

Touching Intelligence

David Morris

Touching Intelligence

The theme of "Epistemology and Movement" invites us to seek knowing and intelligence within living movement itself. In this paper I discern a knowing intelligence in the movement of touch. By interpreting results of dynamic systems theory within a phenomenological framework, I show how our experience of the tactile length of things is constituted within our movement of wielding them. But how does wielding something give us an experience of its tactile length, a property belonging to the thing? Should it not give us an experience of properties of the body and thing as one moving couple? I try to resolve this problem via a phenomenological study of what I call resonant and reverberant modalities of wielding. When we resonate with wielded things, we feel properties of the body-thing couple; when we reverberate with them, we feel properties belonging to the thing. But resonant and reverberant modalities overlap, and it is really a question of focus. I show that different melodic contours of wielding, different movement patterns, bring resonant or reverberant modalities, and correlatively different feelings of body and thing, into focus. At the end, I draw out several philosophical implications about movement and tactile intelligibility, and about the perceiver, the perceived and their interrelation.

I. Wielding a Tennis Racket

The remarkable intimacy of touch and movement is well noted in the philosophical and psychological literature (2, 6, 7, 9, 12, 20). Touch inherently involves movement. Feeling sponginess, roughness, and so on, requires anticipatory explorations of the tactile possibilities of things (1, 13, 14). Whether we feel with a cane or feel the cane itself depends on our way of incorporating the cane into the movements of our lived body (cf. 15: pp. 143-145), a point we shall return to below. Observations of this sort suggest that the movement of touch is not merely mechanical contact, but a living movement that explores possibilities of the world. And that very movement is an intelligence that exposes tactile features of things and sorts out things from each other and from the body. So touch gives us an insight into an intelligence within living movement. I begin developing this insight by interpreting a recent result from psychology, drawing a parallel with Merleau-Ponty's analysis of the Müller-Lyer figure.

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In the Müller-Lyer figure, a line segment bounded by outward-pointing arrowheads is seen as different in length from a line segment bounded by inward-pointing arrowheads, even though the line segments are, according to a ruler, the same length. Many call the figure an illusion. Merleau-Ponty's claim is simple: The figure should not be called an illusion, an error of size perception; in the visual field, the line segments are of neither equal nor unequal size—they are welded into arrows and cannot be compared. It is as if each belongs to a different universe (15: p. 6). The perceiver is not in error about the size of the line segments of the arrow, because the perceiver is not even seeing those "equal" line segments that the scientist so easily measures with the ruler. The perceiver is seeing arrows whose very shape gives them an intrinsic visual breadth. The figure with the outward pointing arrows "bulges" and the figure with the inward pointing arrows "pinches," in the way that a stout cartoon character may appear fatter than a tall one, even if their waists are exactly the same size when measured by a ruler.

Carello and Turvey make a similar claim against illusions in the article "Rotational Invariants and Dynamic Touch" (3). Their study is part of ongoing research that applies the conceptual program of dynamic systems theory and J.J. Gibson's ecological psychology to the case of dynamic touch—that is, to cases in which touch involves not only stimulation of the skin, but also motion of the joints and muscles.¹ In the article, they study how dynamic touch is extended through objects. Given our interest in sport and philosophy, we can think of Carello and Turvey as asking the question: How do we know how long something like a tennis racket is just by touching and holding it?

In Carello and Turvey's experiment, the subject wielded an object, with a curtain hiding the object and arm from view; in full view was a surface that could be moved back and forth. Subjects were asked to "adjust the position of a surface in front of them so that it could just be reached with the tip of the wielded object" (3: p. 34). They were given no feedback or information about the lengths, materials, or shapes of the objects they were wielding. When the wielded objects were cylindrical and of homogenous material, Carello and Turvey found that "perceived length track[ed] actual length quite faithfully" (3: p. 34). This finding is quite startling, given that the subject knew nothing about the wielded object's length, density, or material. When grasp was shifted from the end to the middle of the object, or when masses were attached to the object at various positions, perceived length decreased. As Carello and Turvey note, "Under traditional analysis, one might be tempted to label these instances of 'erroneous' haptic length perception illusory given that they are modulated by manipulations of variables other than length"—that is, given that an "actual rod length is associated with more than one perceived length" (3: p. 34). But according to their ecological framework, what is perceived is the overall information available to the perceiver, and we should not assume that this information is identical with "the physical or geometric properties that are easily labelled" (3: p. 34)—for example, the geometrical-length of the rod. This would be like assuming that perceivers of the Müller-Lyer figure are seeing independent line segments whose lengths are easily labeled and compared by the scientist, whereas they are seeing arrow-shapes that inherently give sense to size. Given this analysis, Carello and Turvey write that "in a very real sense, therefore, we would say that the scientist, not the perceiver, is in error" (3: p. 34). That is, it is not the case that the perceiver is misperceiving a geometrical-length; the perceiver was never perceiving *that* sort of thing in the first place. It is the scientist who makes the mistake when she or he calls the disparities between perceived

haptic length and actual length an illusion.

