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SPECIAL ISSUE

What Is the Philosophy of Movement?

Thomas Nail
Professor, Department of Philosophy
University of Denver, Denver, CO, USA

Abstract

This paper is an introduction to the philosophy of movement. It describes the contemporary motivations and goals of the project as well as its similarities and differences with the mobilities paradigm and process philosophy. I argue that what is unique about the philosophy of movement is that it is the only philosophy that accepts the primacy of motion as its methodological starting point. The philosophy of movement is the analysis of phenomena across social, aesthetic, scientific, and ontological domains from the perspective of motion. It is a philosophy of indeterminacy or processes understood as processes. That is, not as a sequence of static discontinuous occasions as or as a continuous vital energy. In the philosophy of movement, the world is made of processes whose relatively stable iterations generate the phenomena we see around us. Things are emergent "metastable" patterns of indeterminate motion.

Keywords

Philosophy, Movement, Mobilities, Process, Bergson, Whitehead, Deleuze, Migration

We all feel it: everything seems to be moving faster these days. People and things are travelling longer distances, more frequently and more quickly than ever before. We find ourselves in a 21st-century world where mobility increasingly defines every central area of human activity, from society and science to commerce, the arts, and even nature itself. All that was solid melted into the air some time ago and is now in circulation worldwide, like dandelion seeds adrift on turbulent winds.

In this essay, I introduce and explain the motivation for a philosophy of movement. I discuss its relationship to mobilities studies and process philosophy and highlight its novelty.

The Century of Motion

We live in an age of movement. The world has always been in motion, but it is only relatively recently that we have become aware of just how profoundly mobile it is. I find it endlessly fascinating that something as simple as movement has posed such enormous difficulties for philosophers and scientists in the Western tradition. Why have the most remarkable minds dedicated their lives to discovering something genuinely immobile? Aristotle's idea of an "unmoved mover,"[1] Archimedes' fixed "point," Descartes' "unmoveable" certainty, Newton's divine clockmaker, and even Einstein's idea of a block universe are all part of this great effort. But what motivated this critical pursuit, and what are the consequences of it for us today?

These have been guiding questions of my research for a decade. I have tried to understand their implications for politics, science, ontology, and the arts in my books.[2] I have also attempted to discern the scope and nature of their contemporary urgency.

Today, we sense that the pace of life is speeding up, becoming unstable and that we have increasingly less control over our lives. Because our brains can plastically "rewire" themselves to accommodate our media habits, they are now literally scrambling to keep up with the pace of technological change. These changes in our thinking are being matched by shifts in our social and physical environments. Scientists project that global migration will double in the next fifty years, with 68% of the world population living in urban areas and megacities. We are watching species disappear from our yards and forests, and glaciers melt before our eyes. These shifts are all converging on a new planetary paradigm of a world in

1 For a more detailed reading of Aristotles theory of motion see Nail, *Being and Motion*, esp. ch. 20.

2 See Nail, *Being and Motion; The Figure of the Migrant; Lucretius I: An Ontology of Motion; Lucretius II: An Ethics of Motion; Marx in Motion: A New Materialism Marxism; Theory of the Border; Theory of the Earth;* and *Theory of the Image.*

motion.

Motion is not just a new way to *think* about the world. It is a synthetic description of life in the 21st century based on our shared experience of increasing mobility, displacement, and instability. These movements are changing every structure on the planet we previously thought was stable. We are entering a startling new epoch where every aspect of life—in science, society, technology, and nature itself—is increasingly defined by movement and mobility. The philosophy of movement is an attempt to understand the new spirit of our times, how we got here, the consequences of these changes, and how we can move better together. The philosophy of movement is motivated by four significant contemporary phenomena that force us to rethink the nature and centrality of movement.

Quantum Physics

Our contemporary *experience* of motion is in *dissonance* with previous explanations of the world. This dissonance built up over the 20th century and came to a crescendo around the turn of the 21st century. Our worldview was irreparably altered in 1998 when physicists from the Supernova Cosmology Project first discovered that the universe is expanding ever more rapidly in every direction. This epoch-defining event continues to be the single greatest unsolved scientific mystery of our time and the most significant challenge to cosmology and fundamental physics. Prior to Hubble's discovery of the universe's expansion in 1924, all our best theories assumed a stable, non-accelerating "background spacetime" as their foundation. They were wrong. "Dark matter" is the name we now give to the cosmic-scale quantum fluctuations that make up 85% of the universe.

