Merleau-Ponty on movement and relativity

Or, the irrepressible consciousness of Einstein's little finger

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1 | Introduction

In a letter to Max Born from 1947, Einstein laments the failure to forge contact between quantum physics and reality. Despite the radical advancements of quantum over classical physics since the turn of the century, he wrote that he found himself still grasping for "a theory whose objects, connected by laws, are not probabilities but considered facts".[1] As Merleau-Ponty will put it in an essay from 1955, the year of Einstein's death, the conviction is that reality, whatever its intrinsic properties, cannot be a mere "tissue of probabilities";[2] yet—quoting Einstein—"[he] cannot base [this] on logical reasons, but can produce only [his] little finger as witness". "I can offer no authority [for my conviction]", Einstein admits, "which would command any kind of respect outside of my own hand".[3]

As Born's response attests, Einstein's meaning is hardly clear.[4] The context suggests it is an attempt to refuse what he so famously described as

1 Albert Einstein to Max Born, 3 March 1947, *The Born-Einstein Correspondence*, 158.

2 Merleau-Ponty, "Einstein and The Crisis of Reason", 193.

3 Merleau-Ponty is here quoting from Einstein's letter to Born, offering a citation to T. Kahan's *La Philosophie d'Einstein,* which dates the letter to 7 November 1944. I cannot find a letter with this date in the collected correspondence, and the quoted passage so closely resembles the 3 March letter, that I think it must be a misattribution. Note, however, that the translation that appears in Merleau-Ponty's essay differs somewhat from the one collected in the *Correspondence*. The former reads: "I am unable to invoke any logical argument to defend my convictions, unless it be my little finger, the sole and feeble witness to an opinion buried deep under my skin" (see "Einstein and the Crisis of Reason", 193).

4 Indeed, Born and Einstein spent some time in a subsequent letter quibbling over the proper translation of the intended image (the reference to the authority of Einstein's "hand" is a modification from Born; Einstein preferred "skin" to "hand", and the reference to "skin" survives the translation into French from which Merleau-Ponty himself draws) (Max Born to Albert Einstein, 31 March, 1948, *The Born-Einstein Correspondence*, 165).

"a dice playing God". For his part, Merleau-Ponty sees it as Einstein's striving to hold onto "both ends of the chain"[5]: it is as if the "creative physicist"[6] is grasping, with one hand, onto the ideal of "a truth set down in the world"[7] while deploying "wild speculations" [8] with the other. The crisis, on his view, is not, then, the particular problem that the world (according to the "revolutionary science"[9]), is something like an aggregate of statistical probabilities, as that when Einstein attempts to conjoin "speculation and reality",[10] the tools of his science spin and sputter at a frustrating remove. It is in this gap that we discover what Merleau-Ponty calls Einstein's "irrepressible consciousness"[11] of reality; it is here, in other words, that his "risky certainty"[12] of the world finds its expression, not in the form of an argument or a theory built on "logical reasons", but as the tingling of his hand.

Now, I cannot speak on behalf of any rival theory here: "the philosopher", Merleau-Ponty warns, "should not pretend…to arbitrate for science",[13] and, in any case, "the physicists of the next generation for the most part let the first end [of the chain, that is, the ideal of a truth

5 Merleau-Ponty, "Einstein and the Crisis of Reason", 193.

6 Merleau-Ponty, "Einstein and the Crisis of Reason", 193.

7 Merleau-Ponty, "Einstein and the Crisis of Reason", 192.

8 Merleau-Ponty, "Einstein and the Crisis of Reason", 193; Merleau-Ponty is paraphrasing Einstein. The full quotation from Einstein appears earlier in the essay as follows: "I believe in a world in itself, a world governed by laws that I try to apprehend in a wildly speculative fashion" (192); while it is attributed to the letter of 7 November, 1944, the correct reference here is to a letter to Born dated 7 *September* 1944, in which Einstein—foreshadowing the sentiment he later expresses to Born in 1947—writes the following: "We have become Antipodean in our scientific expectations. You believe in the God who plays dice, and I in complete law and order in a world which objectively exists, and which I, in a wildly speculative way, am trying to capture. I firmly believe, but I hope that someone will discover a more realistic way, or rather a more tangible basis than it has been my lot to find. Even the great initial success of the quantum theory does not make me believe in the fundamental dice-game, although I am well aware that our younger colleagues interpret this as a consequence of senility. No doubt the day will come when we will see whose instinctive attitude is the right one". (Albert Einstein to Max Born, 7 September 1944, *The Born-Einstein Correspondence*, 149).

9 Merleau-Ponty, "Einstein and the Crisis of Reason", 193.

10 Merleau-Ponty, "Einstein and the Crisis of Reason", 192.

11 Merleau-Ponty, "Einstein and the Crisis of Reason", 193.

12 Merleau-Ponty, "Einstein and the Crisis of Reason", 193.

13 Merleau-Ponty, *Themes from the Lectures at the Collège de France 1952*–1960, 84.

conjoining physical reality] go".[14] But I would like to linger for a moment on the image of Einstein's hands. What, exactly, is the world attested by the tingling of his skin? And what are we to make of a truth whose "sole and feeble witness" is the physicist's little finger? To answer this, or to answer in these terms, is not to arbitrate for science, but to wander about at its margins. Yet we find ourselves on familiar terrain. For, we discover what Merleau-Ponty (in the context of a commentary on Husserl) describes as a paradox—or, rather, an *apparent* paradox: of a physical reality that rests, as he puts it, "on the carnal".[15] It is this apparent paradox that I want to explore. Specifically—and with Einstein's carnal intuition as a guide—I want to show how we might dissolve that paradox by invoking what Merleau-Ponty refers to as earth's "entanglement" with mind. This will involve some close consideration of both Husserl's and Merleau-Ponty's provocatively anti-Copernican insistence that the earth does not move. But if I can be convincing, it will have the effect of vindicating the testimony of Einstein's little finger. It will credit it, in other words, with a genuine phenomenological insight "buried deep"—as Merleau-Ponty paraphrases—"under [Einstein's] skin".[16]

2 | Some Comments on the Relation of Phenomenology and Science

Let me start with some general comments about how Merleau-Ponty conceives the relationship of phenomenology and science. I'll then come back to "Copernicanism" and the problems of perception and motion it seems to pose.

