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REVIEW ESSAY

Exploring touch: A review of Matthew Fulkerson's *The First Sense*

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The First Sense: A Philosophical Study of the Sense of Touch
Matthew Fulkerson
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In this essay, I review Matthew Fulkerson's The First Sense: A Philosophical Study of the Sense of Touch. *In this first philosophical book on the sense of touch, Fulkerson provides an account of the nature and content of tactual experience. Central to Fulkerson's view is the claim that exploratory action plays a fundamental role in touch. In this review, I put pressure on two of his arguments: (1) the argument that tactual experience is unisensory and (2) the argument that tactual experience does not depend on explicit bodily awareness.*

Keywords: Perception; Perceptual Content; Senses; Touch

1. Introduction

Matthew Fulkerson's *The First Sense: A Philosophical Study of the Sense of Touch* is the first comprehensive treatment of the sense of touch in philosophy. In this extremely interesting and ambitious work, Fulkerson sets himself two tasks: (1) "to provide a philosophically robust account of the nature, structure and content of perception through touch" (p. xiii), and (2) "to show that work in touch has deeper implications for our general understanding of perception and perceptual experience" (p. xiii). Although it is a work of philosophy, Fulkerson draws heavily on empirical research on touch, and, given this, the book should be of interest to those working more broadly in the cognitive sciences.

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Because of the wealth of the discussion, I cannot hope to touch on all of the interesting issues that the book deals with. My aims are to make the contours of the book clear, as well as to raise questions about two discussions in it. In doing so, I will focus primarily on (1).

In taking on (1), Fulkerson focuses on two broad questions:

(a) The *sense question*: is touch a single sense?
(b) The *content question*: what are the contents of tactual experience?

In short, Fulkerson argues that touch is a single sense (the sense question), the experiences of which attribute a range of tangible features to objects in our environment (the content question). The first two chapters deal with the sense question; in the remaining five chapters, Fulkerson tackles the additional questions we must ask in answering the content question. Underlying Fulkerson's answers to both the sense question and the content question is an investigation of the role that exploratory action has in touch. According to Fulkerson, exploratory action plays a "novel, unifying role" in touch (p. xi), one that "undermines the received view that action plays the same role in all of the sensory modalities" (p. xiii).

2. The Sense Question

Chapter one is a short, but extremely rich, chapter in which Fulkerson draws attention to the variety of issues related to the sense of touch—e.g., the different ways in which we can classify tactual experience, the range of properties it presents compared to other modalities, and how it is prima facie distinctive given the role that exploratory action plays in it. But forming the immediate lesson of chapter one is the idea that, unlike vision and audition, the most plausible strategy for individuating the modalities fails to characterize touch as unisensory.[1]

In chapter two, Fulkerson takes up the multisensory view of touch directly. According to the *multisensory view of touch*, touch is fundamentally different from the other modalities in being multisensory. That is, it is *uniquely* multisensory. His argument against this view proceeds in two stages: first, he argues that none of the interesting criteria for multisensory experience has it that touch is uniquely multisensory, and, second, he argues that touch shares with other paradigmatic unisensory modalities a unifying representational structure. For the sake of space, I won't say much about the first argument. According to Fulkerson, each criterion fails because the other unisensory modalities turn out to be much more like touch than we initially thought. That is, if touch turns out to be multisensory, then all of the senses do. He concludes, then, that touch is not uniquely multisensory and that the multisensory view of touch is false.

This leaves open the possibility that all of the senses *are* indeed multisensory. Fulkerson rejects this conclusion. He argues that there is a structural feature that paradigmatic unisensory systems share with touch. This feature is feature binding—that is, the "direct assignment of features to perceptual objects" (p. 33). Fulkerson refers to feature binding as the *positive unity constraint* on unisensory experience. And, he argues, touch satisfies

this constraint. When I run my fingers over the shell I have just picked up off the beach, I feel *the shell* as rough, wet, cold and of a certain shape. Although in doing so, sensory transducers on my fingers as well as those of the muscles and tendons of my hand are all engaged, they are engaged in such a way as to yield a representation with a predicative structure. My tactual experience of the shell, then, is unisensory.

