

# The City, The Highway and the Spatial Level: Navigation Apps and Disorientation

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**Abstract:** I argue that mobile navigation apps, like Google Maps, alienate us from our lived environments. I phenomenologically contrast the experience of moving through an unfamiliar city on foot with driving through one with the aid of a mobile navigation app. This comparison reveals that movement possesses a developmental character: to move through space is to learn how to respond to the environments we encounter, simultaneously developing our sense of ourselves and of the spaces we inhabit. Because the design of our navigation apps neglects this insight, using them conceals and hinders possibilities for the development of self and space in movement. I close by considering how software designers might take this insight into account by creating alternative forms of navigation apps.

**Key words:** phenomenology, GPS navigation, Merleau-Ponty, space and place, smartphones

In this paper, I argue that mobile navigation apps, like Google Maps, alienate us from our lived environments. My method in making this case is phenomenological. I contrast the experience of moving through an unfamiliar city on foot with driving through one with the aid of a mobile navigation app. This phenomenological analysis reveals that movement possesses a developmental character: to move through space is to learn how to respond to the environments we encounter and in doing so, to develop a sense of ourselves and of the spaces we inhabit. Because navigation apps are designed based on a conception of space that neglects this phenomenological insight, using them conceals and hinders possibilities for the development of self and space in movement. The resulting experience can be jarring, alienating and disorienting.<sup>1</sup>

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This article is organized in four sections. In the first section, I challenge the Cartesian notion of space on which most mobile navigation apps are based. To do so, I deploy Maurice Merleau-Ponty's phenomenology to demonstrate how our most basic perceptual experience of space is not immediate and snapshot-like but rather develops over time through interaction between a perceiver and their environment. Thus, our most basic experience of space is not an encounter with a fully present and constituted field but rather an ongoing interaction within a field of ambiguous indeterminacy that becomes more determinate through our engagement with it.

Second, I perform a phenomenological analysis of walking in an unfamiliar city in order to show how our situated sense of self develops as we move about within a meaningful environment. I focus especially on the way that agency—as a power of acting in the world—depends on and is shaped by the environment in which it unfolds. In order to do so, I unpack Merleau-Ponty's conception of a level or standard of perception.

Third, I contrast this developmental experience of space with the experience of moving about the world as directed by a mobile navigation app. I demonstrate how poor understandings of both space and movement inform how such apps are designed. These misunderstandings result in a disorienting or alienating experience for the user.

Finally, I close with some thoughts on how software designers could take the results of this paper into account in designing an alternative navigation app—critically one that factors in the developmental conception of space and movement.

## **1. Merleau-Ponty and the Logic of Development**

Commonly, we think about moving from one place to another in a roughly Cartesian way. We imagine ourselves moving from point A to point B within a space that is already circumscribed and fully present. In other words, we conceive of the world through which we wish to move from an objective, third person perspective—as if perceiving a world that is already existing and present. Moving about in such a world involves pushing our bodies from one position to another as if they were a sort of cargo.

Maurice Merleau-Ponty's philosophy is helpful in bringing to light the way our everyday perceptual experience diverges significantly from our Cartesian prejudices about the nature of space and of our perspective on it. We misunderstand our immediate experience for instance, if we think of space as containing discrete objects related to one another only externally and our gaze upon them as self-

possessed and dis-interested. In the *Passivity* lectures, Merleau-Ponty writes, “we must not conceive of the present as a picture grasped like a synopsis [. . .] When it forms a picture, it is no longer” (Merleau-Ponty 2010, 193). To conceive of space as snapshot-like, he argues, is to engage a space which is no longer present for us. As a picture, the world is not accessible to us in the present. It has already passed away and can be accessed only indirectly.

In contrast, perceptual experience of the present is always given as a milieu of engagement. It is precisely in its availability as such a milieu that the space around us is not like a fully present snapshot or picture. Rather, it is a field in tension, marked by indeterminate zones that motivate bodily action or movement. For instance, in my peripheral vision, beyond my computer screen, I do not see any determinate thing. Rather, insofar as I notice it at all, I see what might be or what could be something. Perhaps, in the midst of typing, I may be interrupted by some ambiguous or fuzzy motion beyond the screen I’m currently attending to. Only through investigating this ambiguous phenomenon do I acquire the perception of a determinate, solid something—the window beyond my desk and the squirrel, perhaps, whose movement first motivated my looking. Thus, this ambiguous movement on the periphery of my visual field requires an act of attention to become a solid, determinate object for me.