In a well-known passage from the preface to *Phenomenology of Perception*, Merleau-Ponty compares phenomenology and science—or seems to—in a negative way. As he writes, phenomenology is first and foremost a "disavowal of science" in the sense, at least initially, that it seeks to "describe" and not "analyz[e] or explain…".[17] An implication, at least to his uninitiated readers, seems to be that the two operate on different planes: the former remains at the level of experience, describing human action and perception as it unfolds in the context of everyday life; the

14 Merleau-Ponty, "Einstein and the Crisis of Reason", 193.

15 Merleau-Ponty, *Nature: Course Notes from the Collège de France*, 77f.

16 Merleau-Ponty, "Einstein and the Crisis of Reason", 193; cf. n. 3 above.

17 Merleau-Ponty, *Phenomenology of Perception*, lxxi.

latter burrows beneath the world of perception, finds its foothold in "reality", and then expresses their relation in the language of reason or cause.

A problem, of course, is that this cannot be exactly what Merleau-Ponty has in mind. For one, he explicitly speaks of *disavowal*—a remark that is strange if we take him at his word: even the casual reader will see that Merleau-Ponty productively engages with the sciences, including—as I will center here—with both classical and quantum physics, throughout his career. What's more, the latter (that is, physics) traffics in descriptions too, though their ultimate status is a matter of considerable dispute. And we cannot get around this apparent collision by saying that physics describes, not experience, but an independent reality. For, in his discussion of quantum mechanics in the *Nature* course, Merleau-Ponty speaks approvingly of what the physicist Paulette Destouches-Février calls a "human physics"[18]—one whose notion of reality (it will be a structural reality) "transcends the opposition object-subject".[19] So, even if we try to sharpen the difference by saying that the descriptive models of physics are meant to predict, as opposed to "merely" describe, there remains a muddying of the contrast with which we began. This is only underscored by phenomenology's claim to *be* a "rigorous science".

So, what, exactly, should we take Merleau-Ponty to mean? I'll suggest two things: The first is that, through all of his close and productive engagements with science—and he will find striking points of contact between embodied phenomenology and those "scandalous" discoveries of quantum mechanics that so unmoor Einstein—what Merleau-Ponty means to do is turn the traditional relation of philosophy and science on its head. Importantly, however, the ground on which science comes to rest is one that cannot be captured in real *or* ideal terms. And so, in this context, it turns out that Merleau-Ponty's concern is less with science than with the exactness of scientific concepts, with the way in which science seems, in other words, to impose onto the spectacle of the experienced world the sharp outlines of conceptual thought. The second point follows from this, which is that every science, for Merleau-Ponty, is a human, historical science. "There is not one of our ideas or our reflections", he

18 Destouches-Février, *La Structure des theories physiques*, 313; quoted in Merleau-Ponty, *Nature*, 97

19 Merleau-Ponty, *Nature*, 98, quoting Destouches-Février, Déterminisme *et indéterminisme*, 142f.

argues, "which does not carry a date…or which transcends time".[20] So understood, it is important that science not be said to discover "eternal" truths. This is why he withdraws his assent from descriptive or explanatory claims, if these are spoken in a mode of, let's say, ultimate authority. When we put these points together, we see that what we have, in the end, is not so much a disavowal of science, as what Merleau-Ponty calls a "deepening of the initial definition of philosophy".[21] In fact, when the problem of their relation is brought into view in the right way, "the difference between philosophy and science is imperceptible".[22]

2.1. On Geography

A lot turns, of course, on what precisely we take this to mean. Let me approach through an oft-invoked comparison of science with geography.

As Merleau-Ponty reminds us in a working note, geography represents relations of physical elements in an ideal space. But this doesn't mean that it stands outside of time. The geographer's map is "an inscription of history",[23] where the line rendering a river traces a real, heaving thing that still carves its way through the mountainside, could be shrunk by drought, diverted by an avalanche, deposits sediment, fossils, carrion, rock, and bone. The line on the map, in other words, is not tracing a river-in-general, but this river now.

By emphasizing this, Merleau-Ponty makes two complementary points: The first is that it is in the landscape that the river, say, or the mountain becomes an idea. Is there "where we first learned what a forest, a meadow, or a river is",[24] where I discover— as I move through the open terrain and as these landmarks remain for me the same landmarks—what it is for something to be an object for sight and for thought in the form of a unity. And on this order of experience, I do not grasp the Tiber as a river through the line, but the other way around.

The second point is that the landscape always exceeds the map representing it. This is supposed to count as a warning for any formal science: geography depends on the actual landscape for its sense. It can

20 Merleau-Ponty, *The Primacy of Perception*, 41.
21 Merleau-Ponty, "Course Notes: Husserl at the Limits of Phenomenology", 67.
22 Merleau-Ponty, "Course Notes: Husserl at the Limits of Phenomenology", 67.
23 Merleau-Ponty, *The Visible and the Invisible*, 259.
24 Merleau-Ponty, *Phenomenology of Perception*, lxxii.

only guide me from here to there, its map can only function as a "notation of reality", if the geometer's line or the topographer's circles are fleshed out, so to speak, as I make my way across the terrain. And since this bend in this river is smoothed away by the line, we could never recompose the landscape from the map.

