

# AN-ARCHIC TIME: MELTING THE CLOCK AS HYPERNORM OF THE I CAN—AND PHILOSOPHY

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*On the level of being, we will never understand that the subject is simultaneously creating and created, and simultaneously infinite and finite. But if we uncover time beneath the subject, and if we reconnect the paradox of time to the paradoxes of the body, the world, the thing, and others, then we will understand that there is nothing more to understand.*

—Merleau-Ponty, *Phenomenology of Perception*

*There are changes/transformations [mutations] that do not happen at the same pace [rythme], [that happen] at different levels of knowledge. . . . The plurality of times = the impossibility of a single measurement standard, but this does not prevent the unicity of time as a melting time [temps fondant], which is not measured; this [melting time] would be like . . . [a] stuff/fabric [éttoffe] of time that is not made up of serial events, but is presupposed by them.*

—Merleau-Ponty, Unpublished Note from January 1959

*Nature does not interest us in itself . . . but as the index of that within things that resists the operations of free subjectivity and as concrete access to the ontological problem.*

—Merleau-Ponty, “Nature or the World of Silence” (author’s trans.)

## I. MELT THE CLOCK!?

Sara Hendren’s (2020) superb book, *What Can a Body Do? How We Meet the Built World*, offers great insights into ways that ability and disability are not matters of our bodies alone, but the ways our built world empowers or disempowers bodies. Hendren is an artist turned teacher of design for disability at the Olin College of Engineering. Her training, together with resources from thinkers such as Rosemarie Garland-Thomson and Eva Feder Kittay, let her reveal, in concrete detail, how affordances of the built world (such as lecterns and lecture rooms, chairs, and streets) or affordances incorporated into our bodies (such as

prosthetic limbs), variously fit and misfit our moving bodies. This fitting and misfitting, enabling and disabling, are due to the presuppositions and standards built into these affordances and their design.

Hendren’s book finishes with a chapter titled “Clock.” But wait a minute! How are clocks part of the *built* world? Don’t clocks just measure time, which flows of itself the same, as Newton would say? Hendren’s point is that the clocks by which our modern world runs impose expectations about how fast we move, when we are to move, and so on. For example, city planners calculate the duration of “walk” signals on traffic lights based on expectations of how many meters per second a body can move. The built world thus times us, sets our beat in both temporal and spatial senses,<sup>1</sup> according to a clock that not all of us are able or wanting to follow.<sup>2</sup> Think of the worker scrambling to keep up with the assembly line, think of a worker punching the clock or waiting for their shift to end. Think of students or colleagues who haven’t been able to meet “on time” because their needed transport was delayed or their access to buildings was blocked by construction undertaken with no thought for accessibility. (If you live in Montréal, you almost certainly have such stories.) The beat of the clock can be debilitating. In this juncture of moving bodies and time, Hendren’s “Clock” chapter contributes to studies of *crip time* as challenging prejudices of normate clocks by revealing how spatial fittings and misfittings of bodies and built worlds crosslink with the clock as an even deeper presupposition of the design of our built world.<sup>3</sup>

My purpose is not a direct discussion of crip time or the clock as building ableist expectations into the world. Rather, I aim to contribute to critical thinking about the role of time in ability and disability by studying what clocks and time are in the first place and challenging typical views of what time is. In some ways, the result is, perhaps, a “cripping of *time itself*.” We tend to think there is a “time itself,” with its own fixed beat, that time is already set to go. And indeed this concept of time does hold within our cosmic epoch and locale and on the usual scales of our experience. However, I argue, under the hood of visible, experienceable time, being itself, the invisible of the visible, cannot yet be said to have a fixed beat or even forward creep. Being is not “in time”: being creates time by operating as what I call “deep change.” Deep change does turn out to manifest clocks and time—but we cannot claim that clocks and time are a foreordained necessity of being.

To link this challenging point back to Hendren (2020), clocks are indeed part of our built world. The way clocks are built into our human-built world appears to draw on time as necessarily built-in, in advance, well before us. I call such a fixed and built-in time *timeframe*. Such a timeframe would “naturally” need to be tracked and thus appears to enjoin and justify clocks. And the clocks that track time thus enjoin and justify “being on

<sup>1</sup> Someone following a regular path through their neighborhood is “on their beat.” So too sailors follow a beat, and hikers beat paths through the landscape. The timing of traffic lights sets the beat of pedestrians and neighborhoods.

<sup>2</sup> Consider the “fifteen-minute city” wherein all the places one needs to go are reachable within fifteen minutes. We would need to ask: Whose fifteen minutes are we talking about? Whose reach?

<sup>3</sup> For some work on time and crip time in connection with phenomenology, see Corrine Lajoie (2022), and Lajoie’s work in general; Emily Douglas (2022) takes up issues of “sick time” in ways important for this topic.

time.” And then bodies that cannot do so need to argue for a crisp time that follows not the clock but life and experience. Still, the presiding figure here is a clock that beats out time itself. I argue that on cosmic and quantum scales, there is no such time, there is only deep change. While deep change does indeed happen to manifest clockable time, this is not because of a fixed timeframe underlying or prior to deep change. Time is itself a verb, a contingent and ongoing temporizing. Anaximander thought that an ordered, delimited world arose out of a boundless, undelimited *apeiron*, according to the ordering of time.<sup>4</sup> For Anaximander, time is thus a presiding principle, *arché*, governing being. In contrast, temporizing is an-archic: it does not begin from an ordering *arché* but instead turns out to create one.

Regarding Hendren (2020), we could say that time is the first design that allows for and informs any subsequent design—so it is no wonder that all design inscribes clocks. My Maurice Merleau-Ponty inspired ontological effort “melts” clocks by describing them in ways that reveal that time, as first design, cannot be presumed to happen “by design” (as if time is baked into the “design” of the universe necessarily and in advance). The norms of design and the design of norms thus goes back to an-archic change that challenges our usual presumptions about norms in the first place.<sup>5</sup>

<sup>4</sup> Simplicius reports that Anaximander said that the apeiron was the *arché* of things. *Apeiron* is not readily translated, but it names a principle that does not itself have limit, delimitation, or definition, that which can change into anything. On Anaximander’s view, then: “The things that are perish into the things from which they come to be, according to necessity, for they pay penalty and retribution to each other for their injustice in accordance with the ordering of time.” Here we see a complex linkage of issues of temporal ordering and norms, which is the focus of discussion below. Anaximander’s *arché* may not be delimited, but it proceeds according to the time order. See Patricia Curd and Patrick McKierahan (1996, 16; 12A9+12B1 in the standard pagination).

