

## The Global Positioning System: Or, In Other Words, the ‘Getting People *Somewhere*’ Device

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Fasten your seatbelts, kiddos. We’re going on an adventure. In this article, Lexi Horras discusses cultural-historical activity theory (CHAT) by picking apart the foundation of mobile GPS apps while sharing one of her own relatively comical personal experiences.

*In half a mile, turn right onto Old Troy Road and make a U-turn.*

“Shut *UP*,” my sister exclaimed, glaring at the device in her hands. Turning to me, she said, “I’m tired of being in this car. Let’s just go home.”

I could hear the desperation in her voice, and for a brief moment, I genuinely considered doing so. I was exhausted, hungry, and wanted nothing more than to lay down and relax, but despite all of these things, I was still determined to find the abandoned, graffitied bridge a mutual friend of ours had discovered and talked so highly of in the past. I initially thought this excursion would be fun, given our adventurous personalities, but somehow our originally seventeen-minute planned journey had quickly (and unexpectedly) turned into a forty-two-minute frenzy of frustration and pounding headaches.

It didn’t start off that way though. As we normally would do when trying to find a new place for the very first time, we punched the address that had been given to us into the mobile GPS app on our phones and hoped for the

best. Our only real job was to keep our eyes peeled and drive to wherever the monotonic, electronical female voice told us to go. Turn left here. Make a right there. Take another right after that one. Sounds simple enough, right? No. Wrong. You see, despite how convenient this mobile GPS app might have been to us during our previous endeavors, it failed to consider that certain roads had been closed or ceased to exist and did not provide us with alternative routes. For the first time (and certainly not the last time), technology had let us down, and being the two teenaged girls with absolutely no sense of direction that we were, we did not know which way to go.

At the time of this strenuous situation, I did not know what CHAT (cultural-historical activity theory) was. If you had tried to explain this theoretical framework to me while I was driving around those never-ending back roads and beaten-up dirt paths that particularly cloudy afternoon, I probably would have glared at you or have let out an aggravated sigh (or both, if I'm going to be honest) because key concepts such as production, reception, and ecology would have been some of the last things I would have wanted to talk about. Now, after taking an English 101 course at Illinois State University, I have a better understanding as to what these terms mean and can now apply them to that unforgettable journey that I had with my sister in a secondhand, golden SUV, much older than ourselves. In this article, I will discuss the importance of CHAT by picking apart the overall function and usage of a mobile GPS app while telling the tale of my wearisome quest to find a pretty and colorful bridge.

### **“This Thing Doesn’t Even Work, I Swear,” My Sister Insisted**

Before I sat down and began working on this *Grassroots Writing Research Journal* article, I did not know anything about the GPS. Well, sort of. I knew that if I typed in where I wanted to go, it would get me to my destination one way or another. But aside from that, I was ignorant of the device. I did not know how it knew which roads to take, when there was traffic, or which landscapes were parks while others were lakes. I didn't even know what the letters in GPS stood for. Later, however, after reading an article published by an unknown author on the official NASA Space Place government website, I learned that the GPS, which is short for Global Positioning System, is comprised of three different parts: satellites, ground stations, and receivers (Figure 1). According to NASA, the location of these satellites is known at any given time. Ground stations use radar to confirm their locations, and receivers such as our phones constantly search for signals given off from these satellites. If multiple signals are found, the receivers can calculate and ultimately determine how far away they are from the satellites they contacted. In seconds, they can pinpoint our

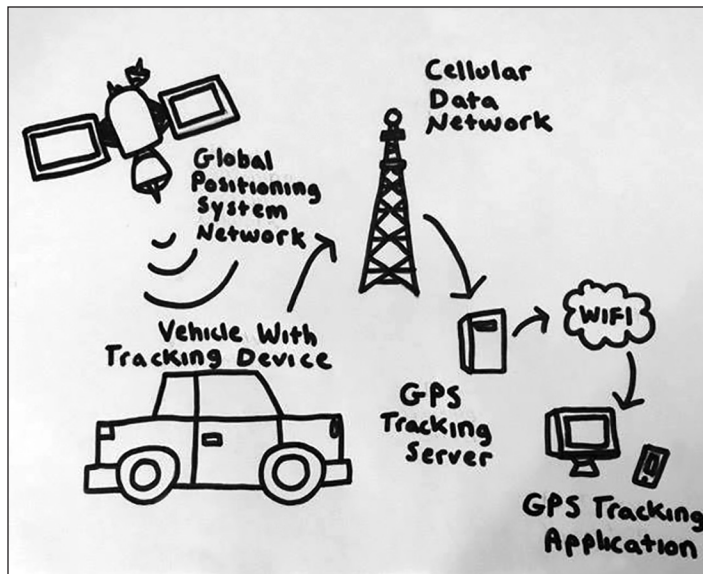


Figure 1: Diagram of how a vehicle with a built-in GPS can be tracked.

exact location in the world. It's a bit unnerving, if you ask me. Try not to think about it too much.

