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How to cite

MIZRAHI-LESCHZINER, Vivian. Touch and bodily transparency. In: Mind, 2023, vol. 132, n° 527, p. 803–827. doi: 10.1093/mind/fzad005

This publication URL: https://archive-ouverte.unige.ch/unige:181303
Publication DOI: 10.1093/mind/fzad005

Touch and Bodily Transparency

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As most philosophers recognize, the body's central role in touch differs from the role it plays in the other sense modalities. Any account of touch must then explain the pivotal nature of the body's involvement in touch. Unlike most accounts of touch, this paper argues that the body's centrality in touch is not phenomenological or experiential: the body is not felt in any special way in tactile experiences. Building on Aristotle's account in *De Anima*, I argue that the body is central in touch because it is the medium of tactile perception. Touch depends on the body as vision and audition depend on air or any medium that can transmit light or sound waves. I show that it is precisely because the body must be transparent in order to transmit tangible properties that it cannot be perceived or experienced in tactile perception. Although this account conflicts with the widespread view that tactile perception is mediated by bodily sensations, I maintain that it explains how the structure and constitution of the human body contribute directly to what we feel in tactile experiences and that it provides a better understanding of the relation between the sense of touch and our bodily feelings.

1. Touch and bodily awareness

Although philosophers and psychologists disagree about the nature of the sense of touch, they often share the view that tactile perception has a unique connection with bodily awareness. Katz argues, for example, that touch is *bipolar* in the sense that tactual perception is both exteroceptive and interoceptive – it gives access to properties of external objects and to properties of the perceiver's body itself. Katz explains:

> A subjective component that refers to the body seems inescapably linked with a second component that refers to the properties of objects. We therefore describe tactual phenomena as *bipolar*. A light, tickling touch with a feather on a spot which, like the back of the hand, is seldom used for touching, can indeed closely approximate a purely subjective tactual sensation, but cannot completely hush-up the evidence as to the causative stimulus. On the other hand, there are tactual phenomena that under one mental set seem exclusively to suggest something objective, but under another mental set, quite unlike the case with subjective visual phenomena,

Mind, Vol. 132 . 527 . July 2023
https://doi.org/10.1093/mind/fzad005

> permit us to attend to the sensation as such (by which, a state of our body is understood). The latter is a clearly given property, not merely one that has been inferred, and it can be localized spatially with reference to our body. At any moment, either the subjective or objective side of tactual perception may be dominant, but this bipolarity nevertheless persists. (Katz 1925/1989, p. 41, emphasis in original)

To enjoy tactile perception, then, is to undergo an experience which is dual or bipolar in that it involves two phenomenally distinct characters (Bermudez 1998; de Vignemont and Massin 2015; Fulkerson 2014; Gibson 1962; Martin 1992; O'Shaughnessy 1995).

According to Katz, a tactile experience therefore partly concerns our own body. But simply characterizing touch as bipolar or dual tells us little about the exteroceptive and interoceptive components of touch. It doesn't explain, in particular, how they are linked and how they structure our sense of touch. A predominant and historically important understanding of the relation between bodily awareness and tactile perception is the template view defended by O'Shaughnessy (1989, 1995, 2000) and Martin (1992, 1993, 1995). According to the template view, tangible qualities of external objects are perceived *by virtue of* the perception we have of our own body. According to O'Shaughnessy, for example, touch essentially relies on proprioception. He says:

> [I]n every instance of tactile perception a proprioceptive awareness of one's body *stands between one* and awareness of the tactile object: it is only through being aware of one's body that one becomes aware of the objects given to touch. And so the sense of touch must depend upon proprioception, as (*sic*) not vice versa. (2000, p. 629, emphasis in original)

It could be argued that all perceptual experiences of all the sense modalities involve the body and therefore depend in some way on our capacity to retrieve information about our own body (Noë 2004; Scott 2001) or on actual information about our own body. But most philosophers insist, in line with the template view, that touch differs from our other senses by virtue of the way the perception of our own body is embedded in touch. As Ratcliffe stresses, the phenomenology of touch incorporates a bodily dimension that is absent from audition and vision: 'Touch implicates bodily awareness in a way that vision does not. Through touch,

we use the properties of our own bodies to investigate the tactile properties of other bodies' (2008, p. 301).

The involvement of bodily awareness in touch can be understood as entailing an indirect view of touch, because it is only by tactually perceiving our own body that we perceive the tangible properties of external objects. Now, if touch is indirect in this way, we might think that the asymmetric relation of mediation that characterizes touch results in 'an epistemic asymmetry' (Fish 2004, p. 2). In effect, if we tactually perceive external objects through the way we perceive our body, the perception of our body has a kind of epistemic priority over the tactile perception of the external world.[1] In other words, if bodily awareness mediates touch in this way, it would seem that what is directly accessible in touch is our own body and not external objects. The pre-eminence of our bodily awareness in tactile experiences therefore seems to conflict with the common view that the sense of touch affords 'direct contact'.

Perceptual indirectness is not at first sight a major epistemic flaw. After all, what guarantees knowledge is not the directness of perception but rather its reliability. Errors or illusions occur when there is a mismatch between reality and what the senses convey, not when immediacy is prevented. But knowledge involves more than reliability; it also involves reaching out to the world. Cognitive success depends on our avoidance of errors, but it also requires us to extend our acquaintance to the external world – physical, psychological, social or platonic. In the case of perceptual knowledge, what is at stake is an organism's capacity to survive by navigating and exploring its environment, finding food and mates, avoiding danger, and so on.