Carello and Turvey's analysis parallels and confirms that of Merleau-Ponty. But if the perceiver is not feeling the geometrical-length labeled by the erroneous scientist, just what is the perceiver feeling? Carello and Turvey's answer has to do with the rotatability of the object about its various axes, that is, with possibilities of twisting it this way or that. In the language of physics, this rotatability is measured by eigenvalues of the inertia tensor of the object. Eigenvalues are determined by the distribution of mass in the object, together with grip position. Carello and Turvey show that the felt-length of the object correlates with the eigenvalues.

To understand their interpretation of this result, we must recall that subjects were not asked to indicate how long the object was, but to position the surface in front of them so that it could just be reached with the object. They were not asked about an objective geometrical-length, but their ability to *do* something with an object in the practical world (cf. 3: p. 38). In phenomenological terms, the experimenters shifted investigation from the Cartesian "I think" to the Husserlian "I can" (cf. 10, esp. the second and third meditation). In the language of Gibson's ecological psychology, subjects were asked about an affordance—roughly, about the wielded object as affording possibilities of wielding. Carello and Turvey argue that what is being perceived is this affordance and nothing else. There is no illusion of haptic length: Subjects perceive what the object actually affords, which is determined by its rotational possibilities. What determines felt-length "is the ways that the object can be used," and "those uses are not simply a function of geometric dimensions such as length and width but, in a very real sense, how these objects can be moved (e.g., whether or not they are 'unwieldy')" (3: p. 38).²

There is perhaps an obvious experiential confirmation of this claim; just think of the way one shakes a tennis racket to get a feel for it. Shaking and swinging a new racket gives one a sense of its length—not its geometrical-length but its "practical-reach" in swinging for the ball. And when one is running about and hitting the ball in the middle of a point, one is continuously feeling this "practical-reach," feeling what the racket affords. Perhaps all that bouncing and twiddling of rackets between points is not merely nervous fidgeting or preparation for movement, but a way of sustaining one's feeling for the racket's "practical-reach."

Wieldiness and thence felt-length arise in joint movement of the body and racket. Recall, for example, that the eigenvalues change when you shift your grip, which is why objects feel shorter when held in the middle. In effect, in dynamic touch we perceive possibilities of joint body-world movement. This finding is central to all that follows.

II. The Ambiguous Relation of Toucher and Touched, From Dynamic Systems Theory to Phenomenology

Carello and Turvey show that in the case of haptic "misperceptions" of the lengths of wielded objects, it is not the perceiver who is in error but the scientist who calls the phenomenon an illusion. To call the "misperception" an illusion is to presume that the referent of felt-length is the geometrical-length that the scientist measures with a ruler. Carello and Turvey's claim, as we have seen, echoes and confirms Merleau-Ponty's specific claims about illusions. But it also echoes something of Merleau-Ponty's phenomenological attitude. Putting crucial details aside, both parties suggest that we must turn away from the already constituted standards of the scientist, away from what Merleau-Ponty calls the ready-made world. One

does not, according to Carello and Turvey, feel the length of the racket in one's hand by escaping outside of one's bodily relation to it and applying an external, geometrical yardstick. One takes the racket in one's hand, swings it, shakes it, wields it, and in doing so feels its dynamic *possibilities* from *within* one's bodily relation to it. The object of perception is constituted *within* the interrelation of body and world, and we must focus our attention on the object as constituted within the activity of wielding, where wielding is a way of engaging the object's dynamic possibilities.

But this focus leads to something of a puzzle. Let me first trace it within Carello and Turvey's framework. It is impossible to perceive the dynamic possibilities of the racket in an instant of time. To feel the racket's possibilities, I must move it.³ To move it, I must take the racket in hand and move my body and the racket as a couple. I touch the racket's possibilities by coupling with the racket in a way that changes my possibilities. The puzzle is how I perceive the *racket's* possibilities *within* this moving couple, rather than just perceiving the possibilities of the body-racket couple as a whole.

Put in terms of Carello and Turvey's discussion of affordances, one perceives what the racket affords for one's body. That affordance is neither in the racket itself, nor in the body itself: It is constituted only by coupling the body and the racket. And as I noted above, the question Carello and Turvey put to their subjects is how far they can reach with the object in hand, a question about the body-racket couple as a whole. So how is it that what the body-racket couple affords is experienced by the subject (or interpreted by the experimenter) as (a) a feeling of the length of the *racket* the subject is touching, rather than (b) a feeling for how far the subject can reach as a racket-augmented toucher? The relation between the toucher and the touched is ambiguous, since we can oscillate between these two sorts of feelings. And this ambiguity coincides with the question how, within the unity of body and racket, there is an experience of a toucher over against a touched.

The ambiguity in the relation of toucher and touched would seem to be inherent in dynamic systems theory, since it analyzes touch in terms of a unified, dynamic system nonetheless constituted by two coupled components, body and thing. Indeed, this sort of ambiguous relation, so far as it hinges on conceiving perception as rooted in an irreducible, non-dualistic, ecological relation between perceiver and perceived, is well noted in dynamic systems theory and ecological psychology, where it provokes basic conceptual questions (e.g., 11, 21).