Moreover, as we see from this example, tangible features are predicated of the shell because I actively explore the shell with my fingers and hand. According to Fulkerson, exploratory action is crucial to feature binding in touch; as he claims, the various actions we undertake in exploring an object coordinate and unify the signals from the various sensory subsystems engaged and, in doing so, allow tangible features to be accurately bound to the objects in our environment. Chapter three discusses the nature of exploratory action further. There is much in this chapter, but central to it is a discussion of the range of movements that we engage in when we tactually explore an object. Coined "exploratory procedures" (or EPs) by Lederman and Klatzky (1987), these standardized movements not only make feature binding possible, but determine the range of tangible features we experience objects as having. Not only does exploratory action allow for feature binding, then, but it also determines the variety of tangible properties we experience objects as having.

I agree that feature binding provides an extremely interesting and novel way of resisting the multisensory view of touch. And, although I think that Fulkerson is right to focus on the richness of content we enjoy as a result of exploratory action, I do want to ask about a range of cases that he does not consider when arguing that touch is unisensory. Now, Fulkerson is clear that he takes feature binding as only a sufficient condition for unisensory experience. Other experiences that possess little structure and yet are clearly unisensory—such as the visual experience of a ganzfeld—are to be counted as unisensory on other grounds. But, as I will suggest, considering these cases raises questions about both the scope and strength of Fulkerson's unity constraint. What's more, they draw attention to a way in which it is potentially problematic.

As I alluded to above, I have in mind cases of non-exploratory touch. Consider for example, the case in which you are resting your fingertips on the chair arm next to you. The arm feels warm, as you have been leaning your arm on it. As Fulkerson tells us, in feature binding "sensory subsystems . . . function to assign a unique set of qualitative features to *individual* objects [emphasis added]" (p. 19). As we know, that is achieved when we actively explore objects through touch. He claims: "Active movements . . . [allow] for different features to be assigned and grouped together as belonging to the same object. Using additional and specialized actions, we can further individuate separate objects" (p. 62). But in this case, you are not actively exploring the features of the chair arm with your fingertips; you are simply touching it. Given that you are not exploring it, it is arguable that your experience does not represent warmth as belonging to any individual object. Compared to the experiences of the exploratory cases, then, we can say that this experience is less structured. It represents that *something* is warm, just nothing in particular.

Because of this, it is questionable that the experience satisfies the positive unity constraint. But, as Fulkerson would agree, it is clearly an experience that we want

to count as unisensory. Is there a way that it might satisfy the constraint? In a later passage than the one appealing to individual objects cited above, Fulkerson claims that feature binding is "*closely* [emphasis added] [related] to our ability to … segment … objects" (p. 33). Although brief, this remark leaves open the possibility that feature binding can occur without segmentation. And it is food for thought for the case I have provided. In that case, although segmentation is not achieved, we might think of binding as occurring in virtue of the very weakness of its existentially quantified content. Setting aside whether the experience is veridical (as in the case where one's fingertips actually span two objects), the idea would be that, because *something* appears to have the tangible features presented, co-assignment comes easily—and despite the fact that exploratory action has not enabled representation of what exactly, or the number of objects that, one's fingers are touching. It would be a case of "minimal binding."

But if this kind of case does *not* satisfy the constraint, what would its impact be on Fulkerson's argument? Given that Fulkerson sees the unity constraint as only a sufficient condition on unisensory experience, we might think that it is simply a case, and an additional sufficient condition, that Fulkerson does not consider. But, depending on what that additional condition turns out to be, it is not clear that the impact would be so minimal. For, given any further condition on unisensory experience, it becomes necessary to ask whether that condition in fact applies to the exploratory case as well. But this is to entertain the possibility that feature binding is explanatorily moot. And, given what we have to work with, it is difficult to rule out this possibility. Although earlier chapters consider how previous methods of individuating the modalities have proven problematic, Fulkerson does indicate that the *properties* represented in experience play an important role in distinguishing the senses. When he sets out his positive unity constraint, he claims that "those constituent systems that coassign *tangible features* [emphasis added] count as touch; those that do not, are not" (p. 45). In the less structured case, tangible features are represented (although the range represented is smaller). In this way, the two cases are the same. In fact, the only point of difference between the cases seems to be in how their respective objects are represented—that is, in terms of whether their contents are object-involving or existentially quantified. Now, as I indicated above, Fulkerson does acknowledge that previous attempts to individuate the modalities based on the properties represented, along with the physiological mechanisms at play, have all fallen short. And my own aim here is not to propose a constraint on unisensory experience that the less structured case satisfies. Instead, my intention is to draw attention to the fact that it seems difficult to envision, at least prima facie, a constraint that would apply to the less structured case and not also the exploratory case. And, if that is true, then it remains a live possibility that Fulkerson's unity constraint is superfluous.

