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Geographic orientation, disorientation, and misorientation: a commentary on Fernandez Velasco and Casati

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ABSTRACT
In this commentary on Fernandez Velasco and Casati's "Subjective Disorientation as a Metacognitive Feeling" in this journal, I take issue with their distinction between "the objective condition of being lost and the subjective condition of disorientation". Instead, I argue that being lost is geographic disorientation, and in all cases, it depends on a person's subjective awareness that they are uncertain about their location or proper course. This, in fact, provides a unified definition of geographic disorientation. In contrast, being objectively misplaced is *mis*orientation instead of *dis*orientation, and is conceptually, and often in practice, a distinct state of affairs.

KEYWORDS
Geographic disorientation; geographic misorientation; navigation; cognition and emotion

In their article in this issue titled "Subjective Disorientation as a Metacognitive Feeling," Fernandez Velasco and Casati propose that disorientation includes a critical component of subjective "feeling." By this the authors appear to mean a person's phenomenological awareness that they are not sure – perhaps have no idea – where they are and/or which way they should go to reach their destination. The authors contrast being disoriented with being lost: "[W]e shall first distinguish between the objective condition of being lost and the subjective condition of disorientation". But *being lost* is a colloquial expression, while *disorientation* is a technical term in the study of spatial cognition. I believe that when people say they are lost, they are colloquially expressing they are disoriented, specifically geographically disoriented.[1] Thus, the subjective awareness that is required for us to say a person is geographically disoriented is exactly the one leading them to say they are lost; I thus use the two terms interchangeably throughout this commentary. While it is true that lay people mostly reserve the term "lost" for relatively severe episodes of geographic disorientation (I discuss my evidence for this below), I believe there is no scientifically principled or useful basis for drawing such a distinction. It is an interesting research issue as to what conditions lead

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[1]The complete term for this concept must include the adjective *geographic* (*topographical* has also been used [Aguirre & D'Esposito, 1999; Griffin, 1948), as people get spatially disoriented in other ways that are not about getting lost from a location (nearly always a place on Earth, so far in human history). They also get disoriented in even more ways that are not literally spatial but *metaphorical*.

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people to decide when an episode of disorientation is sufficiently severe to be called an episode of lost, but for researchers, geographic disorientation ranges from very minor and brief to very major and prolonged, even life-threatening. All are cases of geographic disorientation.

That an awareness of spatial uncertainty is a critical component of being geographically disoriented is certainly true. So much so that the authors' skeptical claim that "there is no unified account of the phenomenon" does not strike me as accurate. In fact, this description of feeling unsure provides just such a clear, unified account of being disoriented (lost), and a definition based on this account is widely consistent with the explicit or implicit conceptualizations of disorientation held by various academic research communities, professional search and rescue, art and literary traditions, lay usage, etc.:

> Geographic disorientation (being lost) occurs when people are aware they are not certain about where they are and/or where they need to go to get to their destination.[2]

I began formulating this definition around 1990, when I developed a survey to ask people about their most severe experiences getting lost. I further refined it through the 1990s as part of course lectures on navigation and orientation, and I presented it at several meetings starting in the 1990s and continuing on into the 2000s (Montello, 1998, 2003, 2009a). I published the definition starting in 2005 (Montello, 2005, 2009b, 2017). So I might well agree with Fernandez Velasco and Casati that "the subjective side of disorientation remains insufficiently explored," but I take issue with their implication that we lack a relatively unified account because a "working characterization of disorientation is a first step in the direction of this unified account."

Over the last three decades, I have come to recognize several critical components for an understanding of geographic disorientation. You must have a destination – a place you are trying to be or to go – in order to be lost. If you step out of your hotel room to take a stroll before dinner, without going any place in particular, you cannot be said to be lost because you do not care where you are or where you are going. Tolkien was right to observe that "not all those who wander are lost," because some people who wander do not care where they are going. In fact, according to the strict meaning of "wander" in English, *no one* who wanders is lost, at least until they stop wandering. In our example scenario, you're not lost until you decide to return to your hotel, and you realize that you're not sure how.

[2]A closely-related use of the term "lost" means that someone else is aware they are not sure where you are or where you are headed, and they care; for example, search efforts are not uncommonly initiated by people who think someone is lost, even when that someone is not aware they are lost.

Being disoriented is clearly a subjective mismatch between one's goal and one's knowledge of how to reach that goal. One of the main themes of Fernandez Velasco and Casati's article is that there is a crucial subjective component to disorientation. I would stress that even more: You cannot be disoriented or lost unless you *believe* you're not sure of your location or your way. It's like lying: You cannot tell a lie unless you believe you are expressing something you think is untrue – even if, unbeknownst to you, it is actually true!