Now, let me pause for a moment to underline that, in making geography the stand-in for science, Merleau-Ponty is trying to show that the precision of scientific representation is artificial, is an imposition in the sense that no science carves the landscape at its joints, not because we have not yet got our concepts right, but because the landscape is not a jointed thing. The same river does not have—either on the plane of ideas or on the ground—the same boundaries for the rower as for the prospector or fisherman (for the latter, it includes the riverbed or the shore). Yet this ambiguity is erased when the perceived river, with its fluid limits, is enclosed by the sharp conceptual boundaries of the river-in-general or reduced to the same line. This is *why* we cannot recompose the landscape from the map: that line cuts through the "sensible soil"[25] of a reality that discloses itself to this observer at this moment in one way, but differently to another. This is also why, I will add here, Merleau-Ponty insists that every science is an historical science. As he reminds us in *The Structure of Behavior*, even the laws of physics, which render predictable the motions of bodies, are not eternal, mathematical truths, even if we could imagine that they are how the world might disclose itself in its fullness to a proverbial "God's eye view". They are not "eternal", in other words, because they "remain valid only so long as the cosmological structure on which [they] are founded endures",[26] they find their sense, like the *ideas* of physics, in the actual configuration—the landscape, we could say—of the universe: were the earth to be knocked off its axis, or to slow its rotation to a halt, that shift in the delicate tension of centrifugal and centripetal forces might conceivably send bodies spinning out into the stratosphere, and our understanding of gravity would be turned upside down. This is why, then, I said that science comes to rest, for Merleau-Ponty, on a different ground: it does not have as its "always presupposed foundation"[27] a stable infrastructure composed of ideal terms (space, time, number, mass), but rests, as he puts it, on ground in "the literal sense": it is "built on the

25 Merleau-Ponty, *Primacy of Perception,* 160.

26 Merleau-Ponty, *The Structure of Behavior*, 138.

27 Merleau-Ponty, *Primacy of Perception*, 13.

earth".[28] To think otherwise is to confuse the map with the territory. But understanding the significance of this point requires us to "renew" a sense of "the Earth that the Copernican man forgets".[29]

3 | The Earth Does Not Move

The Copernican overturning of the Ptolemaic universe set the earth in motion 'round the sun. And it did so, as Kant famously put it, "in a manner contradictory of the senses".[30] Part of Kant's point, of course, is that the ground beneath my feet does not *feel* as if it moves. To the contrary, I experience it as stable or immovable, and *the stars* circulate. Copernicus' "daring" then (to use Kant's term) was to transpose that stellar motion to the earth-bound perceiver, "to seek the observed movements, not in the heavenly bodies, but in the spectator".[31] This introduces into science (and, of course, into philosophy) a schism between the first-hand testimony of the senses, on the one hand, and our understanding of the workings of the universe, on the other. This is why, for instance, Nietzsche calls Copernicus "the greatest and most successful opponent of ocular evidence",[32] sends the madman to ask: "Who gave us the sponge to wipe away the whole horizon"?[33]

I have tried at least in outline to hint at how Merleau-Ponty might conceive of the relation between these two "worlds"—between the world of thought or knowledge, on the one hand, and perception, on the other. But a fact would seem to straddle this divide: whether motion really is in the earth or in the stars, in order to perceive it, to measure it, to conceive something as moving in the first place, requires a point of reference.

Let me start with the classical problem that this poses for science. I'll borrow from Newton's example. Consider a ship: a ship at sail is in motion; a sailor standing still on its deck is at rest. Yet the sailor is also in motion in a different sense; he is carried along by the ship. How could we say, then, that the sailor is in motion or at rest? Newton's answer, of course, turns on distinguishing between relative and absolute motion and relative

28 Merleau-Ponty, "Husserl at the Limits of Phenomenology", 67.
29 Merleau-Ponty, "Husserl at the Limits of Phenomenology", 69.
30 Immanuel Kant, *Critique of Pure Reason*, Supp. 2, 696, n.1.
31 Immanuel Kant, *Critique of Pure Reason*, Supp. 2, 696, n.1.
32 Nietzsche, *Beyond Good and Evil*, 9.
33 Nietzsche, *The Gay Science*, 181.

and absolute rest. So, we say, for instance, that the sailor is at rest relative to the position of the ship, but since he also moves with it, this is not an absolute rest. The question Newton must answer, then, is what ultimately fixes the coordinates with respect to which any rest or motion could be relative or absolute in the first place? Certainly, it can't be earth. After all, the earth moves. Newton reasons that there must be an Absolute Space. What the term "Absolute" is supposed to capture here is that, for Newton, there is a stable system functioning as that fixed frame of reference. On this picture, Absolute Space contains within it a shifting network of moving bodies—the sailor, the ship, the island, the earth, and so on—and they move in the flow of Time, but Space itself does not move. (For Kant, of course, this solution is intolerable: he locates Space and Time in intuition as a pure forms).

Now, let us pause to zero in on that network of bodies. Copernicanism inserts the earth in motion into that network. But importantly, this displaces rather than eliminates the idea of a center of Space. Thus, for nearly 400 years, it was widely understood that the sun around which earth revolved was fixed at the mid-point of the universe and, in Newtonian terms, was at absolute rest. It was not until 1917 that this heliocentric picture was itself displaced by a galactocentric one that set the sun askew roughly 50,000 light years from its center. This sideways sliding of the universe, however, entailed no corresponding slippage of our concepts; if the absolutely resting center is something other than the sun—say, if it is the galaxy—so be it. But what if the universe has no center at all? What if the universe is acentric? Which point of reference could we take as absolute here? The very notion of an Absolute Space would lose its significance. (We can hear the faint whisper of Nietzsche's madman here: "Whither are we moving? Away from all suns? Are we not plunging continually? Backward, sideward, forward, in all directions? Is there still any up or down"?[34])

Now, again, I don't intend to "arbitrate for science"; but the possibility of an acentric universe brings into view, at least in outline, what is radical, and potentially disorienting, in Einstein's relativity. His supposedly shocking proposals for our understanding of motion—there is no privileged frame of reference, no absolute motion, and indeed, no absolute Space or Time—are consistent with a heliocentric or a galactocentric picture, but they are also consistent with one on which there is no center to the universe at all. For it posits no absolutes.

