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Heidegger’s “Time-Space” Vs. Greene’s (Einstein’s) “Spacetime”

[An Appeal to the Public, cc: Physicists Brian Greene and Stephen Hawking]

[*from*] Carolyn Norman Slaughter

Greetings from space! I mean *this* one, this space in which we meet here, you and I. It’s white space, a manuscript page 8.5" x 11“—yes? Am I correct? Are we on the same page?

Perhaps not, not exactly, for the page you’re reading is not a manuscript page as mine is. The page you’re reading doesn’t actually exist yet, not while I’m writing it. The color and size of the page you’re reading have not even been selected. Your page is not in space at all yet. It exists only in my imagination, my hope. It’s a mere possibility. (“Where” is *that*?)

Consider, then, the space we definitely *do* hold in common (if you’re still “there”): *these words*. We are meeting here, together, *in the words* on this page. I write words, you read them, and *Voila*!—we are together, you and I, in the same “space”: in the meaning of the words. Isn’t that *somewhere*? Are we inhabiting the same space, together, when we meet here in these words? Yes? No?

Consider also: I’m writing these words one at a time. You’re reading them one at a time. Do we inhabit this time, this “one at a time” in common? Is there anything “timeless” in the meaning of words so that the meaning is the same for you and me? Or does the meaning of the words drift or shift between the time I write one word and the time I write another, between the time I write the words and the time you read them?

Where are these words, their meaning? Tucson, Arizona, *here* with me? (*There*, with you?)

When are they? July 27, 2007—am I correct? (*When* are you?)

In fact, *are* words—their “meaning,” I mean—in space? in time?

*Are* they—their meaning, I mean? Does meaning *exist*?

If we cannot agree that we are meeting on this page or in these words, where and when “are” we now, here—we the writer and reader?

In spite of the difficulty of explaining the uncanny nature of this meeting, we (you and I) indeed *seem to be* meeting—here, now.

The nature of space and the nature of time . . . seem . . . , here, now, . . . to be uncanny. As close to us and as familiar, as indubitable, as space and time seem to be, their “nature”—what, where, when, how, whether they *are*—seems to elude our ordinary understanding of them.

Would it be easier if we used more concrete scientific language?

Space: Brian Greene, a physics-mathematics professor at Columbia University, gives the obvious definition of space. It is what lies between things. It “provides the medium that separates and distinguishes one object from another.” If space lies between two things, they are two things and not one thing. And in order for one object in space to have some effect on another object in space, it must make its way through that space, work out that effect through and by way of that space. This characteristic of space is called “locality.”

(*The Fabric of the Cosmos*: *Space, Time, and the Texture of Reality*, N. Y.: Alfred A. Knopf, 2004, 79-80)

But Greene soon disturbs the peace of these readily graspable definitions, for in this book of his, he’s describing the “true nature of reality” (5) as it has been detected and determined over the last century in the science of quantum physics. Space as we take it for granted—that is, as it “appears” to be and (or) as we have been taught to take it—is not space as it “shows” itself to be in modern physics. Space in physics “appears” as uncanny as we found it to be in our experience of it in the opening paragraphs above.

In recent decades, as Greene explains, physics experiments have found that space does not simply separate objects from other objects and thereby determine them to be two things and not one, as we used to think. Indeed, objects may connect or “entangle” with other objects and influence them even when they are on the other side of the room from each other or the other side of the country or, for that matter, on the other side of the universe (!). Objects are not securely “located” in space after all. “Mind-boggling,” says Greene (80).

“Spooky,” Einstein called it (Greene 80).

Greene and other physicists as well as other kinds of scientists are writing books nowadays to explain to non-scientists some of the ways their “spooky” discoveries are shocking and shifting our ordinary view of the universe and things in it. Some of these specialists express outright their sense of responsibility to help the rest of us understand the changes that science-technology is making in our understanding of the world (xxx000).

The philosopher I wish to introduce to you in these pages, Martin Heidegger, wrote about these changes too, among other things, from the late 1920’s until his death in 1976. But his purpose was not to help us to adjust to the changes that science-technology is bringing into our lives. He wrote from a different point of view and toward a different end. As for science, Heidegger’s works teach us to look more carefully at it, at its history (its parentage, its lineage)—and at its method (the way it asks questions and determines answers), and they teach us to see in a new way the changes science-technology is making in the “cosmos” and what the changes portend.

Heidegger’s insight into time and space is as “spooky” as physics’. But though his description of what he calls *time-space* is as uncanny as physics’ *spacetime*, it is essentially different, and what it discovers and opens up is a “world” fundamentally different from Greene’s “cosmos.”

It is this difference, the difference between Heidegger’s “world” and physics’ “cosmos” (or, more often, “universe”), that I hope to traverse in this study.

It is impossible to say what Heidegger says. Though he writes in simple language, he is saying what these simple words have not said before. He recasts language (like casting a spell or, better, a fishing pole) as he attempts to recover it, to recover its power, from the oblivion he claims it has fallen into. Thus, my attempt here to explain his thought in my own language will be clumsy and deficient and faulty, but I wish to go on even so, so important do I feel this work of comparison to be at this time.

By way of introduction to Heidegger’s notions of space, and for the sake of contrasting them with Greene’s (and physics’), I shall copy a passage from an essay, “Building Dwelling Thinking.” The essay is drawing distinctions between *locales*, *sites*, and *space*, but we will not need these distinctions here.

In the quoted passage Heidegger describes the space, the distance, from his philosophy classroom at the University of Freiberg to the old bridge at Heidelberg. I add a few more lines from the same paragraph, in which he describes the simple task of walking the distance across the room. Our ordinary conception of space gives way, gives up, to the extraordinary in these passages.

. . . If all of us now think, from where we are right here, of the old bridge in Heidelberg, this thinking toward that locale is not a mere experience inside the persons present here; rather, it belongs to the essence of our thinking *of* that bridge that *in itself* thinking *persists through* [durchsteht] the distance to that locale. From this spot right here, we are there at the bridge—we are by no means at some representational content in our consciousness. From right here we may even be much nearer to that bridge and to what it makes room for than someone who uses it daily as an indifferent river crossing. . . .

. . .When I go toward the door of the lecture hall, I am already there, and I could not go to it at all if I were not such that I am there. I am never here only, as this encapsulated body; rather, I am there, that is, I already pervade the space of the room, and only thus can I go through it. . . . (*Basic Writings*, 358-59)

As strange as these claims are, literally, there is something stranger in them–a curious familiarity from our own experience, something more deep-seated than our conscious thinking or learning: our sense that remembering-toward the bridge is a particular way of *going* there, our sense of *being* across the room before we walk across it.

This reach into unrecognized but familiar experience is an outstanding feature of Heidegger’s writing, his thinking. And I shall attempt to show that his bold, unconventional (un-rational but not irrational) thrusts of thought are often strangely resonant, if not consonant, with the “cosmos” that quantum physics is bringing into view.

Heidegger’s advantage, though, is that his thought does not cut our “understanding” (thinking) off at the head. I mean, it does not ignore or eliminate the deepest roots and reaches of our “sense of things” when it views and contemplates All That Is.

I shall use one primary text to represent the viewpoint of physics, *The Fabric of the Cosmos* by Brian Greene, with occasional commentary from Stephen Hawking’s *A Brief History of Time*.

[ftnt](http://www.carolynnslaughter.com/essays/time-space/*The%20Fabric%20of%20the%20Cosmos:%20Space,%20Time,%20and%20the%20Texture%20of%20Reality*,%20N.%20Y.:%20Alfred%20A.%20Knopf,%202004,%2079-80;%20*A%20Brief%20History%20of%20Time*,%20N.%20Y.:%20Bantam%20Books,%201988.)

For Heidegger’s views I shall draw from various works of his: from *Being and Time*, his 1927 opus capable of transporting the reader into a new state of consciousness, through lectures and essays written until his death in 1976 and even to posthumous publications such as *Contributions to Philosophy (From Enowning)*, translated into English in 1999.

Shall I hazard a beginning of my project at the beginning?—a notion of “origin.”

We are familiar with physics’ story of the Big Bang: retract the expanding universe to an original point in space. Everything we observe in the universe, the stuff of everything-that-is (things, entities, forces, objectively observable phenomena of all kinds) is bound up in this dense condensation of it all, this infinitesimal “point” from which it sprang. Or, if we use the “inflationary cosmology” model, we can retract a step farther and propose a causeless negative-gravity propulsion to set off the Bang, though here we must presuppose certain conditions that imply a pre-Big Bang universe. In either case, physics cannot track time back all the way to an origin—to a Beginning or a First Cause (Greene 272f., 285; Hawking 8-9).

A definition of the word “origin” common to philosophy and science is “source.” The source of something is the place or the condition from which it comes or derives. The *Oxford English Dictionary* traces the etymology of “source” through an Old French word meaning “rise, spring” to the Latin *surgere*: surge. In the Big Bang models we can see a trace of that old root: the universe bursting forth and expanding from one point (in space? in time?).

We shall find this etymological root again, less explosive, more uncanny, in Heidegger’s thinking, radically different from the speculations of modern physics. Here there is no “origin of the universe” for there is no “universe”; and time and space are not retractable to a point, for time is not sequential, serial, narrative; nor is space shrinkable, expandable, or measurable. Instead of streaming from one past point of origin (in place or time), “life” springs, originates, in originary *time-space*.

I must unriddle these riddles.

Since Heidegger’s word *time-space* seems to rename intentionally the phenomenon that Einstein called “spacetime,” I shall begin my comparison of the universe of physics and the world of Heidegger with a description of Einstein’s disruptive, eminently productive hijack of the history of physics in the last century.

I myself have noticed, and I hope this work will demonstrate, that the very act of comparing two things draws both of them into the light more clearly.

When Einstein proposed his new concept *spacetime*, he was not addressing the question of origin. But we can better appreciate Heidegger’s originating *time-space* when we view it in comparison with Einstein’s new scientific formulation of the same cosmic phenomenon [Greene 44ff].

To summarize a few major points, then: In 1905 Einstein put to rest a problem that had plagued physics research and had perplexed Einstein himself since he was a teenager: the problem of measuring the speed of light.

The speed of a moving object is calculated as the relation between the object’s position at an initial point in time and in space and its position at the point of destination. Speed is a ratio of time (duration of travel) and space (distance traveled). At the time that Einstein took up the problem, this calculation generally assumed that time and space were stationary, absolute, and that the motion of things through that medium could be measured in relation to them as Sir Isaac Newton had established the calculation in the seventeenth century.