The mind-bending point is that the same quantum fluctuations that comprise this massive cosmic dark matter are the same immeasurably small fluctuations that create spacetime itself. The most revolutionary discovery of contemporary physics is that our universe is not made of discrete particles or stable substances but indeterminate fluctuations. Incredibly fast-moving processes, *not substances*, create spacetime at the smallest levels of reality and accelerate that spacetime at the largest levels. This is a fundamentally *new* physical worldview. Everything, without exception, is literally in flux.

There is nothing we know of that is *not in motion*. Unfortunately, we have very few useful tools to help us make sense of our new reality because most of human history has been searching for static points of reference to fix our world in time and space. Prehistoric mythologies described human life as secured within a continually reborn but limited space: a "cosmic egg" or "nurturing mother earth." Ancient philosophies described a stablised cosmos rotating around the static centre of a divine sphere. Renaissance science steadied us with the hand of a divine clockmaker. Even Einstein gave us the "static universe" of general relativity.

These old stories no longer reflect our 21st-century world of cosmic acceleration, climate

catastrophe, and massive human displacement. We need a new story, a new synthesis that reflects the contemporary world and helps us solve its problems. The stable cosmos, earth, society, and brain *do not exist*. The philosophy of movement draws on the latest research across several fields to rethink everything from the perspective of motion.

Digital Media

Closer to home, quantum fluctuations form the foundation of the lived world of motion: digital media. The digital revolution, or the move away from analogue technologies like tapes, records, and newspapers, began in the 1940s-70s with the invention of transistors, light-emitting diodes, lasers, and other technologies that code quantum-electrical signals into binary 1s and 0s, or "information." Around the 21st century, just over half the world used digital technologies; today, they are nearly universal. There are now more mobile phones than humans on this planet, and more data collected than can be interpreted and used.

The transition to digital technologies has made it possible for people, information, and things to circulate faster and farther than at any point in human history. But in addition to the benefits they deliver, digital technologies have significantly upped the ante. Digital technologies, advertising, mobile devices, live news, and high-speed internet have all contributed to an enormous contraction of lived spacetime that demands we move as fast as the technologies themselves to keep up. Along with the lightning speed of information, we now depend on the infrastructure and global resource interdependence it requires. High-speed information means that the world is moving and reacting to itself faster. Even our supposedly stable brains are becoming increasingly unstable as these new information technologies continually neurologically rewire them. Our brains are becoming anxious, easily distracted, sleepless, and forgetful.

Global Migration

The invention of ultrafast communication, enormous data storage, high-speed computer processing, and global positioning systems has made possible (among other things) a dramatic expansion of economic markets, trade liberalisation, increased international commerce, transportation, and the movement of vast sums of capital and people. The revolution in economic mobility has required the simultaneous social mobility of people to follow capital flows. Economic globalisation, beginning in the 1970s, led to a doubling of international migrants by the turn of the 21st century. Since then, these numbers have increased by almost 50%. There are now over 1 billion migrants, and that number is still rising. At this point, the proportion of full-status citizens worldwide is notably decreasing. Many people are now moving and residing in countries with partial or no status resulting in societies themselves becoming increasingly hybrid. This is especially dramatic in most Western countries, where 10-30% of the population lacks full political status. With our

societies in transition, there are more migrants, more refugees, more displacements, longer commute times, more traffic, and international movement than ever. Society is no longer a stable place of homogenous citizens. We are all becoming migrants in a world in flux.

Climate Change

We are accustomed to treating the earth as a stable or static surface that we live and move on, but now this stable ground is becoming increasingly mobile. The advance of economic globalisation and human mobility, including global travel and increasing commute times, are significantly increasing fossil fuel emissions and contributing to climate changes, which are, in turn, increasing the international movement of people and climate refugees in a vicious feedback loop.

The more humans try and dominate and control planetary systems, the more they fly into a tailspin. We erode ten times more topsoil through agriculture and deforestation than the erosion caused by all of the earth's rivers combined. We are releasing more greenhouse gases than at any time in the last 500 million years. The earth's changing climate is, in turn, impacting human society through devastating storms, droughts, fires, and mass extinctions in such a way that we can no longer maintain the old separation between the earth, atmosphere, and life itself. Our experience of a world in motion is the product of these record-breaking weather patterns, increasing temperatures, the consumption of global environmental toxins in our water supply, agriculture and seafood, and climate-related political conflicts. We have a gut feeling the world is increasingly unstable—because it is. Today the most stable of all foundations, the earth itself, is now in unpredictable flux.