Considering these less structured cases, then, is important. At minimum, they comprise a set of cases that are incredibly common and worthy of consideration in a book about touch. We sit on chairs, lean on walls, rest elbows on desks, sit with our feet on the floor, and so on. And as I have suggested, if the unity constraint applies to them, discussion of these cases would clarify the *strength* of the positive unity

constraint. In particular, comparing cases like these, which also seem to involve the predication of qualities to *some* object, would elucidate the conditions on object representation at work in that constraint. This, in turn, would clarify the *range* of tactual experience that the constraint applies to. If the unity constraint does not apply to the less structured cases, then the situation is potentially more serious. For, as I have suggested, this puts the relevance of the constraint itself into question.

3. The Content Question

The remainder of the book—chapters four through seven—deals with more specific questions about the content of tactual experience. We have from chapters two and three that tactual experience represents objects. Chapter four explores the role that bodily awareness plays in tactual experience. I will say more about this chapter below. Chapter five considers the range of qualities represented in tactual experience and proposes a view about the relations that they bear to one another. In particular, Fulkerson defines a set of basic qualities and shows how complex qualities are built out of those basic ones. Chapter six considers distal touch and, in particular, the question of whether objects that we are not in bodily contact with are the kinds of things of which we can be tactually aware—that is, whether they ever form part of the content of tactual experience. Drawing on arguments set out in chapter four, Fulkerson argues that they can be and that, moreover, we can be *directly* aware of those objects through touch. Finally, chapter seven considers the affective nature of touch—its role as the basis of felt pleasure and pain. This chapter continues the discussion of the content of tactual experience and argues that evaluative qualities are represented in it (tactual experience is *affect presenting*, as Fulkerson puts it).

There is a lot of extremely fascinating material in these chapters. For the sake of space, I will focus on chapter four, as it introduces a model of theorizing about touch that runs through much of the remainder of the book. There are three related discussions in this chapter. They are discussions of (i) the nature of the dependence between touch and bodily awareness, (ii) the nature of our ability to experience external objects and qualities through touch, as well as present states of our bodies (what he calls the *duality of touch*), and (iii) whether tactual awareness of external objects and qualities is direct. In what follows, I will focus on (i) and (ii), setting (iii) aside.

Touch is distinctive because it is a contact sense. In order to perceive objects and qualities by touch, our bodies, or parts of them, must be in contact with the things in our environment (or each with intermediaries, as Fulkerson discusses in chapter six). Given this, it is natural to think that tactual awareness depends on bodily awareness. Fulkerson does not wish to challenge this assumption; he does, however, argue that the nature of that relation has not been adequately explored. In this chapter, he surveys the available options (e.g., conceptual dependence, identity, and inferential dependence) and settles on a view that he calls *experiential dependence*. According to experiential dependence, an experience "depends (in some manner) on another experience or genuine form of awareness" (p. 89). That is, "we perceptually experience the sensory

qualities of one thing by experiencing the sensory qualities of something else" (p. 89). Stated for the case of touch: we tactually experience the qualities of things in the environment by experiencing qualities, or states, of our bodies.

But, according to Fulkerson, we must make an important distinction between two kinds of experiences: *implicit* and *explicit*. Explicit experiences, he claims, are those whose content is consciously attended to. Implicit experiences, on the other hand, are those whose content is "in the background or recessive" but "there in consciousness primed for attention" (p. 90). According to Fulkerson, the bodily experiences on which tactual experiences depend are implicit. Those "experiences" amount to bodily information that is available for potential attention. We need not be consciously aware of the informational content on which tactual experience depends; that informational content can simply "feed" tactual experience without our paying any attention to it. And in fact, according to Fulkerson, we rarely do pay attention to it—or indeed *can* without taxing our ability to attend to tactual experience. Fulkerson calls this view *informational bodily dependence* (IBD).

