

Introduction

WE NEED A NEW THEORY OF THE EARTH. Most people are accustomed to treating the earth as a relatively stable place that they live on and move on. Today, however, this stable ground is becoming increasingly unstable—for some of us more than others.¹

Due to the widespread use of global transportation technologies, for example, there are now more people and things on the move than ever before in history. Vast amounts of materials are in constant circulation as billions of humans ship plants, animals, and technologies around the world. More than half the world's plant and animal species have now been forced into migration due to climate change.² The earth is becoming so mobile that even its glaciers are speeding up. Karl Marx was not thinking of receding glaciers or greenhouse gases when he said "all that is solid melts into air," but that is what is happening.

Geological time used to refer to slow, gradual processes, but today we are watching the land sink into the sea and forests transform into deserts in our lifetimes. We can even see the creation of entirely new geological strata made of plastic, chicken bones, and other waste that could remain in the fossil record and affect geological formations for thousands, even millions, of years to come.³

Some human groups are now changing the entire earth so dramatically and permanently that geologists have begun calling our age the



Anthropocene.⁴ It no longer makes sense to think of humans as transient occupants moving on a relatively stable earth. Humans are geological, atmospheric, and hydrological agents entangled in all the earth's processes, which are now increasingly in flux. The arrival of the Anthropocene, more than any human historical event, is finally awakening us to the realization that we have never lived on a stable earth. There is significant literature now on climate change and the role of humans as geological agents.⁵ Nevertheless, I argue that the most radical import of the Anthropocene is the unpredictable agency and mobility of the earth itself.

In other words, defining the Anthropocene by human historical markers such as agriculture, the industrial revolution, and nuclear bombs should not cause us to lose sight of the most important lesson of our time. *Nature and humans have never been separate systems*. The Anthropocene is not only about humans and what they have done to the earth. It is about the earth and what it is doing to itself through humans.

However, the participation of the earth in climate change in no way negates the need for ethical action on the part of humans.⁶ Climate change is a significant problem that demands radical social change. Some historical actors and social systems are particularly responsible for ecological destruction, while others are disproportionately affected by its consequences.⁷ But these problems will not be solved using our old paradigm of humans as *separate from nature*. New epochal problems require new philosophical and historical orientations, which is why this book tries to provide a new theory and ethics of the earth for the present.

We tend to think of the world in terms of stasis rather than process. In our zeal to halt our runaway energy consumption, we act as if the goal were to conserve, accumulate, and stabilize energy use. And yet humans, as part of nature, have evolved alongside other life forms in a way that maximizes our collective energy use, flow, and movement.

But it has gotten to the point now that we won't even let our trash degrade. We make things from plastics that last for tens of thousands of years and then bury them underground. Vast islands of plastic are floating in our oceans like quasi-immortal beasts. The net effect of all this is that the planet's *own* energy consumption is *slowing down*, with disastrous consequences.

We continue to think of the earth in terms of stability and conservation, against our best interests. This book is motivated by the advent of increasing

planetary mobility, which pushes us to think about the earth and its history in a whole new way. We need a different history and ethics that will help us to go *with* the flow of planetary energy processes, not *against* them.

TWO PROBLEMS

The Scottish "father of modern geology," James Hutton (1726–1797), published his groundbreaking work, *Theory of the Earth*, more than two hundred and thirty years ago, in 1788. Hutton wrote at a time when humans knew little about geological processes or the age of the earth. The 18th century was a time when geology was still a wide-open field.

Like all new sciences, geology was mostly theoretical at first. Over time, it was separated from philosophy and made into a physical science. As more time passed, other sciences, such as chemistry, physics, biology, and cosmology, had philosophy turn its attention back to them, but geology has still not become a subject of philosophy again.⁸ To my knowledge, there is no definitive book-length work on the philosophy of geology in existence today.⁹ However, given our present historical situation, I think it is high time for philosophy to rethink the history of the earth.

I wrote this book because I think there are at least two significant problems with our theories and treatments of the earth in the Western tradition.¹⁰ These problems are at the heart of the current ecological crisis, and whether or not we overcome them will play a significant role in the survival of future planetary forms of life.