34 Nietzsche, *The Gay Science*, 181.

Of course, the absence of absolutes does not mean the absence of invariants: The internal clock, so to speak, of objects or observers in motion; the mass of a body at rest; the interval—the distance—between events in spacetime…*these* are invariant, and essential for the descriptions Einstein gives of *how* bodies move. (We are not, as Nietzsche might have it, "unchained from the sun".[35]) Even so, the Einsteinian universe has no points of absolute motion or absolute rest, only relative ones. And here, two striking things happen: in science, Copernicanism becomes a "mere" artifact of history. For, as Mach has argued, "the motions of the universe are the same whether we adopt the Ptolemaic or the Copernican mode of view".[36] Which is to say, if what matters for purposes of our physics is *relative* motion, rather than the fact of some particular body's being in motion or at rest, then it does not really matter at all if earth moves. A genuine theory of relativity should therefore dissolve the apparent conflict between our knowing the earth is in motion and our perceiving the earth as still: these can be consigned to different orders, different chosen points of reference in perception or thought.

Phenomenologically, however, we discover that this theory depends for its sense on experience that remains *pre-Copernican*. As Husserl will argue, the exchange of grounds we must be able to affect in thought in order to arrive at a *theory* of the relativity of motion—in fact, to arrive at the very idea of bodies, of movement, of rest, of location in the first place—has necessarily as its experiential ground-basis an earth that does not move. Showing what this means for the relationship of phenomenology and science is the problem that he takes up in an enigmatic 1934 text.[37]

Now, as we will see, Merleau-Ponty also returns to this late Husserlian text.[38] As he will argue, what Husserl describes there is an important story about the limits of phenomenology and its intertwining with the limits of science. But Husserl, he thinks, misses the ontological implications of this view. To tease them out, I will begin with the Husserlian story.

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35 Nietzsche, *The Gay Science*, ¶125.

36 Mach, *The Science of Mechanics*, 281; quoted in Kerszberg, "The Phenomenological Analysis of the Earth's Motion", 182.

37 Edmund Husserl, *Foundational Investigations of the Phenomenological Origin of the Spatiality of Nature: The Originary Ark, the Earth, Does not Move*, in Merleau-Ponty, *Husserl at the Limits of Phenomenology*.

38 Merleau-Ponty's most sustained engagement with the text appears in *Husserl at the Limits of Phenomenology*. But see also his discussion in the *Nature* course (76–79) and in a Working Note to *Visible and the Invisible*, 258f.

3.1. Husserl's Foundational Investigations of the Phenomenological Origin of the Spatiality of Nature: The Originary Ark, the Earth, Does not Move

Recall, in the account I gave of the shifting "center" of the universe, "science" (if I can personify it for a moment) has left behind a supposedly primitive mode of view (one that was, perhaps, overly credulous of the testimony of the senses), and replaced it, bit by bit, with a different conception of the universe. This is supposed to be a narrative of chronological progress, of the displacement of one center by another as the universe slips more clearly into view. As a narrative of progress, then, we do not go back. But phenomenologically, we might tell this story differently, try to excavate, as it were, the origins of this worldview in consciousness. On this version, we would have to show that we began with a "primordial shape of [earth's] representation"[39] as a resting ground, and we built up out of it a "scientific" representation of earth as a spherical body that moves through space, until finally, in possession of this higher concept, "We Copernicans, we moderns", as Husserl calls us, can say this: "The earth is not the 'whole of Nature'; it is one of the stars in the infinite space of the world".[40] "Copernicanism" for Husserl, does not stand, then, for the specific thesis of Copernican heliocentrism. It stands for an acquired consciousness of the earth that has overcome what we might call its "primordial shape". But how did our consciousness of the world acquire its Copernican shape? How did we "acquire the right to accept the earth as a body, a star among stars"?[41]

One way of telling the story would be straightforward and simple: We acquired our understanding of earth as a moved body by a kind of inductive transference of sense. On this story, we recognize how consciousness constructs, in the sense of building up around a perceptual core, a world comprising bodies with "their own essential contents at rest or in motion, in change or nonchange"[42]; I can then come to have these bodies as objects of thought by delimiting how the

39 Husserl, *Foundational Investigations*, 118.
40 Husserl, *Foundational Investigations*, 118.
41 Husserl, *Foundational Investigations*, 128.
42 Husserl, *Foundational Investigations*, 121.

actual intuition of them would be filled out. Thought here is initially something like perception in the conditional. From this we can come to grasp that the earth, too, is a body. Like the bodies it carries along on its surface, after all, earth has "its own essential contents", and we can intuitively "fill it in" as a whole by cooperatively "pacing it out"—indeed, we have discovered and mapped out throughout a long history of earthly exploration the full surface of the globe. Told in this way, the road to Copernicanism begins with the discovery that the earth—whose ends we never seemed to reach in exploration, but that, through a kind of collective effort, can be experienced completely—is a sphere, and it finally becomes a body for consciousness when, conceiving it from elsewhere, it can finally be set loose into space.