Yet, as Kalderon (2017, §2.2) rightly stresses, bodily awareness appears to be essentially self-awareness, which confines the perceiver's conscious experience to the limits of his or her own body. Whether this awareness faithfully mirrors objective properties located beyond the perceiver's body doesn't make it less subjective – that is, less about the subject of experience him or herself. Kalderon articulates this difficulty in the form of the following puzzle:

> Our puzzle now is this. How can a mode of self-presentation disclose the presence of some other thing? After all, perceivers, in being aware of their body, in presenting only themselves, present

[1] According to O'Shaughnessy this priority can even be extended to all sense modalities since touch is 'the very cornerstone of the edifice of sense-perception' (1989, p. 41).

> no other thing. So how can bodily awareness be leveraged into disclosing the presence of something external to the perceiver's body? What alchemy transmutes bodily sensation into tactile perception? (2017, p. 30)[2]

By offering a new view of the body's role in touch, this paper intends to solve this puzzle. As most philosophers recognize, the body's central role in touch differs from the role it plays in the other sense modalities. Any account of touch must then explain the pivotal nature of the body's involvement in touch. Unlike most accounts of touch, the account I shall give holds that the body's centrality in touch is not phenomenological or experiential: the body is not felt in any special way in tactile experiences. The body is, of course, central in touch because it is the medium of tactile perception. Touch depends on the body exactly as vision and audition depend on air[3] or any medium that can transmit light or sound waves. The body's centrality in touch is therefore not experiential – quite the opposite, in fact. Just as air and water must be transparent for audition and sight to occur, so too must the body be transparent to transmit tangible properties. Although transparency is an essential property of perceptual media, it does not follow that perceptual media don't directly affect what we perceive. Perceptual media are transparent and are not perceived *per se*, but they make an essential contribution to what is perceived (Mizrahi 2018). The account I offer in this paper solves Kalderon's puzzle by rejecting the widespread view that 'tactile perception is mediated by bodily sensation' (Richardson 2013, p. 140), but it also explains the body's pivotal role in touch by showing how the body contributes directly to what we tactually feel.

[2] Kalderon's resolution of his own puzzle is quite different from the one proposed here since he argues that, contrary to the approach defended here, it is the force of the hand's activity that is the source of the objectivity of haptic perception (2017, §2.1). He argues in particular that it is the awareness of the limit to our bodily activity that discloses the presence and the tangible qualities of external objects and explains that 'bodily awareness in haptic perception is more than a mode of self-presentation', since the haptic experience itself is constitutively shaped by the object grasped (2017, pp. 57-8).

[3] As will be spelt out in §3, the causal role of the medium is to transmit the sensible properties from the perceived object to the perceiver. Sounds are propagated by a repetitive disturbance of the air's particles. But it is light and not air which is causally involved in transmitting colours. Contrary to the Aristotelian description, it is therefore light and not air that is the visual medium. The causal role of air and other stuffs, like water and glass, in vision is indirect. They affect the spectral composition of the light and therefore change the nature of the medium directly involved in transmitting the visual information to the perceiver. To keep things uncomplicated, I've kept Aristotle's simpler view, as the choice between this view and the alternative doesn't really matter for the topic discussed in this paper.

In the following section, I introduce the concept of perceptual media and, following Aristotle's *De Anima*, argue that the body is the default tactile medium. In §3, I explain how the human body's structure and constitution transmit tangible properties and shape our tactile experiences. In §4, I discuss the merits of conceptualizing the body as a tactile medium by contrasting this approach with O'Shaughnessy and Martin's template view of touch and Fulkerson's informational view of the role of body awareness in tactile perception. The three views form a continuum. The view defended here differs in almost every respect from template views. Fulkerson's view is much closer to the present proposal than to template views. In §5, I conclude the paper by considering some challenges and propose an account of the relation between the sense of touch and the perception we have of our own body.

2. The body as tactile medium

In *De Anima*, Aristotle introduces the concept of perceptual media to explain how perception at a distance is possible. He recognizes that the remoteness of perceptual objects from the perceiver requires the presence of a causal intermediary. For instance, he claims that the colours of distant objects could not be perceived without the presence of a medium capable of acting directly on the organ of sight. This idea is clearly expressed in *De Anima*: (ii 7 418b13–22):

> The following makes the necessity of a medium clear. If what has colour is placed in immediate contact with the eye, it cannot be seen. Colour sets in movement what is transparent, for example, the air, and that, extending continuously from the object of the organ, sets the latter in movement. Democritus misrepresents the facts when he expresses the opinion that if the interspace were empty one could distinctly see an ant on the vault of the sky; that is an impossibility. Seeing is due to an affection or change of what has the perceptive faculty, and it cannot be affected by the seen colour itself; it remains that it must be affected by what comes between. Hence it is indispensable that there be something in between—if there were nothing, so far from seeing with greater distinctness, we should see nothing at all.

Aristotle explains that although the interspace between the perceived object and the observer seems empty, perception at a distance is enabled by a causal intermediary connecting the remote object to the sense organ. However, he contrasts distal senses, like sight and audition,

which rely on an external medium, to proximal senses, like taste and touch, which require bodily contact with the perceived object.

Aristotle's claim that touch 'operates by direct contact with the body' (Sorabji 1971, p. 69) and doesn't present its objects at a distance, like audition and sight, would seem to indicate that tactile perception is not mediated and doesn't require a perceptual intermediary.

But Aristotle explicitly rejects this line of reasoning. He argues that what explains the immediacy of touch is not the absence of an intermediary but the peculiar nature of the tactile medium. In *De Anima* (423b17–423b26), Aristotle explains that although the operation of touch does not rely on an *external* medium, like vision or audition, it does rely on an *internal* medium, namely, the perceiver's own body: 'Hence the body must be the medium for the faculty of touch, naturally attached to us, through which the several perceptions are transmitted' (*De Anima*, 423a16).