<sup>5</sup> While inspired by Merleau-Ponty, the concept of time and being advocated here is not expounded directly in the pages of his books, articles, or even the working and lecture notes published to date. It is extrapolated from my efforts to understand the underlying argument and directions of his works in print, together with as yet unpublished working notes, especially from the period of his writing of *The Visible and the Invisible (VI)*. Claude Lefort does not include all the notes that Merleau-Ponty wrote in this period and tends to avoid those engaging with science—yet time is a recurrent theme in those notes, linked to remarks on nature, biology, and physics (the second epigraph above is a central example). My scholarly efforts (see note 10) also incline me to think that Merleau-Ponty’s work on phenomenology, ontology, and history are an integral whole, connected by the theme of openness, which is a running theme in the notes Lefort selects for *VI* (often discussed through the German *Offenheit*). Openness links to themes of expression, institution, creativity, and generative passivity coursing through Merleau-Ponty’s work. See Don Beith (2018). Regarding history, Merleau-Ponty’s (1969) analysis in *Humanism and Terror* leads him to remark, on the final page, that “[t]he human world is an open or unfinished system and the same radical contingency which threatens it with discord also rescues it from the inevitability of disorder” (188; emphasis in original).

His conclusion would harbour lessons about the ways we design our human world—including the role of clocks therein. But I am pressing further with this theme of unfinished openness into matters of time. In effect, my contention is that Merleau-Ponty’s effort to grasp nature as a place of meaning and expression, in his phenomenology and his analysis of history, conjoins with an ontology in which nature—and the time of nature—are an unfinished system as well. This point is reflected in a remark he makes in his lectures on *institution*, his conceptual name for processes wherein new dimensions—norms—of meaning are established. There, he writes that “[t]ime is the very model of institution: passivity-activity, it continues, because it has been instituted, it fuses, it cannot stop being, it is total because

## II. A CRITICAL ONTOLOGY OF TIME AS HYPERNORM OF ABILITY AND DISABILITY

So far, I have articulated these points by focusing on the clock as a built-in norm of our built world. For this contribution to critical thinking on ability, disability, and the normate, it is crucial to link clocks and time to norms in the first place. I am arguing that ordered clock-time is contingent but its perseverance as ongoing result misleads us into taking it as a fixed framework presupposed by philosophy and various sciences. Time as presupposed, fixed framework is what I call a *hypernorm*.

Why *norm*? Time is a presupposition of all norms, since the basis of any normative claim is assessing some entity as complying with or deviating from a norm, which “takes time.” All norms originate from the norm of time as enabling prediction, deviation, and compliance in the first place. Try, for a moment, to think of a norm that would apply as norm *apart* from time. To say there is a norm of X is to say that for X to be X, it must abide by such and such a norm—over different times. To say that X is normal is to say that X is not now deviating from what X is to be—but this is to say that X could change over time. If each and every X were eternally given as the X that it is, there would be no sense whatsoever to the concept of a norm.<sup>6</sup>

Why *hyper*? Time, as the presupposition of all norms, appears to be perseverant above norms, in the way that the earth, sky, or moon, are, in the perception of children, “ultra-things,” or what we could call hyper-objects.<sup>7</sup> The moon is exemplary of objecthood precisely in overshooting regularly objectivity, because the moon, unlike other objects, never changes where it is, it chases you everywhere you go. Time, likewise, chases you *whenever* you go, it never changes when it is, it perseverates as the order against which all justice is meted out, as Anaximander says; it can even order the boundless *apeiron*.

As Hendren (2020) and others show, down here on Earth, clock-time is deployed to measure out ability and disability. Phenomenologically, we can notice that the “I can” is an inherently temporal structure: it is an “I *now* can do this in the future.” But which future, whose future, whose time? What is the “proper time” of the “I can”? You can

it is partial, it is a field” (Merleau-Ponty 2010, 7). The time wherein norms arise is a time that, contingently, *has been* instituted and remains so by way of being a totality only through openness, being partial, incomplete.

<sup>6</sup> You might try to think of norms of ideal objects, say Euclidean triangles, as timelessly having a sum of internal angles adding up to 180 degrees. But the way you think of this as a norm of Euclidean triangles is by coming back to the thought of such a triangle, again and again, through examples leading up to an in-principle claim of what it would take to think of such an object, on any iteration, any time. Here I am adopting a Brouwerian, intuitionist approach to mathematical objects (see Posy 2020), alongside Husserl’s ultimate approach to the “Origin of Geometry” and mathematical sense. See Husserl’s text and Merleau-Ponty’s (2002) reflections on this. Note that the point at hand here is transcendental, not psychological: it is about the role of time, memory, noting down, and so on as an unsurpassable condition of experientially encountering something with the sense of a specifically mathematical object.

<sup>7</sup> See Merleau-Ponty (2011, 192–94). Merleau-Ponty is here discussing Wallon’s results regarding child psychology, but he notes that adults too encounter ultra-things—he gives the example of death. Here I am noting how time operates as an “ultra-thing,” but I think “hyper-object” is a better name for the concept.

see that norms of ability, disability, and time entwine here. Merleau-Ponty is hinting at this crucial confluence of time and norms in his remark at the end of part two of the *Phenomenology of Perception* that “[o]n the level of being we will never understand the subject as simultaneously creating and created, and simultaneously infinite and finite”—as engendering norms over and above yet within nature—until “we uncover time” and its “paradoxes” (Merleau-Ponty 2012, 424).<sup>8</sup>

There is no normalcy without deviation, there is no deviation without time—but there is no time apart from a deep change as an-archic “principle” that can operate as a deviation from time. To echo Henri Bergson, *time is deviation or it is nothing at all*.<sup>9</sup> Beneath the subject and normativity the ultimate paradox of time is that far from being a fixed hypernorm, time operates out of ultimate deviation. I argue for this ontological point through metrological and phenomenological studies of how we actually encounter time, which reveal how time wells up in and through deep change as a “melting time” that would be what Merleau-Ponty calls “an index, within being, of what resists operations of subjectivity” (2008a, 53; my translation).