It is a truism of the modern age to say that the world is always changing. But what I am arguing here is that something much more profound, revolutionary, and unsettling is happening. I am arguing that today the old *idea of change* is now obsolete. In the 20th century, we still thought of change as something shifting relative *to something else*. Today, this way of thinking about the world simply no longer works and is even proving disastrous.

The stable foundations upon which we had previously measured change, progress, technological development, nation-states, and even the earth itself, are today increasingly unstable in ways we never before imagined were possible. The problem is that we are still thinking about the world as if change can be plotted along a line from point A to point B.[3] But the whole line and all of its points are now in motion. This is new. This is the Copernican revolution of our time. This is what the philosophy of movement is trying to understand.

3 For more detailed historical account of where the idea of motion as a translation between A and B comes from please see Nail, *Being and Motion*, Book II.

The Philosophy of Movement

The philosophy of movement is the analysis of phenomena across social, aesthetic, scientific, and ontological domains from the perspective of motion. Almost every philosopher and even layperson have described things in motion. For the philosopher of movement, though, motion plays an analytically *primary* role.

For example, if we describe a body moving through space over time, we are describing motion. However, we are also assuming a more primary non-kinetic and immobile space-time within which this motion occurs. From the perspective of motion, space, time, and objects are not immobile but are metastable patterns of matter in motion. Everything is in motion, but all motions are relative to others. This is the meaning of general relativity.[4] However, giving analytical primacy to motion does not mean that we cannot speak of space or time. It means that motion is a unique and primary dimension of reality, not reducible to space or time.

We need a new vocabulary and interpretive framework to make sense of the world. We still talk about objects as static or discrete when quantum physics tells us they are fluctuating and entangled processes. We still talk about digital images as if they were made of little bits and bytes, while in reality, electromagnetic waves are flying through the atmosphere all around us. We still talk about people as if they were defined by their national identity, while people have never moved around the globe more in all of human history. We still talk about places as if nature remained immobile as humans move on top of it, while our entire biosphere and geology are rapidly changing both above and beneath our feet. Such talk of objects, images, people, and places is not entirely wrong; it is, in fact, quite practical as a shorthand for much more complex processes. Unfortunately, every shorthand has its limits. We are fast approaching a historical breaking point where this interpretive model of discrete and stable things is getting us into trouble.

The world is increasingly on the move, but because we have yet to fully let go of our fixation with stasis and embrace the mobility at its heart, we are making significant interpretive errors. We have not yet understood the hidden meaning of our present. In my view, we can better understand our mobile world in terms of flows and processes than by fixed objects, people, and places. One of the aims of the philosophy of movement is to show precisely where our traditional model is starting to break down and where a new movement-oriented interpretation can help.

The philosophy of movement offers a unique process view of contemporary reality based on movement, consistent with the science of flux. It is also distinct from older models of process philosophy based on vital forces, as in the philosophy of Henri Bergson, or on static strobe-like occasions, described by Alfred North Whitehead, as I show in this paper.

4 This may sound like a bold thesis, but at the turn of the twenty-first century it is almost universally accepted by all physicists in quantum field theory and cosmology. See Carroll, *The Big Picture: On the Origins of Life, Meaning, and the Universe Itself;* Rovelli, *Reality Is Not What It Seems: The Journey to Quantum Gravity.*

If we look at the world from a kinetic perspective, new patterns and features of reality emerge that we did not see before. I will not get into the details of this view in this introductory paper. Instead, I would like to focus on situating its novelty in relation to the mobilities paradigm in sociology and to process philosophy. Toward the end, I will try and shortly summarise its core philosophical commitments.

The Mobilities Paradigm

Some disciplines study the movement of bodies such as fluid and non-linear dynamics,[5] interactive and generative art,[6] migration and transport studies,[7] to name a few. Motion is important for these disciplines, but it may not be conceptually primary for them. This is what distinguishes the philosophy of movement from other studies of motion.

In 2006, Mimi Sheller and John Urry announced a "mobilities paradigm" or "mobility turn" in the social sciences (207). Their edited journal issue dramatically showed what many scholars studying movement across several different disciplines had felt was going on for some time. Despite their different domains and topics of study, they studied the same thing, but from different perspectives: motion. The recognition of a transdisciplinary area of study was an important event and has led to further expansions of the paradigm into the humanities over the last ten years.[8]

This event has at least two consequences for the development of a philosophy of movement. First, it expanded the study of motion to multiple areas in the humanities and social sciences, including anthropology, cultural studies, geography, science and technology studies, tourism and transport studies, and sociology, to name a few.