However, this assumption was undergoing review. In nineteenth century physics, James Clark Maxwell, developing his new notion of electromagnetism, had identified light as an electro-magnetic wave because it traveled at the rate of 670 million miles per hour as did other electromagnetic waves he had identified.

Now the speed of other electromagnetic waves was measured relative to the medium through which the wave traveled (sound waves through air, e.g., ocean waves through water). And, similarly, since Newton’s day it had been assumed that the speed of light could be measured relative to the *aether*, an undetectable but presumably reliable stationary medium in space.

But subsequent research had thrown doubt on the existence of the *aether*. Particularly puzzling were the results of experiments by Albert Michelson and Edward Morley showing that light waves did not behave like other electromagnetic waves, did not vary in speed relative to the movement of the medium through which they passed or relative to the movement of an observer. Instead, the research of these physicists had computed the speed of light at 670 million miles per hour again and again, even when the source point or the observers were moving (Greene 40ff.).

This was an egregious anomaly; it defied reason and mathematics, as well as common sense, and it contradicted established knowledge about the nature of gravity. That is, the accepted Newtonian view of gravity held that the force of gravity that phenomena exert on each other varies depending on the distance between the objects. Therefore, when an object moves or is moved, the force of gravity it exerts on other objects (and vice versa) changes accordingly (Hawking 28-9). Thus, the speed of light should vary when the source point or the point of observation is moved or moving.

Einstein took a new approach to the problem. He began by accepting the observed facts surrounding the behavior of light. What he did not accept were the age-old notions regarding space and time and gravity that prevented a coherent explanation of this behavior. You could say that Einstein “got around” the logical impasse by leaping over it. He resolved the problem not by means of a new discovery or a mathematical breakthrough, but by means of a simple, brash decision, or declaration, based on the established record of observations: the speed of light is 670 million miles per hour “relative to anything and everything” (Greene 45).

But measuring the motion of objects in space and in time in relation to the now-fixed speed of light led to another perplexing problem. Experiments showed that different observers making such measurements, i.e., measuring the speed of a moving object relative to the speed of light (comparing the distance an object in space and a beam of light moved relative to the length of time involved) reported different conclusions—different, Einstein found, according to the difference in the *observers*’ own respective positions in space and time relative to the event. Einstein attributed the inconsistency in these measurements to the difference in the *perception of different observers*.

Greene describes the implications for us:

. . . , we conclude that *space and time are in the eye of the beholder.* Each of us carries our own clock, our own monitor of the passage of time. Each clock is equally precise, yet when we move relative to one another, these clocks do not agree. . . . Each of us carries our own yardstick, our own monitor of distance in space. Each yardstick is equally precise, yet when we move relative to one another, these yardsticks do not agree. . . ." (Greene 47; see also Hawking 21).

Does this startling conclusion mean that space and time move out of the realm of science, the *objective* universe, into the realm of human, personal, *subjective* “space”?

Well, no, it doesn’t. But something subjective does seem to be moving into the objectivity of scientific observation and measurement. Space and time are still taken to be objective—they belong to the physical universe—but their “objective” measurement now belongs to the “subjective” perceptions of human observers.

And indeed we may say that something is happening to the sharp distinction between the two philosophical realms of object and subject. The concepts of objectivity and subjectivity are giving up something of their formerly strict definition, which depended entirely on their fixed opposition to each other.

Henceforth, the parameters of space and time used to calculate the objective measurement of speed are considered to be variable, to be in fact dependent on the physical location of the participating observer.

If with Einstein’s theories, which included the observer in the determination of the speed of light, something of the *subjective* seemed to leak into science’s *objectivity*, we may suspect that something radical was changing in Western thought, that something at the root was breaking up—or coming to light. Certainly this was the case with Western philosophy, as we shall discuss more fully below.

But if human (“subjective”) perception was now admitted into objective measurement, it was not recognized as such. The direct confrontation with this fundamental issue would have to wait for the work of Werner Heisenberg, below.

The new disruptive theory spread its tentacles throughout old theories. For example, measuring motion according to the new theory brought the striking discovery that time and space were complementary.

" . . . \*the combined speed of any object’s motion through space and its motion through time is always precisely equal to the speed of light“(Greene 49).

That is, the speed of a body moving through space is compromised by its simultaneous movement through time, and vice versa.

Greene illustrates this notion with the image of a car traveling toward the east. If it does not go *due* east—i.e., if it goes in a northeast or southeast direction—its movement toward the east is compromised. If it does travel *due* east, it will arrive no later than the time light travels, the speed limit of motion in the universe.

Bodies in the universe do not move in time *and* in space. They travel in a web of the two where the relationship of time and space is fixed.

Thus we broach Einstein’s most famous contribution to physics. The muscular thrust that sent a shudder through Newton’s Laws of Nature was the concept of relative time, of time related structurally, so to speak, to space. Displacing the previous concepts of absolute space and time, Einstein proposed a new “fixed” parameter for measuring the motion of objects in the universe: “a grand, new, sweepingly absolute concept: *absolute space-time*” (Greene 51).

The *word* “spacetime,” which Einstein gave to the notion of interrelated space and time, “says” (shows) that space and time are no longer considered to be separate, but are united in the new concept. Former problematic concepts of space and time are overthrown. Space and time are not fixed in place to form an empty stage upon which the natural world appears. Now they begin to appear, themselves, as interconnected, interactive, interdependent actors in the drama.

(Heidegger will later write that this new concept of time does not escape the former Newtonian one but merely “[levels it off] . . . [to] what is countable and what makes counting possible,” to reestablish it as a “fourth parameter” of space.)

Here is Stephen Hawking’s capsule description of Einstein’s spacetime:

“. . . space-time is not flat . . . it is curved, or”warped," by the distribution of mass and energy in it. Bodies like the earth are not made to move on curved orbits by a force called gravity; instead, they follow the nearest thing to a straight path in a curved space, which is called a geodesic. . . . In general relativity, bodies always follow straight lines in four-dimensional space-time, but they nevertheless appear to us to move along curved paths in our three-dimensional space" (*A Brief History of Time* 29-30).

You have seen diagrams depicting the web of spacetime, and the earth caught in the curvature of the web, its mass bending the web . . . for gravity makes its way back into the equation on revised terms: e = mcxx2 (e=energy; m = mass; c = speed of light).

In 1915 Einstein posited his fully developed general theory of relativity, including his revolutionary new concept of gravity.

The idea that the force of gravity was due to matter and energy in the universe was not new. Gravity had long been taken to be an attraction that bodies in space exerted on other bodies. A planet’s orbit around a star, for example, was set, held, and shaped by the force of the star’s gravitational field. Einstein’s new theory, though, construed gravity not as a force field but as a dynamic, ongoing interchange between matter/energy and the new phenomenon of spacetime.

According to the new theory, if there were nothing in the universe, no matter, no energy (no sun, moon, planets, etc.), then spacetime would be flat, two-dimensional. But the presence of matter and energy in the universe (objects, bodies, things) changes spacetime. “Things” in spacetime curve and shape it, carve “chutes and valleys” throughout it (Greene 69ff.).

For everything in the universe is caught in the web of spacetime, and like the sun and moon, etc., everything is changing spacetime, marking and shaping it. Bodies and objects move along its chutes and valleys following its curvature, guided and restricted by its warps and shapes, while warping and shaping further as they go. Greene refers to this image of spacetime in the universe, as depicted in diagrams, as the “embodiment,” the “incarnation” (75), of Einstein’s mathematical equations that set forth his new conception of gravity.

The revolution in our understanding of time is the more remarkable when we consider that until Einstein, not so many decades ago, the notion of time had been essentially unchanged since Aristotle in about 300 B.C. described it as a series of *nun*’s (now’s), a progression of *now*’s moving onward. For more than two millennia we have visualized time as a sort of wave passing out of the past through the present into the future. Sir Arthur Eddington coined the phrase “the arrow of time” in 1928, referring to this directionality in time (Greene [ftn]).

[*The Nature of the Physical World* (Cambridge, Eng.: Cambridge University Press, 1928)]

But nowadays in physics even the venerable “flow” of time—onward, ahead—has lost its simple reliability. The laws of physics do not recognize the “passing” of time as a movement of time, or, for that matter, as a changing of any kind. Instead, they see time as absolute, though not in Newton’s sense. They see past, present, and future as a collection of absolute *now*’s, each one as “real” as the others. Each *now* is fixed in the spacetime web—and fixed forever. Greene compares the *now*-“slices” of time with “the still frames in a film” (140). The laws of physics apply just the same to the past and to the future.

. . . the laws of physics that have been articulated from Newton through Maxwell and Einstein, and up until today, show a *complete symmetry between past and future*. . . . Nowhere is there any distinction between how the laws look or behave when applied in either direction in time. The laws treat what we call past and future on a completely equal footing. (Greene 144-45)

Greene says that it is our unenlightened habit of visualizing time in a certain way that fixes *us* in a directional attitude toward the future and blinds us to other and even opposite possibilities in the behavior (or manipulation) of time. Time does not flow, according to the laws of physics, but, Greene explains, our sense of time, our consciousness, joins *now* to *now* seamlessly. Yet, he goes on, “Under close scrutiny, the flowing river of time more closely resembles a giant block of ice with every moment forever frozen into place” (141). (Cf. Heidegger’s all-encompassing temporality, below, radically new—not literal, discrete, and mechanical, as these slices appear here.)

And it is not only the web of time that is segmented and frozen forever, but “all of the events in spacetime” at a given moment, at any *now*-point, are forever fixed in it (139).

(I take it that “events” are by definition objective changes in spacetime—not the personal and historical “events” we usually take to define “life”—since accounts of any one of these vary from person to person, historian to historian, and are revised from time period to time period.)

Furthermore, as I have indicated, these separate, fixed, frozen moments of time are not frozen or fixed in a particular sequence. The laws of physics do not favor one order of sequence (toward the future, e.g.) over another (toward the past, e.g.).

Greene quotes German philosopher Rudolf Carnap (141) describing a conversation he had with Einstein on this issue. It “worried” Einstein, Carnap reports, that man’s personal experience of time, which senses a fundamental difference between “now” and the past or future, cannot be “grasped by science.”

This problem perplexes Greene too. Read his moving explanations of science’s changing conceptualization of time (Part II) as current physics dismantles our traditional understanding of it. Note his remarks discounting our ordinary experience of time, but confessing his own nostalgia for it sometimes in the evening after sundown. “It is possible,” he writes, “that some insightful person will one day devise a new way of looking at time and reveal a bona fide physical foundation for a time that flows. . .” (141).