I can now situate my effort in relation to recent critical phenomenology, which reveals various presumptions in approaches to phenomena such as ability and disability. In terms of Lisa Guenther’s recent “Six Senses of Critique for Critical Phenomenology,” I deploy “5) the problematization of basic concepts and methods” regarding time, to critically reveal “3) a quasi-transcendental, historically grounded” structure of the life-world, what I call timeframe, through “1) the art of asking questions, moved by a crisis” (2021, 5). Guenther, however, admits that within critical phenomenology, time (for example, in the classic Husserlian sense), would remain as a transcendental. It appears obvious that time is requisite as an ordering principle of any possible experience. While I am not denying that the visible operates according to this principle, I am denying that the being of the visible, the invisible of the visible, operates according to time as transcendental principle.<sup>10</sup> *In fact, my contention is that time itself is a quasi-transcendental, not a transcendental, not a hypernorm.*

### III. CLOCKS DO NOT MEASURE INVISIBLE TIME: THEY MANIFEST TIME AS VISIBLE, ACROSS VISIBLES

We are always in tricky waters when it comes to time. Here I plunge in and proceed as quickly as possible. Gottfried Leibniz helpfully demolished the idea of a Newtonian absolute

<sup>8</sup> This book is cited using the French pagination given in the margins of the 2012 edition.

<sup>9</sup> See Bergson’s famous claim that: “*Time is either invention or it is nothing at all*” (2023, 341; emphasis in original; in the standard pagination given in the margins of this edition).

<sup>10</sup> Indeed, I think that Merleau-Ponty’s ontology of an invisible of the visible is, in large part, driven by ongoing considerations of time as central to his work—and that this ontology can be understood “temporally,” i.e., the being of the invisible can be understood in terms of time, history, open dialectic, *Offenheit*, and so on. That is a larger story I have taken up, e.g., in David Morris (2018; 2020). See also Luca Vanzago (2017), Glen Mazis (2010; 2016), Ted Toadvine (2009), and Renaud Barbaras’s emphasis on time as central to Merleau-Ponty (2004, 217–21).

time that would flow from itself, self-same, above all changes, an absolute-time within which all changes can be tracked and numbered.<sup>11</sup> God might be able to perceive such time, but no one else can. The only way time can be encountered is *relationally*, in changes, specifically in clocklike processes. I broadly construe clocklike processes—“clocks”—to include processes we construct, whether atomic, windup, pendulum, or candle clocks; or evolved, living, or experiential processes, such as the sunflower’s movement clocking solar cycles, or the feeling of hunger growing over the day, or pulses felt or counted. In all these cases “clocks” are *not* measuring some other, invisible “thing,” an absolute time that “flows” above all changes.<sup>12</sup> Clocks are observable change-processes evolved or constructed to pace, periodically synchronize with, or count changes of other observable processes.

I first elaborate this point through recent results in the philosophy and science of metrology and the thermodynamics of clocks. Later I combine these with David Ciavatta’s (2017) superb study of the relation between natural cycles and phenomenological time in Merleau-Ponty. This strategy lets me build my threefold claim, that (1) we encounter time in and as an experienced or constructed form of change. But (2) we do so only *within* change. This entails that (3) time as a visible, observable form is inherently open to the resistance of its relative matter, namely an-archic or deep change. Time’s ontological openness to an-archic change<sup>13</sup> challenges the view of time as a fixed hypernorm.

Metrology, the account of how we measure things, shows that the effort to clock time as a fixed order internally challenges claims that we are encountering such an order. Galileo discovered the pendulum was an especially reliable oscillator for clocks. How? He learned to count out a regular number of his pulses, happening at a regular resting rate, against repetitions of singing a hymn at a regular pace—and noticed that the swinging of a chandelier in the cathedral was reliably and precisely regular when counted against his regular pulse. At no point in this process could he claim that the chandelier swings regularly against some flow of absolute time. Notice the circularity here: changes are manifest as having regular periods all and only by reference to the regularity of *other* periodic changes. You can check your watch against the atomic clock that broadcasts its signal on the radio, but that clock isn’t checked against some absolutely regular flow of time beyond clocks—it’s checked against *other* atomic clocks.

This sort of circularity is characteristic of all measurement, as Hasok Chang (2007) shows in his brilliant book about the history of thermometry. Here’s a way to put it. A thermometer or chrono-meter is accurate if it shows reading  $R_B$  all and only when measuring an instance of something with value  $V_B$  (or close to it). For example, a thermometer is

<sup>11</sup> See Leibniz’s third letter to Samuel Clarke. Absolute time is requisite for Newton because he understands force in terms of accelerating mass and needs to understand individual bodies as accelerating or not, *independent* of other bodies. See Robert DiSalle (2006) and James Owen Weatherall (2016). Note that Newton himself did not think we could directly encounter or perceive absolute time; we can, however, construct clock mechanisms that we take to track and thus reveal absolute time.

<sup>12</sup> On this point, see R.G Collingwood (1925) or Paul Davies (2019).

<sup>13</sup> This formulation is too mild: the point is that the being of visible time is the being of invisible, an-archic change. The being of visible time is not some fixed flow, it is deep change operating to generate an ordering that is in disparity with its own an-archism.



accurate to the extent that it gives a reading of 100 Celsius,  $R_B$ , all and only when it is measuring an instance of something with a temperature,  $V_B$ , of 100 Celsius. Historically, the problem is that this sort of test is pursued using samples of water at its boiling point—but that phrase “water at its boiling point” needs very hefty scare quotes *because water and its ebullitions (boilings) are far more variable than one would have thought, depending on all manner of circumstances, ranging well beyond air pressure and chemical composition of the water to the composition and finish of the vessel.*<sup>14</sup> While this variability would make Merleau-Ponty and other phenomenologists happy (it forces scientists back to the things themselves!) it entails no end of sorrows and *tsures* for thermometicians.