Identifying the body as the medium of touch has some important consequences for the way the sense of touch is analysed. If the body is the medium of touch, the body itself is not tactually perceived. Unlike other perceptual intermediaries postulated by philosophers, such as sense data or sensations, a perceptual medium is a form of causal mediation between the perceiver and the perceived object that does not itself become an object of perceptual awareness. Because a perceptual medium is that *through which* a perceptual object is perceived, it is transparent and imperceptible.

Consider the visual medium of air. By transmitting light from the perceived object to the perceiver, air creates an environment where visual perception can take place without obstruction. Unlike opaque objects, which offer visual resistance, transparent media allow sight to pass through them. Perceptual media are essentially transparent because they must transmit perceptual properties without interfering with the perceptual information they convey. The same is true for touch. If the body serves as the default tactile medium, it is that through which tangible properties are perceived and therefore cannot itself be an object of tactile perception — as long as it functions as a medium.[4]

[4] Like all tangible objects, the body can of course be the object of the sense of touch. In this case, we feel part of our body as a perceptual object through our body which functions as a medium. As will become clear, the role of the body as a perceptual object and as a perceptual medium are fundamentally different and cannot be reversed without fundamentally altering the structure of the experience. See in particular §5.

In the next section, building on Heider's 'Thing and Medium', I explain how the human body can serve as a mediator for touch. I spell out the way the structure of the body selects and transmits the tangible properties of external objects.

3. The human body: rigid but shapable

The Aristotelian notion of a perceptual medium involves two distinct aspects. A medium functions as a causal link between the perceptual object and the perceiver and it allows the perceptual object to appear to the perceiver. Now, as stressed by Johansen (1997, §§5-7), there are some tensions between these two aspects. How, after all, can the medium act directly on the perceiver without being itself perceived? And how does the medium transmit sensible properties without being itself affected by those properties? It seems that for the medium to cause an experience of red in the perceiver without itself being red, the medium must receive the colour in a way that is 'rather different from the way in which an ordinary object receives the colour' (Johansen 1997, p. 135).

Fritz Heider's 'Thing and Medium' (1926/1959) is an attempt to tackle precisely these problems and to spell out the causal mechanisms that explain how perceptual transparency and mediation are possible. In order to clarify how we can 'ever see something at a distance in its own right without having to see something else because of the interference of what is between us and the object' (Johansen 1997, p. 117), Heider distinguishes between perceptual objects, which are internally conditioned, and perceptual media, which are externally conditioned. The claim that media are externally conditioned means that their parts are causally independent of each other. Any air molecule can, for example, move freely without affecting the way the other air molecules behave. By contrast, all the parts of an internally conditioned object are interdependent. As Heider (1926/1959, p. 4) writes:

> The process on the surface of the stone, which reflects the light rays, is a process which is conditioned by the substratum... the fact that this particular kind of process occurs, namely, one which contains waves of particular lengths arranged in certain patterns, is determined by properties of the stone. The process in the medium, on the other hand, is conditioned externally. What happens in it is dependent on the form of the impinging process; the special state of the medium is to a high degree irrelevant for the form of the process in it.

According to Heider, the causal independence of the medium's constitutive parts explains how information can be transmitted from the perceptual object through the medium without interference. Because the medium's parts are causally independent of each other, the medium as a whole can remain undisturbed by a given process even while the medium's parts are directly affected by it.

Unlike air or water, the human body is not constituted by unconnected parts – quite the contrary. It is built around a skeleton constituted by several attached rigid parts, and its unity is guaranteed by the fact that each body part is attached to and inseparable from the whole. As Massin (2010) points out, the body's rigidity is essential to its role as a tactile medium because only rigid objects transmit mechanical forces without interference. Consider the white cane used by blind persons as a mobility aid. The degree of rigidity of its material is directly correlated to its capacity to 'afford better discrimination of the characteristics of surfaces' (Rodgers & Emerson 2005, p. 704).

But what makes a material or an object a good medium is not only its capacity to serve as a causal intermediary, but also its capacity to capture the complexity of the sensible world. A medium's ability to successfully transmit sensible qualities depends not only on its possession of physical characteristics that enable it to convey such qualities, but also on its possession of an internal structure that can be shaped by those qualities.

Thus, in a discussion of optical causality and the necessary conditions of vision, Gibson explains why a medium's capacity to transmit information depends on its capacity to be structured. As Gibson stresses, since light 'is never seen as such, it follows that seeing the environment cannot be based on seeing light as such' (1979, p. 55). Although the presence of light is a necessary condition of seeing, light is a condition of visibility only because it contains information about visible things. As Gibson notes, light is informative insofar as it is structured by the environment. Therefore, light plays an essential role in visibility not by virtue of its own physical characteristics but because it can be structured by the environment.

Expressing the same idea, Heider explains why the information conveyed by light is not about light itself. From an ontological point of view, light does not possess the characteristics it conveys because light is composed of a manifold of independent light rays that vary independently. Therefore, when a particular structure emerges from this manifold, it does not characterize the manifold itself but is rather the structure the event or object imposes on it. Heider explains:

> The mediator processes which meet our sense organs are spurious units; they have unitary form not because of their own character but because they are coordinated to objects. If one does not refer them to their unitary cause, they are unexplainable. A manifold of light rays which has been produced by a source of light cannot be compared to an event, such as the fall of a stone […] The light rays have no 'reality' without their cause. They contain a strict order which cannot be attributed to the waves themselves since they are independent of each other. (1926/1959, p. 7)

Visibility and light transmission are therefore intimately connected because the materials transmitting light preserve the structure of the environment conveyed by light. Heider's general idea is that for a material or an object to be a good medium, its parts must be independent. This property is what enables the medium to be shaped by external objects and ultimately to transmit their sensible qualities. Like a piece of wax receiving the impression of a seal, perceptual media are shapable because their parts can vary independently and can consequently be shaped by the qualities of the objects impinging on them.