But I do not wish to take up this ambiguous relation in terms of dynamic systems theory. Instead, I turn to phenomenological philosophy, which is pushed toward similar conceptual questions.

Phenomenological analysis of experience shows that perception is not a passive reception and synthesis of sensory data, but the constitution of a meaningful, perceived world through an irreducible relation between the lived body and the world. Since the constitution of a meaningful, perceived world is reciprocally the constitution of a meaningful lived body, the bounds of the lived body dilate and shift as we engage with the world in different ways—for example, the blind man's cane becomes part of his lived body (cf. 5, 15, 19). So an ambiguous relation of the lived body and the perceived world is inherent in phenomenology. We encountered a version of this ambiguity above, when we turned from the already constituted standards of the scientist to a conception of the object of perception as constituted *within* the interrelation of body and world. This left us with the question of how

that interrelation constitutes an experience of a perceiving body over against an object with its own characteristics, rather than constituting an experience of that interrelation itself. We posed this question in terms of affordances. But phenomenology is an attempt to be driven by the phenomena, to suspend, in a sense of wonder, all previously constituted standards, including the traditional vocabulary of subject and object, even the conceptual framework of affordances and so on. In this way the phenomenological tradition takes the question to a deeper level, which is why I am turning to phenomenological analysis. But of course the effort to suspend the conceptual vocabulary of our tradition leads to profound problems (e.g., concerning what Merleau-Ponty called the reversibility of the flesh) that I can only return to at the end of the paper.

Here my strategy is to develop a phenomenological analysis of the relation of the toucher and the touched by taking Carello and Turvey's result as a clue. Their crucial clue is that our manner of wielding constitutes our sense of the meaningful length of things. The question we can now pose in our turn from dynamic systems theory to phenomenology is as follows: How does my manner of wielding a racket correlate with an experience of the *racket's* tactile-length (an experience of a toucher over against the touched), or an experience of *my own* racket-augmented reach (an experience of the augmented-toucher)? To answer the question, I distinguish different experiential modalities of the moving couple of toucher and touched, namely, modalities involving what I call tactile reverberation and resonance. I should emphasize that my answer is descriptive and phenomenological; I am not aiming to give an ultimate explanation *why* these modalities correlate with different experiences of toucher and touched, just that they *do* descriptively correlate with—or perhaps constitute—those different experiences. Also, I am not directly using reverberation and resonance as technical terms of physics or acoustics; I am taking them up as descriptive categories.

III. Tactile Reverberation and Resonance

In order to develop an experiential distinction between tactile reverberation and resonance, let me first describe a series of experiences that contrast with the experience of wielding a racket.

I cannot feel the length of my car by touch, because it is impossible for me to wield it. Godzilla might be able to wave my car about and feel its length by touch, but I cannot. Suppose I am sewing and want to find out, by touch, how long a piece of thread is. I shut my eyes and wiggle the thread, but I just cannot tell how long it is. The thread couples with my moving body, but the thread is too light-weight to change my moving possibilities. When I wiggle the thread, I merely perceive my own possibilities, not the possibilities of something else. Suppose again I am out mowing the lawn; the cord on my electric mower snags and without turning around to look, I flick the cord. If the cord snaps back almost instantly, I feel it snagged on something vaguely close by; if there is a short lag before snapping back, I feel the snag further away; but if the lag is very long, then I have a very vague feeling that the snag is far away, and really I cannot differentiate lengths beyond a certain point, because the cord hardly snaps back at all. It is the way my flick of the cord is snapped back by the cord that gives me a feeling of its length.

In all these experiences (of the car, thread, cord, and racket), touch depends on something akin to the experience of reverberation. Experientially, I can hear the

size of a room by hearing my voice reverberate in it. In acoustic terms, when I sing, I acoustically couple the vibratory possibilities of my singing body with the reverberatory possibilities of the room, and the consequent change in what I hear gives me a sense of the room's acoustic size. Similarly, in terms of experience, I feel the length of things by moving them. In dynamic terms, I couple my dynamic possibilities to the thing's dynamic possibilities, and feel the consequent change in my dynamics. But in what form do I *experience* this change in my dynamics? I experience it as a tactile analogue of reverberation, a reverberation dependent on my dynamic coupling with the thing.⁴

Let me return to my examples to spell this out. When I sing in the room I experience a change in the voice that I hear—it reverberates. When I flick the extension cord and a while later it snaps back, I experience a tactile-reverberation that gives me a somewhat vague feel for the length of the cord. Experientially, this is like singing in a big concert hall and hearing its size in the “reverb time” of one's voice. But when I push against my car, it immediately puts a stop to my movement; there is no possibility of tactile-reverberation because I cannot even move the car in the first place. Experientially, this is like singing in an anechoic chamber that damps all reverberation—feeling the car's length is as difficult as hearing the anechoic chamber's size. When I wiggle the thread, there is no tactile-reverberation because moving the thread does not change my movement. Experientially, this is like singing in an outdoor setting that gives no echo. One cannot hear the size of the outdoor setting, because it does not have a determinate acoustic size. Likewise, the thread gives no determinate, perceivable response to one's wiggle, so one has little sense of its determinate size.