Why? Let me spell this out through the logic of the general case of building and testing meters. Again: a meter is accurate to the extent that it shows reading  $R_B$  all and only when measuring an instance of something with a value very close to  $V_B$ . So, checking our meter for accuracy entails multiple tests of the meter measuring a thing with value  $V_B$ . But first we need to ensure that we are testing our meter against a thing whose value in fact is  $V_B$ . And to do that, we need a meter that accurately determines that the value of the thing we’re testing is  $V_B$ . *We need the very device we are trying to test!*<sup>15</sup>

Given that we are limited to observables, as Chang (2007) shows, addressing this problem requires constructing different meters and comparing their results in tests against various samples drawn from experience. We end up in a circle of cross-checked tests that gradually let us figure out better and worse ways of measuring. In this way we can show, for example, that one sort of clock-mechanism is more regular in *comparison* to others or use tests of this sort to construct clock-mechanisms that increase this comparative regularity.

The key point is that we are stuck within the circle of *phenomena*. In the case of thermometers, scientists eventually figured out that measured temperature can be understood in terms of observable phenomena *other* than temperature itself, namely, useful work accomplished by a system. With clocks, though, we can never directly access some *other* phenomenon, beyond changes of clockable-processes, that clocks measure. Clocks just measure the relative pace of changing systems against one another: clocks manifest changes as having a pace, a count, a form, over and above, yet *within*, what changes.

The mistake, which Merleau-Ponty (2012) cautions against in the *Phenomenology of Perception*, is taking this “time-form,” manifest within change by mechanical or felt and living clocks, to be something there independent of situated subjectivity and perception—as if time is something that flows by us, or that pulls us along in its flow, as if time issues from a fixed origin, source, principle, *arché*. This mistakenly projects an inborn subjective

<sup>14</sup> See Chang (2007) for copious details.

<sup>15</sup> This result probably would also make Jacques Derrida happy: it is akin to the logic of the supplement. In a way, the problem is that the meter has no access to anything *dehors* the text, until (and this is the difference from human texts) thermometry becomes accurate enough to allow for a theory of how thermometers work that can reconstruct their operation in terms of something beyond readings, i.e., temperature understood in thermodynamic terms. But that takes a long time to figure out and is still no easy matter. Temperature is complicated, don’t let quick and easy formulations about average heat and so on fool you.

form as an underlying structure of reality itself, independent of subjectivity.<sup>16</sup> In terms of cosmological and quantum mechanical sciences, the mistake corresponds to taking time as a fixed background within which phenomena unfold, a background that as fixed cannot be explained since it is presumed as a basic principle or as part of a boundary condition that is so to speak fixed at or beyond the limits of the cosmos.<sup>17</sup>

The concept of time as hypernorm takes time as an obviously fixed framework and designs the built world on this mistaken presumption, which is pragmatically obvious—obvious in such a way that it obviates and obscures thinking about what underlies pragmatically ordered time and its measures. Where proponents of crisp time reveal the mistakes of these presumptions through insistence on life and experience, I am seeking to complement this through a critique of the clock itself.

We can begin undoing the mistaken presumption of an eternally fixed timeframe by noticing how clocks manifest ordering time-forms only within change. But this means that clocks are *nothing other than complex change-forms*. Clocks do not escape visible change, they do not measure invisible time above change, they internally mutate the resistance of change to birth *new* sensible forms of change.

<sup>16</sup> This is one of the key points of the temporality chapter in *Phenomenology of Perception* (2012), where he criticizes the view that time is either like a river that carries us along past the banks or like a stream flowing down the mountain from the headwaters of the future to the outflows of the past. On the contrary, he argues that there is time only from a perspective (Merleau-Ponty 2012, 472–74.) Nonetheless, he also argues that this does not mean that time is therefore *actively constituted* all and only by subject. Time arises through a transition synthesis that involves a passivity that would also require that what we take up as time is not fully self-constituting and active either (484–85.) My argument in this paper deepens and radicalizes this point to an ontological level that also receives support from and echoes some of his later work in and around *The Visible and the Invisible* and his lectures on nature. But the full argument requires a much longer work.

<sup>17</sup> On this topic, see Lee Smolin (2013; 2018), Smolin and Roberto Mangabeira Unger (2015), Fay Dowker (2020), Carlo Rovelli (2018), and Richard Muller (2016), as well as Thomas Hertog (2023). All of these are physicists who are, to varying degrees, seeking to give an account of the origin or genesis of time, versus presupposing time as a fixed background (to use Smolin’s conceptual vocabulary). For example, Rovelli (2018) argues that we need to understand time as arising out of change and that this is contingent on thermodynamics and the universe starting with a low entropy. Dowker (2020), whose work draws on “causal set theory” offers a “classical sequential growth” model of the origin of time, which conceptualizes “atoms of time” arising through a process of “random birth,” which grows a topological network of time atoms; the topological connectedness of the network is what establishes what we encounter as the order of time. Her guiding remark that the “birth of a baby is not a baby” helps emphasize that the “birth process” of time is not itself a process of/in time (138). This process can be read as echoing the conceptual point behind Merleau-Ponty’s remark about time as the model of institution (see note 5 above): time has been born, and it is total because it is partial. It must be noted, however, that these scientists are (to various degrees) at odds with and in a minority working against a more prevalent and dominant view of time as a more or less fixed order of a “block-universe.” Michael Silberstein et al. (2018) gives an extensive discussion of the block-universe view and its implications for ontology, mind, and perception.



#### IV. CHANGING CHANGE INTO CLOCKS: OSCILLATION, REGISTRATION, AND COUPLING

I approach this point by sketching what I call a *metrological schema* for clocks. Later I link this back to phenomenology.

In their barest form, clocks require three operations. First, *oscillation*, which constructs or accesses<sup>18</sup> a changing process as cycling back on itself as the *same*. An example is the tick of a mechanical clock: the mechanism is constructed so that an ongoing change keeps resetting itself to make a tick, a tick, a tick—where each tick is exactly the same qua tick. Another example is a pendulum reaching the limit of its swing and changing direction to cycle back.<sup>19</sup>

Second, *registration*. This constructs or accesses a changing process as cycling back on itself as *different*. Imagine pressing a button on a mechanical counter. Each press runs through a cycle that each time works the same in resetting the mechanism to be ready for another press. While each cycle is the same qua resetting, each results in something *different*: now the counter reads 2, now 3, now 4, and so on.<sup>20</sup> Crucially, the registration operation requires *determinately forgetting* the past result, erasing the record of the previous, determinate, count and replacing it with the new one. The oscillation operation is a change that produces a tick now, that is the same as any other tick, and doesn't need to be recorded.<sup>21</sup> Registration, however, is a change that registers a different difference in each now.<sup>22</sup>

The third operation is *coupling*, for example, coupling registrations and oscillations. On its own, registration, as a cycling that is ever different, would just count its *own* changes,

<sup>18</sup> For example, a sundial accesses a natural process, the sun's daily traversal of the sky, as a daily oscillation through the gnomon projecting the sun's shadow along the dial that registers the progress of the oscillation.