Now, what makes the human body particularly apt to formally assimilate the tangible qualities of objects is its plasticity, flexibility, and overall sensitivity. Although perceptual media are shapable because their parts can vary independently, the body's parts exhibit this independence in different ways.

First, the body is articulated at multiple points, making it very flexible and versatile. The great flexibility of the human body is enabled by its skeletal system, which consists of 206 rigid bones attached by tendons and muscles. This complex architecture allows each part of the body to bend, twist, and slide in relation to other body parts and thus makes possible an unsurveyable variety of combinations of postures and movements. But the body's flexibility is not crucial only to locomotion and motor activity. The relative independence of the body parts and the flexibility it provides play an essential role in tactile perception as well. It is indeed this flexibility that confers on the body its capacity to adapt to a tangible object and maintain 'simultaneous contact with as much of its overall surface as possible' (Kalderon 2017, pp. 5-6) in order to assimilate its shape and volume and its relative rigidity and solidity. Consider the numerous ways we mould our body or body parts around the objects we want to tactually feel: we hold our loved ones in our arms, pick an apple with one hand, and press an avocado with a finger, but we also feel an object's texture and curves by letting our hand

explore its surface. The flexibility exhibited by the body is both static and dynamic. We can maintain contact with an external object by positioning our various body parts to mould our body around it, but we can also maintain contact by moving our hand over an object's surface. For example, to tactually explore a surface with our hand, each finger must independently maintain its contact with the surface and move accordingly. The structural mobility of the human hand is therefore essential not only to its amazing dexterity but also to its capacity to mediate the tangible qualities it detects by grasping an object or actively scanning its surface.

The role of the human body as a tactile medium relies on its flexibility and on the complex articulation of its numerous parts, but it also relies on the crucial properties of one of its central organs: the skin. The skin covers the entire human body, and different types of mechanoreceptors, which can detect a wide range of stimuli, are localized in its various layers. Although the spatial and temporal acuity of the skin varies significantly across the body surface, what is remarkable is that almost all areas of the body are tactually sensitive.[5] The importance of this fact can be underlined by noting the similarity between the role of the receptors that cover the skin's surface and the role of the photodetectors that cover the photosensor of a digital camera.[6] For a photosensor to be a good visual medium, it must be constitutively shaped by the visual properties of the object photographed and not interfere with those properties. To do this, each of the photodetectors that constitute the sensor must work independently and capture individually the light rays coming from the object photographed. Because each pixel composing the surface of the sensor can be reached only by the light rays coming from a particular point of the scene object, the spatial and chromatic configuration obtained on the sensor corresponds to the visual properties of the photographed

[5] Although the skin's sensitivity covers most of our body's surface, most of our tactile explorations are performed with our hands and not with the other parts of our body whose cutaneous sensitivity is mostly used to monitor what happens to these bodily regions and not to tactually explore the environment (Mattens 2017, §2). This should be taken into account when investigating tactile perception. As will become clear in the last section, although tactile perception and tactility both rely on cutaneous sensitivity, they must be distinguished. Contrary to what is commonly the case in science and philosophy, one should resist the temptation to systematically correlate the presence of cutaneous sensitivity with tactile perception and rather spell out the function performed by the skin in each particular situation. It follows from this observation that the empirical literature about touch and bodily awareness should be read carefully since it often overlooks this important distinction (Mattens 2017, p. 692).

[6] Cheng and Haggard similarly argue that 'the skin is covered by a mosaic of sensitive receptors, whose receptive fields are arranged like the cells of a spreadsheet, or the pixels of a screen' (2018, p. 61).

scene and not to the visual properties of the sensor itself. Similarly, each point or small area of the skin, which covers the entire body, can be independently stimulated. And because each point of the skin is stimulated independently by a particular point of the external object in direct contact with it, the static or dynamic configuration perceived on the skin corresponds to the configuration of the tangible qualities of the perceived object and not to the tangible qualities of the skin itself. In its role as a tactile medium, the skin has no internal structure.[7] It is like a blank piece of paper on which we could draw figures. The geometrical properties of the drawings that appear on a piece of paper characterize not the white paper itself but rather the movements and pressure a pen applies to it. Similarly, the skin as a tactile medium is devoid of internal structure and is consequently able to be structured by external objects and to assimilate their tangible properties.[8] Unlike internally conditioned objects, the temporal and geometrical arrangements revealed in touch through the skin are characteristic not of the skin itself but rather of the external objects exercising pressure on it.[9]

4. Bodily awareness, attention and contact

The view of the body as a tactile medium is incompatible with the template theory of touch defended by O'Shaughnessy and Martin.

I have argued that insofar as the body functions as a tactile medium, it is transparent. This claim has many consequences. First, although 'we use the properties of our own bodies to investigate the tactile properties of other bodies' (Ratcliffe 2008, p. 301), it by no means follows that our own body is felt or is otherwise an object of perceptual awareness when such investigations are conducted. The pivotal role of the body in tactile perception doesn't make it an object of awareness. The thesis of the transparency of the body in tactile perception therefore departs

[7] The skin is unstructured in the sense that it has the form of a connected surface covering the entire body which is able to receive information 'regardless of the spatial relations between stimulated receptors' (Skrzypulec 2022, p. 313).

[8] The present approach to the skin as a tactile medium has some interesting connections with the account by Haggard et al (2017) of a 'skin-space', whose structure is determined solely by the independent tactile receptors positioned on the skin's surface. This model contradicts most theories that consider tactile spatiality to derive from bodily awareness, since it argues that the skin-space, which is constituted by a dense array of cutaneous receptors, is 'logically prior and independent of any representation of the body parts on which the skin lies' (2017, p. 98) and that it can by itself account for spatial perception without the need 'to transform skin location into an implicit egocentric orienting movement' (2017, p. 102).