Second, and even more importantly, this expansion introduced the possibility of a theoretical unity to the study of motion. It also raised some critical questions. Does the mobilities paradigm apply only to studies where things are clearly moving around as in tourism, migration, the spread of viral epidemics, portable computers, airports, automobiles, and so on?[9] Or should we still adopt the methodological priority of motion

5 See Prigogine and Stengers, *Order Out of Chaos: Man's New Dialogue with Nature; Strogatz*, *Sync: The Emerging Science of Spontaneous Order.*

6 See Scott Draves' *Electric Sheep* (1999), Maurizio Bolognini's *Programmed Machines* (1988), *Collective Intelligence* (2000); Maxime Causeret's *Order From Chaos* (2016).

7 For a great bibliography of work on migration, transport, and tourism see Sheller and Urry. "The New Mobilities Paradigm" 207-226; and Endres et al., *The Mobilities Paradigm: Discourses and Ideologies.*

8 For an excellent literature review and collected volume on the latest expansions of mobility studies see Endres et al., *The Mobilities Paradigm: Discourses and Ideologies.*

9 Rather, applying the terminology of Foucault's archaeological approach to discourse analysis, the *rules of discourse formation* "determine both, what can appear as 'movement,' and the subject positions according to which one can move meaningfully and legitimately and according to which one can claim agency and insight in relation to movement" Frello, "Towards a Discursive Analytics of Movement: On the Making and Unmaking of Movement as an Object of Knowledge" 25–50.

in cases where things are seemingly immobile, like borders, states, prisons, desktop computers, roads, and so on? Or for static things, should we go back to the spatial turn of the 1980s for a different method and set of concepts? Should we still begin our approach with the priority of motion if the events are older than the contemporary event of our "liquid" and "mobile" modernity as Bauman, Augé, Castells, Virilio, and others heralded at the turn of the century?[10] Or for older events when the world was more static, should we rely on our discipline's traditional static methods?

There are as many answers to these questions as there are mobilities scholars. I hope you see where I am going with this. The mobility paradigm extends only as far as scholars are willing to take it. At the moment, mobility studies is largely, although not exclusively, focused on clearly mobile bodies (cars, dance, diaspora, airports, and so on) in the twenty-first, often twentieth, and occasionally nineteenth centuries, and mostly in the social sciences, sometimes in the humanities, and rarely in the natural sciences.[11]

In their description of this mobilities paradigm, Sheller and Urry even make clear that they "do not insist on a new 'grand narrative' of mobility, fluidity, or liquidity. The new mobilities paradigm suggests a set of questions, theories, and methodologies rather than a totalising or reductive description of the contemporary world" (210). According to the authors, the mobilities paradigm is not a metaphysics that describes everything forever and all time.

This is great. However, it also seems arbitrarily limited in its scope and content. At times, this limitation threatens to undermine the methodological centrality of motion altogether. For instance, it unintentionally introduces a binary division between space-time immobilities, fixities, or moorings on the one hand and mobilities on the other. This is significantly limiting when immobility itself is understood to be the condition of mobility. For instance, Urry and Sheller claim that "the multiple fixities or moorings … enable the fluidities of liquid modernity," and that mobilities "presume overlapping and varied time-space immobilities" (210).[12] It sounds like they are saying that movement comes from stasis. If so, this is not a movement-first perspective.[13]

Despite the indisputable fact that everything is in motion, some mobilities scholars have dug their heels in on this point, arguing that "if everything is mobile, then the concept has

10 See Augé, *Non-places: Introduction to an Anthropology of Supermodernity;* Castells, *The Rise of the Network Society;* Bauman, *Globalization: The Human Consequences*, 87.

11 Most mobilities philosophies or "methodologies," begin with motion but just as often supplement this with theories of space from Soja, Lefvfre, or David Harvey, or theories of time from Heidegger and Virilio, or theories of affect from Deleuze and Guattari.

12 See Graham and Marvin. *Telecommunications and the City: Electronic Spaces*, *Urban Spaces.*

13 Peter Merriman and Peter Adey have also taken issue with this binary opposition between mobility and immobility. See Adey, "If Mobility Is Everything Then It Is Nothing: Towards a Relational Politics of (Im) Mobilities" 76, 83, 86. In reply, Adey has suggested that as "everything is mobile" and "there is never any absolute immobility", "moorings are indeed mobile too", but at a more fundamental level Peter Merriman argues that the mobility/moorings binary too simplistic. See Merriman, *Mobility, Space, and Culture.* This is a concern also held by Bissell, "Narrating Mobile Methodologies: Active and Passive Empiricisms" 53–68.

little purchase." (76)[14] Imagine saying that "since everything is in space or time, the concept has little purchase"! This critique is preposterous.[15] No wonder so few natural scientists seem interested in the mobilities paradigm. I agree that it is at least analytically useless and at most politically pernicious to *merely* say "everything is in motion" (Cresswell 55) or "motion is a good,"[16] but that is true of anything. By contrast, the methodological goal of the philosophy of movement, in my view, is to give us another robust perspective on reality. It strives for the same rigour that the study of space and time have had in every field of knowledge.