<sup>19</sup> In the case of a candle clock, each candle's burn-down is one oscillation. We need multiple candles for multiple oscillations of such a clock. Note that considering a single candle as a regular oscillator requires comparisons across multiple candle burn-downs and comparisons with other processes—the coupling operation.

<sup>20</sup> Registration can also count fractions of an oscillation.

<sup>21</sup> Oscillation doesn't even have to bother remembering the past: each oscillation cycle just happens, replacing past cycles. Registration events, though, must remember the previous registration and replace it: now it is count 1; now it is not count 1, but count 2, etc. Consider timing an event by making a mark on paper at the end of each pendulum swing. In terms of oscillation operations, it would suffice to make each mark in the same place each time. But these marks do not allow you to count them up. The registration operation requires counting up repeated marks and that means not counting a mark once it is added to the count. On paper, that is nicely accomplished by striking out or erasing marks that have already been counted. Note that this requires determinate forgetting: erasing this mark, specifically. (The oscillation marks that keep on accumulating in the same place could be considered to be erasing the previous marks, but not determinately, and this is not really forgetting the past marks, it's just replacing them.) Note that while oscillators do not remember the past, mechanisms that regulate oscillators adjust them for regularity, do need to remember and forget; this requires the coupling operation. Also note that this clock schema in effect engages with the logic of Husserl's time-synthesis diagram (1991, §10).

<sup>22</sup> In "Signature, Event, Context," Derrida (1982) is getting at something like this point about registration, forgetting, and repetition.

as when we repeatedly press a button on a mechanical counter. But when registration is coupled to an oscillation, registration can count changes of something different, namely, cycles of the same. This manifests a form of sameness repeating in change: an image of time.

In fact, given that clocks just are ever changing things,<sup>23</sup> *coupling oscillating changes to registration is fundamental* to clocks appearing to tell time, versus just being flows of change that manifest something ever new. Furthermore, it is only in coupling clocks to one another that we can give meaning to the claim that a change is a *regular* oscillation, or manifests a regular form, within change in a more open-ended sense.<sup>24</sup> The mistake, of course, is thinking that the regular form manifest in coupled clocks is some sort of absolute flow that occurs over and above changes.

Notice that this point about coupling means that *clocks as ordered change-forms must in principle be open, exposed to other unordered forms of change*. More precisely, this means clocks that appear to manifest regular, time-ordered forms of change are in fact *necessarily* open to forms of change that are not necessarily ordered in ways that would inherently show time-forms.<sup>25</sup>

<sup>23</sup> All clocks wind down and wear down, their changes surpass mere counting of change. This is just more obvious with the candle clock burning down or the tree rings counting up years until the tree stops growing.

<sup>24</sup> The candle-clock nicely illustrates this: unless you are cross-comparing one candle-burn to another, to calibrate candle-burns as oscillators, all you have is something changing, burning down.

<sup>25</sup> In terms of the scientific background, the significance of coupling has to do with thermodynamics. This is quite important. Sometimes physicists distinguish between different sorts of time, e.g., cosmological time (where the origin of time becomes an issue); thermodynamic time (where the one-way irreversible “arrow” of time becomes an issue, as does the running down of the cosmos as a whole); chronological clock time (where time becomes an issue as observable). The point here is that oscillators are drawn out of the thermodynamics of their operation, and that registration too hinges on thermodynamics, because registration requires forgetting, erasure. (The science of information teaches us that erasure of information requires an unsurpassable minimum of energy dissipation.) Coupling links the thermodynamic flows of oscillation and registration to one another. This means that clocks as manifesting time cannot stand apart from thermodynamics. Indeed, recent beautiful results in the thermodynamics of clocks show that: (1) any clock must dissipate a certain amount of available energy into waste heat, and (2) the more accurate the clock, the more heat it must generate. See, e.g., G.J Milburn (2020).

But thermodynamic flows of any sort, and of the sort required by clocks, entail limits on the distributions of energy in the cosmos. Heat needs to flow from here to there in relatively ordered ways for there to be clocks and for time to be manifest in change. See note 27 on David Z. Albert (2000) for some technical points around the arrow of time in relation to thermodynamics. In a word, clocks operate only by not melting down, by leveraging melt-downs of their energy sources into registrable oscillations; this requires escapement or other mechanisms that dissipate heat so as to produce regularity within change. What is marvellous is that nature engenders this spontaneously at all scales: nature operates as exchanges of energies that ratchet out regularities. What is mistaken is thinking that is because regularity is baked in as basic background.

## V. LIVING CHANGE AS TIME: COUPLING EXPERIENCE AND NATURE

Given that the effort here is a contribution to critical phenomenology, I now articulate these points about clocks in phenomenologically counterpart terms through Ciavatta's (2017) detailed analysis of "Merleau-Ponty and the Phenomenology of Natural Time," which shows that even though experienced time is a subjective construction, it is neither impervious to nor separable from cycles of natural time. We could say that experienced time translates or expresses natural time cycles as meaningful for us. Ciavatta condenses his results using the illustration of a jazz musician transforming cycles of breathing into musical phrasings on an instrument. He arrives at this through a detailed phenomenological analysis of the ways that natural cycles, such as breathing, heartbeats, or daily cycles of hunger, or seasonal cycles, inform our experience of time. Translated into my metrological schema, Ciavatta's point is that while our bodies feel differences in phases of various natural *oscillation* cycles, that does not yet give an experience of *time*. Oscillations themselves tend to vanish in cycling back as the same. Temporal experience requires coupling oscillation cycles to registration cycles. Our inner, temporal experience *in fact couples* with and takes up *natural* oscillation cycles—but it never rises above or entirely abstracts itself away from its roots in changing nature. Hendren (2020) shows that designers who design places and time movements by abstract clocks precisely obliterate these natural roots: clocked designs expect us to run on their time, not our inbiding natural time.