Stasis

The first problem is that of stasis. Historically, we have tended to view the earth as the stable object par excellence.¹¹ Many prehistoric mythologies described the earth as the primordial womb or egg from which all things were born and to which they cyclically return.¹² In the ancient Near East and the classical world, most people thought of the earth as the stable center of the universe, a static sphere upon which the whole cosmos turned.¹³ For Copernicus, the earth itself was still a relatively unchanging sphere, even if it rotated around the sun. Even Hutton defined the earth as a profoundly slow, uniform, and relatively stable cycle of balanced change.¹⁴

The theory of plate tectonics, in the 1960s, was the first major geological revolution to question the stability of the earth itself. However, even then,

90 civ (17)
I have
slow,
not
against

what
earth is
doing to
itself
through
humans

the near consensus of "uniformitarianism" still described tectonic movements as slow, uniform, and relatively homogeneous. Even when we have acknowledged that the earth moves, we have rarely and only recently begun to acknowledge that the movements of the earth are profoundly and unpredictably affected by, and integrated with, nonlinear and non-geological cosmic, biological, and chemical processes.¹⁵

We have treated and, in various ways, continue to treat the earth as a kind of unmoved mover.¹⁶ We either act as if our scientific knowledge about the earth is a separate thing, unconditioned by the earth itself, or we think that the earth that existed before us and will exist after us is somehow radically unrelated to us.¹⁷ Most geologists still believe that there are uniform and mechanical laws of geology.¹⁸ Most of us in the West are unconscious uniformitarians. We still act like the earth is largely stable but punctuated by exceptional environmental disasters.¹⁹

Meanwhile, we have new technologies, including high-precision geochronology and satellite observation, along with detailed data on the earth's temperature, precipitation, river flow, glacier behavior, groundwater reserves, sea level, and seismic activity. We can now directly see that many of the earth's processes are neither as slow nor as constant as we thought.²⁰ All of our significant predictions about climatic change failed to anticipate how rapid and nonuniform the changes have been so far and how integrated the earth's systems have proven to be.²¹ Climate scientists still have no working models to explain sudden "tipping points" in the earth's history, where temperatures suddenly rise 10 to 15 degrees in less than ten years.²²

Treating the earth as stable, uniformly predictable, linear, or mechanistic allows us to continue to act as if we can pollute it and extract as much as we want from it without significant or uncontrollable consequences. If the earth is just a bunch of mechanical stuff, we can treat it however we want and then mitigate the problems with geo-engineered solutions.²³ So far, however, no such technical fixes exist that are feasible, nor are any likely to appear.²⁴ As George Bataille once remarked, "All that we recognize as truth is necessarily linked to the error represented by the 'stationary earth.'"²⁵

History

The second, related problem is that we have treated the earth as an ahistorical substance lacking genuine novelty.²⁶ For most of recorded Western

history, humans have thought of the earth primarily as a passive object or as the product of natural, divine, or mechanical laws. The natural sciences frequently explain the movements of the earth according to causes other than the earth itself (laws, forces, principles of uniformity, etc.). Geological histories are thus typically histories written about the earth, not histories written as practices of the earth itself.

The anthropocentric assumption is that only when nature becomes aware of itself in the human being can we say that it becomes genuinely historical and meaningful.²⁷ Western historians have long believed that only humans can have a history, because only humans are self-conscious and genuinely novel agents.²⁸ People too often think that the earth's systems simply form the backdrop or stage upon which real history, i.e. human history, occurs.²⁹

This anthropocentric narrative is evident from the almost complete historical erasure of earth processes as active contributors to some of the most significant events in Western history. The Holocene glacial retreat, the medieval warm period, and the "little ice age" all played significant active roles in shaping human history. Yet historians frequently leave these events out of the books.³⁰ Earth processes like volcanoes, fires, hurricanes, earthquakes, and tsunamis also continue to shape history in crucial and active ways.³¹

Even when we acknowledge the activity of the earth, we tend to do so while thinking of the earth as a living and vital subject like ourselves.³² Unfortunately, this is still a biocentric image of the earth. This image misunderstands inorganic matter as being like organic matter when the historical situation is precisely the opposite. The earth is mostly *not* alive. The earth is part of much larger non-living cosmic cycles and patterns that are not fully captured with the idea of the planet as an organic individual (Gaia).³³ The earth is neither in stasis nor in homeostasis; it is neither mechanistic nor vitalistic; it is neither an object nor a subject. Instead, I argue, it is a turbulent process operating far from equilibrium.³⁴

I do not think, as some do, that we have arrived at the "end of nature," in which nothing exists unmixed with human activity.³⁵ The origins of this idea were well-intentioned but wrong and are now potentially dangerous. The idea was that if we emphasized how significant and widespread human intervention in nature was, that would help us see that nature is a human ethical issue we should take seriously.³⁶ However, the flawed assumption of

this position is that reality can be otherwise than it is only through human activity.