NOTA: In the next few pages I shall attempt to describe to you that insightful person, that foundation which does not negate our personal experience but awakens it. However, the new foundation is not “physical” and is therefore unavailable to physics research.

Meanwhile it is physics theories such as those I have been describing that bring scientists to consider the possibility of time travel. (You will find upon examination that even this shocking speculation, which seems to break through the confines of our “reality” into an otherworld of the imagination, is approached by physicists in the fixed, limited-mathematical terms in which engineers design a spaceship [see Hawking 162ff.]. The revolution that science has brought to the understanding of time has not transformed our everyday lives yet. Physicists work with the new concepts only in the microcosm, where they developed them. Their theoretical breakthroughs do not break into our ordinary sense of time and space. Our past-to-present-to-future experience is not fazed by the uproar in the microworld.

However, changing notions of time have been sifting into the popular consciousness from philosophy and science for more than a century. They have inspired art and music, poetry, drama, and fiction, and spawned science fiction fantasies which by this time do not alarm us. We are moving together, all of us, into a brave new world whose rough outline is taking shape around us only vaguely.

In light of these disruptions to traditional knowledge, I may turn without trepidation to compare Heidegger’s post-philosophy, setting his *time-space* in contrast to the spacetime of physics. His usurpation of the traditional concepts of time and space and his installation of the uncanny in their place cannot be unduly disturbing to our changing sensibilities and expectations.

In every point of comparison here I hope to show that the transformation taking place nowadays in our collective psyche and driven by science-technology “progress” is transporting us, removing us, *from ourselves*, and that a transformation of another, different kind, more wonder-ful still, can occur when we so choose. This alternate transfiguration involves us in a journey for the sake of which we need not leave ourselves behind—indeed, a journey that takes us in the very direction of ourselves at the same time it opens the “universe” anew and rediscovers the world. The universe that science is exploring does not disappear, but it is approached, broached, in a radically different way—as we discover and recover ourselves in it all.

We shall test this possibility right away, as we place Heidegger’s *time-space* beside physics’ *spacetime*.

In Heidegger’s thinking, as in physics research, time and space and notions related to them are transformed. In Heidegger’s thinking too, “Each of us carries our own clock, our own monitor of the passage of time”—except that what we carry that is our own is not a clock, not a monitor. Again, in Heidegger’s thinking, “Each of us carries our own yardstick, our own monitor of distance in space”—except that what we carry is not a yardstick, not a monitor. And in Heidegger’s thinking all of these elements are reviewed, revised, and transplanted from the “objective universe” to a radically different ground.

In lectures and books, presented and published over his lifetime, Heidegger set forth his radical re-vision of the history and the “meaning” of philosophical—and scientific—concepts, including those of time and space. His first major work, *Being and Time* (1927), uprooted time from traditional philosophical notions of it and from ordinary clocktime, and reestablished it in relation to the human and to “Being” itself.

We find a prime example of his disruptive “time” in his discussion of “origin.” I will point out how it contrasts to the traditional notion of time which, in spite of Einstein’s theories to the contrary, lies embedded in physics’ Big Bang, sketched above.

For Heidegger the origin is *prior* to the existence of the “universe,” as it is for physics—but for Heidegger it is not prior *in time*. The origin doesn’t *precede* the universe. It does not “occur” before the world comes into existence, as by the splittest of nan-seconds the Big Bang origin does. Nor does the origin *cause* the world, as the Big Bang does, when that explosion of concentrated gases sends it flying off into perpetual expansion and starts the clock (Gr 171-72). Instead, in Heidegger’s version the origin is prior to time and space *as a root is prior to stems*.

In Heidegger’s thinking “roots” are more than a metaphor, and uncovering them is not an exercise in biology or even etymology.

Consider the priority of “root.” The root doesn’t come first in time, before the stems, and does not cause or precipitate the stems, nor do the stems develop from the root. The root and the stems lie inert together at the beginning, intact, entire, and enclosed in the seed from which they develop together at the same time, as one and the same plant. Further, as the root becomes the base that grounds and stabilizes, supports and nourishes the stems, the stems are necessary to the root if it is to be a root. The root and the stems cannot “be” properly (live and grow as the plant that they are) without each other.

Now we apply the analogy to roots in language. Above, I wrote that for Heidegger *the origin* is prior to time and space *as a root is prior to stems*. What we call by separate names, “time” and “space” are indeed separate, but they are separate stems that belong to a common root, which Heidegger calls “true” *time-space*—primordial *time-space* in which we (humans and also everything else that “is”) “are,” unaware. Heidegger refers to “true” time-space as the “Open.” This “opening” or “clearing” is the site where/when all that we call “life”—everything that “is”—occurs, happens.

Heidegger’s special usage of the word “prior” which discounts the reference to clocktime shows us that for him the “origin” of everything that “is” is not an event that happened in the past, setting “history” into motion. A fixed factual point does not mark the beginning of the story of the “universe.” Time, as Heidegger has it, “goes on” in the “present,” as we think of the present, and in what we call the “past” and in the “future” too—*and all simultaneously*.

As bizarre as this suggestion sounds, it is less offensive to our personal sensibilities than physics’ notion, mentioned above, that time can be read backward as easily as forward, reading *literally*, so to speak, i.e., one slice at a time. In fact, Heidegger’s re-vision of time seems rather to awaken us to the presence of the extraordinary lying already, unrecognized, in our ordinary experience of time.

It is a daunting task I am undertaking here, to explain Heidegger’s notion that the three dimensions of time–present, past, and future—go on “simultaneously.” You are surely, and properly, objecting that our very notion of time is contradicted when the three distinctions in time, the three “times” which delineate what we still think of as the very “passing of time,” are conflated, dissolved, into one.

But let us ponder more slowly and carefully this “movement” of time as Heidegger views it. First we should consider two characteristics of time or two aspects of its character which he finds not only in time but in things, beings, as well: two features which are essential to every thing and yet, paradoxically, stand in *contradiction* to each other. The first is the tendency or the necessity of things to cover up, hide; it is called “self-concealment” in the quotation below. The second is the tendency or necessity in things to reach out, reach *to* each other; Heidegger calls it “nearness.” (When physics recognizes such tendencies, it labels and treats them scientifically as parameters.)

Heidegger writes about these opposing tendencies in “The Nature of Language” [*On the Way to Language*]. In the passage I quote here, he is explaining his use of the word “nearness,” a key word of his to characterize relations among things. He writes:

. . . Goethe, and MÃ¶rike [German poets] too, like to use the phrase “face-to-face with one another” not only with respect to human beings but also with respect to things of the world. Where this prevails, all things are open to one another in their self-concealment; thus one extends itself to the other, and thus all remain themselves; one is over the other as its guardian watching over the other, over it as its veil. (104)

In this passage, the oppositions draw our attention first: openness vs. concealing, giving oneself away vs. remaining oneself, watching-over as veiling.

This contradictory relationship that is discovered among “things of the world” is found as well among the dimensions of time. In fact, in these relations it is the oppositions which generate the movement that has been called the “passing” of time.

In *Time and Being*(19xx, 14-5) Heidegger details this movement. He describes it as a kind of inter-reaching, inter-giving, of the dimensions of present, past, and future:

. . . Dimensionality consists in a reaching out that opens up, in which futural approaching brings about what has been, what has been brings about futural approaching, and the reciprocal relation of both brings about the opening up of openness. Thought in terms of this threefold giving, true time proves to be three-dimensional. Dimension, we repeat, is here thought not only as the area of possible measurement, but rather as reaching throughout, as giving and opening up. Only the latter enables us to represent and delimit an area of measurement. (14-5)

Reprise:

Opening and extending themselves to each other, things “encounter” and “face” each other. Yet, concealing themselves, things hold onto themselves, remain intact, “remain themselves.”

Each aspect of time—present, past, and future—reaching toward another, is relating to it as it moves it on, opening up another: the future is approaching and replacing the present, which is becoming the past; the present (which is becoming the past) is reaching toward the future (as your own momentary glimpse into your own “present” psyche will affirm; I have no doubt that you are leaning heavily toward the end of this interminable sentence). The past is opening too, does not cease to “be.” (Look about. Everything that “is” brings forward the unerased past, extending, reaching toward the future to continue into it: developing or deteriorating.)

It is this chain of exchanges among the dimensions of time, these reachings-out to each other—the present reaching into the future, the future’s reaching into the present, the past’s reaching into the future—which is opening up the Open: where you are.

In the paragraph that follows the passage above, Heidegger adds:

. . . the unity of time’s three dimensions consists in the interplay of each toward each. This interplay proves to be the true extending, playing in the very heart of time, the fourth dimension, so to speak–not only so to speak, but in the nature of the matter. (15)

We note emphatically that the different aspects of time, which retain their separate integrity, are not frozen, absolute segments, not like blocks of ice, and not reversible. They are reaching, inter-changing, inter-relating “dimensions” of a “unity”: time.

Of course the Aristotelian concept of time as a succession of *now*’s resists such a characterization as this, and modern science’s use of time as a parameter in mathematic calculations precludes it. Think of Greene’s “slices” of time, absolutely independent of each other. In xxxx Heidegger emphasizes the point:

“. . . , space and time as parameters can neither bring about nor measure nearness. Why not? In the succession of ‘nows’ one after the other as elements of parametric time, one ‘now’ is never in open face-to-face encounter with another. In fact, we may not even say that, in this succession, the ‘now’ coming after and the ‘now’ coming before are closed off from each other. For closure, too, is still a manner of facing or excluding something being in face-to-face. But this encounter is as such excluded from the parametric concept of time.” [104] [????]

I shall at least mention another interesting co-incidence in physics’ “time” and Heidegger’s. This issue deserves its own space and time for its own appreciation, but I shall only state the point briefly.

As I mentioned above, according to the laws of physics (Greene 144-45), time is a swift sequencing of now-slices, slices flying by like “still frames in a film,” each slice absolute, i.e., fixed forever, unchangeable. Now compare (and contrast) another aspect of Heidegger’s re-vision of the “interplay” of future, past, and present in the “heart of time”:

“But time itself, in the wholeness of its nature, does not move; it rests in stillness. . . . But space itself, in the wholeness of its nature, does not move; it rests in stillness” (106).