But a problem is concealed here; it concerns the relativity of motion. For, as Husserl acknowledges, "a certain relativity of motion and rest is already formed" in the world of experience.[43] I see, things, for instance, moving relative to the resting ground of my body, or at rest as I move around them on a stable ground. But how can we arrive from here at a theory of the relativity of motion on which I could conceivably exchange my ground?

The problem is two-pronged. First, the actual appearance of bodies in experience—the experience, that is, of extended things, with their place, in motion or at rest—is always an appearance on the basis of some ground. This is meant, on the one hand, in the sense (which Merleau-Ponty famously takes up in *Phenomenology of Perception*) that things can appear for me only against a background against which they stand out; as he puts it, "the perceptual 'something' is always in the middle of some other thing"[44] and that is what it is to have a perception at all; on the other hand, it is meant in the literal sense that bodies—physical bodies—can be seen in their dimensional fullness, and as unities, only by a subject who *moves*. Here is Merleau-Ponty on this point:

> When I walk around [a body], the different aspects under which it presents itself to me could not appear as profiles of a single [body] if I did not already know that each of them represented the [body] as seen from here or as seen from over there, nor if I were unaware of my own

43 Husserl, *Foundational Investigations*, 121.

44 Merleau-Ponty, *Phenomenology of Perception,* 4.

> movement and of my body as identical throughout the phases of this movement.[45]

The issue, of course, is that *perception* of bodies here seems to presuppose the *idea* of a body. And how do we acquire the idea of a body in the first place? This is the question Merleau-Ponty will take up.

But Husserl's question begins, as it were, at a higher level. What concerns *him* is that we do not leave behind the dependence on an experiential ground when we conceive of something as a body moving through space. Here is Husserl: "When I 'conceive' the earth as a moved body, I use a ground which all experience of bodies, and hence all experience of continuing to be at rest and in motion, is related".[46] In other words, my concept of the earth as a moved body includes the ground in relation to which we can say that the earth moves. And what is that ground if it is not, as it is for experience, the earth?

Now, we have seen how the history of physics has resolved this second problem: Newton, for instance, has posited the Absolute background of Absolute Space. In Einstein, the ground is not space, but bodies or positions in spacetime playing the role of exchangeable grounds. But this does not resolve the broader *phenomenological* problem; instead, it multiplies. Where can I stand in Absolute Space in order to have the earth as a body that moves, except on another body and *as* a body? Even then, I could not perceive the earth as a whole that moves. So, I have to conceive it. But on what ground? The ground of experience on which conception rests is an earth-ground. How, then, could I be transported to another ground for my thinking, perceive from its surface, without taking with me the original earth-as-ground that has, in a sense, become sedimented in

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45 Merleau-Ponty, *Phenomenology of Perception,* 209. In the original example, Merleau-Ponty describes perceiving his apartment. He then connects his perception of the apartment (both from within and "from above", using the example of a floorplan) to the *perception* and then the *conception* of a cube. He does this, as I read him, in order to make the case, first, that both perception and conception are embodied activities and, second, that any "concept" or "idea" through which a succession of embodied perceptions could be unified is learned *in* perception (this explains why he begins with the perception of his apartment: he is playing with its formal identity with a cube as enclosed on 6 sides). Since I am making the more general point, I have modified the reference to draw out what I take to be the underlying claim about the perception of unities *as* unities, and of bodies as physical unities.

46 Husserl, *Foundational Investigations*, 121.

thought—an earth-basis that does not move? Again, the problem multiplies: even if I go, in actual fact, to the moon or to Mars and see Earth in its actual rotation, I will go there in an Earth-born body whose world of thought is built on the "core" of its own oriented perception. Indeed, even if I were born on the moon or on Mars, I would be tied to the history of Earth—of the Earth-that-goes-to-the moon or goes-to-Mars. The possibility that Earth could actually be conceived as a body that moves as a whole, without this possibility being anchored in a kind of pre-Copernican earth-ground, is opened up here only when we begin to imagine other Earths, with their own humanities, and thus their own histories, elsewhere in the infinite space of the universe—which is to say, only when we imagine other consciousness for whom the earth that is the homeland of my thought is always in motion.

And here, of course, we butt up against the basic presuppositions of a naturalistic astrophysics. As Husserl puts it:

> In these sciences of the infinity of the totality of Nature, the mode of observation is usually one by which carnal bodies are only accidentally particularized bodies which can therefore also conceivably be completed ignored so that a nature without organisms, without animals and humans is possible.[47]

This is a physics, in other words, not of the universe as it is for human consciousness but of the universe itself. And against the current of this naturalistic ambition, we have just now inserted as the condition of possibility for physics at all a consciousness that perceives the earth and that *on this basis* can conceive it as a moved body. Science and philosophy come apart here.

This cleaving is, for Husserl, the basic phenomenological paradox: The long prehistory of human life unfolds on the surface of a physical earth in the infinite of space of the universe. Perhaps it *really is* a body, a mass, in space-time. In any case, the birthplace of humanity is on Earth, we are tied to the earth. And since, in order to conceive of the earth, of that body, of its movement, of its 'place'—even if this is a relative location in space-time—is to engage in a process whose "subjective starting point and ultimate anchorage [is] in the Ego",[48] one whose homeland, whose "original ark" as

47 Husserl, *Foundational Investigations*, 128.

48 Husserl, *Foundational Investigations*, 120.

Husserl puts it, is Earth—science and its objects are swallowed up as moments of the history of consciousness that makes them possible. Since this consciousness, Husserl reminds us, has sedimented in it an experience of the earth that science itself aims to describe, we call upon phenomenology to dig it out.