Fulkerson argues that the IBD "offers a compelling account of [the] duality of touch" (p. 100). The example that Fulkerson provides of this duality is a case in which a subject seems to alternate between two kinds of experience—one an externally directed touch experience and the other a bodily directed one. The details of the case are not essential here. What is important is that what happens in this case "is similar to what occurs in viewing a Necker cube" (p. 103)—i.e., it is a perceptual "switch" of sorts—and that, according to Fulkerson, "what changes between [the] bodily-directed and [the] externally-directed touch experience is the object that we attend to" (p. 102). Fulkerson holds up this kind of case as paradigmatic of the duality of touch and something his model can handle nicely. In short, on Fulkerson's model, this case involves a shift in the perceptual information attended to. In other words, it involves a shift from implicit to explicit bodily experience, and one from explicit to implicit tactual experience—and vice versa.

As it will become clear momentarily, I think that there is something right about Fulkerson's model of implicit and explicit awareness. I do question, however, whether the bodily awareness on which tactual awareness depends is as implicit as he makes out. Fulkerson rules out the view that tactual awareness depends on *explicit* bodily awareness—i.e., the view that he calls *strong experiential dependence* (SED)—by arguing that the kind of bodily awareness it demands is not present when we are tactually aware of objects. So, citing considerations of transparency, he claims that when we run two fingers across a flat surface, we experience one uniform surface and not two—as we would expect, he claims, if we had explicit awareness of our fingertips. He makes similar claims, and provides similar examples, with respect to perceptual constancy and the ability for demonstrative thought about objects. If explicit awareness has such demands, then I agree that touch does not strongly depend on bodily awareness. But must we conceive of explicit awareness—or all species of it—like this? I don't think so.

In the tabletop case that Fulkerson provides, it seems too strong to say that I am not aware of my body. To be sure, I do not experience two uniform surfaces—namely, at each place the table comes into contact with my fingertips. For reasons that will be

clear below, we might call this kind of demand *strong*-strong experiential dependence, in which all, or a large part, of bodily information is attended to in tactual experience. Still, although this demand is not met, I do seem to be aware of *contact*. That is, I seem to be aware of *some* sensation at my fingertips, even though that sensation is not segmented into two distinct bodily experiences. And it seems possible to attend to that contact while also attending to the feel of the chair. We might go so far as to say that this case is best characterized as one in which one's bodily awareness seems, in some sense, *part* of the very experience of touch. If this is true, then, while it is correct to say that I do not have the kind of bodily awareness that Fulkerson claims SED demands, I do have *some* bodily awareness when I run my fingers over the table. And, if we loosen his restrictions on what counts as an explicit experience, we can use Fulkerson's model to describe this awareness. It amounts to some of the information about the states of my body (albeit limited information) remaining at the fore—or *explicit*—while other, more determinate information remains "in the background or recessive"—or *implicit*. Also explicit is information about the tangible properties of the table, as well as information regarding their co-assignment.

As I have described it, this case does not put into doubt Fulkerson's model of implicit/explicit awareness. After all, I have used that model to re-describe his tabletop case. Still, my description of the case does challenge a major conclusion that he makes using it—namely, his rejection of strong experiential dependence. If we adopt the case as I have described it, then explicit bodily awareness admits of degree. It can be the "more robust" kind of bodily awareness that Fulkerson advocates on behalf of SED—that is, awareness in which much of the bodily information available is attended to. Or it can be, as I have suggested, a less robust form of bodily awareness in which more limited bodily information (but information nonetheless) is attended to. I agree that strong-strong experiential dependence is false. But, as my remarks here suggest, that is not the only possible form of strong experiential dependence. Because Fulkerson does not rule out that tactual awareness experientially depends on this weaker, yet nonetheless explicit, form of awareness, he does not show that strong experiential dependence is false. In order to get his conclusion, he must rule out *all* forms of that view.

These results directly impact his characterization of the duality of touch. I agree with Fulkerson that perceptual switch cases are rightly characterized as falling under the label "the duality of touch." But, as I have suggested, his tabletop example is also a case of this duality. And there are many others like it. After all, his tabletop case is a case of active exploration of an object and, as he has argued, such exploration is a central feature of much of our tactual awareness. Considering the tabletop case in more detail, then, gives us reason to think that the duality of touch is much more common than Fulkerson alludes. It is even ubiquitous. Moreover, as these experiences are so common, they help to better capture what, as I see it, philosophers have found interesting, even puzzling, about the duality of touch. I have now spent a lot of time running my fingers over the arm of my couch and finding remarkable how I seem to be aware of both the couch and its contact with me. I invite the reader to perform the same exercise to make this last point clear.