However, in its ambiguity, prior to its being determined as a solid object, it stands out as a part of my environment that is unclear and that could be investigated. It is encountered as a possible way of deploying my perceptual capacities. Such ambiguity motivates action by first being lived as an indeterminate tension. In this way, our most basic perceptual life takes on a developmental structure. Some tension within our perception of the environment motivates some action, the acting out of which serves to reveal and enrich the meaning of the very tension that began the process.

One may further understand this developmental point through the perceptual examples Merleau-Ponty gives in *Phenomenology of Perception*. We might, for instance, focus on his example of encountering the mast of a beached ship in the distance, which first appears as merged with the forest behind it. He writes:

As I approached, I did not perceive the resemblances or the proximities that were, in the end, about to reunite with the superstructure of the ship in an unbroken picture. I merely felt that the appearance of the object was about to change, that something was imminent in the tension, as the storm is imminent in the clouds. (Merleau-Ponty 2012, 18)

As he moves along the beach toward the ship, suddenly the figure changes and he comes to see that what he thought was a strange sort of tree was in fact the mast of a ship all along. For Merleau-Ponty, the alteration of the field from an ambiguous phenomenon into a beached ship “will resolve a problem only posed in the form of a vague uneasiness” (2012, 18). Once this alteration has taken place, it is impossible to return to the world that included the mast as a funny sort of tree—an ambiguous phenomenon soliciting attention only so that the ambiguity could be removed and replaced by a determinate phenomenon.

Thus, prior to the presence of an objective Cartesian world, we encounter an ambiguous one to which we help give form through our engagement with it. Only on the basis of such engagement can we come to think about a world made up of determinate objective properties or objects. Thus, the situation from which a Cartesian conception of space begins, with an already constituted world of objects external to one another, is not the situation in which perception unfolds.

Think again of Merleau-Ponty on the beach. The perceptual givens he first encounters there are not reducible to the complete “mast” and “ship” that he ends up with. What was given at the outset had to snap into place and take on a form that only then made sense of his previous, uneasy experience. Having accomplished this development, Merleau-Ponty can no more easily return to the world in which he saw a funny sort of tree off in the distance than can a toddler return to the world of an infant. However, just as the toddler still has growing to do, these settled levels of perception are not fully complete. Rather, they serve to establish new positions from which to be motivated by new tensions, the investigation of which will serve to deepen and enrich our experience of the world by showing these earlier accomplishments to be more than what they first appeared to be.<sup>2</sup> As we will see in the next section, our developmental experience of movement, through which we come to know our environments, also informs our sense of ourselves as agents—shaped and supported by the environments we navigate.

## **2. Walking in the City and Wertheimer’s Wacky World**

The purpose of this section is to show that, in moving through a space, we not only gain a better sense of that space, but also an enriched sense of ourselves and the possibilities of our agency within that space. Indeed, to move is to become familiar with a space precisely by becoming habituated to the possibilities for one’s **body’s** movement within that space. In order to make this point, I perform a phenomenological analysis of walking in an unfamiliar city. Through this analysis I demonstrate that learning to navigate a new place not only demands that I come

to understand or to know that space as an object, but to learn how to engage it with my body and become habituated to the ways that the space supports movement. This means that I sometimes must develop new ways of moving my body in response to new spaces.

In *The Practice of Everyday Life*, Michel de Certeau draws a distinction between a city as it is understood, monitored, and manipulated by city planners and officials, and the way it is experienced by the people who live there. From the perspective of city planners and cartographers, the city is seen as if from above—beyond the grasp of the city itself. Rather than dwelling within the city, directed and drawn out by streets that twist and turn or open and close according to an anonymous law, the planner's virtual elevation "transfigures him into a voyeur" (de Certeau 1984, 92). From this perspective, the city ceases to be something that one must navigate with one's body and becomes a readable text, laid out before a panoptic eye.

In contrast, consider walking in a city like Prague. Characterized by narrow side streets which twist and turn, Prague is a city of folds. As you navigate the tourist-filled alleys of old town, you move about by constantly turning corners. With each corner, the city folds up behind you and unfolds in front of you—concealing the block you were just on and opening up a new environment. This is different than simply having the city disappear behind you, the way it might if you were travelling across a landscape quickly in a car on a highway. The folding up of the city supports a new future which was not previously available. As you move around corners, the city folds itself and unfolds itself to reveal new positions, new places to move. You cannot just glance back to see where you have been or forward to see where you are going the way you might in a city like New York or Toronto with wide streets built on a grid system. In Prague, you have to actually walk back or forward to see where you have been or where you are going. You have to allow the city to do its thing—to fold up behind you so that it can unfold in front.