What one finds there appears at first, Husserl acknowledges, like the height of "philosophical hubris". Is it not "crazy", Husserl asks, "to contradict all natural scientific knowledge of actuality and real possibility",[49] to insist on the insertion of the human observer into the possibility of physics considered as an objective science of nature, of things as they are? to say that "the ego lives and precedes all actual and possible beings, and anything existent whether in a real or irreal sense"? [50] After all, "it is possible that entropy will put an end to all life on earth, or that celestial bodies will crash into the earth, etc".[51] His answer sustains the paradox: We can say, in a certain voice, that perhaps this disaster would not destroy the earth of physical science. But in another voice, we must acknowledge that it would mean the end of the world. "What sense", he asks, could the collapsing masses in space, in one space constructed *a priori* as absolutely homogenous, have, if the constituting life were eliminated"?[52]

So, what is the way out? Can we overcome phenomenologically the analysis that has led Husserl, as Merleau-Ponty puts it, to leave "next to one another (correlatively) the realist-causal order and the idealist-constituting order" in the form of a "crazy paradox"?[53] His answer is "yes". But only provided that we take the appeal to our earth-ground literally.

Recall, as we make this pivot, that Merleau-Ponty himself imagined cosmological disaster—the planetary bodies change their relative positions; Earth ceases to spin; our understanding of the laws of physics empties out, our world turns upside down. But notice that, in these cases, what is at issue, what brings about the disaster, is not the elimination of constituting consciousness through the elimination of conscious life. It is the elimination of earthly consciousness through a shift in the landscape of the universe that give it its sense. It is here, in the landscape, that he finds his

49 Husserl, *Foundational Investigations*, 131.
50 Husserl, *Foundational Investigations*, 131.
51 Husserl, *Foundational Investigations*, 131.
52 Husserl, *Foundational Investigations*, 131.
53 Merleau-Ponty, "Husserl at the Limits of Phenomenology", 76.

anchor, his Absolute "brought down to earth".[54] As he puts it, the "This structural or concrete *a priori*" on which science and philosophy depend, "is neither a Kantian category nor even a Hegelian idea;"—it is earth, understood in the sense of soil, of ground "in the literal sense".[55] To recognize what becomes, for Merleau-Ponty, our inescapable rootedness in our primordial soil is to seek, as he puts it, "in the depth and not the height", to do, not exactly philosophy, but a kind of "archaeology".[56]

3.2. Merleau-Ponty on Movement and Relativity

It remains to be seen, of course, how this literal appeal to earth, to soil plays out. Is this earthy basis the reality to which Einstein's little finger attests? Let me turn to that now.

Let's come back one last time to the landscape we visited in our discussion of geography a moment ago. This time, I am walking across that open terrain, and I pause to look around. In every direction the perceived world spreads out around me, rich and full: things dart across my path, branches whip in the gathering wind, there is a rock underfoot. I find, at the end of my field of vision, the distant horizon where the surface of the earth curves and drops out of view. As I move in its direction, the perceived world is sustained all around me by the motion of my body, which (this is Merleau-Ponty's wording) "continuously breathes life into the visible spectacle, animates it and nourishes it from within". That body, as he puts it, "is in the world just as the heart is in the organism…and forms a system with it".[57] But it is always, crucially, on this side of the horizon. I can see, but cannot arrive at, the "ends" of the earth.

Now, as any phenomenologist knows, if we were to describe precisely this same activity—a body traversing the surface of an open terrain—from the point of view of a spectator, we would express ourselves differently. For instance, we might say that what is in motion for the spectator is a physical body, in the sense of a body extended in physical space. If we were pressed to give evidence, we could say, for instance, that the spectator knows what she sees is a body, because she can trace out in perception the boundaries that enclose it as a thing, she can see its outline, which enables

54 Merleau-Ponty, *Primacy of Perception,* 13.

55 Merleau-Ponty, "Husserl at the Limits of Phenomenology", 67.

56 Merleau-Ponty, "Husserl at the Limits of Phenomenology", 67.

57 Merleau-Ponty, *Phenomenology of Perception*, 209.

her to detach the body, as it were, from the background as a figure for sight. In short, the spectator knows what a body *is*, and that's what she sees. Furthermore, she can say that she knows this is a body *in motion*. After all, she knows what motion is: the body occupies a succession of determinate or determinable locations, and by tracking those locations, she could map out its trajectory like the orbit of a planet in space. Of course, Merleau-Ponty does not give us this third-personal description, but the image of experience *from within*. And so, the description is radically transformed.

Image is often argument, for Merleau-Ponty, so let's linger here. Why, for instance, does he invoke the image of *breath*? Why does he say that a body in motion "breathes life into the visible world and animates it from within"? One answer is that this captures a particularity of the moving body *as alive*: unlike a "merely" physical body, the living body moves itself. When I am in motion, then, I do not have the experience of being propelled or pulled along by something outside of me, the way we might describe the movement of the planets or of bodies in a field of force. Instead, my body is moved, as it were, from within. And this movement sustains my world from its center. But while this living body, this "I move", has a kind of physicality—it takes up room—its moving center is not enclosed, for me, by stable boundaries: like lungs breathing life into the visible world, my living body as lived expands and contracts.

Importantly, this expansion and contraction is not constrained by the surface of the skin. If I cross this open terrain in a car, for instance—or, in an image Husserl exploits, hover above it in a spaceship—the vehicle, which is more extensive than my physical body, engulfs that body, not as a kind of container for it, but as the organ of my movement across or above the ground. The car, the spaceship, belongs to my body, becomes my center, my "I move". Conversely, when I rest my body against the trunk of an oak tree, my lived body contracts down to its point of contact with what doesn't "belong" to it, to its pressure against bark; the rest of my body seems to trail behind that point of contact, Merleau-Ponty says, "like a comet's tail".[58] This is why he describes the lived body not as a thing with a position, but as an opening, a zero point of orientation. Of course, in just this sense, it is not—or is not *really*—a body at all.