The relation of toucher and touched in each of these experiences (at least on initial consideration) has none of the ambiguity of toucher and touched noted above. I experience myself moving and *then* experience a tactile-reverberation that gives me a sense of the length of a thing in hand (the extension cord)—there is a toucher who feels the length of a touched thing. Or I just experience myself moving, either freely (the thread) or blocked (the car)—there is a toucher feeling its own body moving.

The ambiguity returns in the case of the racket. Given the examples above, I can now describe the ambiguity of toucher and touched in terms of an ambiguity between tactile-reverberation and tactile-resonance. I wield the racket and, in each instant of movement, the wieldiness of the racket is at play in my feeling of my moving body. At each instant the racket modifies my movement, reverberates with my body, without delay. Wielding the racket is, I submit, akin to singing in the shower. (I mean a person-sized, North American-style tile shower, with ceiling.) In a concert hall, I hear my voice, and after a just-noticeable temporal lag, I hear the reverberant echo of my voice. I hear the size of the hall in the lag in the sound of my voice. In the shower the lag is so short and imperceptible that I do not hear a reverberation of my voice; I hear my voice reinforced in the instant, *become resonant*. This is especially apparent when singing into the corner of the shower. I no longer hear a system of reverberation in which two coupled terms, my voice and a reverberant hall, are distinguished by a perceptible lag; I hear a system in which a unitary phenomenon, my-voice-in-the-shower, is qualitatively different from my voice outside the shower. Experientially, in the concert hall my way of hearing my voice changes because of an echo, but in the shower it is as if my voice itself changes—“I sing better in the shower.” Yet I know that my voice has not

improved. Moreover, given my knowledge of acoustics, I can still *describe* singing in the shower as an acoustic system with two terms, my voice and the shower as reverberator. And if I am attentive, I can *experience* this system as having two terms: I can hear a reverberant echo rather than my voice transformed by resonance, especially if I sing very short notes or in a vibrato.

The ambiguity of the auditory phenomena of singing in the shower is that it is an experience of both reverberation and resonance. As an experience of reverberation, it is an experience that compellingly manifests one term auditorily coupled to a second, distinct term; as an experience of resonance, it compellingly manifests two terms so tightly coupled that they are heard as a unitary system with a new quality. But the experience of resonance is nothing other than the experience of a very short reverberation, and a very short reverberation may be experienced as a resonance. And indeed resonance and reverberation, as *experiential categories*, always seem to overlap ambiguously to some degree. The experience of singing in the shower manifests the ambiguity of resonance and reverberation in a compelling way, but the ambiguity can also be experienced in a concert hall. It depends on the temporal contour of your singing. Vibrato in the shower helps one hear the reverberant echo; long, sustained, melismatic lines in a concert hall give one an experience of a reinforced, resonant voice, rather than a reverberant echo, hence the power of plainchant in the cathedral.⁵

IV. The Melodies of Touch

The relation of singer to shower is ambiguous—it is an experience of a singing voice reverberantly echoed by the shower as distinct term, and also an experience of a resonant, augmented voice. This ambiguous relation can be driven in different directions by the temporal contour of singing, by the way we “play” our voice within the auditory couple. So too the experienced ambiguous relation of toucher and touched in wielding the racket can be driven in different directions by the temporal contour of our movement, by the way we “play” the racket within the moving couple.

As a reminder, our point of departure is Carello and Turvey’s result that we feel the lengths of things by wielding them. The problem we are pursuing comes down to the experience that when I wield a racket, I not only feel *its* wieldiness; by virtue of the very movement of wielding, I also feel the wieldiness (or unwieldiness) of “my-body-with-racket.” So how is it that I distinguish the *racket’s* wieldiness within the body-racket coupling? To our point of departure I add a simple observation: The movement of wielding the racket inherently takes time. Wielding has a temporal contour that stretches over time.

I call the temporal contour of wielding a melodic contour. At every moment a melody remains the same melody only by shifting to a new note. A melodic identity at once stretches over time and unfolds through notes that are already implicated in one another. To hear a note as the first note of Beethoven’s Fifth Symphony is to hear it already as part of the triple repetition and fourth note drop that is the strange opening of that strange symphony; the note has its melodic role only in relation to what follows. Likewise, a wielding movement has a temporal contour that stretches over time yet is manifest in each instant of the movement. Wiggling, hefting, shaking, flicking, and so on, are distinguished by the amplitude, rhythm, and pattern of a sequence of movements that are woven into a whole:

A wiggle that is cut off midway through is not quite a wiggle, but a flick; a cord-flick that goes too far is a yank. You cannot identify genres of wielding through isolated moments, any more than you can identify a melody through one of its notes; and correlatively one experiences wielding as a pattern inherently stretched over time, as one experiences a melody as a note pattern inherently stretched over time. Neither melodies nor genres of wielding are the simple sum of their parts. Each has a gestalt character, hence my characterization of different genres of wielding in terms of melodic contour.