In both re-visions of the ancient concept, Heidegger’s and physics’, time is no longer understood to be a series of *now*‘s which flows, and flows ineluctably in a futural direction. In physics’ version, the *now*’s are retained but solidified (like “chunks of ice”) so that they do not “flow,” so that, indeed, they could conceivably be reordered or rearranged. In Heidegger’s version, time, as belonging to time-space, remains related to us, our “being,” and retains its inter-relating interplaying movement, but maintains also its “unity” which “rests in stillness.”

You may be noticing something very odd in Heidegger’s description of the operation of time. To speak of time’s dimensions as “encountering” each other “face-to-face,” as “reaching” and “giving” each other, to speak of their “interplay” “playing in the very heart of time”—all this language treats time as something humanlike. *Of course* science does not, cannot, take time in this anthropomorphic fashion.

Certainly in scientific “thinking” such language could never be used. (I am placing “thinking” in quotation marks to remind us that science, according to its method, does not “think.”) For in science, time, like every object that comes under scientific scrutiny, i.e., like every “object” as such, is considered objectively, not subjectively. The fact that in every scientific study, in every examination of every object whatever, the work is inspired by and carried through by only human observers using the human mind and its mathematic capability seems to count for nothing in the equation.

Heidegger confronts this logical dilemma–that there is no other route to knowledge of the “objective” world than through the “subjective” human mind–in *Being and Time*, where he calls the problem the *hermeneutical circle*. It is the original tautology: the problem that *thinking* is *human*, that as far as we know only humans think, and that thinking cannot untangle *itself* from what it thinks it thinks *about*. For Heidegger the solution to the problem is not to escape from the circle (we can’t) but to learn to use the circle appropriately. His body of work is a working-through of this attempt.

Thus, in Heidegger’s revised notion of time, our everyday experience of present and past and future is not dissolved or dismissed; it is our *understanding* of this experience that changes. We “see” the experience of time (understand it) in a new way, we *re-view* it.

Now, “experience” is what happens to us. It is what we “feel,” “undergo” (OED). But then what we feel and undergo depend in part on the understanding we bring with us to these events in the first place. When we now re-view our customary experience of time, i.e., take a new look at it Heidegger’s way, the experience undergoes a metamorphosis. We recover dimensions in the experience which we have been missing.

For Heidegger’s description of the dimensions of temporality corresponds to our personal sense of time more closely than the traditional Aristotelian view or physics’ modern speculations. Neither of these, when we consider them, can explain what we feel, undergo, as time. The former is too narrow, the latter too technical, too “objective.”

Nonsense, you object. My “experience of time” is very simple. I just look at the clock or my cellphone or ipod, etc., or I can turn on the TV or log onto the internet, and I am able in “no time” to check in with the rest of you to the ends of the earth—and to the end of time too, as far as it can be accounted for by historians and newscasters and predicted by forecasters. We don’t exactly *experience* time, you continue. But at any time I wish, I can know what time it is and what’s happening “now” everywhere. I can know what people “in the know” know about the past–what has happened in the world—and about the future—what can be expected to happen later. What’s to “experience”? you demand. I am accustomed to see my life in intervals of the clock and the calendar, not in intervals of introspection. It’s a secondary consideration even to notice the movements of sun, moon, and stars in the sky or the changes in seasons. On the whole, I hardly need to think about it or to look outside my cocoon of virtual reality nestled in instrumentation adequate to my needs, hardly need the natural world at all. I am grateful for the millions of benefits this high-tech synchrony affords me: the world around me, if you like, and the universe as a whole.

But some of you are not satisfied to leave it at that. You are willing to make a little concession. If I look closely at my own personal “experience” of clocktime, you confess, I find that clocktime can be a nuisance. Wherever I am, whatever Now I inhabit, whatever Future I contemplate, whatever Past I consult, the clock hovers or towers, pushing or pulling me into that celebrated synchrony with the rest of you. I’m too early. . . . It’s too late. . . . I won’t have time if I . . . . A task-master is the clock, correcting my indolence, my separateness, my veering off its course into some uncharted course of my own. A nag is the clock, interrupting the sheer flow of life with its contradicting precise intervals. The clock is certainly not a part of myself, some of you conclude. Its incessant tick, tick, tick exists somewhere “over there,” where clocks are, not “here,” where I am. Clocktime belongs in the realm of items of knowledge such as telephone numbers and letters of the Greek alphabet—impersonal, inessential.

Let us consider, then, the residue, I reply—your experience of the time that *is*a part of yourself. Not clocktime, but what I am calling your personal sense of it, that course of your own you tend to veer off into: time “here,” as you put it, where the present, the past, and the future *are* essential. You live intimately “in time.” You *are*, are *doing*, here, at this point (now), in a space of time oblivious to the clock. That’s why you’re “late” for the clocktime appointment. You *were*, *did*something, “back then,” at a point in the past like the one you are in now, or unlike it—by which comparison you recognize and understand (or fail to recognize or understand) this one in the present, and in light of which you are deciding how to deal with this one. You *shall be*, hope to *do*, at some point (in the future), and toward that end you plan and act now.

What would an *experience* of time be? We don’t *see* the passing of time as it passes. We don’t *feel* it passing incrementally by. We take for granted that it is going on, but we *experience* it by seeing that change has occurred or is occurring, by anticipating what is going to happen, or by remembering what has happened or what we have learned. *And we “experience” time only and always as all of these at once.*

For example, when I decide that I will visit my mother on Tuesday afternoon, I look ahead in time, ordering my schedule, imagining her circumstances, rehearsing the conversation, anticipating her reactions, responses, and the (weighty) consequences. Meanwhile, this plan that predicts the future is freighted with the past, with memories of just such afternoons, Tuesday afternoons, memories of visits to my mother on Tuesday afternoons, etc., etc., and the plan is informed by past choices of just these kinds, along with the memory of their (heavy) consequences. My plan draws on knowledge of social formalities that I carry with me out of the past, and on my understanding (and, oh, memories) of the psychology of my mother and of my relationship with her, and of all these as they relate to Tuesdays, Tuesday visits, and so on. Of course, as I look forward toward the scene, scripting (and dramatizing), making insightful selections among choices of attitude and behavior, I am at every turn applying what I consider to be reason–no doubt habits of reasoning I have accumulated along with memories of their (considerable) consequences, etc., etc.

Meanwhile, I do not need to perform any maneuvers to turn toward the past in one direction (whatever “direction” could mean here) and the future in another. I do not forget the past in order to think about the future, or vice versa. In fact, in my general consciousness I cannot extricate these three “directions” from one another. All this, all I have experienced, seen, done, learned, all I hope, dread, plan, anticipate, and all I see, know, think, do, cannot be parsed into a string of *now*’s or a sequence or series of clock-points. Instead it seems to be one bundle of “where I am” which I carry about without cease, in which I live—one seamless sense of “t/here.”

But hold on, you object. “There” and/or “here” are not locators in time, but in space. You have stumbled into Einstein’s spacetime.

No, I reply, for Einstein’s spacetime does not locate us “where we are”; it gives a mathematic schematic of the parameters of space and time (revised to spacetime) in the objective universe. What it cannot include is our personal experience of “t/here.”

We have not stumbled into Einstein’s spacetime, but into Heidegger’s *time-*space. “*T/here*” is another name Heidegger gives to time-space, the Open, where-we-are. Thus, Heidegger’s word for the human is *Da-sein*: *There-being*. *Being-there*—there, *where you are.*

In Heidegger’s thinking, *where you are* is the site of the origin: *Time-space*, the Open (also the Moment of Decision, as we shall see below). This is where everything—all that “is”—occurs. It is simultaneously the site of All and the site of the individual Dasein.

If you are thinking that the “All” in my phrase “the site of All,” means the totality of existence, then you probably think that it means the “universe,” the objective fact of everything that science has discovered. This “realm,” you are thinking, the province of science (the physical universe), is the “site” where “beings” exist. You do not think of your own private “site” (where you are, as I have described it) as the site of the whole universe.

You may be incredulous that Heidegger characterizes the All and the individual Dasein, each human being, as the same site. You may object that this conflation blurs or, indeed, eliminates the distinction between the objective (the real, the universe) and the subjective (the personal perspective, the individual human being). Perhaps I have pressed your patience too far, and you want to insist: if this claim isn’t simply absurd, it is solipsistic or worse, narcissistic. It equates an individual’s private space with the space of the whole universe.

It’s the “space” problem again. The phrases “private space” and “space of the whole universe” rely on the old, outmoded definition of “space.” Heidegger’s *time-space*, the Open, where-you-are, usurps that limitable, measurable “space.”

But your observation that Heidegger blurs or eliminates the subject-object dichotomy is a valid one. He does. He was not the first philosopher to do so. A generation earlier Friedrich Nietzsche, for example, had famously done so. But it is not only philosophy that has loosened its hold on the subject-object distinction in the last century or so. Physics has done so too. We can cite, for example, the well-known Heisenberg principle. Let us consider for a moment this bombshell principle.

In 1927 Werner Heisenberg struck elemental uncertainty into the heart of scientific precision. Science’s hopes of constructing a deterministic model of the laws of the universe, from which future events could be predicted, were shattered when it was demonstrated that in the field of quantum physics, phenomena under scientific observation are affected, altered, by the act of observing, itself. It became necessary to factor in to experiments the effects of experimentation itself in each case (Hawking 54-5). But the point is not simply that observing or measuring phenomena disturbs the phenomena and thereby contaminates the observation or the measurement. The principle goes farther.

Absolute precision of measurement is lost in quantum mechanics not only because the human observer influences the observing, but also, and more essentially, because quantum phenomena do not manifest resolute definition. “In quantum mechanics, uncertainty just is,” Greene asserts (98). For example, in a typical probability wave of a particle, the location of the particle is uncertain since the particle is spread out in the wave (an uncanny “fact” in itself). Or, rather, and precisely to the point here, the location of the particle is indeterminable until the observer enters into the experiment to take the measurement, when the particle is discovered concentrated in one point, one measurable location. (Greene describes the amazing event, 200ff.; I shall return to it below.). So much for the dream of absolute objectivity.

The Heisenberg principle has been conclusively confirmed and incorporated into quantum physics research, where it is proliferating into, I am tempted to say, “fantastic” or “fabulous” theoretical probabilities (and technological realities).

Thus the concepts of objectivity and subjectivity have lost their former prestige and status of priority in Western science as well as philosophy.

But even if I win your grudging permission to suspend the subject-object difference here, I must ask your indulgence a little further. For it is not only the concepts of subject and object that have lost their prestige and prerogative in Heidegger’s thinking. All concepts have done so. Heidegger eschews the *concept* itself, rejects thinking that thinks in concepts (*What Calls for Thinking?* 211).