But how does this have anything to do with CHAT, you might ask? Production.

**Production**, one of the categories (or “chategories”) that pertain to CHAT, refers to all the little things involved in creating a certain type of piece or text. For example, as I write this, I am using my Dell laptop to type my thoughts and ideas onto a document that can be found in my Google Drive while I lay comfily in bed with a plate of cheese and crackers at my side. If it weren't for these personal and necessary resources, my article probably would have never been completed. Now, referring to my research, a lot goes into the production of creating an overall reliable GPS. In addition to the satellites, ground stations, and receivers that I mentioned previously, many other important factors such as the people who work at these stations and the tools or other forms of technology that they use to build these complicated devices are also crucial to the proper functioning of a successful GPS model.

**“On the Map It Looks Like I'm Supposed to Turn Left, But It's Telling Me to Go Right,” I Sighed, Melodramatically**

Now that I have *explored* production, I will move on to representation and reception. While **representation** refers to the way in which information is

presented to an audience, **reception** is how a consumer perceives or interacts with a certain type of piece or text. Because these two CHAT factors are so closely related, they tend to overlap and affect one another. Now, for the sake of the discussion of these two “categories,” I will refer specifically to the mobile GPS “Maps” app that is automatically programmed into iPhone generations 4 through 7 (Figure 2). When users first click on this app, they are immediately given the options to search for a place or address and to select whether they are traveling by foot, transit, or car. If they tap on the ⓘ icon found in the top right-hand corner, they will be directed to a “Maps Settings” page where they can decide if they want to mark their location, add a place to their directory, and if they want traffic to be considered when choosing which route would be the fastest and most convenient (Figure 3). In addition to these settings, consumers can also choose which map layout they want to use. They have three options: Map, Transit, and Satellite. Map is simple and consists of town names and lines that symbolize roads. Although it does not look like much, each line is a pathway that leads to a new destination, a new adventure. Transit is like Map, but includes Amtrak routes as well. Lastly, Satellite displays a map composed of real-life, 2-D satellite images of actual buildings, roads, and other natural landscapes. Examples can be seen in Figure 4 on the next page.

Manufacturers ensured that “Maps” was user-friendly by not over complicating things or adding unnecessary components simply because they knew consumers would not use the app if it was inaccurate or was difficult to comprehend. As I briefly mentioned in the previous paragraph, representation and reception may influence one another because they are both concerned with how an individual visualizes and interprets a piece of



Figure 2: “Maps” app.

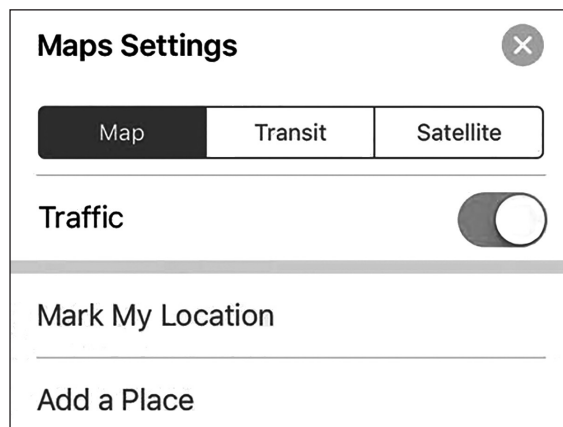


Figure 3: “Maps” settings.