The narrow streets of Prague serve as a particularly good example of how our developmental experience of space does not just involve coming to know our environments, but also our own sense of our selves within those environments. At first, getting lost in Prague can be alienating and worrisome. If one is accustomed to more modern places with wider, straighter streets, one finds oneself constantly on edge, unsure if one is moving in the right direction toward one's approximate goal. One finds oneself doubling back, looking for street signs, checking a map. Eventually though, one learns to grasp the logic of the place simply by moving through it. One's body catches hold of the folding nature of the city and one comes

to understand oneself in the city's terms. There is a way one moves their body here, and an embodied grasp of the space is acquired that sets up new possibilities for movement. By moving within the city in this way, one learns something that could never be learned by studying maps of the city. One begins to engage and understand the city bodily—on the city's terms—inssofar as it becomes the current or the rhythm that structures one's movement.

Merleau-Ponty's discussion of an experiment by the Gestalt Psychologist Max Wertheimer is useful for understanding this phenomenon. In the experiment, a subject is confronted with the mirrored image of the room in which he is standing. The mirror reflects the room in such a way that it first appears on a 45-degree angle. At first, the experience is described as "strange," like being in a funhouse at a carnival. People appear to walk funny. Falling objects appear to fly off at an angle. However, after several minutes of looking into this room and seeing others move about in it, the subject's perception shifts, and they cease to experience the room as odd or strange. Instead, the wacky room now appears normal and upright.

Prior to the experiment, Merleau-Ponty contends, the subject's perception accepts what he calls a spatial level. The French word that Merleau-Ponty employs, "*niveau*," translates into English as both "level" and "standard." Both meanings are helpful here. Think of trying to get a framed picture to hang level on the wall, nudging it first from one side, then the other, trying to get it as close to level as possible. Merleau-Ponty's point is that such a level is not an absolute standard. Rather, it emerges out of the subject's lived relationship with the space he inhabits. For each of us, he contends, there is an up and a down and a left and a right, and indeed, a level that correspond to our body's acquired powers of navigating the world we confront. The reason the world in the mirror appears strange is because it is at odds with this adopted standard.

Interestingly, Merleau-Ponty notes, these standards do not necessarily correspond to the body's objective position in space. It is not as though my body drags the orientation of up and down with it such that it corresponds with the position of the head in relation to the feet, for example. Simply the fact that I can lie down and maintain the same spatial level attests to this. What Wertheimer's experiment shows, however, is that the orientation of up and down is also not given objectively. There is no absolute level to which my own spatial level corresponds—dictated, say, by the feeling of gravity pulling me towards the floor. Rather, given time and exposure to Wertheimer's wacky room, a new spatial level is achieved that corresponds to the given perceptual field.<sup>3</sup>

Simply by peering into the room, Wertheimer's subject begins to adopt the world as a possible place of movement. It becomes experienced as a place he could walk, open an armoire, sit in a chair. By engaging the space as a space of possible movement, the subject lets go of the level to which he was previously accustomed and adopts a new level that suits the new situation. In this way, "the reflected room conjures up a subject capable of living in it" (Merleau-Ponty 2012, 261). Importantly, this is a phenomenon that is not projected from the side of the body. The body does not simply deposit into the wacky room its own intentions, and with them, its own standards. Instead, the body must adopt an orientation proper to the world it confronts such that its "motor intentions, as they unfold, receive the responses they anticipate from the world" (Merleau-Ponty 2012, 261). My body "gears into the world" in such a way that "a background for my life" can emerge—that is, "a general milieu for the coexistence of my body and the world" (Merleau-Ponty 2012, 261).