Let us now look more closely at this lived body in motion. So far, we have described the lived body, not as a thing, but as something like a zone

58 Merleau-Ponty, *Phenomenology of Perception*, 102.

that radiates outward from an un-quittable center. That center is its opening onto the world. And as that center traverses the terrain, the underfoot of its world, it brings a flow of different perspective into view. Perception and movement are necessarily imbricated here. So, where do perception and motion take place?

The answer, for Merleau-Ponty, is that they take place, necessarily, in terrestrial space. What he means by "terrestrial space" is a kind of open expanse, a field, whose outer limit, so to speak, is the horizon-line where my vision drops out. But then, the end of the field is a place I could never arrive. What this means, for him, is that all bodies, all moved bodies—whether moved from within or by the pressure of external forces—all bodies in relative motion or relative rest, can appear, and so can be bodies for me, only inasmuch as they appear on the open ground of terrestrial space.

So, how do we come to see these bodies in terrestrial space *as bodies*? Initially, it appears as if the process unfolds through the same transference of sense. Consider, for instance, how I perceive a stone as a body if I come across one on my path: I pick it up, move it away from the ground, turn it over in my hands. The point is that I come to have it as a physical object, as a physical body, through the palpitations of my hands (or of vision) that find where its outer limits are, through its contact with my lived body. For Merleau-Ponty, this is always how I find things as things. I discover them by feeling, from the outside, where they end, where their boundaries enclose them, where they finally curve back on themselves and turn back in. Of course, when that "something" is larger, more extensive, than I can hold in my hands, I must move myself. I walk around the tree, for instance—I move within terrestrial space—accumulating the possible perspectives through which it could appear to me as the same tree; and then I keep walking. I arrive at Talmage Street, which is the outer boundary enclosing my neighborhood; I cross, say, the boundary line of LA County, then the border of the state. As I do this, I come to learn what a limit, a boundary, an enclosure is; and I take my center with me. This is important. Because I might stop and (adapting Merleau-Ponty's example here) "conceive of my [neighborhood] as if from above, I might imagine it or draw a [map] of it on a piece of paper".[59] But this remains a bodily perception in the form of the conditional. As he argues:

59 Merleau-Ponty, *Phenomenology of Perception*, 109.

> even [at the level of thought] I would not be able to grasp the unity of the object without the mediation of bodily experience, for what I call a [map] is nothing but a more extensive perspective. This is the [neighborhood] as "seen from above", and if I can summarize in it all of the customary perspectives, this is only on condition of knowing that a single embodied subject could successively see from different positions.[60]

What this means is that no object, for Merleau-Ponty, even an object of thought, can be wholly "detached from the actual conditions under which it is given to us"[61]; and among those conditions is its appearance in terrestrial space. When I come to perceive bodies *as* bodies, as enclosed on all sides—indeed, as I learn what *enclosure is*—I bring "terrestriality" with me.

We can now spot the difficulty: While the ground-terrain is extended, in the sense that it continues in all directions, and while it can be an object of my perception, in the sense that I can see it and fill it in with intuitions, and while it is the *source* of my idea of a limit; it is itself neither a body nor an object in the ideal sense, inasmuch as these are, in principle, perceivable from beyond a limit, that is, from all sides. But Copernican earth is a *body*: Whether it is a body considered as an object for perception or for thought, it therefore must be, on Merleau-Ponty's picture, in principle perceivable from all sides. Likewise, if it is a moved body—as Copernican earth is a moved body—then it has to move *within* the openness of terrestrial space. The idea of Earth as a spherical body, a moved body, on this picture, both depends on, and only emerges within a ground that necessarily engulfs it—a terrestrial spatiality on which *I* am always the perpetual center. And there is no other side of terrestrial space: Even if I try to circumscribe it as a body from elsewhere (for instance, from the moon), I take my earth-ground with me and perceive with an earthly body a point of orientation in terrestrial space.

Terrestrial space is ultimately not a thing, and so it cannot itself be an object in the sense of a body; it is not something enclosed or circumscribed, something "inside something else"; it engulfs. And terrestrial space is the ground of perception and movement, for the appearance of bodies in motion and at rest, the background against which the figure as figure stands out. In *Phenomenology of Perception*, Merleau-

60 Merleau-Ponty, *Phenomenology of Perception*, 109.

61 Merleau-Ponty, *Phenomenology of Perception*, 210.

Ponty called this background existential spatiality; but here it has become *materialized*. It has become, if I can make a connection to *Eye and Mind*, like the rock wall of Lascaux that "pushe[s the animals] forward…h[o]ld[s them] back", but which "never" lets them "break free of their elusive moorings".[62] In just this way, I take terrestrial space with me, in movement and thought: it is the literal ground of my movement as a center; I cannot break free. "One can change the place of [my ground]", Merleau-Ponty argues, "but not suppress it. Every other planet is earth".[63]

A gulf has opened up here, however, between two senses of the possibility of the earth: there is, on one side, the logical possibility of my wholly filling in terrestrial space. This would involve my actualizing the point of view from every possible "here" (say, by pacing off the surface of the globe); but there is the corresponding impossibility of ever completing, in the sense of enclosing within ideal limits, my perception of terrestrial space. Earth as a whole, then, is not located anywhere: it "engulfs" but "does not move".