Indeed, there is a third way between a metaphysics of motion and only studying some contemporary things that move a lot. It seems possible for paradigms and theoretical frameworks to describe everything that has been without being the only coherent or reductive description of those things. There can be multiple co-existing descriptions of the same things from different perspectives. Why then can't the mobilities paradigm offer us a new view or dimension to everything in the same way that we quite easily talk about spatial and temporal dimensions to all things? Movement is just as real of an irreducible dimension of being as space or time. There is nothing that is not or has not been in motion. To believe otherwise is precisely to reduce motion to space and time.

We can stretch a historical ontology of motion a long way without impinging on the future or becoming "total," "absolute," "metaphysical," or "reductive." In other words, a theory can have a large region and still be regional. Certainly, we can push theory at least beyond the last fifty or one hundred years! So why restrict a movement-oriented theoretical perspective to a couple of domains, or historical periods, or anything else outside the non-existent future itself? If something moves, why can't a movement-oriented perspective be used to understand it?

The mobilities paradigm has and continues to make excellent contributions to the philosophy of movement. However, it also seems to have some arbitrary de facto limitations to its domains, historical scope, and content that leave plenty of room for the emergence of a more robust non-metaphysical and non-reductionistic philosophy of movement. This is what I want to explore.

Process Philosophy

The philosophy of movement is a process philosophy. However, it is a new kind of process

14 Adey, "If Mobility Is Everything Then It Is Nothing" 76.

15 It is also wrong because space and time are both produced through the folding of quantum fields which are not themselves reudicible to space and time. This is yet another contemporary discovery of the primacy of motion. See Rovelli, *Reality Is Not What It Seems*.

16 For a critique of such simplistic theories of motion see Cresswell, *On the Move*. On this also see Thrift, "Inhuman Geographies: Landscapes of Speed, Light and Power" 191–248. Although a few feminist theorists such as Rosi Braidotti have embraced nomadic theory/nomadic metaphors, many others have criticized their gendered nature, see Wolff, "On the Road Again: Metaphors of Travel in Cultural Criticism" 224–239; Kaplan, *Questions of Travel: Postmodern Discourses of Displacement*, 65–100.

philosophy distinct from the two main historical branches of Bergsonian and Whiteheadian process philosophy. Below, I would like to briefly summarise my argument that Bergson, Whitehead, and Deleuze are not philosophers of motion. They each have important similarities and differences, but I cannot reproduce my full comparative arguments here due to space.[17]

The French philosopher Henri Bergson (1859 – 1941) argued that nature was an "intensive" continuum of vibrations. Instead of changes between discrete states, Bergson argued that nature was a continuous "universal transformation" (209). Instead of fixed states, Bergson described "fluid masses" in "a moving zone." "States," he says, "thus defined cannot be regarded as distinct elements. They continue each other in an endless flow" (*Creative Evolution* 5). Nature is "one single immense wave flowing over matter" (*Creative Evolution* 273). The appearance of discrete units of space and time are products of the human intellect and not real features of nature.

Bergson wrote a lot about movement, but he almost always described the source of movement as being something else he called a "vital force" or "duration" (*duré*). For Bergson, movement derives from a vital force or unquantifiable energy inside all of life that causes it to move. Other passages in his book *Matter and Memory* claim that time or "pure duration" is ontologically primary and is causing the flow and motion of nature (187).

By contrast, in the philosophy of movement, motion is primary, indeterminate, and without any other cause or explanation. Neither time, duration or vitality is more primary.[18] Furthermore, there is no whole of nature because nature is an open indeterminate process expanding and unfolding in all directions.