Psychologists and philosophers have already noted the importance of what I am calling melodic contours to tactile phenomena. Different patterned rhythms, amplitudes, and directions of exploration are crucial to our way of feeling different tactile aspects of things (cf. 1, 12–14). Here, in the context of Carello and Turvey's results, I want to suggest that different melodic contours of touch are crucial to our experience of the relation of toucher and touched.

In the case of flicking the extension-cord, the melodic contour of the tactile-reverberation has two experientially distinct moments, my flicking the cord and the cord snapping back. The interval between these moments marks out the toucher from the touched, even though toucher and touched are, by the very demands of wielding, tied together in the unity of one tactile-reverberation stretched over time.

In the case of wielding the racket, the moments of toucher and touched are so tightly coupled that they are superimposed in the melodic contour of wielding rather than being marked out as distinct. A two-moment tactile-reverberation approaches a unitary tactile-resonance, in which toucher and touched are fused. Yet one can still distinguish two moments within this tactile-resonance, especially if one disturbs one's experience of the resonance from within. Instead of smoothly swinging outward with the racket for a tennis ball, in which case one's experience is compellingly that of reaching with body-racket, one can give the racket a rapid, abbreviated shake close to the body, in which case one shifts to a compelling experience of oneself touching the racket, feeling *its* possibilities. This is analogous to using vibrato in the shower to hear the size of the shower stall.

To give another illustration, in the Marx Brothers's *Duck Soup* there is a scene in which Groucho looks at Harpo through an empty mirror-frame (Harpo has smashed through it). Harpo and Groucho are dressed identically (grease-paint moustache, glasses, night-gown, socks, night-cap, cigar), and Harpo mimics Groucho (or is it the other way around?). The immediately compelling experience is of Groucho looking into a mirror, of Harpo's body as a reflection of Groucho's. But Groucho knows what is up, and as usual pushes things to their limit, becoming ever more manic. Surprisingly, magically, Harpo keeps up, but eventually the line is crossed: They slip out of synch, a resonance without lag shifts into a reverberation. The experiential difference is between seeing one body appearing in two places via a resonant reflection, and seeing two distinct bodies coupled in a reverberant echo of one another. By disturbing the Groucho-Harpo couple from within, Groucho emphasizes the distinctness of the two poles of the couple.

By changing the melodic contour of one's wielding, one can effect a similar sort of disturbance from within one's coupling with the racket, a shift from a more resonant coupling to a more reverberant coupling. When I smoothly swing for the ball, I emphasize the resonant modality of body-racket movement, and what is compelling is an experience of how far the body-racket couple can reach as an

unitary system. I feel the *ball* and feel myself reaching for it through a racket-augmented body. When I shake the racket quickly, I disrupt this resonance and emphasize the reverberant modality of body-racket movement, and I more emphatically feel the racket acting against my movement, lagging against the direction in which I am moving it. What becomes compelling in this reverberation is an experience of a racket with its own length in my hand.

Notably, it is when I am not using the racket to do anything, when I am just shaking the racket on its own, that I can most compellingly disrupt my resonance with the racket and feel the racket's length as a tactile-reverberation of my movement. When I reach for the ball, the explicit experience of the racket's length is not very compelling at all. In fact, if I depended on an explicit awareness of the racket's length, I would hardly be able to hit the ball, just as I would hardly be able to walk if walking depended on explicit awareness of the length and position of my limbs.⁶ But the reverberant modality is also highlighted when something intrudes into the body-racket resonance from the outside, as when I hit the ball off center: Instead of feeling the body and racket resonating as a living couple, I experience the racket as a dead thing reverberating somewhat painfully in my hand, and in that experience I am compellingly aware of touching *its* mass and length.

In sum, in reverberant modalities of wielding, the experience of a toucher over against the touched is compelling, whereas in resonant modalities of wielding, what is compelling is the experience of an augmented-toucher touching something else. The different modalities can be brought out by different melodic contours of wielding. Significantly, these melodic contours seem to correlate with different living relations between the body-thing couple and the world: The melodic contours that bring out resonant modalities are ones in which body and thing work smoothly at touching something else; reverberant modalities become focal in melodic contours involving body and thing alone, or in intrusive disruptions from outside the body-thing couple.

Crucially, body and thing are just as much a unified moving couple in either modality of wielding. When I am moving resonantly with the racket, there really is little experienced distinction between toucher and touched: Very compellingly, I touch the *ball* with the racket. But when I *do* experience myself feeling the racket's length by touch, it is not as if the moving unity of body and racket is shattered. Body and racket are still fused in a moving unity. What has changed is the melodic contour and modality of this dynamic. *The experienced distinction between toucher and touched emerges in the melodic contour and modality of our dynamic coupling with things.*

V. Philosophical Implications: Movement, the Tactile-Intelligibility of Things, and Temporality

This phenomenological finding has several philosophical implications and echoes.