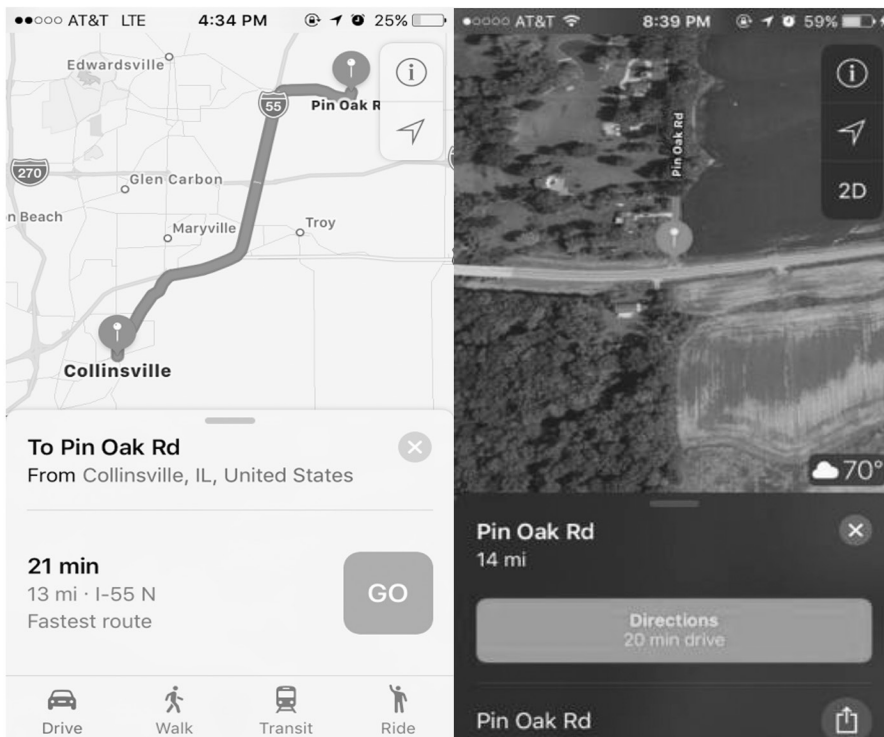


Figure 4: Example of a route using the Map (left) and Satellite (right) layout options.

text. In this case, as far as representation goes, “Maps” has certain software limitations that contribute to its overall proper functioning. However, because not every person interprets information in the same way, modifications (like those described earlier) can be made so consumers can better understand what is being presented to them. If there had only been strict limitations and zero flexibility, they would not have been able to get from point A to point B as quickly and efficiently as they would have if they had had options to choose from. Consequently, because the audience can customize what is being displayed to them, they are able to create their own reception and can therefore have an overall positive experience.

### “Maybe We Should Have Bought One of Those Map-Book Things Instead”

A final CHAT term I will address is ecology. **Ecology** refers to the environmental factors that can affect how a text is created and how an audience receives a certain type of piece or text. When it comes to mobile

GPS apps, there are many different outside elements that can prevent a consumer from using them effectively. Because most, if not all, GPS apps require the usage of data or Wi-Fi to access their features, you're (pardon my French) shit out of luck if these connections are not available to you. In addition to this, not all phones have the option of downloading a mobile GPS app in the first place. This leaves the individuals who find themselves in this kind of situation to seek out a different method to obtain directions.

Although I had a general idea as to what other factors can influence GPS accuracy, I decided to browse the web and do a little more research to have a better understanding. According to the FAQ tab on the GPS Basics website, the more satellites your receiver identifies, the more accurate the distance and time between your location and destination will be. Consequently, if your receiver only picks up a few signals, your connection will be much spottier. The forum discussed other factors that affect the overall functioning of a mobile GPS app too, such as the act of not staying in one spot, as well as receiver quality. If you are constantly moving around, your receiver will be forced to pick up different satellites as you pass through different areas and landscapes. This will weaken your connection if your receiver had not already acquired ephemeris data, which is a set of parameters that are used to accurately calculate the location of a GPS satellite. So, what are you supposed to do if you don't have Wi-Fi, are not able to download the app, or have an overall crappy connection? Maps. Physical, foldable maps. The kind that you can buy at a convenience store or gas station. I know. It sounds horrifying, but maybe putting away our technology for a while isn't such a bad idea, especially if there is a place you desperately need to be.

### **“Wait . . . I See It. I SEE IT!” My Sister Proclaimed with Delight**

In the end, we did manage to find the bridge we had been searching for. It was tucked carefully away in a cluster of trees at the end of an old, closed country road. I believe its tricky location was the reason for our misadventure. Because the road that led up to the bridge had been shut down several years prior, its coordinates ceased to exist in the GPS database and failed to show when using the Map layout setting. This might have been why the “Maps” app was not able to give us a direct path, but a general area instead. If I had changed my layout settings to Satellite, I probably would have been able to see the bridge in the 2-D satellite images and would have saved myself a lot of time and frustration. A poor connection may have also been the reason for our app rerouting multiple times throughout our journey. Either way, I'm

sure you can imagine the relief we felt when we did eventually see the bright, welcoming color of graffiti in the distance.

I guess you could say we lost a few things that day: our sense of direction, a half a tank of gas, an hour of daylight, and our sanity for a short while. But despite these things, it was worth it in the end. If our “Maps” app had not come in clutch and rerouted at the last second, we probably would have never found this secret gem. We wouldn’t have been able to show it off to our family members a couple days later, have had a hideaway to practice our own graffiti art, nor have gone to a unique place for me to take my high school senior-year pictures at as well. Fortunately, thanks to the production, reception, representation, and ecology involved with our mobile GPS app at that very moment in time, this was not the case.



Figure 5: Me and my aunt at Pin Oak Bridge.

Now that we’ve reached our destination, I hope I have given you an insight as to how the Global Positioning System works as well as a better understanding of the meaning behind a few of the key terms involved with CHAT. With this new information in mind, I encourage you to download or open that mobile GPS app on your phone (or pick up a hard copy from your





Figure 6: Me jumping at Pin Oak Bridge.

local convenience store) and to go on one of your own adventures. Just try not to get lost, like we did.

Happy traveling.

### Works Cited

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