Again, it is the roots of language that decide the issue for him. In German the word for “concept,” *Begriff*, also means “to grasp.” The concept *grasps* whatever it names instead of *letting-be*.

Take for example the word *Dasein*, which I introduced above. Heidegger takes up this word which was previously used in German philosophy to designate almost anything in existence (*Being and Time* 27, H11) and uses it to designate the human—or not precisely or solely the human, but primarily so. Now since Aristotle, “man” has been defined as the animal that speaks, the animal distinguished from other animals by the faculty of language. The definition has been modified, amplified or attenuated (in philosophy and by the social sciences, especially anthropology, which takes “man” for its subject), but it remains the basic functioning definition of the “human.”

If you find that this definition misses anything essential as it defines *you*, then you may prefer Heidegger’s *Dasein*, not as it has been defined and used in philosophy, but as it “means” in the root, in the word itself: *Da* (there) *sein* (being), *being-t/here*.

The non-concept *Dasein*–t/here-being, being-t/here–does not “define” you, does not confine *you* to a precise definition. Still, the word does not miss anything you “are,” for it does not try to include everything you are and can be–does not *grasp* you. It sets you free, as Heidegger puts it–sets you up in the *t/here* we discovered for ourselves above and lets you “be” there. “Being” is the most comprehensive, exhaustive word for “what you are” in the vocabulary, and it places no limits on your possibilities for “being.”

However, at a glance we can see that this definition has no *definition*. It tells us nothing. It could as easily indicate rocks or trees or animals, etc. Everything in the world is “being there.” There is nothing about “man” in this epithet.

When we fell into the phrase “being there” in our discussion of time above, the phrase came to us naturally, to describe our sense of “where we are” when we look closely at our “experience” of time. We were musing that although we speak of each time dimension separately (the past and the future operating *in the present*), we do not *experience* them separately, and we could only describe this all-encompassing time-space where we invariably find ourselves, as simply *t/here*, “where you are.” Is the *there* “where *you* are” different from the time and space that rocks and trees and animals experience?

But rocks and trees and animals do not “experience” time and space.

So far, at least, philosophy and science agree that only man experiences time *as time*, space *as space*, and develops ways of understanding and dealing with them. There is nothing in the world but “man,” so far as we know, that *experiences* this *t*/*here,*this *Dasein*. Only man “is” (being) “t/here.”

In *Being and Time* Heidegger makes an exhaustive analysis of the “being” of Dasein. There is, for example, *being-in-the-world* (a familiarity with and understanding of a “world” of meanings which precedes the explicit understanding of anything in it); there is *being-with* (a kind of co-being with others that precedes and underlies any relation to them), *being-toward* (toward one’s own being, primarily, and also being-toward death, the kind of understanding that grounds [and enables] all the others). There is much, much more of this radically different analysis of “man.” The analysis of *mood*, for example, provides a comprehensive psychology.

*Dasein*:*Being-there*–in space-time, at the origin, in the Open.

You do not need a scientist or a philosopher to tell you that morning . . . dawns, opens, every morning another beginning. The year does the same, season following season. The tides rise into their diurnal coursing, birds into their seasonal migrations.\* In fact, any moment does: opens, indeed (now!) is opening. This “opening” is always happening *t/here* . . . where you are.

Access to this site, the Open, is not needed. We are always already t/here.

Come with me to the east window where the rays of the invisible sun are streaming above the horizon, midwifing the visible world. Look! . . . watch with me . . . *be* here . . .

If we face the sunrise *immediately*, i.e., without preconceptions of it—without the understanding and knowledge, the collective memory, education, to identify and interpret the phenomena that are appearing—what do we see?

To approach the natural world immediately we shall have to revert to the Beginning, to prehistoric time, to an undocumented Genesis predating history, philosophy, science. We shall have to fly back over all the accumulated genealogy of natural evolution and human development we think we “know”–that is, over all that intervenes between us, standing at the window this morning, and the sun “rising” in the east.

Good morning, Adam, Eve! What do you “see”?

We “see” that we cannot see at all. We see that if we relinquish our knowledge and understanding, “seeing” goes blank.

If there is one settled notion that all share today, scientists and philosophers alike–settled in the last century or so and likely to endure—, it is the notion that “the world” is always already “there,” somewise interpreted for us before we “approach” it. -Else what would we approach? What would “approach” mean? The word (“approach”) would dangle foolishly in the ruffled air after we had expelled it and, with no place to go, no referent, it would fizzle mid-air.

And yet.

Standing here before the sunrise, with two interpretations before us for comparison–physics’ and Heidegger’s—, we can approach, if not the sunrise, then the interpretations, the approaches.

We have glanced at science’s objective approach to phenomena. We glance now at Heidegger’s.

First we turn to the window. If you live in Arizona as I do, sunrise comes as the very epitome of Event. It *is happening*! For a while the changing in the sky is subtle. If you linger with it, what is happening, sunrise, happens *to you*, like an opening realization, a nameless oncoming taking-shape. All the east and with the east all the rest—which reaches from the horizon up to the brink of seeing, i.e., you—is brightening and also changing in its hues, cloud-drifts, -interdriftings, -interchangings. It draws you. Yes, to it, but also into a strangeness, awe, wonder, which like a tempter or temptress withdraws from you as it draws you to it. There is more to the sunrise than you can “get,” somehow. Like Hamlet’s father’s ghost, the sunrise draws you on . . . to . . . Question.

Sunrise doesn’t satisfy you, it awakens.  
And so does everything else.  
A mountain. The sea. A tree. A leaf, even. A lizard. A rock.  
They’re lures.  
Of course, we rarely take up this invitation things offer, an invitation to Question, for “the answer” meets the sunrise before our eye does:

Sunrise: another day, i.e., a day like the others: 6 o’clock.  
Not the sun rising at all, in fact, but the earth turning—  
certain effects of sunlight on the atmosphere, seen from certain perspectives, caused by certain air currents, moisture, temperature, etc., . . . .  
We have been taught to see the sunrise before we look at it, not as a unique and as yet open, unanswered question, but as a phenomenon that is, yes, ongoing, happening, to be sure, and open to further discovery, but a natural phenomenon well understood. To science (our teacher when it comes to the sunrise) the sunrise, and with it all the natural world, is taken, before it appears, as a given complex of objective phenomena which can be questioned and analyzed according to tested and proved principles and methods accumulated and developed, adapted and revised over the ages to explain, interpret, and predict the object and the objective system that “is” nature.

Let us return to the Question at the window (the sun rising), this time to “see” it Heidegger’s way.

Again we attempt to approach the event of sunrise bringing no readily available preconceived systems to explain or interpret it. We come to the window, to nature or to the universe or to “life”—to any being or to the question of “being” itself–as to an opening to which we open ourselves. Something is happening (the sun is “rising”). We see it, meet it, as though we were answering a summons, a “calling.” [cit.\*]

We find, as we did above, that the event and the “meaning” of the event (the nature or significance of it) are just what attract us, draw us, and we find, again, that they escape, elude, us—withdraw. As we have noted, it is perhaps the withdrawal that draws us on–again like the ghost of Hamlet’s father summoning and leading Hamlet further into the mists.

Withdrawal is an event. In fact, what withdraws may even concern and claim man more essentially than anything present that strikes and touches him. Being struck by actuality is what we like to regard as constitutive of the actuality of the actual. However, in being struck by what is actual, man may be debarred precisely from what concerns and touches him–touches him in the surely mysterious way of escaping him by its withdrawal. The event of withdrawal could be what is most present in all our present, and so infinitely exceed the actuality of everything actual

(*What Is Called Thinking?* 9).

And yet . . . . Can I seriously ask you to consider a “calling” of some kind in the sunrise we observed at the window, a Hamlet’s father’s ghost-like summons, in the unformalized impressions that emanate from natural beauty? This sense of immediacy with nature in the moment is, we now “know,” simply the fact of sensory stimuli on our particular sensorium, merely uncorrected primitive intuition.

And yet . . . , day by day, without permission from our teachers we consult our own untutored intuitions, our unmathematical calculations, when we must reach a final judgment on questions of ultimate importance to us. Among the clamoring, conflicting “facts” and “truths” offered to us day by day in video and print media by conflicting authorities with their conflicting “scientific” claims to “truth,” we find ourselves eventually face to face with . . . ourselves, to make our own decision as to the truth in each case. We work through the present problem, whatever it is, clearing a personal path through the options and obstacles that show up. In our private universe we are always in some sense standing at the window immediately facing the sunrise.

With *Being and Time*, Heidegger inaugurates a radically new “way” of thinking. A new way of thinking brings with it a new way of writing and requires a new way of reading. Ideally the book should be read “all at once,” for the end and the whole of this work are in play, interplay, from the beginning.

Opening up a new pathway for thinking and setting out upon his “way” (the word *weg*, “way,” has special significance for his thought),…

[ftnt: …As indicated in some titles of collections of essays: *Holzweg*, *Unterwegs zur Sprache*, *Wegmarken*],

…Heidegger takes up certain words or nomenclature fundamental in our tradition and empties out their current, customary definitions or meanings in order to restore to each word its original thrust. We have observed this turning back to the root already—for example, in his censure of the word *Begriff*(*concept*) and in his recovery of the word *Dasein (*there-being).

The re-viewed, revised nomenclature which Heidegger introduces into philosophy is not derived from and does not depend upon an esoteric source–such as, for example, science’s specialized body of knowledge built upon or developed by rational analysis according to a rational method, or Christianity’s divine revelation rendered into rational theology over centuries of clerical scholarship.\*\*\*\*

Instead, Heidegger’s language with its new “meanings” (“meaning” takes on new meaning too) is retrieved, recovered, from the roots of language itself–language, which underlies and pervades human existence. The elemental “meanings” in words lie undiscovered or forgotten—unrecognized or unacknowledged and unappropriated—in the “being” of Everyday Dasein, the ordinary, everyday human.

But a caution. Note the words “unrecognized,” “unacknowledged,” and “unappropriated,” “undiscovered or forgotten.” Heidegger characterizes Everyday Dasein as “falling.” The word “falling” comes from the Christian vocabulary which treats of “fallen” man, man guilty from conception, according to the doctrine of original sin. But the word “fallen” is transformed in Heidegger’s appropriation of “falling.”

In fact, a demonstration here of the transformation of meaning in this case will serve two purposes at once.

It will in the first place illustrate Heidegger’s method of procedure in *Being and Time*, where again and again he abandons a word (such as “fallen,” here) but awakens an essential meaning sleeping in the root of it in order to transplant it to a revised word (“fall*ing*,” here).