The first is a reconfiguration of questions about dualism, at least in the case of touch. It is not the case that we gather sensations generated in us by a purely material world (which world is in itself meaningless), and that we add intelligibility to these sensations by further processing. Touch is not a movement that crosses from a world devoid of intelligibility to a realm of intelligible representations within

us. Things in the world are intelligible to touch so far as they already reverberate and resonate with our bodies, so far as *they* have dynamic possibilities that let us couple our bodies to them and do something with them, so far as they already *participate* in our movement of touching them. Things already have a tactile intelligibility *for us*. But the tangible intelligibility of things is perceived by us only so far as we fuse body and thing into a moving couple, at least for a moment. There is no dualism of toucher and touched here because toucher and touched fuse into a moving whole in which tactile-intelligibility exists on neither side on its own but in their moving fusion.

But how do we, in this non-dualistic fusion of body and thing, experience a toucher over against a touched thing with its own tangible intelligibility *in itself*? Any claim against dualism must also give an account of our experience of a distinction between ourselves and our intelligible world. To simplify, accounts of this distinction typically rest on representational or computational properties of the brain as material system, on a kind of “cognitivism.”⁷ But the discussion so far suggests something different. At least in the case of touch, our experience of a world over against us does not rest simply in peculiar material or computational properties of *one* term of a system, the brain, but in *modalities* of the *living movement* of the *body-world system as a whole*. The line between toucher and touched is not to be interpreted merely in terms of material, representations, or computation, but in terms of living movement.

In this non-dualistic fusion we find an echo of the ontology Merleau-Ponty was trying to work out in his unfinished manuscript *The Visible and the Invisible*. There he urges that philosophical interrogation must proceed from *within* our bodily involvement with the world. Philosophy cannot begin in a fictive realm of pure ideas, pure matter, or in a fictive division between our body and the world. Philosophy begins in the element of the “flesh,” which is the undivided stuff of ourselves and our world. Above we noted that phenomenology is driven by a sense of wonder that suspends traditional conceptual vocabulary in an effort to describe experience from within. We followed this phenomenological turn, via Carello and Turvey’s clue, to a description of the relation between toucher and touched from within our experience of movement. In *The Visible and the Invisible* Merleau-Ponty takes phenomenology’s turn even deeper, sinking from the stance of phenomenological description down into the being of perceiving itself as an event within the flesh. But this effort to sink into the depths of being opens the problem of describing how body, world, and perceived things appear as related yet distinct within flesh.

In the chapter, “The Intertwining—The Chiasm” in *The Visible and the Invisible*, one of Merleau-Ponty’s efforts to describe body, world, and things within flesh is as follows:

There is vision, touch, when a certain visible, a certain tangible, turns back upon the whole of the visible, the whole of the tangible, of which it is a part, or when suddenly it finds itself *surrounded* by them, or when between it and them, and through their commerce, is formed a Visibility, a Tangible in itself, which belong properly neither to the body qua fact nor to the world qua fact—as upon two mirrors facing one another where two indefinite series of images set in one another arise which belong really to neither of the two surfaces, since each is only a rejoinder of the other, which therefore form a couple, a couple more real than either of them. (16: p. 139)

The Tangible in itself, tangible things, are neither objects distinct from us, nor purely subjective representations within us. Rather, the Tangible in itself arises in a commerce between a part of the tangible, the body, and the whole of the tangible, the world. The image series that appears between two facing mirrors belongs to neither of the mirrors on its own, but to their coupling, which constitutes the field in which the series has its reality. So, too, suggests Merleau-Ponty, with the tangible: It has its reality neither in the body, nor in the world, but in a coupling whose commerce constitutes the field in which the tangible has its reality.

My analysis of wielding the racket echoes Merleau-Ponty's description. A resonant coupling of body and racket constitutes the field of movement in which the wieldiness of the racket appears for the wielding body. But Merleau-Ponty's description adds ontological depth to the problem we have been pursuing, for "The Intertwining—The Chiasm" dwells on the point that my body is a toucher only by being a touched. I feel the racket with my hand but, in doing so, I also feel my hand as a thing touched by the racket. My body is in tactile resonance with the racket only by being a toucher-touched, which means that the racket, in my coupling with it, is a toucher, too. This complicates the ambiguous relation of toucher and touched that we have been pursuing; each term of the relation doubles. I want to elucidate this complication briefly by returning to the question of how the fusion of toucher and touched constitutes an experience of the racket as a tangible in-itself within the field of living movement.