This is the phenomenological counterpart of my metrological point that all clocks hinge on a logic of coupling that inherently *opens* clocks to the changes out of which they rise. As I put it, clocks are "time-forming" processes: in time-forming . . . change changes into . . . change-forms that manifest visible time within changes. My contention is that time-forming, as manifest in clocks, can never become autonomous from changes that "precede" time-forming—and this point runs counterpart to Ciavatta's (2017) Merleau-Pontian phenomenology of time. This also echoes efforts to crip time: to have time issue not from the clock but from the time it takes to live and move.

## VI. DEEP CHANGE

Clocks and experience are open to and open out of change that is not necessarily ordered to the time of clocks or experience. This result with regard to clocks leads to the question: What is the nature of this change that time-forming forms up as time? The question would of course be begged if we claimed that this change is such that it is ordered to or by an already determinate absolute time, or that the change in question is already "in" time. Such a claim would imply time *directly* appears in the changes that it orders, time all and only *is* change. The claim would mistake something experiential, formal, manifest, visible—*time*—for something "material"—the *change* within which timeforms are manifest. A conjoint complication arises here: when we encounter change, we of course encounter it as visible (sequenced "in" time). But the analyses above enjoin us to think of manifest, visible time as

open to a change that is not necessarily, or not in principle, observable and visible in any direct way. In Merleau-Pontian terms, deep change would be the invisible *of* visible time.

At this point it will help to recall something else that Merleau-Ponty says, that “[n]ature is *not* in itself geometrical, it only appears so to a careful observer who limits himself to the macroscopic givens” (2012, 83; emphasis in original). My point here is that nature is *not* in itself chronometrical: it only appears so to a careful observer who limits themselves to the macroscopic givens of clocks, without asking how clocks in fact work; or an observer who limits themselves to the macroscopic givens of experience, without asking how experience ever comes to construct itself out of *nature*.

Nature is far from chronometrical. This is the challenging point: if we go all the way with the results above, we must stop making any direct claims about a “time itself.” The phenomena (indirectly) enjoin us to withhold from making any positive claim that the natural changes from which clocks and temporal experience are drawn is itself necessarily ordered by any invisible chronometric principle that orders and governs change. True, on the macroscopic scale, in the regions of the cosmos that we inhabit and on the timescales in which we observe these regions, clock-like processes that manifest time-forms within change can evolve or be constructed. But that time-forming is a *result* of the way natural change itself proceeds. It is a conceptual mistake to confuse a result of a process with the origin of that process.<sup>26</sup> This, I think, is in the background of Merleau-Ponty’s point in the unpublished working note on standards of time arising from a prior “melting time” that is cited as an epigraph to this article.

Nearly any cosmologist would agree that the time and space we encounter are a result of a process of cosmogenesis. The full scientific details do not matter here. What matters is that once we realize that time forms *within* change, then in principle we are conceptualizing time as rooted in a change that *cannot be subjected to a time-ordering principle*.

In principle, *time is subject to change*. That is, time can change, be changed. In principle this sort of change is such that it need *not* be ordered by time as principle. I think this is part of what Merleau-Ponty is getting at when he speaks in the *Phenomenology of Perception* of “time as subject” and deeply links time to passivity: time does not have a principle set up in advance, and in that respect operates as subject, passive to itself (2012, 483–85). In *Humanism and Terror*, he makes a related point in his argument that historical change is not like a “straight line that is always easy to trace,” since its elaboration continually alters its bearing “like a traveller who moves into a changing countryside continuously altered by his own advance” (1969, 94). Here we would have to think of change altering its own advance, not by traveling through place, but by enduring its own changings.<sup>27</sup>

I call such change, which is not lined up in advance, but radically open to and affected by passivity, “deep change”: deep because, like the rippling, distorting, syrupy water through which alone the pool’s bottom shows up in depth,<sup>28</sup> deep change’s *resistance* to

<sup>26</sup> See Merleau-Ponty on the experience of error (2012, 27).

<sup>27</sup> Gilbert Simondon (2020), Merleau-Ponty’s student, might speak here of changes dephasing themselves.

<sup>28</sup> In Merleau-Ponty’s essay, “Eye and Mind” (1993, 142).

being ordered by time is what lets time-forms show up; deep because deep change is its own dynamic dimension, versus being ordered in advance.<sup>29</sup>

## VII. TIME AS QUASI-TRANSCENDENTAL: IMPLICATIONS FOR ABILITY, DISABILITY, AND NORMATIVITY

We do encounter time as an order that is in principle necessary for experience and the visible. We do encounter time operating as a classic transcendental. I am not denying that. But when we study *how* we encounter this ordering principle, we encounter it as manifest in and through change as eventuating, happening, in its own terms. Change does *appear* to be operating according to a transcendental ordering principle of time. But I am arguing that, on the scale of cosmos and of nature, change is not so ordered, and time eventuates as quasi-transcendental.

Indeed, time is an original quasi-transcendental. There is a truth to normativity being inseparable from time. And so far as transcendentals are transcendentals of something determinate, transcendentals are inseparable from normativity. So: no time, no transcendentals.

Here, though, I want to emphasize that it is not as if time orderings begin to operate apart from what they are orderings of—or apart from *where* those orderings proceed. Time as original quasi-transcendental eventuates with and through the cosmos as place where orderings can appear and proceed, where distributions and flows of energy allow clocks and life to appear. This eventuation of time and place together is a process I call *templancement*. Templancement as original quasi-transcendental corresponds to an *arché*, a principle or source of being. But the whole point is that templancement as *arché* of the visible arises out of deep change. So templancement is an-archic: templancement might not have led

<sup>29</sup> Martina Ferrari approaches a similar point in her analysis of the temporality of deep silence through the theme of precession (2021, 197–202). Ferrari is drawing on Mauro Carbone’s discussion of Merleau-Ponty’s remark on precession in a note meant to summarize *The Visible and the Invisible* (Carbone 2015, 58–61). Ferrari is linking this to the theme of the virtual in Bergson via Alia Al-Saji.