We have arrived at this point at a version of Husserl's question. But on Merleau-Ponty's framing, the paradox does not emerge. For while it is true, he has argued, that thought always imposes a limit on perception from the outside (this is its moment of idealism); thought is also for him always born in perception, it is born *on* and born *of* the earth. We can say, then, that the thought of the earth is always already an earthly thought, is sprung from what Merleau-Ponty calls sometimes "soil" and at other times "flesh". And so, he responds to the Husserlian paradox like this:

> The earth which is first is not the physical earth; it is the source Being, the *Stamm und Klotz* being, in pre-restfulness; the mind which is first is not the absolute Ego [donating sense]. It is the [possibility of thought] and they are *Ineinander*, entangled.[64]

With this image of entanglement, science and philosophy are not consigned to different orders, one of causes, one of thought. They emerge from the same source. More directly: the role played by the transcendental ego for Husserl is played for Merleau-Ponty by the ambiguity of the earth-as-ground, by the ambiguity of sense that is a *material* sense, of matter that

62 Merleau-Ponty, "Eye and Mind", 355.

63 Merleau-Ponty, "Husserl at the Limits of Phenomenology", 68.

64 Merleau-Ponty, "Husserl at the Limits of Phenomenology", 76.

includes the possibility of becoming the idea. To find where physics and phenomenology are anchored—to find, that is to say, their common source—we do not need the metaphorical excavation of the transcendental ego, but what Merleau-Ponty calls, in the *Visible and the Invisible*, "transcendental geology".[65]

4 | Conclusion: Einstein's Little Finger

Let me now, by way of a conclusion, come back to the crisis we opened with. Recall that Einstein seemed, to Merleau-Ponty, to be stuck on two points. First, he wants a world comprising not probabilities but fact. Second, he needed this to fit with his "wildly speculative" picture of the universe. The language of "speculation" thus obscures, a bit, Einstein's hope to somehow fuse his rationalist and empiricist commitments: we cannot find our way up to the complicated equations of mathematical physics, on his view, by reason alone—in this sense, "every theory is speculative",[66] as Einstein put it. But even our wildest ideas must find their truth, their affirmation in the empirical world. The world stands, then, as the final tribunal of thought.

Einstein's "crisis of reason" is supposed to be that he feels this possibility slipping further out of view: the classical ideal of "a truth set down in the world" has reached its limit. I have tried to show, in my own sort of speculative way, *how* that ideal reaches its limit. As Husserl has shown, we cannot step outside the bounds of consciousness to find a physical, that is to say, a *merely* or *really* physical Earth. Einstein's crisis, then, is a version of Husserl's paradox, retold in the voice of natural science. It is as if he is straddling the same gulf between the order of real causes and the order of ideas, but unlike Husserl—who is willing to find his anchor-point in the constituting Ego—and unlike the "next generation" that sees no need, in the end, for the "real", Einstein tries to hold both ends of the chain.

There are hints, of course, that he feels the tug of Merleau-Ponty's solution. As he writes in an obituary for Mach (he is lodging a complaint here at philosophers, who have so often stalled the progress of scientific thinking):

65 Merleau-Ponty, *The Visible and the Invisible*, 258.

66 Einstein, "On the Generalized Theory of Gravitation", 349.

> Concepts that have proven useful in ordering things can easily attain an authority over us such that we forget their terrestrial origin and take them as immutably given…. Such errors make the road of scientific progress often impassable for long times.[67]

The point he is making about thought's "terrestrial origins" is supposed to underline the source of our concepts in *history*, which for him, speaks to the threat of our "removing [them] from the domain…where they are under our control".[68] But Merleau-Ponty would urge us to hear this differently. The concepts of physical science—of law, structure, number, force—are not, as Einstein would have it, "freely invented" "creations of the human mind",[69] but depend on the earth. If I can play a bit with an image, the idea is that when the mathematician Hermann Minkowski says, quite famously, that his "radical" conceptions of space and time (that is, of space-time) "have sprung from the soil of experimental physics, and therein lies their strength",[70] the phenomenologist insists that we take this appeal to soil literally. All possibles, he argues, "[even of thought] are possibles of the earth".[71]

It is thought's earthly origins, its source in the "universal ground"—the soil—of sense, that, for Merleau-Ponty, is deposited, like striations of rock and sediment, in consciousness in a way that can never be suppressed. In fact, appealing to Kant, he makes it a condition of any truth that could be "set down in the world". As he puts it:

> The Kantian subject posits a world, but, in order to be able to affirm a truth, the actual subject must first have a world or be in the world, that is, he must hold a system of significations around himself whose correspondences, relations, and participations do not need to be made explicit in order to be utilized.[72]

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67 Einstein, "Ernst Mach", 10.

68 Einstein, *The Meaning of Relativity*, 2.

69 Einstein, *The Evolution of Physics*, 286; quoted in Merleau-Ponty, "Einstein and the Crisis of Reason", 192.

70 Minkowski, Address to the 80th Assembly of German Natural Scientists and Physicians (Sep 21, 1908).

71 Merleau-Ponty, "Husserl at the Limits of Phenomenology", 68.

72 Merleau-Ponty, *Phenomenology of Perception,* 131.

The source of this world of significations, which remains often implicit—we might even say *buried*—is earth, meant not in the sense of inert matter, but of something elemental, something teeming with the possibility of sense.

On this picture, it is indeed our entry into the "world of thoughts" that allows us to move effortlessly though the world to, "count", as he puts it, "on our acquired concepts and judgments". This gives, us, even, the possibility of science and of philosophy: "This is how for us there can be a sort of mental panorama", he continues, "with its accentuated regions and its confused regions, a physiognomy of questions, and intellectual situations such as research, discovery, and certainty". But we must be careful not to let ourselves be tricked by the imagery. The appeal to soil is the appeal to the *Ursprung* of sense. As Merleau-Ponty puts it, this "sedimentation", "this contracted knowledge is not an inert mass at the foundation of our consciousness". It is, in a manner of speaking, fleshy and alive. And "I hold [it]", as Einstein knows—in his own way—"in my hands".[73]

73 Merleau-Ponty, *Phenomenology of Perception,* 131.

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