In the second place, this demonstration will point toward an overall project of Heidegger’s, which his works continually carry forward, the *Destruktion* of the philosophical tradition as a whole (the “world” received by all of us in the West simply by dint of being born into it), in order to recover from its root a pre-rational orientation toward Being. This *Destruktion* amounts to something of a reconstruction. (It should not be confused with Jacques Derrida’s more familiar, and derivative, “deconstruction.”) The traditional language thus abandoned is salvaged after all, while the underlying human “being” is renewed, recovered from the root.

The reconstruction of the word “fallen,” then, proceeds as follows. In Heidegger’s use of the word “*falling*,” the Christian sense of “falling off” from the “right” condition is retained, but what the right condition is, is transformed, as is the meaning of “right” (and wrong).

The right standing from which everyday Dasein is always already falling is the condition of standing in an original, authentic, resolute orientation toward one’s own potentiality for being. That is, by the time one becomes aware of one’s “standing” at all, it is to discover oneself already in a state of “falling,” embedded in and surrounded by a veritable web of meanings–a personal and cultural history, a received outlook on “the world” with given sets of ingrained, habituated relations with and attitudes toward and expectations of people and places and things, in general and in particular.

As Heidegger retrieves and renews the Christian *fallen*, his use of the *present* participle “fall*ing*” instead of the Christian past participle *fallen* changes the meaning of the word. The difference is more than grammatical. For the condition of *falling* is not fixed in place, as original sin fixes man’s *fallen* condition until grace redeems it. Fall*ing* is always an active occur*ring*, is happening t/here where we are. Thus it could, if we so decided, be reversed; it could be *not*-happening t/here where we are, if we chose.

In this connection, Heidegger also carries over from the Christian vocabulary the words *conscience* and *guilt*. Conscience, here, is a particular, individualized “calling,” an appeal to a particular Dasein’s own (i.e., authentic) potentialities for “being.” (Compare our experience, above, of being drawn, called, to the sunrise at the window.) The appeal is coming from, and leads back to, a nameless “It gives.” There is no “it” behind or beyond this “It gives.” The word “It” in this phrase, which grammatically signifies what gives, has no actual referent, refers to no giver. Beyond “It gives” there is no thing (i.e., there is nothing, no being; there is, instead, not-being). There “is,” in fine (in the end and in total and on the whole, as in every particular case), only the gift of Being.

We can compare the “given” that is the starting and limiting point for the sciences. For science too the investigation begins with the “given” phenomenon–the entity to be investigated. But the given phenomenon is not a “gift” and it offers no “appeal.” For science, the “given” is taken as “object” before it is encountered. There is no “encounter,” indeed. It matters not whether one person or another “encounters” the object, for no relationship develops between the particular observer and the particular object. The scientific observer’s intuitive or sensory “experience” is immaterial and irrelevant to the objective observation.

To reiterate, for science objectivity is the starting point and the limiting point. Science cannot count or countenance “appeals” from or in or among things of the world except as it can treat them all—intuition and senses included–objectively as objects. Of course, the consequence is that science invalidates our personal access to the world, full of intuitive, sensory experience. Even more decisively, science transforms that access into “facts,” into further “objects” for objective investigation—i.e., intuition becomes functions of the brain, available physically (objectively) to analytical research; the senses become physical organs available to the same objectivity. Immediate access to things we “see” (a seeing-relation that is not routed through the concept) becomes inconceivable, *ergo* unthinkable.

(However, quantum theory, the most exciting, reliable, and technologically prolific branch of science today, finds itself in the peculiar position of professing strict adherence to the objective scientific method while admitting a new, contradictory phenomenon into their field of view: human consciousness. See Bruce Rosenblum and Fred Kuttner’s account of physics’ “skeleton in the closet” in *Quantum Enigma; Physics Encounters Consciousness* and of the self-deception, evasion, and denial with which physicists attempt to deal with the scandal.)

Both Heidegger and science are stopped, limited, at some point in their search/research. In Heidegger’s case, it is Nothing, not-being, that marks the limit. However, it is precisely at the end of the “way,” here, at the point to which beings, things (the sunrise), draw us while at the same time withdrawing from our understanding—here against the closedness of not-being—that the *disclosedness* of the “world” occurs; i.e., here the “world” arises into appearance. Here at the “deadend,” we find ourselves again at the beginning, at the origin: *where you are*.

Of course, we do not usually recognize “where-we-are” as “the origin.” For Heidegger, this mis-take, mis-understanding, occurs because, as noted above, the general understanding that belongs to the ordinary, everyday human is not original or authentic, does not arise from the underlying unique Dasein, but is instead a received understanding—received in each case from what we call the individual’s social or cultural milieu, a sense of collective consciousness, which Heidegger calls the “they.”

We recognize the authority of this familiar “they.” What “they” say is customarily taken for granted without much ado. It is this “they” that introduces us to the “world” in the first place, that sets us upon and guides us along its paths. And it is this “they” that cautions us against using or trusting our own intuition and senses, and that teaches us to rely instead on scientific studies, findings, and their oh, so provisional and temporary conclusions.

Let us note that in the physical sciences—the “they” of collective knowledge which we take nowadays to be most reliable—the “objective” world outranks and displaces everyday human experience, discounts and supersedes it. You will not find your own “original” experience underlying physics’ theories. You yourself cannot reach science’s conclusions or verify them except by following science’s rational course–through the body of scientific knowledge which is grounded, proved, and corroborated by mathematical principles, at least as far as consensus can be achieved among current investigators.

(By the way, it should come as no surprise that mathematical equations eventually validate scientific discoveries or proposals. They must inevitably validate “valid” theories, i.e., theories that meet the requirements of the rigorous principles and laws that science has adopted and works to adapt as each problem is encountered, challenged, and provisionally overcome.

(That is, the same system of mathematical principles that prompts and guides the formulation of questions and problems [all of these following upon previous answers and solutions] —this same system also devises the approach to the research and the methods to be used [experiments, proofs], and in these ways and by these means both predicts and prescribes *and proscribes* the results. The mathematical system itself is self-contained and self-limiting. Whatever the configurations of problems and questions and answers, whatever their consequences for the “universe” and for us, in the end it is the system itself that the system is exploring.)

In Heidegger’s thinking, however, as we have noted, underneath the received, established “world” of everyday Dasein—our everyday understanding of things and relations among them, our attitudes and patterns of behavior toward them, the beliefs and habits of thought provided by the “they”—there lies the original, authentic Dasein. For this reason every Heideggerian notion can apply and appeal to every reader’s own (original but unacknowledged) human “being.”

But, as I admitted above, the notion of returning to an uninterpreted human “being” or to a pre-scientific “world” is, since inconceivable (i.e., non-conceptual), unthinkable—because thinking itself, for us, is shackled to the concept.

(But we have noted that the science of physics itself is ranging abroad these days, is sending tentacles out beyond its traditional rational borders.)

Science is in the ascendency today. Scientific knowledge enjoys more prestige than any other kind. But this is a relatively recent development. In the Academy of the ancient Socratic Greeks, who set science on its rational course, the sciences were part of philosophy. In the centuries that followed, philosophy and science developed into two branches of knowledge, eventually became two disciplines in the universities—the sciences and the humanities—and by the nineteenth century had developed a prickly antagonism toward one another.

But it was in the twentieth century that science won the preeminence it enjoys today. For philosophy found itself to be trapped in a rational cul de sac and retreated from its former purpose—to discover ultimate Truth—losing thereby its previous integrity and prestige. Meanwhile science, though it was the rational child of philosophy and remained dependent on the mechanism of rational thought for its *modus operandi*, was joining forces with technology to dazzle the world with its powers and potentialities.

Heidegger was writing in the mid-twentieth-century, when philosophers were pronouncing the death of philosophy, a time when, as the poet William Butler Yeats expressed it in 1920, “Things fall apart; the centre cannot hold.” . . .

[ “The Second Coming,” *The Variorum Edition of the Poems of W. B. Yeats*, eds. Peter Allt and Russell K. Alspach, 401-02]

. . .The young Heidegger, facing the crisis in philosophy, opted to break open a path ahead by routing through the past (we have observed already that he is fearless before the spectre of contradiction). His intention, as we have seen, was to get back to the roots of Western thinking. He followed the history of thinking back to its beginning in order to rediscover what thinking is, and to recover whatever potentialities and alternatives lay there in the beginning before thinking turned toward the rational (for it was rational thinking that had been rationally discredited, not thinking per se). Heidegger sought to turn, return, to the ground itself and to set out again from there.

As Brian Greene, Stephen Hawking, and other physicists are writing books nowadays to remind non-specialists of the historical development of scientific knowledge which brought us to the present moment, and to inform us about current developments, so I am attempting here to give an abbreviated account of the historical development of Western thinking culminating in the current state and status of philosophy, leaving open the question of the future of “thinking.”

The ground of Western history, to which Heidegger turned in the twentieth century, is the world of the ancient Greeks. This world is evoked in extant fragments of texts written by pre-Socratic thinkers such as Anaximander, Parmenides, and Heraclitus. These rich remnants provide some direct, though limited, access into the Western thinking that preceded the rational philosophy inaugurated by Socrates, Plato, and Aristotle.

Heidegger’s interest in the Greeks is not academic. Their significance for his thinking is not their historical or anthropological or cultural significance. In the first place, Heidegger rejects the ordinary meaning of “historical significance,” for he discounts the ordinary sense of “history.” His new word for his re-vision of “history” is *historicity*, and this word carries primary significance throughout his works.

As for the anthropological and cultural significance of the early Greeks, Heidegger discounts our current notions of “anthropology” and “culture” because they have developed inside the rational tradition he is displacing and remain entangled in it, cannot escape or transcend it.

No, for Heidegger the significance of the pre-Socratic Greeks lies in the power he discovers in their pre-rational thinking.

As we know, for Heidegger the roots of thinking are found in the roots of language. Returning to the earliest scraps of Greek philosophy and “following” the language wherever it leads, i.e., approaching the language in his own opening, questioning, listening “way,” Heidegger is turning up the roots of the Greek language, buried under the history of usage that followed and developed from them.

And here he discovers a . . . *primitive* world? Only if we think anthropologically. If we approach the world that arises from the language of these texts without preconceptions as far as possible, we find an unfamiliar world, no longer accessible.