A similar thing occurs when we come to adopt the inherent logic of an unfamiliar city like Prague. Just as a stranger there at first experiences the city of folds as disorienting, the subject in Wertheimer's experiment encounters the reflected room as strange. This is because, in each case, the stranger and the experimental subject are still oriented according to a previous standard, achieved in some other place. Disorientation may not be overcome by forcing the room or the city to a pre-established standard—whether it be what I take to be level or how I am used to moving through a city. Rather, by adopting a new standard for movement, my body gears into the world with which I am confronted, and I learn to move through it accordingly. In the city, I develop a new way of walking—perhaps, less hurried. This frees my head to look up, to crane around corners, to take in the new space. I become a tourist in a touristy part of town rather than a rushed commuter hurrying towards my goal. In this way, a new agency is realized and a new standard is established when

Between my body as the power of certain gestures and as the demand for certain privileged planes, and the perceived spectacle as the invitation to these very gestures and as the theater of these very actions, a pact is established that gives me possession of space and gives to the things a direct power upon my body. (Merleau-Ponty 2012, 261)

A space that was first disorienting now becomes inviting of my body's movement. My body develops into the space such that I can now experience the city as supportive of my activity—as the general milieu in which my life unfolds. This new

standard opens up new possibilities for me and allows for continued growth into the space in which I find myself. My body comes to grasp what Prague is like and attunes itself to the city's rhythm.<sup>4</sup>

Our discussion of walking in a city has revealed the developmental structure of movement. Only by gearing into my surroundings does my body develop an agency within them. Only by establishing a new standard on the basis of this engagement can a city cease to be disorienting and problematic and become the supportive milieu of my activity. Importantly, this takes time. I do not have, at the outset, the sense of space and myself within it that I end up with. Rather, my sense of the space and of myself within it only shows itself to be what I am searching for in my finding it.

### 3. Navigation Apps as Disorienting

The purpose of this section is to demonstrate the ways in which navigation apps designed according to a naïve Cartesian notion of space alienate and displace us from our lived environments. Using a navigation app transforms places that could be engaged developmentally into transitional environments—places that possess no meaning beyond their being empty and on-the-way to my desired location (Kingwell 2019). They flatten space out, creating homogeneous and indifferent environments (Besmer 2014).

In this way, the apps work against themselves and undermine their intended purpose, attempting to foist an inappropriate spatial level onto an experience that requires attuned development. Using such an app, we sometimes find ourselves stuck in the experience of tension because we are constantly stymied in our attempts to develop into our environments. This occurs due to the app's insistence that we adopt a ready-made, cartesian spatial level rather than allowing a new one to develop out of the activity of movement.

In service of this point, the experience of walking in Prague may be contrasted with the experience of navigating, not by way of environmental cues in one's surroundings, but by way of an app like *Google Maps*. Consider for instance, making one's way through a series of on ramps and off ramps while driving through a major metropolitan area such as Dallas while assisted by such a device.

The first thing to notice is that one finds oneself attuned to one's device rather than to one's surroundings.<sup>5</sup> One is never sure exactly when the next set of instructions will come, so one finds oneself fighting the urge to slip into "driving mode," allowing one's movement to be directed by the curve of the road and the traffic surrounding the car. If one stops actively listening, one might miss something im-



portant. As a result, one finds oneself on edge, anticipating the next direction from the robotic voice, never able to gear into one's world and establish a new level. In this way, each instruction becomes experienced as an emergency: "Get in the left lane!" or "Take exit X towards Y!" This is not a simple design flaw. It is not just because the instructions are too frequent or infrequent that they are experienced in this way. This experience is unsettling, disorienting or alienating because these apps are designed based on a poor understanding of movement through space.

Rather than assuming the perspective of someone actually moving through the world, navigation apps take on the perspective of de Certeau's voyeuristic city planner. Based on satellite imagery, positioning systems, and maps drawn from this high-altitude perspective, the space through which a person must move is conceived as given and ready-made from the beginning of the journey to the end. It is all already there. The highway is not understood as something that unfolds and presents a driver with new opportunities for movement. It is not an invitation to the gestures of driving and the theater of driving actions. Rather, the app merely traces the path of a solid object through an indifferent space.

Likewise, the person who must make this journey is not positioned as a living body that must gear into its environment, but as a solid piece of furniture in the world.<sup>6</sup> From the perspective of the app, no transformation of space and of the agents within it must take place in order for the journey to be successful. Instead, navigation apps position people as things that are already developed and simply need to be moved from one place to another within its pre-established co-ordinates. Rather than building instructions for living, breathing bodies-in-development, navigation apps, like de Certeau's voyeurs, "know only cadavers" (de Certeau 1984, 93). This is why the instructions appear in the form that they do. The logic of the app dictates that when a tracked object reaches a certain point, an objective and determinate adjustment must be made to alter its course, not that a human body must develop into the space of the highway and become attuned to its environmental rhythm so as to be responsive to navigational cues. In doing so, it positions its user as a passive, ready-made object, not an agent on a journey.