In the analysis of the racket we detect a tactile echo of the narcissism that Merleau-Ponty, in *The Visible and the Invisible* (in the sentences immediately following the quoted passage), claims is fundamental to all vision. There seems to be an unavoidable narcissism in touch: One touches the racket only by fusing with it, so in touching the racket, one does not merely feel the racket, but one also inherently feels *one's body* touching the racket and one's body *being touched* by the racket. In touching the racket, one can become immersed in *being touched*, without any other agency doing the touching; in resonating with things, one is opened to feeling oneself through an other that is fused with oneself. How can such a narcissistic fusion fission into a sense of touching something other than oneself? As David Michael-Levin argues, for Merleau-Ponty, narcissism is not a circuit of reflective self-absorption; it "is a seduction of the ego, drawing it out of itself into a process of education," into an encounter with something other (16: pp. 62, 66). One's body, we could put it, is seduced into coupling with a body that resonates with one's own, but that very resonance may turn out to be a reverberation with alterity. The very temporal structure upon which resonance depends opens the possibility of a disturbance, a lag, that can reverse from a resonant self-absorption into a reverberation with otherness. Our narcissistic involvement with the racket opens the possibility of its disturbance (a) from within, by varying the melodic contour invited by the resonant coupling of body and racket, or (b) from without, by intrusions enabled by that resonant coupling (e.g., hitting something off center).

It is inherent to our moving body that it go outside itself in a resonant coupling with the world, that it be ecstatic. But when this ecstatic circuit lags, our ecstatic resonance no longer appears as a self-involvement, but gives us a sense of an I over against an other. When Groucho sees Harpo as his own body, the seeing Groucho-I is ecstatic: It animates the seen Harpo's body with the Groucho-I; it looks back at itself through Harpo's body.⁸ In resonating with this image of his own seeing body, Groucho sees himself as a purely seeing body rather than a body to be seen by an other. But when Harpo lags out of resonance, this narcissistic

circuit is disturbed. Groucho is also a Groucho to be seen and can see an other as other. Something similar is manifest in the artwork, "Through a Looking Glass" by Douglas Gordon (1999), in which Robert de Niro's "Are you talking to me?" scene from Martin Scorsese's *Taxi Driver* is presented on two facing screens. The scene is of de Niro talking to himself in a mirror, so with de Niro's body projected on two facing screens, we have something that approximates to the "hall of mirrors" in the above quote from Merleau-Ponty: Gordon's artwork belongs "really to neither of the two surfaces, since each is only a rejoinder of the other, which therefore form a couple, a couple more real than either of them." But the footage is slightly altered so that the scenes move in and out of synch in subtle ways. As the scenes lag, we shift from experiencing one self-absorbed de Niro whose monologue with himself in the mirror ecstatically resonates across space, to experiencing two de Niro bodies, each on its own surface, that are in reverberant dialogue-combat via mirrors. De Niro is seduced into a narcissistic self-involvement that is implicitly an involvement with himself as an other, and this becomes explicit as the images lag out of synch.

What our study adds to Merleau-Ponty's consideration of these points about flesh is the possibility that the melodic contour of our moving fusion with things, a temporal aspect of our tactile immersion in the world, is crucial in constituting our experience of either (a) ourselves in a narcissistic tactile-fusion with things, or (b) a fission in which "we" touches things other than ourselves.

The distinction between these two sorts of experience interestingly echoes Heidegger's distinction between the *zuhanden* (the ready-to-hand) and the *vorhanden* (the present-at-hand) (8). When the resonant modality of our coupling with the racket is emphatic, the racket is ready-to-hand, absorbed into our projects, and we are inattentive to the racket's own characteristics. A disturbance of our resonant relation, emphasizing the reverberant modality of our living movement with the racket, can give us an encounter with something akin to the *Vorhandenheit* (presence-at-hand) of the racket, its own characteristics beyond our immediate projects. And this shift from the *zuhanden* to the *vorhanden* correlates with a disturbance of the living engagement of body-racket with the world. Perhaps these observations open the way for conceiving Heidegger's distinctions as modalities of our living movement in the world, even conceiving living movement as integral to interpretation. But these suggestions raise all sorts of problems that cannot be addressed here.

Putting aside ontological echoes, the main claim that I have made is that the experiential difference between feeling oneself fused with a thing in hand and feeling the tactile properties of the thing itself correlates with melodic contours of one's movement. The unity and distinction of toucher and touched appear as correlative to—perhaps constituted by—the melodics of movement. This is a grand claim and needs further conceptual underpinnings and analysis. At the very least, it requires an account of the temporality of the perceiver, since this temporality underlies the possibility of experiencing dynamic patterns over time. But the framework established so far has the advantage of demanding a reconfiguration of the traditional question about the temporality of the perceiver. What is at issue is the *temporality of a moving body that deploys melodic patterns in the course of living movement*. The perceiver is not an inner homunculus that collates sensory data and stamps it with the mark of intelligibility. The perceiver is a mover and shaker who

moves in a world containing things that already have a tactile-intelligibility for the moving body. What a perceiver does is couple with the possibilities of things, move them in melodic patterns, and feel the reverberations and resonances of that patterned movement. In pursuing intelligence within movement we may have to turn from the temporality of the transcendental subject to a temporality inherent in the dynamics of a body being in the world.⁹