But what about the converse situation, the one that Fernandez Velasco and Casati would refer to with the term *lost* but not the term *disoriented*? In such a situation, people are unaware of being uncertain about where they are or about which way they should go to reach their destination, but they are not in fact where they think they are, or they are not in fact going the right way to get to their destination. It could be called "objective disorientation," but that would be confusing, rather oxymoronic. I find it clearer and more illuminating to refer to it as *misorientation*. Disorientation is about your phenomenology of uncertainty; misorientation is about the objective correspondence between your spatial belief and your actual location or route. These are semantically separate issues, although, of course, they often do go together. *Mis*orientation concerns what you think about your location or course; *dis*orientation is what you think about your certainty or confidence.

Fernandez Velasco and Casati's claim to "differentiate between 'being lost' (objective; third-personal) and 'being disoriented' (subjective; first-personal)" is not useful, in my view, and does not correspond well with the use of those terms in various research traditions, not to mention in literature, history, colloquial understanding, and so on. But recognizing the distinction between being disoriented and being misoriented is very useful, as Fernandez Velasco and Casati have discovered. Although the authors claim they do not want "to completely separate the third-person and subjective aspects of being lost and disorientation" because "these two are generally concomitant, and are only temporarily apart in borderline cases," I strongly believe that conceptual clarity does behoove us to recognize them as potentially distinct and separate. Both being disoriented without being misoriented, and vice versa, are not borderline cases but likely fairly common events. Who among us has not felt disoriented, perhaps completely lost, even though we were headed just the way we needed to be to get efficiently to our destination? Who among us has not traveled blithely along, with no awareness that we were not where we thought we were or were not headed in the right way to our destination? Certainly many instances of people getting lost start as misorientation without disorientation. Defining being lost (i.e., disoriented) objectively simply does not work well.

Consider further that most of us have only a vague notion of our actual location on Earth's surface at any given moment in time. When you consider

that location can be expressed to any arbitrarily precise degree (literally, degree of latitude and longitude), with respect to a multitude of nested regions, and according to a variety of spatial reference systems, it really is not so hyperbolic to say that *we are all objectively misoriented at all times*. As I write this, for instance, I am a little vague as to my precise latitude and longitude to the minute or second, I do not know exactly how far away the deli is that I am about to visit for lunch, and I do not know more precisely than to a few degrees how far east of due north my heading is as I walk across campus. And I am a geographer (otherwise, I might not happen to know my know my latitude and longitude to within a degree) with a decent sense-of-direction who has lived in this area for nearly three decades and knows the spatial layout of his surroundings quite well. When I sit in a hotel room in another town, I will certainly be even more objectively misoriented, even though I know I am at my desk, in my room, on a certain floor in a certain hotel, on a certain street, in a particular city and country (or did I ignore the street name when I told the driver my hotel name?). Even if I know all these things, there will certainly be many respects in which, sitting in my room, I will not know precisely or with complete accuracy where I am. A common rebuttal I have heard to this line of reasoning is that we know as well as we need to know and don't care about the rest. But that makes my point – being lost requires us to believe we know less than we think we want or need to know. There is no way to define it entirely objectively. At the same time but much less often discussed, there are instances when a person is on the correct path or maybe just where they need to be – possibly standing directly in front of their actual destination[3] – and if they don't know it, both we and this person would still say they are lost, even though they are "objectively oriented."

We thus need to distinguish between being subjectively lost and being objectively misplaced. That is why I like referring to the subjective state as disorientation and the objective state as misorientation. By all means, questions about the relationship of disorientation to misorientation are fascinating and important to research. As Fernandez Velasco and Casati observe, people don't act to reorient or seek help unless they feel confused or uncertain about their location or way, i.e., unless they are subjectively aware of their uncertainty. You are not lost just because you don't know where you are.

1. Affective states of geographic disorientation

The metacognitive "feeling" to which Fernandez Velasco and Casati refer is essentially a feeling of uncertainty, which a psychologist might not refer to as an affective state as such but a cognitive state of awareness, one that might often occur without a person consciously recognizing a clear referent for

[3]Blind people whom I have interviewed have recounted this scenario, of course, but I doubt it is exceptionally rare among the fully sighted.

their awareness or perhaps any clear antecedent (something like an intuition, as in a "gut feeling"). In their footnote 1, however, the authors claim that, unlike me, they "cast subjective disorientation as an affective state." But if their account of disorientation is based on a "metacognitive feeling," then their account of disorientation is no more an affective state than is my own account.

If, instead, their account of disorientation is based on the true affective or emotional states that so often accompany geographic disorientation, then I oppose ontologically mixing the cognitive, behavioral, and affective states of disorientation. We need to keep them separate, conceptually, so we can meaningfully address questions like how do people respond emotionally to the belief they are lost, how do people respond emotionally when they find their way or are rescued, how do people's actions differ as a function of their emotional responses to getting lost, and so on.