[9] For the idea that the proper object of touch is pressure, see De Vignemont and Massin (2015).

significantly from the approach to touch which maintains that touch is dependent 'on one's awareness of one's body in as much as one's body is used to measure other objects' (Martin 1993, p. 213). According to the template model, spatial properties of tangible objects are given through the awareness of the spatial properties of our own body, and feeling the shape of objects through touch thus depends on our capacity to perceive our own body and its movements. The template model, as its name suggests, requires tangible properties of external objects to undergo a bodily transcription: it requires a systematic correlation between tangible properties of tactually perceived objects and bodily sensations.

The template model has been criticized by many philosophers but few have consistently and fully ruled out the duality on which it rests.[10] The nature of the relationship between touch and bodily awareness is discussed at length in Fulkerson (2014). Fulkerson argues that although touch depends on bodily awareness, the experience on the body on which touch relies is only implicit and does not therefore threaten the directness of tactile experiences. He writes:

> My view is that touch causally depends only on implicit bodily experience (if it depends on experience at all). In fact, on my view, the kind of implicit bodily experiences on which touch depends are not really experiences at all, in anything other than a technical, philosophical sense of the term (cf. Byrne, 2009). The claim shall be that without the bodily awareness there could be no perceptual touch experience. And this is because perceptual touch involves the representation of distal information that is extracted from bodily information made available through active bodily engagement with the world. I will call this weak form of experiential dependence informational dependence. This dependence, I shall argue, is structurally analogous to similar forms of dependence found in the other sensory modalities. (2014, p. 91)

[10] One exception is Scott who explicitly rejects the idea that tactual experiences are dependent on or constituted by bodily awareness. Scott consequently rejects the view that visual and tactual experiences are structurally different and that 'current theories of visual perception could not be developed for touch' (2001, p. 159). The approach presented in this paper disagrees with this implication. Although it is argued that bodily awareness is not a component of tactual experiences, the present approach maintains that sight and touch are structurally different since their relationship to the body is essentially different. Touch, unlike sight, relies on the body as its medium. Although it can be argued that proprioception, and bodily awareness in general, play similar roles in touch and sight, it is only in touch that experiences take place through all the body. We feel the softness of the sand under our feet and the circularity of the coin in our hands, but we don't feel the greenness of the pasture in our eyes or somewhere else on our body. The importance of bodily contact for touch is spelled out in the last part of §4.

According to Fulkerson, although tactile experiences depend upon a distinct experience of the body, this experience is not explicit. Unlike the template approach, which assumes that spatial properties of touch are given through an explicit experience of the body's configurations and movements, Fulkerson's view is that tactile experiences depend upon bodily experiences that are only implicit, in the sense that they are 'in the background and recessive' and do 'not allow its objects to be open for epistemic appraisal' (2014, p. 90). The duality of touch defended by Fulkerson is therefore very different from Katz's bipolarity or Martin's view since it rests on an asymmetry between an implicit and an explicit experience. Although Katz admits varying degrees of salience between the subjective and the objective pole of touch (1925/1989, p. 127) and Martin's view acknowledges that attention can switch 'between the object touched and how one's body feels' (1993, p. 206), they both view the kind of bodily awareness involved in touch as explicit and fully experiential. In contrast, for Fulkerson, tactual experiences depend on bodily awareness only informationally, in the sense that 'touch only requires that certain bodily information be available for potential directedness' (2014, p. 95). Fulkerson persuasively shows that template approaches to tactual perception cannot account for our unmediated access to tangible properties (2014, pp. 85-6) and recognizes that 'our typical bodily awareness during touch is entirely transparent' (2014, p. 97). But he remains convinced that touch is dual and depends on a kind of bodily awareness, a view inconsistent with the account defended here.

Fulkerson's criticism of the constitutive role played by bodily awareness in the template approach is compelling but some reservations are in order regarding his notion of implicit bodily awareness. One may wonder in particular whether what he sees as implicit experiences, which he understands in terms of 'potential experiences', are experiences at all as he himself notes – see the quotation above (see also Cavedon-Taylor 2015, pp. 835-6), and whether the implicit-explicit distinction applied to perceptual experiences is in fact coherent (see Kalderon 2017, p. 42). More generally, Fulkerson's distinction between implicit and explicit experiences raises a number of fundamental questions concerning the nature of attention and consciousness, the relation between actual and potential experience, and how they contribute to explain the richness of perceptual experiences in general and tactile experiences in particular. However, I do not think that answers to these difficult questions are required here. For this paper explores a very radical perspective on touch which, unlike Fulkerson's, does not require that tactile perception presupposes bodily awareness – whether explicit or implicit.

Fulkerson's approach defends a 'weak form of experiential dependence' (2014, p. 91) and rejects as 'entirely implausible' (2014, p. 78) stronger versions of dependency between touch and bodily awareness and so shares with the view defended in this paper many central claims. But the two views differ fundamentally in the way they conceive the embodiment of touch. This difference is manifest for example in our respective accounts of distal touch (Fulkerson 2014, §6). Fulkerson argues that touch is not a contact sense, but rather a connection sense which does not require that the tangible object is in direct contact with the body or the apparent body. According to Fulkerson what is in fact required is that 'there is an appropriate exploratory connection between our bodies and the external object' (2014, p. 141). He argues that tactual perception of objects distant from the body is possible only if they 'are connected to us in the appropriate ways, though the appropriate channels' (2014, p. 147) and ascribes to tactile media the function of 'reliably transmit[ting] tangible information about distal objects' (2014, p. 149). Although Fulkerson recognizes that distal touch involves the intervention of a tactile medium, he seems to think that tactile media are only required for distal touch involving extrasomatic entities and excludes therefore the possibility that the body itself may act as a tactile medium.[11]

The Aristotelian approach defended here provides a very different picture of tactile media and the structure of touch. According to Aristotle, the perceptual medium relates the perceiver and the perceived object regardless of its distance from the perceiver. It is indeed the intervention of a suitable medium and not the proximity of its object that makes perception possible (see Kalderon 2017, p. 66; Steiner Goldner 2017, p. 59). Unlike Fulkerson's approach, the Aristotelian view involves therefore the claim that a tactile medium is always present in touch — whether it presents a remote or a proximal object. Indeed, as Aristotle argues, the perceiver's body is the default tactile medium, just as air is the default medium for vision and audition. Here he is again:

> In general, flesh and the tongue are related to the organs of touch and taste, as air and water are to those of sight, hearing, and smell. Hence in neither the one case nor the other can there be any perception of an object if it is placed immediately upon the organ, e.g.