The point here is not that we must simply learn to better attune ourselves to our phones and that, once we do so, the experience of navigating according to an app will be seamless or less disorienting. The point is that the experience is disorienting precisely *because* the technology is based on presuppositions about space and our experience of it that are alien to that very experience.<sup>7</sup> Navigation apps foist a ready-made understanding of space on an experience which is inherently developmental. They impose a high-altitude perspective when what is needed is

a level proper to one's embedded driving activity. Thus, commands from the app are felt as impositions or disruptions precisely because they are. They impose a fixed notion of space and movement on the lived body that interrupts our ability to develop into our surroundings by moving through space.

#### **4. How to Build Apps to Enhance Agency in Place**

As examining the experience of movement both unaided and aided by a navigation app reveals, to move through the world is to allow a space to conjure up the subject capable of living in it. It is to develop a baseline familiarity with our environment such that we can meaningfully respond to the world we confront. As I have argued, this does not necessarily involve taking stock of the objective positions of our bodies in relation to our goals and then mapping a route along which to push our bodies. The solution to navigating Wertheimer's room, for instance, is not to transpose the slanted room onto one that could be navigated by an upright body through a series of adjustments. Rather, it involves learning to respond to what the world makes possible for our bodily capacities and allowing the world to call action forth from us. In other words, the developmental experience of space involves learning to perceive the world as one that invites action rather than one we can represent to ourselves objectively for the purposes of planning an action, where acting and planning are thought of as two distinct processes.

Our most basic experience of space is developmental. It involves gearing into our environments—establishing new spatial standards—such that we can become attentive to the sorts of opportunities for movement that our environments afford. In doing so, we realize ourselves as agents suited to the particular spaces we inhabit. As they exist presently, navigation apps operate on the exact opposite principle, conceiving of both human bodies and the spaces through which they move as already fully developed and ready-made. Here I pose a few questions and posit a possible response. What would a navigation app built on the principle of developmental space look like? What kinds of journeys would it enable? How might it expand and extend human agency? What kind of world would it allow us to create?

As presently conceived, navigation apps aim to extend and enhance human agency by offloading human cognitive and calculative capacities onto a device. The idea is that by taking over this task, the user is freed up to do other things. In this way, they follow a traditional, aristocratic model for automating intellectual labor that goes back at least to Gottfried Wilhelm Leibniz. Of an early calculator that he designed, Leibniz writes, "It is unworthy of excellent men to lose hours

like slaves in the labor of calculation, which could safely be relegated to anyone else if the machine were used” (1959, 181). Likewise, apps like Google Maps take over the task of planning the route and deciding ahead of time the determinate steps necessary for moving an object from point A to point B, presumably allowing the user to concentrate on other things. For this reason, the app needs to treat space and the bodies contained therein as ready-made and unchanging, assuming the spatial level of a planner rather than a navigator.

However, as we have seen, the process in which navigation apps are implicated and the agency that app designers ought to aim to enhance is cognitive at the same time that it is perceptual and motor. So, an app developer designing a navigation app may consider the phone, not as a computational device that takes over the task of planning the route through indifferent cartesian space and delivering information relevant to getting from point A to point B, but as extending a user’s senses such that they may become sensitive to new aspects of the environment that are ordinarily imperceptible. A phone could deploy the technical capacities it already has, not just to take on the task of planning our routes for us and pushing us along a path, but to enrich and alter the environment we confront. In designing a navigation app, one could use all of the technical capabilities that phones already possess—dinging, buzzing, taking pictures, etc.—and simply shift the way we think about using them as navigational aids and extensions of human agency.

Imagine for instance, instead of an app that directs the user through a series of linguistic commands, an app that conveyed information to the user through sonorous tones. One could mark a location on a map that one is heading towards or away from, creating a virtual beacon that emits a tone or a “ping.” If I am in an unfamiliar city and I don’t want to get lost, I could create a beacon at my hotel and then wander off. When I want to return, I could turn on my navigation app and put in some headphones. Rather than being directed by a series of instructions, I would be able to “hear” my hotel. Using headphones would provide differential information related to how I am moving. If my hotel is roughly to the left of me, I might hear a ping that would be louder in my left ear than my right, if I move closer the tone would get louder, etc.