Unfortunately, the focus on human structures³⁷ and human-nature hybrids³⁸ has tended to obscure the profoundly nonhuman indeterminacy of the earth and the cosmos.³⁹ Not everything is or has been a human hybrid. Human-nature hybrids are only a very tiny portion of nature.

There is today a marked reluctance (whether implicit or explicit) on the part of humanists and social scientists to interrogate the prehuman material conditions of human beings.⁴⁰ Critical and social theories always seem to begin and end with human histories rather than with the deep historical prehuman earth as the turbulent and mobile condition that is immanent to humans themselves.⁴¹

On the one hand, I think that the geosciences need to recognize the historical and social conditions of their claims about the earth. On the other hand, the social sciences and humanities, in turn, need to recognize the geological conditions of their concepts and social structures.⁴² Moreover, both need an immanent critique of the earth as their shared material kinetic condition.⁴³ For all the recent interest in things and objects in the theoretical humanities, there has been ironically little attention given to the earth.⁴⁴

The danger of starting all our histories with classical Greece or early human evolution is that it gives us an inflated sense of our importance. For example, if humans do not take the earth's deep and turbulent history seriously, we are more likely to think that we can dominate or geo-construct it at will.⁴⁵ If we want to overcome the nature-culture duality, we need to start taking the cultural history of the earth seriously.⁴⁶ Starting our histories with European modernity or even human history only reasserts an implicit division between nature and humans, whatever we might say to the contrary.

I worry that if we think the earth has no genuine historical agency, we may foolishly think that it can have no real effect on human history. Natural scientists often treat earth systems as passive mechanical processes following universal laws, punctuated by random changes. However, we ignore the truly indeterminate movement of the earth at our peril. The deep history of the earth is not a secondary or derivative history merely told by humans about something that they are not. The earth is the immanent material condition of human historicity itself.⁴⁷ Humans are the earth and therefore

bear its history. In my view, our ability to see this ought to be the real point of the Anthropocene.

The aim and novelty of my work here in *Theory of the Earth* is to overcome these two problems, the problems of stasis and of history, by inverting their static and ahistorical assumptions. What new philosophy and geology might await us if only we took seriously the earth's genuinely unpredictable power of movement? What would it mean to reconsider human ethics and politics as terrestrial and geological formations?

A HISTORICAL ONTOLOGY OF THE EARTH

The Anthropocene marks a new period in geological history. It forms the limits of a previous epoch and provides the outline of a new one, defined in part by the increasing mobility and instability of the earth.⁴⁸ However, the advent of the present is never limited to the present alone. Now that our present has emerged, it is possible, in a way that it was not before, to inquire into the conditions of its emergence and discover something new about the nature and history of the earth's constitutive mobility.⁴⁹

Most of our existing theories assume that the earth is homeostatic, uniform, stable, or capable of being stabilized by life. However, it seems to me that the recent increase in planetary mobility, sudden climatic change, and emergent feedback patterns in earth systems ought to draw our attention to this instability.⁵⁰ More importantly, it should draw our attention to a previously hidden dimension of the earth's fundamental instability, only now coming into view: the earth is suddenly proving to be more mobile and eccentric than we thought possible. It's time to start taking this seriously. It's time for, among other things, a different conceptual framework.

The approach of this book is not to write a philosophy *about* the earth, as a distinct substance separate from philosophical practice or humans. Humans and their philosophies are not outside of or separate from the earth's systems. *Theory of the Earth* is also not a "natural philosophy," "cultural history," or "geophilosophy" that studies human thoughts about nature or the earth's relationship to human thought or culture.⁵¹ The focus of this book is instead on the earth *itself as a theoretical practice*.⁵² Recent works have done a good job of showing the importance to humans of geological and material processes. *Theory of the Earth* goes one step farther, theorizing these deep geological and material processes themselves.

-earth as theoretical practice

This book is also not a philosophy of geological science as a human institution.⁵³ *Theory of the Earth* makes extensive use of contemporary earth and natural sciences but does not critically engage them all using the full repertoire provided by science and technology studies. There are already plenty of books that do this, including my own.⁵⁴ My purpose and usage here are entirely different. I cite scientific studies in this book not because I naively accept them as universal truths about the objective facts of nature nor because of so-called science envy.

