awareness

As described in the last section, GPS guides us from our places through space to other places. In that journey we are subject to overexposure from our cities, technology, and GPS. Overexposure is the constant bombardment of information. Technology has risen to be involved in every aspect of our life. GPS is one of its products, along with other devices like TVs, wireless phones, and tablets. This constant release of information is encountered as we travel through the environment. Could this be diluting our sense of place and dampening our awareness? When we are not home\rootedness, we are less aware of our environment because GPS and technology are distracting us from keeping that positive feeling of sense of place. As Relph described, identity is part of this. If we are relying more and more on GPS and "zoning out" then we no longer will be aware or know our sense of place. Subject 4 said, "I can get up and get in the car and not have to plan. I don't have to think about it." Subject 5 said, "I don't pay attention anymore. I definitely

notice less now than before I had GPS." Subject 13 said, "GPS lets me zone out and I become very passive while I drive." Subject 9 said, "It definitely has made me lazy and I just end up checking out. I like it for the fact it provides me with the freedom to not worry how to get where I want to go."

Since GPS provides the freedom to not care about navigation and where we are going, then how are we going to know anything other than rootedness/home when we are away from our homes? That is a question for future studies to ask. How is this going to affect our view of the world in the future when we step out the door, when we don't know anything other than our home? Tuan states "To the young child the parent is his/hers primary 'place.' The caring adult is for him a source of nurture and a haven of stability" (Tuan, 1977, 138). GPS is acting as a parent and we are the children. But when will that fake stability disappear? Will we get frustrated and expect more like Kevin Slavin describes?

4.5 The Fear and Freedom of Being Lost

Nine of the thirty subjects invoked the topic of getting 'lost'. This fear recalls the statement by Salvin, "and that social function of being lost will itself be lost" (Shasha, 2008, 1). The subjects expressed that the fear of getting lost was a concern that GPS eliminated. GPS eliminated the worry to get lost. GPS took away the freedom of getting lost.

Subject 7 said "I wouldn't be able to find my way around if I didn't have GPS, I would be lost." Subject 8 said, "I don't like being lost it scares me to death." Subject 15 said "I rely ultimately on GPS to not get lost. My number 1 issue is getting lost." Subject 22 said, "I am so in love with GPS, because I don't want to get lost!" Subject 29 said, "GPS keeps me on track so that I do not get lost on trips outside of my local town." Subject 30 said, "I fear that if I don't use

GPS that I will get lost in a dangerous neighborhood." Subject 30 was asked, "when was the last time you've asked for directions?" To that the subject replied, "I can't remember, not in many years." The pattern was clear. People use GPS due to the fear of being lost. GPS has replaced the freedom of figuring out where we are. It is noted by the study that this apparently isn't a problem currently. Will it be in the future?

What is the value of getting lost? GPS provides a form of comfort and security of our home within its navigational directions. Is it becoming more apparent that we no longer want the freedom to get lost? Have we lost the urge to explore and to find new ways to reach our destination? Do we no longer value Tuan's idea of freedom of space? Do we always want to be at home? Could home be the last place that we identify with in the future, because outside of our homes we are neither the native nor the stranger?

Chapter V

Conclusions, Limitations, and Further Research

5.1 Conclusions

Based on the findings of this study, it would appear that GPS has begun to affect our sense of place in many different ways. GPS brings with it losses and opportunities that bring to light many questions in regards to our sense of place. Do we care that our sense of place is being affected? Do we no longer value the freedom of getting lost?

Will a sense of rootedness/at-homeness overshadow other modes of being in the city? By drawing on the ideas of Tuan, Relph, Fleming, Gould, and Lynch this study has shown that GPS makes its users feel continuously and confidently "in place" rather than "lost" or exploring new places. How will GPS continue to affect its users' sense of place? Future studies should take these core values and this case study as an introduction to a new topic in the discussion into how we humans perceive the experience as Tuan describes.

5.2 Limitations and Further Research

The difficulties in this study, as well as in many master's theses, are the restrictions of time and money. This study's use of a sample of thirty research subjects was appropriate for completing a thesis within a two year graduate program. If this study were to be extended, an integration of an online survey would have been created along with a web application to draw a mental map from a computer or tablet screen. Since online surveys yield less consistent results it was decided not to pursue this route in regards to the current case study. Another idea that was

discarded was interviews and observation of subjects using GPS in their cars. Time and liability concerns resulted in the idea being discarded.

The author recognizes that the thesis is just a small piece to a larger puzzle of how 21st century technology, including GPS, is affecting the way people develop a sense of place and understanding of their environment. This thesis established a goal of drawing geographers' attention to the uncertain future effects of GPS and technology. The points of thesis can be argued, however the goal of expanding this dialogue on GPS affecting our sense of place has been achieved. Further research and studies of this thesis should use this case study as a beginning to recognize the changes that occur in space and place.

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Appendix A: Survey

California State University, Northridge

Department of Geography

Mental Map Survey

Subject: #_____

Age:_____

Gender:_____

Education:_____

GPS Usage:

Check All That Apply:

Phone:_____

Car:_____

Computer:_____

Tablet:_____

How often do you use GPS?

Daily:_____

3-4 times a week:_____

Few times a month:____

Rarely:____

Never:____

On the following page please fill out in the box provided your mental map of the San Fernando Valley. Illustrate anything that comes to mind. Answer the questions that follow. If you run out of space please feel free to continue on the back of the page.

Describe your mental map:

From the drawing, what would you say you identify with the most? A place? An area? A landmark? A store? etc…

Do you use GPS to travel to the places that you illustrated? Or by memory?

In your opinion, does GPS influence how you travel through this area? Does it influence your decisions on where to go?

If you didn't have GPS would you be able to find your way around?