Precession is a term from physics that Merleau-Ponty employs to capture processes that do not circle back on themselves in regular cycles ordered by a past, present, and future that would always be aligned, in line. Instead, in precession, various processes disturb one another over their time of operation. We see this in the precession of a gyroscope or top, when its axis of rotation begins to rotate in a cone or wobble; in effect, the rotational momentum of the gyroscope’s wheel that was keeping it pointing in a steady direction begins bleeding out over time, diverging from its own futural direction, so it circles round itself in space and then wobbles as it cycles down. In a bicycle, you can feel precession when you wobble away from riding straight and the momentum of your spinning wheel precessing out of line pulls you back in line: you are feeling rotational momenta overhanging themselves in time and pulling themselves together. My point here would be that precession needn’t be pulling things in line: in deep change, being can wildly wobble. Precession in this sense corresponds to Simondon’s (2020) concept of phasing and dephasing of processes.

to a cosmos or nature that manifests clocks, life, time.<sup>30</sup> Templacement *might not have led to a being that supports manifestation at all. The being of the phenomenon is not itself a phenomenon.*<sup>31</sup>

What are the implications for ability, disability, debility, and the world? Hendren (2020) and others who think critically about crip time show how clocks impose norms that contribute to disabling bodies. As with other normative and normate practices, clocking practices appeal to or presume what seems obvious and natural. The framework of time seems obvious and natural, to the point of operating as a hypernorm. But normate practices also tell us other things are obvious and natural, for example, that heterosexuality is natural “because reproduction.” But in fact, biologists find that long term pair-bonding between animals of the same sex is very common; what is not natural is the sort of homophobic conduct we find in humans. Anyway, sex, even on the biological level is far more plastic, complicated, and wondrous than what human societies often say.<sup>32</sup>

Here the point is that time is far more plastic, complicated, and wondrous if we look into what makes it “go.” Of course, to be a body, to live, to experience, does entail a patterning of change as time, change changing into cycles upon cycles. But these patterns are ongoingly precarious accomplishments that do not run down rigid rails but rather surf on roiling change. Recent results on the thermodynamics of clocks show that the beat of clocks must dissipate heat—clocks run up time by melting down order. And we forge our patterned times of living in and through our own precarious bodies, in relation to one another and to various fabrics of our built- and timed-world. We should not expect that these patterns will remain the same over one’s lifetime or be the same in all lifetimes. Lifetimes are not lived as happening within a fixed time, they are the happening of changes lived and felt through their own changing ebbs and flows. If time itself is born of change and is subject to change, then norms *and the very possibility of their being norms* is, as emphasized above, born and subject to change as well.

I am suggesting that norms are born out of ontologically precarious deep change. That is another way of saying that norms are born out of life as generative of its livingness. Life does not follow norms, norms follow life. And that means that norms aren’t “normal.” Normalized norms, fixed norms, are abstractions. Norms born of life are inherently ambiguous, open ended, plastic, relational, distributed, labile. There is a sequence of ontological lessons that verges here into a moral lesson: the being of the phenomenon is not

<sup>30</sup> This claim finds support in David Z. Albert’s (2000) work in the philosophy of physics that indicates that the arrow of time, the way clocked changes manifest an irreversible direction, cannot be guaranteed to emerge if we analyze change through a purely abstract statistical framework—we need to add a hypothesis about a contingent past, that is, an historical fact. See also Rovelli (2018) on this point.

<sup>31</sup> That, I think, is part of what Merleau-Ponty (1968) is getting at with his thought of the invisible of the visible. Once there is a visible, its invisible is indeed an invisible of the visible (an invisible indirectly indicated in every visible). But an ontology that takes seriously invisibility as a mode of being precisely precludes saying the being of the invisible is a phenomenon, a visible. We therefore cannot rule out an invisible that would never have manifest a visible. Again, Merleau-Ponty’s point is that the invisible of being is not manifest directly, as visible.

<sup>32</sup> See Monk et al. (2019), which notes that same-sex sexual behavior is found in over 1,500 animal species; also see Joan Roughgarden (2004) for earlier work on this topic.



a phenomenon; the being of time is not time; the being of norms is not a norm. Everywhere in being we find expression, *écart*, disparity, creativity.

We thus need to invert the relation between time and change, norms and life—bring these abstractions “down to earth” as Merleau-Ponty would say—if each one of us and every one of us are to flourish as following our own living with others. But this following and flourishing require a rethinking of time: time is not a framework wherein all of this happens, rather time is what follows along in the wake of the happening that allows living in the first place. More profoundly, philosophy would no longer be able to pretend to rely on even time as transcendental. This is a case where the ventures of critical phenomenology, into the thought of crip time, advene into phenomenology itself, by exposing phenomenology to a time that phenomenology presupposes yet cannot constitute, an-archic time of nature within which alone philosophers and philosophy come to live and move and have their being.

## REFERENCES

- Albert, David Z. 2000. *Time and Chance*. Cambridge, MA: Harvard University Press.
- Barbaras, Renaud. (1991) 2004. *The Being of the Phenomenon*. Translated by Ted Toadvine and Leonard Lawlor. Bloomington: Indiana University Press.
- Beith, Don. 2018. *The Birth of Sense: Generative Passivity in Merleau-Ponty's Philosophy*. Athens: Ohio University Press.
- Bergson, Henri. 2023. *Creative Evolution*. Translated by Donald A. Landes. London: Routledge.
- Carbone, Mauro. 2015. *The Flesh of Images: Merleau-Ponty between Painting and Cinema*. Translated by Marta Nijhuis. Albany: State University of New York Press.
- Chang, Hasok. 2007. *Inventing Temperature: Measurement and Scientific Progress*. Oxford: Oxford University Press.
- Ciavatta, David. 2017. “Merleau-Ponty and the Phenomenology Natural Time.” In *Perception and its Development in Merleau-Ponty's Phenomenology*, edited by Kirsten Jacobson and John Russon, 159–90. Toronto: University of Toronto Press.
- Collingwood, R. G. 1925. “Some Perplexities about Time: With an Attempted Solution.” *Proceedings of the Aristotelian Society* 26: 135–50. <https://doi.org/10.1093/aristotelian/26.1.135>.
- Curd, Patricia and Richard D. McKirahan. 1996. *A Presocratics Reader*. Indianapolis, IN: Hackett.