The primary distinction and difference for us in the non-rational thinking that is opening up here is the seemingly seamless relation we find between the thinker and the thinking or the thinker and what there is to think about. There seems to be no distance or space, no separation at all, between the think*er*and the think*ing*, no question about the questioning itself. The thinker seems to be *immediately* involved in the thinking; he is always already “there” in it. And there seems to be no distance or separation between the thinking and *what is being thought about*. There is an intimacy and comprehensiveness of “attunement” (as Heidegger calls it) between the thinkers and the world set forth in their thinking.

Still, Heidegger will cite the oversight of the early Greek philosophers, i.e., their overlooking the *site* of thinking that underlies all thinking. You and I have already become acquainted with this site. Heidegger calls it the “there,” the Open; we have called it “where you are.”

Let us take a brief overview of the Greek world, following Heidegger’s route through the roots of a few of the Greek words that reveal it.

The Greeks used words such as *aletheia, phusis, eidos*, and *logos*, which reveal their relation to . . . *what is*, or what we call *things* or *the natural world*. Heidegger gives thought to these words. We shall take the briefest survey.

The natural world seemed to *arise* into appearance around these early Greeks, as though “beings” were always (now), arising or awakening from oblivion, *a-letheia*. *Lethe* is often translated “forgetfulness” and has been associated with death. The word *a-letheia* (*from*- or *out of-* Lethe) points to the event of beings arising *from* or *out of* that ultimate region from which things arise into being and to which they return.

*Phusis,* the Greek root for our word *physics*, referred to these beings themselves, beings (things) which come into being *by themselves*, i.e., *of* themselves—beings not constructed, not made by man. In the Greek sense of *phusis,* physical things “arise into being,” as I put it above, describing *aletheia*; they arise from “concealment” into “unconcealment”; they *appear*, or, better, they are actively appear*ing*.

And yet, for the pre-Socratics there was no absolute distinction between *oblivion* or *death,* on the one hand, and the *appearing* or the *rising into appearing* of physical things, on the other. That is, “concealment” and “unconcealment” were not absolute, opposite states of being; nor were they contradictory *notions* of states of being. For *ideas*, as we understand ideas–as the work and the tools of thinking–did not belong to the lexicon of thinking for these thinkers. *Ideas*, in our sense of the word, would originate later, in the lexicon of Plato’s rational thought.

No, according to Heidegger, Heraclitus, e.g. (“Aletheia,” *Early Greek Thinking* 102-23), considered “revealing and concealing–not as two different occurrences merely jammed together, but as one and the Same” (112-13). In fact, he adds later, “self-revealing not only never dispenses with concealing, but actually needs it, in order to occur essentially in the way it occurs . . . as dis-closing” (114). We can compare our experience with the sunrise: the sense of being drawn to its mystery (its “appearing”) at the same time that the mystery seems to withdraw out of reach as we attempt to approach it.

Today we refer to not-manmade beings as “things of nature,” or physical entities. And we take them as science, developing from Plato’s and Aristotle’s rational thinking, has taught us to take them, i.e., as objective entities, analyzable and classifiable. Such beings were subjects of the “science” of physics for the Greeks too, even in this early historical period, but for the Greeks “science” was a word that denoted *knowledge*, *knowing*; and *knowing* did not carry the sense of systematic or objective knowledge as it does for us today. *Knowing* included a primordial *relating* to the thing *known.* Heidegger explores this *knowing* in, e.g., “The Anaximander Fragment”:

. . . To have seen is the essence of knowing. In “to have seen” there is always something more at play than the completion of an optical process. In it the connection with what is present subsists behind every kind of sensuous or nonsensuous grasping. . . ."

(*Early Greek Thinking* 36)

The Greek word *eidos*, “appearing,” can help us to understand this primordial *relating* or *seeing*. In this word Heidegger finds another aspect of the ancient Greek sense of “being.”

For the pre-Socratics, “physical” (natural) phenomena arise (*aletheia*), of themselves (*phusis*); and they arise *into appearing*[*eidos*]. That is, things *bring themselves to appear*, to appear *as themselves*. In *eidos* we recognize the word to which Plato would give particular significance: *idea*. Things, beings, come (into existence), arise, present themselves to *view*—and, again, for these earliest philosophers, not as static, objective things, but as ris*ing*, appear*ing* phenomena: each thing as *itself*, each one declaring or showing itself.

You notice that along with the *appearing* of physical things a *lighting*, a *seeing*, is occurring as well. You recognize again this site of the movement of beings into presence as Heidegger’s Open, “where you are.” We observe the same “coincidence” as we consider *logos*.

*Logos* is the Greek word for language. We recognize the root of “logic,” but the *logos*of the pre-Socratic thinkers predates the logic that we attribute to rational thought or reason. The *logos* of these early Greeks denoted *speech*, *saying*, and *what is said*. *Logos*, the noun, named *speech*, *what is said*; *legein*, the verb, meant *to speak*, *say*.

But the verb *legein* had another meaning as well: *to lay out* or *to gather up*. Heidegger retrieves the second meaning along with the first and brings a startling new dimension to the understanding of what we are doing when we put something into language. \*\*\*\*

To wit: we have said that for these Greeks the “natural world” arose about them (*aletheia*) by itself (*phusis)*into appearing (*eidos*). *Logos* (speaking, saying) was the *gathering together* of this rising world into language. The speaker’s saying/speaking *gathered up*and*laid* *out* this appearing of the being or beings that lay before him. In speaking or saying, the speaker and the rising being/beings were related, attuned. Above I mentioned Heidegger’s aversion to language that “grasps” what it *represents* (and by grasping obtains the power to manipulate).

We can sense the immediacy of “nature” in such a world: things “arising” into “appearing” before the thinker, as though awaking from sleep. We can sense the immediacy of the human relation with nature that was achieved by way of language that did not *represent* the world or *refer to* it secondarily or *interpret* it, but instead “let it lie before” as it was appearing, gathering it and laying it out in language. Perhaps children still feel this strange, strangely familiar “reality” (perhaps you remember). Besides the sense of immediate intimacy with the world, the pre-Socratics give the sense of a non-religious holiness or wonder, of mystery, in the being-ness of every being and in the unity or wholeness of the All.

Heidegger’s thinking returns to these ancient roots—not to restore or resume this pre-rational thought, but to recover the site from which it arose. On this original site he uncovers a (post-rational) “way” of thinking and breaks open a path ahead

Heidegger turns back to the pre-Socratics not to overturn history or to recover a lost world, but to examine the roots of Western thinking and to recover the “origin.” In his works he follows the movement of this original relation to Being down to the present day, redefining *historicity* as he traces shifts and changes in the record of philosophy-science.

He describes the relation to Being in our own time as “technological.” We take the natural world to be “standing reserve,” he says—a treasury of resources to be managed and exploited for our human purposes, regardless of its own Being; and his critique has exerted a powerful influence on us. His thought directly influenced the development of major philosophy in the twentieth century, phenomenological and existentialist, and it marked religious, political, social, and cultural thought and movements. His thinking influenced the period also as it marked the thinking of his students, many of them eminent thinkers of the time, e.g., Hannah Arendt, historian and cultural thinker; Jacques Lacan, psychoanalyst; and Jacques Derrida, philosopher-literary-cultural thinker. The power and potentiality of Heidegger’s thinking remain directly available to us today in the numerous volumes of his works, and continue to deepen and widen with the posthumous publication of previously unavailable works.

[ftnt](http://www.carolynnslaughter.com/essays/time-space/) Heidegger’s record is stained (or damned, many critics believe) by his affiliation with the Nazi Party in the 1930’s (he was a member from 1933-45) and his active participation briefly while he was rector at the University of Freiberg. For a time during this period, Heidegger thought and hoped that the emergence of the National Socialist Revolution was the dawning possibility of a renewed authentic human relation to Being. [Cite speech].

The case against Heidegger is complicated by the fact that Heidegger did not denounce the Nazis publicly after the atrocities of the death camps came to light, nor did he ever publicly renounce his own Nazi participation or explain his silence on the subject. However, a posthumous publication and recent translation of a major work that Heidegger wrote during this period [M*indfulness*, tr. Parvis Emad and Thomas Kalary, New York: Continuum International Publishing Group, 2006] shows, as the translators put it, “clear evidence that he disagreed with the politics of Hitler and National Socialism” (xxxix). The translators conclude:

“With the availability of *Mindfulness* and other texts that are now published in GA 16, the whole question concerning Heidegger’s political error of the 1930s needs to be reexamined in a manner that is no longer prosecutorial and journalistic but fully considers his being-historical stance toward politics. Such a reexamination is likely to prove that much of the furore of the 1980s that surrounded Heidegger’s political error was irrelevant and prejudicial (xl).

Heidegger’s account of the history of changing human relations to Being in the West moves from the Pre-Socratics to the Socratics themselves. With the works of Plato and Aristotle in the fourth and third centuries B.C., philosophy bursts open a floodgate into a new possibility for thinking.

In the thought of Plato, the significance of *eidos* undergoes a change. For the pre-Socratic philosophers, as we saw above, *eidos* signified the *appearing* of things, their *bringing themselves to appearing*—their *presencing*. In “The Origin of the Work of Art, Heidegger calls this event their”shining," or “beauty” (“*Basic Writings* 181). But In Plato’s thinking this *appearing* loses the sense of immediacy that we noted above, the sense of the *happening* of things here and now, and it takes on the solidity of”form," the permanence of the “real.”

For Plato, *eidos* is still the presencing of appearing, but a space (of difference) opens up between this *appearing* and the *being* that is *presencing*. (See *Contributions*145-47.) Appear*ing* changes to appear*ance*. Whereas appear*ing* was inextricable from the thing itself (the thing came into presence in appear*ing*), now the appear*ance* of a thing takes on a separable, secondary existence of its own. The appearance of things is now the “mere” appearance of things, and belongs in the realm of the natural world. Indeed, the thing in its “appearance” in the natural world (the mountain, that flower, this page) is for Plato a mere reflection, a “copy” of the “real” thing (the form). The *reality* of things moves out of the natural world into a higher realm: the realm of forms, ideas—and with a new sense of *idea*. We still make a distinction between the way things *look* and the way they *are*, between unstable “illusion” and “factual” reality, and, as we shall discuss further below, between subjectivity and objectivity. [See *Republic*269*.*]

Now when the Socratics attribute “reality” to the form or idea of a thing, this new attribution applies not only to things of nature but also to manmade things, i.e., things made for useful or for artistic purposes. In a familiar Platonic dialogue, *Republic*, there is a well-known passage dealing with the question of the truth of art [Part Ten, Theory of Art, 421ff., esp. 422ff]. Socrates and Glaucon are discussing the relative “truth” in three kinds of “bed”: a bed in a painting, a bed made by a carpenter, and the bed created by God, i.e., the idea of the bed. Of course, the “real” bed is the one in the mind of God. The bed in a painting by an artist is a copy of the carpenter’s bed, which is in its turn a copy of the real bed in the mind of God. Art is two removes from truth.