Responses to the "Lost" survey I mentioned above have taught me quite a bit about geographic disorientation and its psychological concomitants, including both emotions and behaviors. I have administered it to over 500 residents of the U.S. ranging in age from about 5 to about 90 years (the very young and very old responded orally; the rest in writing). The survey asks respondents to recall their most severe experience getting lost, leaving it to them to define what is severe, but stressing to them that lost episodes can be of relatively short duration and otherwise minor. The survey then asks them to describe how it happened, under what circumstances, in what place, what they did about it, and how they felt at various moments throughout the experience.

One of my original inspirations for this survey was my curiosity about the interaction of cognition and emotion. This is a particularly difficult issue to study experimentally, given the ethical limitations against intentionally manipulating strong emotions in research studies. Experiences getting lost have long been recognized as universal wellsprings of strong emotions (e.g., Artress, 1995; Borges, 1964; Ellard, 2009; Jonsson, 2002; Tuan, 1977), most often negative emotions. My survey responses elaborated this idea for me, highlighting the complex story of emotions and geographic disorientation. For one, when we think about the role of emotions in geographic disorientation, we need to differentiate among moments in the time course of such episodes. This course includes the moment you first begin to suspect you are lost, the moment you become convinced you are lost, any number of moments of believing you are succeeding or failing at finding your way, any number of moments of believing you will or will not eventually find your way, the moment you realize where you are or which way to go, the moment someone finds you, and so on. Emotions obviously vary greatly in valence and intensity across these moments. Of course, people differ from each other in emotionality just as they do in navigational acumen. And the direness of

any episode also clearly depends on many factors external to the person, such as the physical and social nature of the surrounding environment, including the presence or absence of specific types of threats. It is clear from my survey results that not everyone reports any strong emotions as part of an episode of geographic disorientation (of course, episodes of misorientation without disorientation come without any emotions related to spatial orientation). Yes, as Fernandez Velasco and Casati point out, some people experience positive emotions while lost – not just when found – including excitement, carefreeness, and contentment. Centuries of stories and other artistic artifacts do not lie when they attribute negative emotions to lost experiences, of course, but my survey has shown me that these negative emotions are not just forms of fear or annoyance, but include sadness (such as for a loved one who is missing you) and, strikingly, anger. The anger is often directed at oneself but also at someone you think is responsible for your plight. In the words of one five-year old, who lost his mother in the store for several minutes, when asked how he felt when he found her, "I was very mad and told her she was never going to do that again!"[4]

2. Final thoughts

I conclude by taking modest issue with a couple of ways that Fernandez Velasco and Casati characterize the cognitive-behavioral study of geographic disorientation. I do not agree with the common misconception that "The existence of cognitive maps was first hypothesized by Tolman." Tolman first used the term, but the concept of a mentally represented environment was around in scientific literature at least as early as Trowbridge (1913), who referred to "imaginary maps." Likewise, reading that "Dudchenko argues that, if the idea of a cognitive map can be extrapolated to humans", I remember that we have decades of theorizing and data from social and behavioral scientists that establishes how appropriate – even necessary – is the application of cognitive maps to understanding human spatial behavior, without any need to "see Epstein, Patai, Julian and Spiers (2017), for a review of literature supporting the extrapolation" (as fine as that article is). We do not need rat studies or neuroscience studies to establish that humans mentally represent environments, including various spatial properties of those environments. Of course, we do learn plenty from these studies, and no body of literature establishes unambiguously and in complete detail exactly what the form or content of the cognitive map is.

[4]Although the destination whose location is uncertain during an episode of geographic disorientation is almost always a statically-located place, in some cases, it is a dynamically-located person, pet, etc., who moves. Young children very often get lost from their adult in public places like shopping centers. It amused me to be told by a mall security officer in a conspiratorial tone that he guessed parents who lose track of their kids sometimes intentionally ditch them so they can slip across the street for a drink.

In their first paragraph, Fernandez Velasco and Casati list various disciplines that have studied geographic disorientation, including professional search-and-rescue, but I would be remiss as a professor in a geography department if I did not ask that disciplines such as geography, cartography and geographic information science, anthropology, planning, and architecture be included in this list. Besides the article by Sava, Twardy, Koester and Sonwalkar (2016) and the recent book by Schmidt Di Friedberg (2017), both of which the authors cite, examples include Crampton (1988), Downs and Stea (1973), Gladwin (1970), Golledge (1999), Harrower and Sheesley (2007), Hutchins (1995), Ishikawa (2019), Klippel, Freksa and Winter (2006), Lewis (1994), Lynch (1960), Passini (1992), and Weisman (1981).

A final observation: Given these conceptualizations of disorientation and misorientation, we can understand that Columbus was both (Cohen, 1969; Montello, 2009a).

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