- Davies, Paul. 2019. *The Demon in the Machine: How Hidden Webs of Information are Solving the Mystery of Life*. Chicago: The University of Chicago Press.
- Derrida, Jacques. 1982. *Margins of Philosophy*. Translated by Alan Bass. Chicago: University of Chicago Press.
- DiSalle, Robert. 2006. *Understanding Space-Time: The Philosophical Development of Physics from Newton to Einstein*. Cambridge, UK: Cambridge University Press.
- Douglas, Emily. 2022. “Sick of It: Psychosomatic and Sociogenic Illness in Feminist Philosophy of Disability.” PhD diss., McGill University.
- Dowker, Fay. 2020. “Being and Becoming on the Road to Quantum Gravity; Or, the Birth of a Baby is Not a Baby.” In *Beyond Spacetime: The Foundations of Quantum Gravity*, edited by Nick Huggett, Keizo Matsubara, and Christian Wüthrich, 133–42. Cambridge, UK: Cambridge University Press.
- Ferrari, Martina. 2021. “Decolonizing Silences: Toward a Critical Phenomenology of Deep Silence with Maurice Merleau-Ponty and Gloria Anzaldúa.” PhD diss., University of Oregon.
- Guenther, Lisa. 2021. “Six Senses of Critique for Critical Phenomenology.” *Puncta: Journal of Critical Phenomenology* 4 (2): 5–23. <https://doi.org/10.5399/pjcp.v4i2.2>.
- Hendren, Sara. 2020. *What Can a Body Do? How We Meet the Built World*. New York: Riverhead Books.
- Hertog, Thomas. 2023. *On the Origin of Time: Stephen Hawking’s Final Theory*. New York: Bantam Books.
- Husserl, Edmund and John B. Brough. 1991. *On the Phenomenology of the Consciousness of Internal Time (1893–1917)*. Translated by J. B. Brough. Boston: Kluwer Academic Publishers.
- Lajoie, Corinne. 2022. “The Problems of Access: A Crip Rejoinder via the Phenomenology of Spatial Belonging.” *Journal of the American Philosophical Association* 8 (2): 318–37. <https://doi.org/10.1017/apa.2021.6>.
- Mazis, Glen. 2010. “Time at the Depth of the World.” In *Merleau-Ponty at the Limits of Art, Religion, and Perception*, edited by Kascha Semonovitch and Neal DeRoo, 120–44. London: Continuum.
- . 2016. *Merleau-Ponty and the Face of the World: Silence, Ethics, Imagination, and Poetic Ontology*. Albany: State University of New York Press.

- Merleau-Ponty, Maurice. 1964. *Le visible et L'invisible*. Paris: Gallimard.
- . 1969. *Humanism and Terror*. Translated by J. O' Neill. Boston: Beacon Press.
- . 1993. "Eye and Mind." In *The Merleau-Ponty Aesthetics Reader: Philosophy and Painting*, edited by Galen A. Johnson, 351–78. Evanston, IL: Northwestern University Press.
- . 1994. *La Nature: Notes, Cours du Collège de France*. Paris: Seuil.
- . 2002. *Husserl at the Limits of Phenomenology*. Translated by Leonard Lawlor. Evanston, IL: Northwestern University Press.
- . 2008a. "La Nature ou Le Monde du Silence." In *Maurice Merleau-Ponty*, edited by Emmanuel de Saint Aubert, 44–53. Paris: Hermann.
- . 2008b. *Phénoménologie de la Perception*. Paris: Gallimard.
- . 2010. *Institution and Passivity: Course Notes from the Collège de France (1954–55)*. Translated by Leonard Lawlor and Howard Massey. Evanston, IL: Northwestern University Press.
- . 2011. *Child Psychology and Pedagogy: The Sorbonne Lectures 1949-1952*. Translated by Talia Welsh. Evanston, IL: Northwestern University Press.
- . 2012. *Phenomenology of Perception*. Translated by Donald A. Landes. Oxon, UK: Routledge.
- Milburn, G. J. 2020. "The Thermodynamics of Cocks." *Contemporary Physics* 61 (2): 69–95. <https://doi.org/10.1080/00107514.2020.1837471>.
- Monk, Julia D., Erin Giglio, Ambika Kamath, Max R. Lambert, and Caitlin E. McDonough. 2019. "An Alternative Hypothesis for the Evolution of Same-sex Sexual Behaviour in Animals." *Nature Ecology & Evolution* 3 (12): 1622–31. <https://doi.org/10.1038/s41559-019-1019-7>.
- Morris, David. 2018. *Merleau-Ponty's Developmental Ontology*. Evanston, IL: Northwestern University Press.
- . 2020. "From 'Block-Things' to 'Time-Things': Merleau-Ponty's Temporal Ontology in Part Two of the *Phenomenology of Perception*." *Continental Philosophy Review* 53 (1): 1–19. <https://doi.org/10.1007/s11007-019-09479-4>.
- Muller, Richard. 2016. *Now: The Physics of Time*. New York: W.W. Norton & Company.
- Posy, Carl J. 2020. *Mathematical Intuitionism*. Cambridge, UK: Cambridge University Press.

- Roughgarden, Joan. 2004. *Evolution's Rainbow: Diversity, Gender, and Sexuality in Nature and People*. Berkeley: University of California Press.
- Rovelli, Carlo. 2018. *The Order of Time*. New York: Riverhead Books.
- Silberstein, Michael, W.M. Stuckey, and Timothy McDevitt. 2018. *Beyond the Dynamical Universe: Unifying Block Universe Physics and Time as Experienced*. Oxford: Oxford University Press.
- Simondon, Gilbert. 2020. *Individuation in Light of Notions of Form and Information*. Translated by Taylor Adkins. Minneapolis: University of Minnesota Press.
- Smolin, Lee. 2013. *Time Reborn*. Toronto: Alfred A. Knopf Canada.
- . 2018. “Temporal Relationalism.” In *arXiv e-prints*. <https://doi.org/10.48550/arXiv.1805.12468>.
- Smolin, Lee and Roberto Mangabeira Unger. 2015. *The Singular Universe and the Reality of Time*. Cambridge, UK: Cambridge University Press.
- Toadvine, Ted. 2009. *Merleau-Ponty's Philosophy of Nature*. Evanston, IL: Northwestern University Press.
- Vanzago, Luca. 2017. *The Voice of No One: Merleau-Ponty on Nature and Time*. Sesto San Giovanni, Italy: Mimesis International.
- Weatherall, James Owen. 2016. *Void: The Strange Physics of Nothing*. New Haven, CT: Yale University Press.