Alfred North Whitehead (1861 – 1947) was a contemporary of Bergson but had a very different process philosophy. For Whitehead, process is real, but change and motion are not. For example, according to Whitehead, change is only "the difference between actual occasions comprised in some determined event" (*Process and Reality* 73) and thus it is "impossible to attribute 'change' to any actual entity" (*Process and Reality* 59). "Thus an actual entity never moves: it is where it is and what it is" (73). Change and motion thus relate to a succession of actual entities and are constituted only by their *differences*. Every entity is "what it is," and it "becomes" as the whole of reality enters a succession of discretely different states, but no entity ever technically changes or moves. Whitehead explicitly connects his view to the philosophical tradition called "occasionalism." Occasionalism is the view that the entire universe is destroyed and created anew at each moment, like a strobe

17 If readers are interested to hear more, they can see chapter three of *Being and Motion*.

18 At the end of his life, Bergson explicitly identified time/duration with mobility. On the issue of time/duration Bergson writes very clearly in this final work that "time is mobility." "Mobility," Bergson argues, "or what comes to the same thing, duration," is becoming, but becoming is not "becoming in general" as an "immobile medium," through which things pass. Becoming is the continual mobility of reality itself. "Reality is mobility itself." In this final work Bergson could hardly be a more unequivocal and clarifying: "If movement is not everything, it is nothing." Bergson, *The Creative Mind: An Introduction to Metaphysics* 8; *Matter and Memory* 47; *The Creative Mind 46; The Creative Mind* 155.

light.

At least one scholar has aptly observed that this is a purely logical king of change or what has come to be known as a "Cambridge change," after the school of logicians Whitehead worked with, and not a kinetic one. Whitehead's transition, the same scholar observes, "is not a real transition, not a flow or flux, and change so understood is merely a fact consequent upon the successive existence of a series of different unchangeable and static actual entities. *The very notion of change has been made incurably static*" (Eslick 510).[19]

If there was still any doubt on this matter, Whitehead quite clearly writes in *The Concept of Nature* that "Motion presupposes rest…A theory of motion and a theory of rest are the same thing viewed from different aspects with altered emphasis" (105). There is "no continuity of becoming," Whitehead says, but only "a becoming of continuity" (*Process and Reality* 35). This is the direct inverse of Bergson's idea of intensive continuity.

This is most clearly different from the philosophy of movement because processes are completely static for Whitehead. The appearance of movement derives from rest and stasis. It is a static becoming.[20]

The most recent novel attempt to continue process philosophy is the work of the French philosopher Gilles Deleuze (1925 – 1995). Deleuze was the first to unify the Bergsonian and Whiteheadian traditions into a single systematic philosophy of becoming. Instead of developing a philosophy limited to a single name for being (space, eternity, force, time, motion, etc.) Deleuze developed an inclusive and pluralistic ontology in which all the great names of being are processes. Deleuze developed and applied process theories of space, thought, force, time, motion, and others.

Becoming means continuum, matter, and motion for Deleuze just as equally as it means discreteness, thought, and stasis. *There is a becoming of both*, which he calls "static genesis."[21] However, there is a difficulty and perhaps impossibility of affirming the becoming of movement and stasis equally without falling back into one or the other or introducing, as Deleuze ends up doing, a third "pure becoming" that traverses them all: force. For Deleuze, there is a "force of thought"[22] just as there is a "force of matter."[23] Everything "becomes" because everything is a force of "becoming." He is quite explicit about the ontological priority of force against Marx and Lucretius' kinetic materialism (which

19 See also Eslick, "Substance, Change, and Causality in Whitehead," 503-513. Whitehead's transition "is not a real transition, not a flow or flux, and change so understood is merely a fact consequent upon the successive existence of a series of different unchangeable actual entities. *The very notion of change has been made incurably static*." (510).

20 It is well established in the scholarship that Whitehead is a thinker of radical discontinuity, stasis, but also becoming. Since each actual occasion is atomistic and self-contained, and events only arise in the gap or passage between them, there is "no continuity of becoming." See Robinson, ed., *Deleuze*, *Whitehead*, *Bergson: Rhizomatic Connections.*

21 See Deleuze, *Logic of Sense* 98.

22 See Deleuze, *Difference and Repetition* 138.

23 See Deleuze and Guattari, *A Thousand Plateaus* 95.

lacks force) in his book on Nietzsche. "Atomism," Deleuze writes, "would be a mask for an incipient dynamism" (*Nietzsche and Philosophy* 6-7).[24]

As much as Deleuze rejects the early modern attempts to explain the movement of matter by something else (God, soul, and freedom), he cannot help himself form assigning an immanent motive power to motion in the form of a vital striving or conatus. This is not the same as a transcendent explanation of the swerve, but it is nonetheless wholly unnecessary and has no textual support in Lucretius or Epicurus.