Instead, *Theory of the Earth* treats the earth sciences as real historical ontological dimensions of our present. Rather than trying to prove that knowledge and nature are endlessly open to human revision and reconstruction, my goal here is to demonstrate the performative reality that the earth itself has produced as our scientific knowledge of it. Knowledge is not something we have *about* the earth, as if the earth were something separate from us. Knowledge is something that a region of the earth performatively *does* to itself and with itself.⁵⁵ This book is a study of the deep historical and material conditions of this earthly knowledge performance.

Before there were humans, the earth moved independently of what humans thought about it.⁵⁶ However, this deep historical earth and its cosmic flows are not radically unrelated to humans. The present is the key to the past because some of the past coexists immanently within the present, within us. We cannot go back and change the earth's deep history, but insofar as it is literally in our bones, we are immanently related to it.⁵⁷

We are not cut off from access to the earth, nor stuck inside our heads. Our heads are not entirely our own—they too belong to the earth. We have access to the earth and the cosmos because we *are* them, albeit only a small region of them.⁵⁸ We can, therefore, know something about this deep history precisely because it is the material condition of our very existence. Our bodies and cultures are material memories or traces of the deep history of the cosmos and the earth. This is the earth I am primarily interested in. By this, however, I do not mean that there is only one true objective earth that humans can know absolutely, or even progressively, through science. The earth is neither a single objective reality nor a mere construction of human scientific knowledge.

The methodology of this book is what I call “historical” or “material” ontology. It is historical and material in the sense that our practical inquiry

always begins from somewhere historically particular: the present-day earth. From the specificity of the present,⁵⁹ the world *is* a specific way, a way that includes us as a region of that same world.⁶⁰ Sensation, knowledge, and the historical present are not separate from the world just because we are humans.

This method is ontological in the sense that our situated descriptions are real aspects or dimensions of reality. My method is neither about the earth in itself, independent of or unrelated to us (naive realism), nor about the earth as it is strictly for us (constructivism). There is no division; we are a region of the real earth itself. Its deep history persists into the present as our immanent deep history. The earth really and performatively constructs itself.

In other words, my question is not “what is the earth like in itself?” or “what is human language, mind, economics, or power like such that it is possible to think of the earth?” My question is, “what are the material and historical conditions of the earth, up to and including us?” Multiple human structures shape contemporary reality. These structures are, in turn, conditioned by other real, terrestrial processes that have been around since long before humans walked the earth.⁶¹ This is what I am interested in: the deep conditions of the present.⁶² What is especially interesting is that these conditions have turned out to be more profoundly eccentric than we ever imagined.

This work aims to locate the historical conditions of this present-day eccentric mobility.⁶³ It is not a universal history but a single situated account, among others, from the vantage of the present. I do not offer any final word or universal theory of the earth.⁶⁴ Reality does not mean totality. Human history is open because the movement of the earth is open, not the other way around.

The history of the earth is like a double image. In the well-known images of the old/young woman and the duck/rabbit, both figures are really there in each case. Both descriptions are true and different at the same time. The earth, however, is not just two images but a vast multiplicity of images, and the perceiver of those images is only a region of the image itself that actively changes the image by looking at it.⁶⁵

The natural and earth sciences tend to act as if there were one fixed objective world and a single set of universal natural laws about that one nature.⁶⁶ However, there are as many natures as there are paths leading from past

to present. All the paths are real, just as each figure in the double images is real. If humans are part of the earth, then so is this book. What are the cosmic and terrestrial conditions for this book and for the body writing it?

Theory of the Earth is both a theory of the earth before humans and, at the same time, a theory of the immanent material conditions of the human itself as a region of the earth's deep history.⁶⁷ They are the same ongoing history. The historical ontology of the earth is thus not situated because we are humans but, rather, we are humans because we are a historically situated region of the earth's present.

Theory of the Earth is, therefore, not a theory in the traditional sense of an abstract and universal mental representation of the world. Instead, it is a "theory" in the etymological sense of the Greek word *theōria*, as a "movement, sending, or process." Theory is, therefore, a performative process that describes the structure of the immanent movements that constitute it.⁶⁸

MOVING TOWARD A KINETIC THEORY OF THE EARTH

Theory of the Earth reconsiders the immanent history of the earth from the perspective of the increasingly unstable mobility that defines the Anthropocene. It thus provides a uniquely movement-oriented or "kinetic" theory of the earth. This methodology has two significant consequences.

First, by focusing on the movement of the earth, we are able to avoid problematic theories of the earth as an "active," "generative," "vital," "living" subject or as a "passive," "law-driven," "mechanical," "dead" object. I find it unhelpful to divide, oppose, and choose one side of these binaries against the other.