[11] Fulkerson explicitly cites some body parts (for example, fingernails, epidermis and hair) as tactual media, but unfortunately does not explain why this is not the case for the body as a whole (2014, p. 147).

> if a white object is placed on the surface of the eye. This again shows that what has the power of perceiving the tangible is seated inside. Only so would there be a complete analogy with all the other senses. In their case if you place the object on the organ it is not perceived, here if you place it on the flesh it is perceived; therefore flesh is the medium of touch. (*De Anima*, 423b17-423b26)

Now, if distal touch and proximal touch both involve transparent media, one may wonder how we can phenomenologically distinguish between them. How can we differentiate between tactile experiences that involve direct contact with our body and those that do not? Consider a blind person's tactile exploration with a cane or a motorist's perception of the road while driving a car. The objects of these tactile experiences lie at a distance from the body. And although such experiences give access to tangible qualities, they are phenomenologically distinct from tactile experiences that occur through the body without an intermediary, such as the grasping of an object with a bare hand or a kiss on someone's cheek.

Touch experiences through instruments are phenomenologically different from direct touch experiences, but they also differ from one another according to the nature of the tactile intermediary at play. Although tangible qualities can be perceived through different fabrics, the nature of the intermediary fabric affects tactile experiences (Katz 1925/1989, §24).

Here again, one strategy for explaining the phenomenological differences among experiences of touch through clothes made of different fabrics is to split tactile perceptions into two components: the feeling we have of the tangible properties of the object perceived through the fabric and the one we have of the tactile properties of the fabric itself (Katz 1925/1989, p. 53). But I maintain that the strategy of splitting tactile perception into two components is wrongheaded, because it conceals the fact that in these experiences, the fabric is tactually transparent and does not exhibit any tangible properties. Unlike the tangible properties we can detect when wearing gloves or when tactually exploring an object through an intermediary of any sort, the tangible properties of the tactile medium itself are not perceived. As stressed by Fulkerson (2014, p. 154), we don't perceive the elasticity or the superficial texture of the gloves, the rigidity of a walking stick or the roughness of its surface. All we perceive in those experiences are the tangible properties of the distal objects they mediate: their shape, volume, density, resistance, elasticity, texture, and so on.

So how can the phenomenological differences between tactile experiences involving direct contact with the body and tactile experiences conducted though a tactile intermediary be explained? And more generally, how can the qualitative characteristics associated with a tactile medium be explained if it doesn't exhibit phenomenological tactile qualities?

To understand the phenomenological differences resulting from tactile media, it is important to bear in mind that all tactile experiences occur through a medium. As Aristotle argues, the perceiver's body is the default tactile medium, just as air is the default medium for vision and audition. Yet, although air and the body are the default media for vision and touch, they are not the only media for those faculties. Perceptual media are transparent and imperceptible. They are therefore ignored by perceivers, who see the tree in front of them and hear the bird hidden in its leaves but do not see or hear the air in which those perceptions take place.

As Arthadeva stresses, an important exception to this lack of awareness arises when the information carried by different perceptual media are confronted. He explains (1959, p. 135):

> We must not forget that when we see the stick in water we see through the water: because part of the stick is actually in the water we have to see through the water if our vision is to reach it. Similarly, though we do not bother to remind ourselves of it, we see the part of the stick above the water through the air. In fact, the further away we are from the stick, the more air we see through when we see it. Because air is usually completely transparent we tend to neglect its presence, but we must not forget that it exists and is as material as other things. Seeing through air, seeing through water, likewise seeing through other media or through lenses, are different kinds of seeing.

When a stick is immersed in water, we notice the presence of water because perceiving the stick in water differs from perceiving it through air alone. Perceptual media have no intrinsic phenomenal properties[12], but they nonetheless shape our perception by changing

[12] The fact that some media that are not totally transparent are perceptible — for example, translucent objects like frosted windows — does not contradict the claim that transparency and perceptibility are opposite properties. It rather shows that transparency is a property which admits of degrees: the more transparent an object is, the less visible it is, and vice versa. If an object can be both transparent and visible, it is because it is not completely transparent and is therefore partially visible (see Mizrahi 2018, pp. 244-5).

what we perceive. As explained above, the role of perceptual media is to carry perceptual information from the perceived object to the perceiver – but what information is carried depends on the nature of the perceptual medium. Consider optical instruments like telescopes and microscopes. By changing the direction of light rays, the refractive lenses in optical instruments make accessible to observation phenomena too small or too distant for the naked eye to perceive. Although the lenses are themselves invisible, their presence is attested in experience by the reality they give access to. Similarly, tactile perception through gloves or a walking stick are different from touch by direct contact because the tangible qualities perceived though those media are different and vary according to the media involved. Although the cane and the gloves are tactually transparent, their presence is attested by the tangible qualities they give access to. The phenomenology of perceiving objects through a walking stick or other tactile intermediaries does not rest on the tangible properties of these intermediaries, as suggested by Katz. Nor does it attest that in those experiences our felt body extends beyond its own skin by including tools or clothes. Contrary to what is often assumed (Lotze 1888; Katz 1925/1989; Martin 1993; O'Shaughnessy 2000; Ratcliffe 2008), we don't need to experience our body as extending to the tip of a tool in order to perceive tangible qualities at such extradermal locations.[13] The phenomenology of these experiences only suggests that tactually perceiving objects by direct contact is different from tactually perceiving them through a cloth or at the tip of a walking stick. We know what it is like to perceive tangible objects as being in contact with our skin, because the tangible qualities we perceive in those experiences are characteristic of those experiences.