4. Conclusion

Recall that one of Fulkerson's aims—(2) of above—is to "to show that work in touch has deeper implications for our general understanding of perception and perceptual experience" (p. xiii). In conclusion, let me make some brief projections about how the topics I have considered contribute to these aims.

Considering the less structured cases of tactual awareness provides an opportunity to understand experiences of other modalities—and, in particular, a set of non-visual ones. Consider, for example, olfaction. I have argued elsewhere that olfactory experience does not achieve the level of object representation that we enjoy in vision (Batty, 2011). In particular, I have argued that, unlike vision, olfactory experience does not achieve object individuation (although it may achieve object recognition). The kinds of experiences that I have had in mind are those had in isolation from exploratory action. In this sense, they are similar to the non-exploratory touch case that I have provided—and also very common. They are also arguably similar with respect to their content. I have argued that olfactory experience represents that "something or other," here, has certain olfactory qualities. As I indicated above, your tactual experience of the chair arm also arguably has existentially quantified content, representing that "something or other," in peripersonal space, is warm.[2] Finally, these two types of experience are similar in that we want to count each as unisensory. A discussion of the less structured, non-exploratory experiences of touch might provide us with a way of understanding why experiences of the other modalities also count as unisensory.

What about Fulkerson's model of implicit and explicit awareness? Fulkerson's reliance on this model provides at least a timely reminder of the complexity of our perceptual situations. There has been much discussion in the philosophy of mind about the distinction between attention and awareness. Still, much of the recent philosophical discussion of perceptual experience has relied on the assumption that the content of experience should be characterized by what is, in Fulkerson's terms, explicit to the perceiver. For example, we see characterizations of content as *how the world appears to a perceiver*, where "appears" is understood in terms of explicit awareness. But, as Fulkerson reminds us, this is not the full story. If we think of our behavior as driven by *what we experience*, then our perceptual situations are far more complex than these quick characterizations of content would have it. This is the case, it would seem, for all modalities and for cases in which bodily awareness is arguably not at play. As we press on carving out new territory in the philosophy of perception (e.g., as we investigate further the non-visual modalities), this is something to keep very much in mind. Moreover, if we arm ourselves with the more liberal model of explicit and implicit awareness that I have suggested, we have the potential to explain even more. For example, consider a case in which one's experience of the intensity of an odor decreases over time. (This might be a case of adaptation or one in which other odorants introduced begin to mask the initial odorant.) Although one's experience of the odorant changes, it remains both explicit and arguably qualitatively the same (i.e., of the same odor). This phenomenon is a prime candidate for explanation by a

model that allows for our experience to be more, or less, explicit. Of course, much more would need to be said by way of explaining just how the model applies—e.g., how the empirical facts are to be incorporated by it. My point here is to simply draw attention to the fact that, prima facie at least, the version of Fulkerson's model that I have suggested above is well suited to a case like this. It is worth keeping in mind as we aim to characterize not only the similarities between, but also the idiosyncrasies of, the different modalities.

Although I have raised some considerations against two of Fulkerson's arguments, the book remains an extremely impressive treatment of the sense of touch. In the end, those discussions of the book that I was convinced by significantly outnumber those that I found questionable. The tasks Fulkerson sets for himself are not small ones and he undertakes them with remarkable clarity and care. He not only presents the first comprehensive view of the sense of touch; in highlighting the ways in which touch departs from the other modalities, he challenges us to think differently about perception and to be especially careful when making generalizations about *the senses*. For this reason, and because touch has been traditionally underserved by philosophers, his is an extremely important work in the philosophy of perception. No philosopher working on perception should bypass it.

Notes

[1] He has in mind Keeley's (2002) theory of modality individuation which focuses on criteria used in science and neuroethology in particular.

[2] Peripersonal space is the space defined by the limits of our bodies. Fulkerson employs this notion in chapter six, in which he discusses the nature of distal touch.

References

Batty, C. (2011). Smelling lessons. *Philosophical Studies, 153*, 161–174.

Keeley, B. (2002). Making sense of the senses: Individuating modalities in humans and other animals. *Journal of Philosophy, 99*, 5–28.

Lederman, S. J., & Klatzky, R. L. (1987). Hand movements: A window into haptic object recognition. *Cognitive Psychology, 19*, 342–368.