Matter in motion is the immanent historical condition for both subjective and objective dimensions of the earth. There are different patterns or regimes of motion, but movement has no historical opposite. There is, strictly speaking, nothing in the universe that is not in motion.⁶⁹ Even space and time themselves are products of motion—not the other way around.⁷⁰

Motion is neither determined nor random. Patterns of nature are emergent features of a universe in motion. There are no laws of nature before there is a universe in which those laws are emergent features. In short, motion allows us to overcome the dualisms we have projected onto the earth.

Second, focusing on movement allows us to see the material continuity between beings that have historically been thought of as categorically

and ontologically divided. Movement, for example, flows between cosmos, planet, life, humans, animals, plants, rocks, microbes, and so on, down to the smallest vibrations of matter. The movement of matter plays a constitutive role at every level. Rather than project our own life and subjectivity back onto the earth (Gaia), this book begins its history prior to life and the earth to show how they emerged as a material process.

As mentioned previously, the assumptions of stasis and stability are at the core of the Western project.⁷¹ They are at the top of the great chain of being. Our most straightforward definitions of motion, as a transition from point A to B, assume a static background and internally static, self-identical, points "A" and "B." Even when we consider closed cycles, loops, and orbits, we assume a change that merely oscillates between A and B without any fundamental instability in the line itself.⁷²

The material basis for this abstract idea of a static background and identical points is the earth. One of the main reasons we have assumed planetary stability in the first place is because most of human history has taken place during a geological epoch of relative climatic stability, the Holocene. In other words, our idea of motion is historically and geologically particular—but we have taken it to be universal.⁷³ This is the great epochal error of our time.

However, if the earth is a non-uniform and turbulent mover, as I argue, then the movement from A to B is much more like a continual transformation of the whole line AB itself.⁷⁴ The earth is not uniform. Its movement is turbulent, unstable, and entangled with the cosmos in ways that we are only now discovering. This has radical and undertheorized consequences for our understanding of the earth and of motion.

A THEORY, HISTORY, AND ETHICS OF THE EARTH

I have organized this book into three major parts covering the theory, history, and ethics of the earth.

Part I: Geokinetics

I propose a new movement-oriented theoretical framework of the earth as an alternative to the traditional ones defined by stability. Instead of thinking about the earth as an object, subject, substance, or essence in isolation from the cosmos, I introduce a process theory of the earth. I call this a

“geokinetic” theory because it treats the hydrosphere, lithosphere, atmosphere, and biosphere as fully integrated earth processes that flow, cycle, and circulate through one another.

The kinetic theory of the earth begins from the contemporary observation that the earth is much more fluid and unpredictable than we ever thought possible. The earth flows. We are now aware of the deep historical coproduction, or “sympoiesis,” of all kinds of material flows that we used to study separately. Flows of rock, flows of water, flows of air, flows of life, and even vast cosmic flows of matter are profoundly interdependent processes. What if we retold the history of the earth from this perspective?

In my previous books, I began my historical ontologies with early human prehistory in order to study the *longue durée* of the emergence of politics, ontology, art, and science in the Near Eastern and Western traditions. In all of these works, I attempted to show the hidden and constitutive primacy of movement and matter. Although I started with human history, the goal was to show the transversal historical patterns of motion that moved through human and nonhuman processes alike.⁷⁵

But where did these patterns of motion come from in the first place, if they were not the sole invention of human beings? *Theory of the Earth* is an answer to this question. What I call “geokinetics” is the study of the deep historical and material conditions for the emergence of, among other things, human politics, ontology, art, and science. In my movement-centered philosophy, I named my study of these areas, “kinopolitics,” “kinology,” “kinesthetics,” and “kinometrics” to emphasize the primacy of movement. A central thesis of this book and of “geokinetics” is that humans and their culture are continuous with cosmic and terrestrial processes of kinetic dissipation (see Table I.1).⁷⁶

Human culture is only a regional and specific expression of what nature has already been doing in a general sense for a very long time. I realize that this is a big claim, and I do not expect most readers to agree with it immediately. But if it is accurate, it has enormous consequences.

Part II: History of the earth

Another consequence of my movement-oriented perspective is that it makes possible a new history of the earth. Against mechanical and vitalistic theories, I argue that the history of the earth is about the indeterminate dissipation of energy through four patterns of motion.