References

1. Appelle, S. "Haptic Perception of Form: Activity and Stimulus Attributes." In: *The Psychology of Touch*, Heller, M.A., and Schiff, W. (Eds.). Hillsdale, NJ: Lawrence Erlbaum, 1991, pp. 169-188.
2. Buytendijk, F.J.J. "Some Aspects of Touch." *Journal of Phenomenological Psychology* 1(1):99-124, 1970.
3. Carello, C., and Turvey, M.T. "Rotational Invariants and Dynamic Touch." In: *Touch, Representation and Blindness*, Heller, M.A. (Ed.). Oxford: Oxford University Press, 2000.
4. Cole, J. *Pride and a Daily Marathon*. Cambridge, MA: MIT Press, 1995.
5. Dillon, M.C. *Merleau-Ponty's Ontology*. Bloomington: Indiana University Press, 1988.
6. Gibson, J.J. "Observations on Active Touch." *Psychological Review* 69:477-491, 1962.
7. Gibson, J.J. *The Senses Considered as Perceptual Systems*. Boston: Houghton Mifflin, 1966.
8. Heidegger, M. *Being and Time* (Macquarrie, J., and Robinson, E., Trans.). New York: Harper and Row, 1962.
9. Heller, M.A., and Schiff, W. (Eds.). *The Psychology of Touch*. Hillsdale, NJ: Lawrence Erlbaum, 1991.
10. Husserl, E. *Cartesian Meditations* (Cairns, D., Trans.). Dordrecht: Kluwer, 1991.
11. Kadar, E., and Effken, J. "Heideggerian Meditations on an Alternative Ontology for Ecological Psychology: A Response to Turvey's (1992) Proposal." *Ecological Psychology* 6:297-341, 1994.
12. Katz, D. *The World of Touch*. Hillsdale, NJ: Lawrence Erlbaum, 1989.
13. Klatzky, R.L., Lederman, S.J., and Metzger, V.A. "Identifying Objects by Touch." *Perception and Psychophysics* 37:299-302, 1985.
14. Lederman, S.J., and Klatzky, R.L. "Hand Movements: A Window into Haptic Object Recognition." *Cognitive Psychology* 19:54-64, 1987.
15. Merleau-Ponty, M. *Phenomenology of Perception* (Smith, C., Trans.). Atlantic City, NJ: The Humanities Press, 1962.
16. Merleau-Ponty, M. *The Visible and the Invisible* (Lingis, A., Trans.). Evanston, IL: Northwestern University Press, 1968.
17. Núñez, R., and Freeman, W.J. (Eds.). *Reclaiming Cognition: The Primacy of Action, Intention and Emotion*. Thorverton, UK: Imprint Academic, 1999.
18. Ramachandran, V.S., and Hirstein, W. "Three Laws of Qualia: What Neurology Tells Us About the Biological Function of Consciousness, Qualia and the Self." In: *Models of the Self*, Gallagher, S., and Shear, J. (Eds.). Thorverton, UK: Imprint Academic, 1999, pp. 83-112.
19. Russon, J. "Embodiment and Responsibility: Merleau-Ponty and the Ontology of Nature." *Man and World* 27:291-308, 1994.
20. Schiff, W., and Foulke, E. (Eds.). *Tactual Perception: A Source Book*. Cambridge, MA: Cambridge University Press, 1982.

21. Turvey, M.T. "Affordances and Prospective Control: An Outline of the Ontology." *Ecological Psychology* 4:173-187, 1992.
22. Turvey, M.T., Shockley, K., and Carello, C. "Affordance, Proper Function, and the Physical Basis of Perceived Heaviness." *Cognition* 73:B17-B26, 1999.
23. Varela, F.J. "The Specious Present: A Neurophenomenology of Time Consciousness." In: *Naturalizing Phenomenology: Issues in Contemporary Phenomenology and Cognitive Science*, Petitot, J., Varela, F.J., Pachoud, B., and Roy, J.-M. (Eds.). Stanford, CA: Stanford University Press, 1999, pp. 266-314.

Note

¹On dynamic touch, see 1, 6, 7.

²Carello and Turvey argue that it is likely that we feel the length of our *own* limbs in a similar way. Preliminary data supports this claim (3: pp. 46-49). Also, see their result about perceived heaviness (22).

³Even when I appear to be holding the racket steady, I am in fact engaged in the movement of holding up the racket and keeping it steady over time. I could of course calculate the dynamic possibilities of the racket and *think* about those possibilities as present in the instant, but even then, possibility would be indexed to time. And no matter how I think about the racket's possibilities, touching them, perceiving them, takes time.

⁴My thanks to Maxine Sheets-Johnstone, in her comments on an earlier version of this paper, for drawing my attention to reverberation as a way of describing this phenomenon.

⁵These experiential descriptions are supported by informal experiments I conducted by singing into a microphone hooked to an Alesis MidiVerb4 effects processor whilst listening on studio headphones. I used single configuration reverb effects, modifying the decay, pre-delay, density, and diffusion settings.

⁶Cf. the difficult experience of I.W. (4).

⁷Cf. 17 for a critical discussion of cognitivism.

⁸Cf. the phenomena of the "phantom nose" and the "phantom head" noted in 18; in the latter, the subject experiences her voice emanating from a model head equipped with a mirror that reflects the subject's lip movements.

⁹Cf. 23 for an effort that might be heading in this direction.

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