Deleuze finds matter and motion insufficient on their own because he cannot imagine the agency of matter without the existence of vital power. He cannot imagine movement without a cause or something else to explain it. I have argued elsewhere at length that we do not need force or vital power to explain motion.[25] In particular, I see no reason why we need *conatus* to make Lucretius' philosophy of movement work as Deleuze thinks.

In my view, processes are neither continuous, as Bergson said, discontinuous as Whitehead said, nor both as Deleuze said. Instead, processes are *indeterminate* because they are material and kinetic.

Movement and Indeterminacy

In the Western tradition, we are used to defining determinate beings. According to the Oxford English Dictionary, a "determinate" being is one with distinct and definite limits. We typically define a "being" as something that exists as a positive presence. But what if we are trying to talk about something without definite limits or a fully positive presence? We could use the words "absence" or "non-being." But we can also use the words "process" or "becoming" to indicate an event that is neither a determinate being nor a non-being. A process such as a swallow swooping after a bug through the sky is neither fully present nor fully absent. This is what I mean by "indeterminacy."

Indeterminacy, in my view, is a process understood *as a process*. That is, not as a sequence of static discontinuous occasions as Whitehead thought or as a continuous vital energy as Bergson described. In the philosophy of movement, the world is made of processes whose relatively stable iterations generate the phenomena we see around us. Things are emergent "metastable" patterns of indeterminate motion.

24 Deleuze explicitly subordinates matter and motion to force in his book on Nietzsche contrasting himself and Nietzsche from Lucretius and Marx's kinetic materialism. "Only force can be related to another force. (As Marx says when he interprets atomism, "Atoms are their own unique objects and can relate only to themselves" - Marx "Difference Between the Democritean and Epicurean Philosophy of Nature" . But the question is; can the basic notion of atom accommodate the essential relation which is attempted to it? The concept only becomes coherent if one thinks of force instead of atom. For the notion of atom cannot in itself contain the difference necessary for the affirmation of such a relation, difference in and according to the essence. Thus atomism would be a mask for an incipient dynamism." See Deleuze, *Nietzsche and Philosophy* 6-7.

25 See Nail, *Being and Motion* 317-388.

In the Western tradition, most thinkers have placed matter at the bottom of their conceptual hierarchies because they said matter was so easily and completely shaped by any form that touched it. What matter was "in itself" was unknown, unlimited, and indeterminate. Motion, too, was at the bottom because it was the name for the process by which one determinate thing changed into another. The process of motion was not "nothing", but it wasn't fully "something" either. In short, matter and motion have been understood as indeterminate processes and subordinated to higher and more static forms of existence. Even process philosophers have tried to explain them by vital forces or spontaneous occasions.

How might indeterminacy shift the standard definition of matter and motion? It would mean that matter in motion is not a translation from point A to point B because there is no determinate point called "A" nor a fixed object moving through a fixed space and time. "Point A" is a continually changing process. Indeterminate matter has no internal static identity. It is not stuff, substance, vital force, occasion, or an object but rather a regional stability-in-motion or pattern-in-process. Matter changes when it moves.

In this way, movement is not a movement in empty space from point A to point B. Movement is the continual transformation of the whole extended space, point A, point B, and the line. Everything moves and changes indeterminately but in relatively stable iterative patterns.

A Movement-Oriented Perspective

The consequences of a movement-oriented perspective are significant and I have spent the last decade exploring them. I cannot reproduce all my conclusions here, nor can I offer a more sustained elaboration of the philosophy of movement. If readers are interested, they can look at book one of *Being and Motion*. However, I will try to say a bit more and briefly sketch out what I have done so far.

If everything is indeterminate processes of matter in motion, how does the relatively stable and determinate reality we know emerge? How does thinking about the world as movement, instead of substances, forms, and essences help us make better sense of things?

At every scale of reality, matter affects and interacts with itself. Quantum fields interact with themselves to create particles, particles vibrate back and forth at certain frequencies that shape the solidity of objects. Objects converge into massive metabolic systems at social and planetary levels.

All these occur because things do not move in a straight line. As matter flows, it "swerves," the Roman poet Lucretius said.[26] Matter is accustomed to deviating from its course just a little. But these constant little changes build up into larger patterns of motion. If things

26 See Lucretius, *De Rerum Natura* trans 218-222.

moved randomly then anything could come from anything else. All fruits could grow from all trees and men could sprout from the sea, but this is not what we see, Lucretius said. Instead, we see emergent patterns increasing and changing "little by little" in rhythms like the seasons that repeat slightly differently each time. Roses bloom in spring and grapes ripen in autumn each time in a slightly unique way. These are predictable but not entirely determined patterns since each time they are different but not random.