TABLE I.1 Theory, form, content, and patterns of motion

THEORY	FORM	CONTENT	HISTORICAL PATTERNS
Kinopolitics	Relation	Border	territorial, political, juridical, economic
Kinology	Modality	Surface	space, eternity, force, time
Kinesthetics	Quality	Image	function, form, relation, difference
Kinometrics	Quantity	Object	ordinal, cardinal, intensive, quantum
Geokinetics	Nature	Earth	mineral, atmospheric, vegetal, animal

Each of these patterns is associated with the rise and prevalence of a different planetary structure in the earth’s history. Minerals emerged through a centripetal motion, the atmosphere through a centrifugal motion, plants through a tensional motion, and animals through an elastic motion. In each historical eon, a new regime rises to predominance, while all the older ones persist and mix with it. Now, in the 21st century, we find our contemporary earth at the intersection of all four major historical regimes. These are the limits not of what the earth can do, but rather of what the earth has done so far (see Table I.2).

The earth is not just a rock. In fact, a rock is not just a rock. The profound uncertainty of the earth’s systems today prompts us to completely reconsider our previous categories, substances, teleologies, and hierarchies. We need new definitions and histories for these new hybrid processes of mingled minerals, atmospheres, plants, and animals. We need a process theory of the earth based on patterns, not substances.

The conditions of the present are not locatable in the present alone nor in human history alone. Deep history, in all its uneven flux, is the key to understanding our planetary present. The past does not go away but persists and coexists, to varying degrees, in the present. In other words, there are humans only because there are rocks.⁷⁷

A new kinetic history of the earth will help us to see more fully the present earth that we are and how to live better on it. This history is critical if we are to move away from our current tendencies toward mechanism,

Keskinen - väestö
 Vesiväestö - ilmasto
 - kasa
 - kasa
 - kasa

TABLE 1.2 Patterns of motion

	CENTRIPETAL	CENTRIFUGAL	TENSIONAL	ELASTIC
Politics	territorial	political	juridical	economic
Ontology	space	eternity	force	time
Art	function	form	relation	difference
Science	ordinal	cardinal	intensive	quantum
Nature	mineral	atmospheric	vegetal	animal

vitalism, uniformitarianism, geo-constructivism, and homeostasis. This book is an immanent critique of our moving earth.

Part III: The Kinocene

The third consequence of the kinetic theory of the earth is that it will provide us with a new perspective on contemporary life—what I am calling the “Kinocène.” There are as many Anthropocenes as there are ways to think about the present. That is a good thing.⁷⁸ So without wishing to negate the others, I would like to propose the addition of one more. The Kinocene is an age defined by the earth’s post-Holocene return to itself as an increasingly mobile, turbulent, and dynamically entangled process.

This transition is historically gendered, raced, economic, and asymmetrical, and in our examination of this transition, we must also think about the real possibility of human extinction, something we want to avoid. But it is also crucial to recognize that the Kinocene would be nothing without the contributions of the earth itself. These include fossil fuels, metallurgic compounds, positive climate feedback processes, hydrologic conditions, and the plants and animals that also transform the climate.⁷⁹

Of all the names for our geological epoch, we should not forget the earth itself as a constitutive part of this transition.⁸⁰ The twin narratives of humans as earth-destroyers and as earth-savers are two parts of the same anthropocentric dilemma.⁸¹

By thinking only about our own movements of energy expenditure and conservation on a “relatively static earth,” we have failed to see ourselves as part of the larger cosmic and terrestrial drama of increasing flow rate and mobility. By damaging the earth’s dissipative processes (especially the biosphere), humans have slowed down the kinetic movement of energy throughout the planet. Fossil fuel capitalism has increased human energy consumption, but only at the cost of decreasing planetary energy consumption by much more.

I rewrite natural and human history from the broader perspective of movement. This offers a new ethical orientation to our “Kinocene” present and to the cosmos. My thesis is that, if humans want to survive, then the most geohistorically likely way forward is to contribute to the earth’s massive process of energy expenditure, including land fertility, biodiversity, and climate stability. This shift requires us to reject our current biocentric emphasis on conservation in favor of expenditure and flux.

Today, unprecedented increases in the earth’s unpredictable mobility prompt us to reconsider all our planetary paradigms. These changes challenge us to reconsider the nature of nature as well as the deep history of the earth. Perhaps most importantly, the earth’s turbulent mobility forces us to rethink our ethical relationship to one another, the planet, and the cosmos at large. The Kinocene is calling us to become what we are: the earth.⁸²