Such an experience might be disorienting at first—like Wertheimer’s room. But what it offers is a new field of tension that could be engaged bodily—it enables auditory perception of one’s destination at a distance, rather than an objective representation of the world from above. Becoming habituated to the app’s sensitivity would require finding a new level that would sediment and make possible new ways of moving through space. Designing the app in this way would not assume

that the body using it remains unchanged throughout the process. Hearing a ping would be perceived as a tension that itself calls for resolution, leaving the user of the app to supply the solution—to become a body capable of finding a resolution to the tension. The ping alone is ambiguous enough so as not to command any one determinate action—it does not ask for an objective adjustment—but it could become the tension through which a new way of moving comes to realize itself in making sense of the tension. Learning to move through a field of pinging beacons is a way of realizing one’s agency in a new way, in relation to a new world.

Learning to move through such a world would open new avenues and new projects of movement and engagement in space. It would provide us with an environment full of opportunities and possibilities to be engaged rather than a ready-made world full of facts to be known or directions to be followed. This meets us where we are as humans, casting our bodies as agential rather than inert, developmental rather than voyeuristic.

## Notes

1. Previous phenomenological treatments of the use of smartphones analyze the space of the body-smartphone pairing in constructing and maintaining a personal space between the user and the device (see Hjorth 2012; Richardson 2012). This paper extends this analysis to the broader experience of the space beyond the screen as it is affected by smartphone use. In doing, so I challenge previous phenomenological studies that understand the smartphone as a useful device, like a blind person’s cane, which helps the user to navigate a given environment and asks about the best ways to improve such a device (see Solnick et al. 2008). In contrast, my essay demonstrates the ways that a navigation app is not a neutral tool. Rather, it embodies values in ways that may go unnoticed by those who design it (see Winner 1980) and alters the experience of the world for those who use it—perhaps perniciously (see Greenfield 2017). Likewise, I go beyond phenomenological research on distraction and driving which is primarily concerned with arguing for the regulation of smartphone and cellphone use by drivers. (See Rosenberger 2019). In contrast with these studies, which understand the smartphone primarily as a tool that can aid or hamper an already determined task, I examine the way that the user’s own experience of herself as an agent is affected by the use of a smart phone for navigation. I argue that the design of smartphone navigation apps conceals possibilities for developing new ways of moving and new ways of understanding oneself in new environments. This critique does not necessarily apply

to so-called “locative social media” apps, like Foursquare, that others have argued can enhance a sense of place for the user (see Evans 2015; Evans and Saker 2017).

2. For Sartre, this point is especially important for understanding our experience of responsibility insofar as it has been *our* movement and development which structures the current field of problems we confront. See Butler, (2016).

3. Merleau-Ponty writes, “What counts for the orientation of the spectacle is not my body, such as it in fact exists, as a thing in objective space, but rather my body as a system of possible actions, a virtual body whose phenomenal ‘place’ is defined by its task and by its situation. My body is wherever it has something to do” (2012, 260).

4. On this point, I am indebted to David Morris who notes that for Merleau-Ponty, “bodily movement is first of all a transformation of that rapport [between subject and world] which engenders a trajectory “to follow.” Perceived and bodily movement both show they are not to be understood as translation along an already determinate trajectory. This is because the perceived thing and the moving body are *also* transformed by their movement, they are not already determinate” (2018, 212).

5. As Ingrid Richardson argues, many mobile phone apps “demarcate private space around the user” (2012, 146) rather than gearing the user into the external world. Likewise, Larissa Hjorth (2012) argues that mobile phones create a micro-mobile home, effecting the mobilization of private space. Perhaps for this reason, as Sugimoto et. al (2021) have shown, people who use mobile navigation apps rather than paper maps to navigate unfamiliar spaces are less effective at retracing their route unaided.

6. On the other hand, the car is an excellent example of technology that works according to a developmental principle. It is only because we can gear into the car and engage the highway in terms of the car-highway-body system that we are able to drive at the high speeds we achieve. If we had to follow directions for each motion that is required for driving a car—that is, if the designers of cars built-in to their devices the assumption that our bodies are objects which have to be moved about in three-dimensional space in order to move other objects like pedals, steering wheels and gear-shifts in order to operate the car—we would not be able to do it. It is because the car enables development within space that it is a successful device that extends and expands human agency. Morris describes a car in traffic as a perceptual system that allows a driver to perceive an obstruction up ahead through the constraints placed on one’s movement by the slowing of cars ahead. To slow down by easing off the gas pedal and switching to the break is to glimpse the obstruction by way of an expressive movement from “inside a moving system” (2004, 65).

7. Kirk Besmer argues that this is partly due to the fact that GPS relies on earth orbiting satellites, reinforcing the Cartesian privileging of abstract space over the lived experience of place (see Besmer 2014).

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