Feeling the tangible properties of a table through a glove and feeling them after removing the glove are different as experiences because, among other things, the exercise of our capacity to detect pressure is different in both cases. This difference in turn explains what shapes, textures, vibrations, and so on, we can perceive through a given tactile medium and why therefore there are phenomenological differences between touching with and without gloves.

A similar explanation holds in the case of vision. Nearsighted people don't need to perceive their glasses to know they are using corrective glasses. They know what it is like to see with or without glasses because

[13] For an extended discussion of why tactual perception does not only occur at the *apparent* surface or limit of the body, see Fulkerson (2014, §6.4).

their capacity to perceive visual properties of distant objects differs in both cases.[14]

Although transparent lenses, like corrective glasses, are not perceived, distal touch through an intervening probe does not always seem to exhibit a similar transparency. Consider, for instance, the experience of probing the ground with a cane. In this case, it may seem that we not only feel the surface through the cane but are also aware of the cane itself.[15] But is that really the case? And in what sense is the awareness of the cane embedded in the tactile experience we have of the ground? How is the awareness of the rigidity of the cane combined with the feeling of the rigidity of the ground to form a unique and single tactual experience?

Take a more complex tactile intermediary like a car. As rightly pointed out by Fulkerson (2014, p. 144), when driving a car, you feel the tangible properties of the road. But are you at the same time also aware of the tangible properties of the car? If so, which of its properties are you aware of? The rigidity of its metallic frame, the softness of its tires, the slickness of the steering wheel? While we can attend to all these different components separately, it seems implausible that they are all combined or merged into a single experience when you are feeling the smoothness of the road while driving a car. According to the view of touch defended here, tactile mediators are not perceived *per se* when they act as mediators, even if on other occasions they can themselves be the objects of tactile experiences. While using a cane or driving a car, we can indeed cease to tactually perceive the ground or the road and feel instead the rigidity of the cane or the slickness of the steering wheel. But this simple possibility doesn't show that tactile media are not fully transparent when they transmit properties of other tangible objects.

5. Conclusion: touch versus tactility

I conclude by proposing an account of the relation between the sense of touch and the perception we have of our own body and I suggest a diagnosis of the perennial attraction of the dual view of touch.

[14] The fact that there is no phenomenological difference between the visual perception of a subject with 20/20 vision and that of a subject with 10/20 vision wearing adapted refractive lenses shows that perceptual media are not necessarily located between the subject and the perceived objects. The view that perceptual media not only include external entities causally involved in the perceptual process but also comprise the perceptual system itself is anticipated by Aristotle in De Sensu where he argues that the eye has to be composed of transparent matter in order to be functionally similar to the external medium (see Gregoric & Fink 2022, p. 31; Johansen 1997, pp. 146, 187).

[15] Thanks to an anonymous referee for raising this complication.

I have argued that identifying the body as the default tactile medium offers a solution to Kalderon's puzzle regarding the possibility of accessing tangible qualities 'in something external to the perceiver's body' (Kalderon 2017, p. 32) and allows one to avoid being confined to the limits of one's own body. This view seems to be blind to the apparent fact that we experience the boundaries of our body, and thereby the boundary between our selves and the world, through the sense of touch (Martin 1993, 1995). After all, is it not obvious that tactile experiences include bodily sensations? And how do we develop the sense of our body's limits if not through the bodily sensations we have when we touch something or are being touched?

Although many philosophers recognize a necessary connection between tactile perception and bodily perception, they admit that it is difficult, even impossible, to attend simultaneously to a tangible object and to the surface of our body in contact with it. This tension appears as early as Thomas Reid's *Inquiry*, which stresses the difficulty of picking out the bodily sensations while feeling the tangible qualities of a table. Reid writes:

> This sensation of hardness may easily be had, by pressing one's hand against the table, and attending to the feeling that ensues, setting aside, as much as possible, all thought of the table and its qualities, or of any external thing. But it is one thing to have the sensation, and another to attend to it, and make it a distinct object of reflection. The first is very easy; the last, in most cases, extremely difficult. (1764/1997, p. 56)

More recently, Martin has acknowledged that one does not 'attend to how one's body feels whenever one feels an object of touch – on the contrary, one's attention is normally directed at the object touched' (1993, p. 206) and has proposed to account for this difficulty by a dual experience involving something similar to an aspect shift in which 'one can switch one's attention between the object touched and how one's body feels' (1993, p. 206).

But why should we conclude that the switch of attention from a tangible object to our own body corresponds to a shift of attention within a single complex experience rather than to two distinct experiences? After all, how we perceive our body 'from the inside' is very different from how we tactually perceive external tangible objects or how we perceive our own body by touching it. In fact, none of the tangible qualities that constitute the tactual world can be attributed to what we perceive when we direct our attention to the body part in contact with

the tangible object. When we become aware of our hand touching a table, we don't experience our *hand* as soft, hard, rough, or smooth[16]; we perceive only that it is touched at a special location. Although we can feel our fingers when pressing them on a table, there is no reason to assume that these feelings belong to the tangible experience of the table itself. As Mattens very persuasively argues (2017), the basal function of the cutaneous sensitivity covering the body of most animals is not object-directed. Most of our external, and some of our internal, cutaneous sensitivity – which Mattens calls 'tactility' – is not used to explore the external world but to monitor what happens to our body. Mattens explains:

> Rather than reveal what is touching me, tactile experiences tell me what my body is undergoing. When we are touched, we become aware of the presence of an external object and our attention is drawn to a part of our body, but what we come to know in this bodily experience, I suggest, is not so much the object or body part as such, but rather what the object is doing to that part of our body. For, even when we cannot tell which object is doing the touching, we always feel its effect on our skin. (2017, p. 693)

Although they both involve bodily contact and are enabled by the same perceptual organs, experiences of touching and experiences of being touched have different proper objects and are therefore different in nature. Whether touch is reduced to the perception of pressure (de Vignemont & Massin 2015) or extended to encompass other properties, like temperature (Weber 1996), tangible properties perceived by touch are attributed to external objects or materials. In contrast, as Mattens perspicaciously remarks, what we feel when we are touched are not the features of the objects in contact with our body but rather the kinds of contact events involving our body:

> Tactile sense enables us to discern with great precision what is happening at the surface of our body: this is neither a sensation in the mind nor a quality in the object; rather, it is a mechanical event that takes place in the physical world. And, pace Reid, every language offers a great variety of names for the different types of contact events that we can tactually discern: we feel that we are being caressed, tapped, struck, pinched, that something is grazing and

[16] Similarly in Fulkerson (2014, p. 85): 'The problem isn't that we have no conception of what our bodies feel like when we touch something slimy; it's that such feelings do not constitute what it is for something to be slimy'.

> scraping our knee, scratching, biting, nudging, tweaking, fondling, rubbing, chafing, or poking our shoulder. (2017, p. 693)

Rather than characterizing tactility (our ability to perceive contact events involving our body) and the sense of touch (our ability to perceive tangible qualities of objects and materials) as bipolar constituents of a single experience, I believe it is preferable to characterize them as distinct experiences. As we have seen, most instances of tactile experience don't involve attending to our own body. According to the view defended in this paper, this is not an accident, because the body, as the tactile medium by default, must be transparent to convey tactile information from the perceived object to the perceiver. Tactility, on the other hand, doesn't involve perceiving the features of the objects that come into contact with our body. It involves discerning among the different kinds of contact events in order to react properly and promptly to the effects such events have on our body.

In many situations, of course, both experiences count. It is by knowing the correlation between the tangible qualities of objects and their effects on our body that we learn some of their dispositional properties. Indeed, in most haptic perceptions, we receive feedback from the objects we touch or manipulate. As we press our fingers against soft objects, we feel their surfaces gently enveloping our fingers until a certain limit is reached. The surfaces of hard objects, by contrast, do not vary under the pressure we apply to them, and we feel pain when the act of pressing against or striking such objects exceeds a certain threshold of force. But although we often need both types of information to navigate and explore our environment, there appears to be no reason to suppose that they must be conjoined in a single perceptual experience.

I suggest that tactility and touch, rather than being two poles of a single experience, give rise to reversible and alternating perceptual experiences in which the body plays fundamentally different roles. As Ratcliffe remarks in his discussion of the experience of touching one's left hand with one's right hand, the structures of the perceptual experiences are different when the hands' roles are reversed:

> There is a subtle 'reversibility' in the roles of the hands. And, when the touching becomes the touched, the bodily side is not *felt* in the same *way* that it was previously. In making the bodily aspect of touch available as a perceptual object, we change the *way* in which the body is perceived. We cannot make it conspicuous without altering the way both the hand and the object it is in contact with are experienced (…)

> The background side of the relation between toucher and touched, the 'touching', is not just recessive: it has a very different structure. The touching hand is what *does the feeling* rather than what is *felt*, and it performs this role precisely in so far as it is *not* experienced in an object-like way. (2008, pp. 308-9, emphasis in original)

The view defended in this paper criticizes the dual view of touch. It therefore breaks with a long tradition in philosophy and psychology about the relation between touch and bodily awareness.[17] But if the dual view of touch is wrongheaded, as I have argued here, one can wonder why it is so widespread and so little criticized. Why is bodily awareness always so prominent in empirical and philosophical studies of tactile experience, if it is not one of its fundamental constituents?

I don't have a definitive answer to this question, but I have a tentative diagnosis. This article argues that exteroception of tangible objects and interoception of our body are not 'one state of mind, which can be attended to in different ways' (Martin 1992, p. 204), but rather two kinds of experiences different in nature. Yet, because our bodies – and especially the skin and the tactile receptors – are involved in both touch and tactility, philosophers and scientists often suppose that feeling something and feeling our body are two aspects of a unitary experience.

My diagnosis is then that the orthodox view infers from the correct premiss that information about our own body travels through the same channels used to carry tactile information about tangible objects to the mistaken conclusion that the distinction between the tactile sense and tactility corresponds to no real difference. I believe indeed that the sense of touch and tactility are mistakenly conflated because philosophers and scientists wrongly rely on the physiology to demarcate the senses (see Roxbee-Cox 1970 for an objection to this demarcation criterion).[18] The present approach favours instead an Aristotelian demarcation criterion of the senses based on their proper objects (*De Anima* 418a12-13). According to Aristotle, to understand the different ways the body is involved in perception, one must first identify, for each particular sense, what information is extracted and gathered from the external world or from the body itself. It is indeed the proper objects of the senses that explain and are prior to the functions of the

[17] For an overview of the dual view's numerous variants, see Fulkerson (2015, §6).

[18] For a discussion of a similar problem related to the sense of taste, see Mizrahi (2017).

sense organs and not the other way around (Johansen 1997; Johnstone 2021).[19]

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[19] Thanks to Kevin Mulligan and two anonymous referees for *MIND* for their insightful comments on earlier versions of this paper. For helpful discussions, I would also like thank the audience at the conference on *Themes from the work of Mark Eli Kalderon* held in July 2022 at the University of Warwick.

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