As matter *flows* and swerves, it interacts or *folds* over itself again and again in cycles. As it moves, it builds on itself responding and iterating over time like a snowball rolling down a hill or a spider wrapping its prey. At every scale, from atoms to societies to planets, the universe is woven from indeterminate strands of energy looped over one another again and again in various metastable patterns.

These cycles gather together into composite *fields of circulation* whose order and structure only hold together under certain conditions. Planetary systems, ecologies, and societies, are made of many folds that reproduce themselves by circulating energy in specific patterns together. If they get too hot or cold, they fail to reproduce themselves in the same way. From the quantum to the cosmic, the world is woven together by habitual repetitions that build on one another little by little. These habits can always be suddenly broken but typically the more they interlock with on one another the more stable they become like threads in a tapestry. The world of things tends to persist out of habit—until the whole process eventually unravels at the end of the universe.

The philosophy of movement, as I understand it, is a conceptual framework for studying these patterns across scales. Instead of thinking about essences, forms, and substances, it proposes three key concepts, "flows" "folds" and "fields" to help us think about how things work. It also distinguishes and studies the historical emergence and mixture of four different fields or patterns of motion. Centripetal patterns move inward toward a central area from the periphery. Centrifugal patterns move outward from a central area to the periphery. Others establish rigid networks of tension and contrast between different patterns or flexible elastic structures of adaptation.

So far I have completed two series of books using these three concepts and four patterns of motion as my methodological framework. The first series of books covers four primary dimensions of human knowledge (art, ontology, politics, and science) from prehistory through the European West.[27] It also includes one book on the deep history of the cosmos and Earth prior to human knowledges.[28] The second book series traces the intellectual precursors to the philosophy of movement, as I understand it including the Roman poet Lucretius, the German philosopher Karl Marx, and the English novelist Virginia Woolf (see

27 See Thomas Nail, *Being and Motion; The Figure of the Migrant; Theory of the Border; Theory of the Earth; and Theory of the Image; Theory of the Object.*

28 See Nail, *Theory of the Earth.*

Table 1). [29]

Table 1 The Philosophy of Movement

Series	Volume	Kinetics
I. Theory of Motion	*I. The Figure of the Migrant*	Kinopolitics
	II. Theory of the Border	Kinopolitics
	III. Being and Motion	Kinology
	IV. Theory of the Image	Kinesthetics
	V. Theory of the Object	Kinometrics
	VI. Theory of the Earth	Geokinetics
II. Theorists of Motion	*Lucretius I: An Ontology of Motion*	
	Lucretius II: An Ethics of Motion	
	Lucretius III: A History of Motion	
	Marx in Motion: A New Materialist Marxism	
	Virginia Woolf: Moments of Becoming	

Conclusion

In this paper, I aimed to provide a general introduction to the philosophy of movement. I wanted to show what contemporary phenomena motivate this idea and how the philosophy of movement continues and diverges from mobilities studies and process philosophy.

In my view, what is unique about the philosophy of movement is that it is the only philosophy that accepts the priority of motion as its methodological starting point. There are many ways to study motion, but not all of them have a *movement-oriented* perspective. In most cases, they rely on a metaphysics of stasis, time, vitality, or force. Even when people talk about motion today, they are often still talking about stasis. It's a hard habit to kick because it is at the core of the Western tradition and the great chain of being.

By contrast, the philosophy of movement begins with flows of indeterminate matter and tries to map how they fold and cycle into metastable states, like eddies in a river. Flows weave together like strings into the ordered fabric of particles, bodies, societies, and ecosystems. Flows, folds, and fabrics are much more helpful concepts to think about the world than things, people, and places.

The philosophy of movement's general method is to adopt the perspective of motion, which seems to prevail at this moment in world history and use it to look at everything. It's not the last or best philosophy but one way among others to give names to large groups of

29 See Nail, *Lucretius I: An Ontology of Motion; Lucretius II: An Ethics of Motion; Lucretius III: A History of Motion; Marx in Motion: A New Materialism Marxism; Moments of Becoming*, under review.

phenomena. It is a philosophy for its time, not a metaphysics for all time. The goal is to study the patterns of motion that create and sustain our world of objects, sensations, people, and places at every scale. From the quantum to the cosmic, the philosophy of movement provides a conceptual framework for understanding some of nature's most significant patterns.

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