Thus, for Plato the visible (physical) forms in nature are merely the shadows or reflections of the Real–the ideas, the ideal forms–whose invisible realm lies beyond the realm of “appearance” in which we live. The Real comprises the forms of higher intelligible Truth, absolute Truth—ideas of Good, beauty, love, temperance, etc.—and also, in a different category, mathematical forms of reasoning. Thus, the schematic for the idealism of Plato: two realms: the higher realm of ideal forms and the lower realm of sensory experience, the higher realm accessible from the lower only by way of reason.

With their concept of absolute Truth and their concept of thinking as Reason, the Socratic philosophers laid the foundation for the philosophy that has defined Western civilization ever since.

I shall not attempt to give the history of philosophy from the Greeks to the present time, but I shall sweep across it to pause at the Enlightenment, when a seismic shift in rational thought turned history toward the philosophy and science we are comparing here.

First the “sweep”: The rational philosophy founded by Plato (Socrates) and Aristotle moved through the classical Roman translation of it, by which movement, according to Heidegger, it lost the remnants of original Greek thinking that the Socratics had not cast off. (Heidegger points out some of these remnants in Aristotle’s physics, as we shall see below.)

With the advent and ascendance of Christianity, rational thinking became theological; philosophy—indeed, learning itself—became primarily the property and privilege of the Church.

When the Renaissance spread across Europe, the hegemony of the Catholic Church was weakened, and learning became charged with a rational humanism. Philosophy (science a constituent of it) developed as a rational, systematic, Christian understanding of the world and the cosmos.

In the seventeenth and eighteenth centuries Western thought underwent another major shift. This was the period during which Western thinking veered from its Christian underpinnings in received or divine authority (its reliance on divine Scripture and Holy inspiration for source and guarantee of truth) onto the foundation of the *mathematical—not*mathematics*, as a system of numbers and equations, but the*mathematical*(something the Greeks called*mathesis*), as a kind of understanding of things that derives not from the things themselves but from something in the human understanding itself*.\* Heidegger explains this change in the concept and use of the *mathematical* in *What is a Thing?*

A section of this book is reprinted as an essay called “Modern Science, Metaphysics, and Mathematics” (*Basic Writings* 271-305). In this essay Heidegger cites *Meditationes de prima philosophia* (1641), a seminal work of RenÃ© Descartes, an eminent seventeenth-century French philosopher-mathematician who followed Galileo and preceded Newton. In this work Heidegger finds a key articulation of the transformation taking place in Western thinking at the time.

Descartes posited a new guarantor of the truth of thinking—i.e., of the truth of propositions, of thought, of knowledge. What constituted and guaranteed the truth of knowledge about things was not to be sought for, after all, in the things themselves and not to be attributed to a transcendental relation between them and us (that is, it was not simply a “given” understanding, impossible and unnecessary to explain). No, the ground of the truth of human understanding or knowledge lay, he claimed, in the “I” that posited the thinking, the “I am.” The “I” became the “subject” of the first principle—“*cogito—sum*.” (Previously the word “subject” had been used to refer to the *thing* being discussed, while the word “object” had referred to *imaginary* things, things that did not actually exist but existed only in the mind. With Descartes’ usage, these two terms underwent a reversal in definition.) Human thinking, Descartes declared—thinking stemming from the “I”—*and this kind of understanding alone*, could attain to the truth of things with total clarity and certainty.

Heidegger is using a work which Descartes never finished and which was not published until long after his death. Nevertheless, Heidegger writes of it: “In [this work] the modern concept of science is coined. Only one who has really thought through this relentlessly sober volume long enough, down to its remotest and coldest corner, fulfills the prerequisite of getting an inkling of what is going on in modern science” (299).

\*\*Descartes brings into philosophy a clarifying focus on the concept of the *mathematical*, a narrowing of the concept, which had been taking shape for a century. To the ancients, *mathesis* had indicated a certain kind of mental capability: the capability to learn, to teach, and also the learning, the teaching, and it had indicated as well the matter that was learned, taught. Now, learning and teaching involve subject matter that the mind itself in some sense already possesses. For example, if the mind were not able to recognize the subject matter as something already available to it, it could not grasp its concept or explanation. Or if the mind had no prior understanding of number, it could not learn to count or calculate.

In Descartes’ thinking the *mathematical* itself, seated in the human mind (“I think”) with *its own rules*, is elucidated as the foundation of certain knowledge.

Concerning the objects before us, we should pursue the  
questions, not what others have thought, nor what we  
ourselves conjecture, but what we can clearly and insightfully  
intuit, or deduce with steps of certainty, for in no other way is  
knowledge arrived at.  
(Descartes, qtd. in “Modern Science.” *Basic Writings* 300)

According to the new formulation, the certainty of the truth of knowledge depends on the reliability of human reason, i.e., “[deducing] with steps of certainty” in the quoted passage. The attainment of knowledge, enlightenment, still begins with clear, insightful intuition of things of nature. But from this initial insight there must follow “steps of certainty” leading from the thing itself to certain knowledge of it.

Descartes describes the *method*:

Method consists entirely in the order and arrangement of that upon which the sharp vision of the mind must be directed in order to discover some truth. But we will follow such a method only if we lead complex and obscure propositions back step by step to the simpler ones and then to ascend by the same steps from the insight of the very simplest propositions to the knowledge of all the others. (300)

Back and forth the mind must make its way, beginning with the sensory experience of something in nature and the understanding that accompanies it. This understanding must now be disassembled, one step at a time, from complex propositions to simpler and simpler ones by which to retrace the steps, weaving a total complex of propositions, consistent and certain. Thus a system of principles or axioms may be established, a *mathematical* system consisting of these special formulations, all of which shall rest fundamentally upon the one “indubitable and absolutely certain” ground: reason, the human subject’s “I think.”

As a result, as Heidegger explains it *(*304-05), the definition of “man,” the human, is altered as well. Since the time of Aristotle, man had been taken to be the *animal rationale*. But the word *rationale* takes on special significance with Descartes’ formulation of the “I think” as pure reason; the rational becomes the *mathematical*, in a limited sense.

Further, co-posited along with the new principle and the new method is the principle of non-contradiction, found in philosophy in one form or another since Aristotle. What is posited in the *subject* (the “I”) cannot in reason be contradicted by the predicate, i.e., the assertion posited in relation to the subject. The result according to Heidegger: “The question about the thing is now anchored in pure reason, i.e., in the mathematical unfolding of its principles.”

Physicists today would not attribute the development of modern science and the scientific method to Descartes, perhaps, since he was not a scientist primarily but a philosopher. Instead they would more readily trace their genealogy to the British scientist and mathematician Sir Isaac Newton (or to Galileo before him), whose *Philosophiae Naturalis Principia Mathematica* (1686-87) set forth the revolutionary system of mathematical principles that laid the groundwork for the movement of Western science away from the Ptolemaic framework (the earth taken to be the center of the cosmos) into the Copernican view (the sun at the center of our galaxy). Newton’s new system of mathematic principles and axioms dominated scientific theory until the next revolution, Einstein’s. Today the phrase “classical physics” refers to Newton’s work.

With Newton, science sets aside the attempt [—and thus the capability—] to “see” (understand, know) the world immediately or by way of divine inspiration or authority, and moves uncompromisingly into the realm of the mind itself, the realm of pure reason.

Among the *first principles* that Newton’s physics establishes are axioms dealing with motion, the movement of bodies in space. We can catch a glimpse of different “worlds” created by different kinds of thinking (or, as Heidegger phrased it, different “relations to Being”) if we compare a few notions from Aristotle’s physics with Newton’s. I shall give a little of Heidegger’s point by point comparison in “Modern Science, Metaphysics, and Mathematics” (*Basic Writings* 271-305).

In Aristotle’s physics, things of nature, *phusis,* move of themselves. We found a similar notion of *phusis* in the discussion of the pre-Socratics above. For Aristotle, things move in different ways according to their own “nature.”

That is, things differ from each other in kind. Each kind of thing possesses its own character, capabilities, needs, tendencies, limitations, etc. (its own *nature*). And each kind of thing belongs in its own *place*, i.e., in either earth, water, air, or fire (the four elements, ordered spatially according to the scientific configuration of the universe at the time). As for motion in its kinetic sense, in each case a body tends to move according to its own nature and toward its own “natural” place. Movement contrary to natural movement is *violent*.

Two examples: It is the nature of heavy things to move downward toward the earth, not because of gravitational attraction (gravity was not yet conceivable), but because heavy things *belong to* the earth. Likewise, light things—clouds, smoke, fire—tend upwards toward their place in the heavens or the fiery element beyond, where they *belong*. Each thing has its place according to its kind and its nature. Places themselves differ in priority. The heavens, home to celestial things, are of the highest order, for example.

And in Aristotle’s physics each body has its own *kind* *of motion*. The “natural” motion of things of the earth, for example, is movement in a straight line toward the center of the earth, while things of the heavens move “naturally” in a circle. Circular motion has priority over earthly, for earthly motion is always incomplete (it reaches an end at some point) while circular motion is always complete in itself. Further, circular motion does not move in relation to the center of the earth as earthly motion does. Things with circular motion move independently, perpetually, completely. Thus the natural *place* to which things with circular motion belong is *in the motion* *itself*.

Differences in *velocity of motion* depend upon this natural attraction of bodies to their own place. The nearer they approach their place, the faster they move.

If the motion of a thing–a heavy thing moving downward or a light thing moving upward or a thing moving in a circle—is violently (unnaturally) diverted from its course, its movement slows, eventually stops.

We are taking the briefest sampling of Aristotle’s physics here, of course (and of Heidegger’s discussion of it). Every point described so summarily here multiplies into a world of physical detail as the philosopher/scientist names and analyzes and catalogs phenomena according to their nature.

Aristotle’s analysis of the nature of motion sounds quaint or primitive to us today with our everyday familiarity with high-tech motor-generation; spaceflight (*outer*-space flight) is a commonplace reality now, and we are not amazed to know that there is ongoing research into time-travel!

Still, it is important to note that century after century philosophers and scientists rediscover the complexity and comprehensiveness of Aristotle’s *Organum*, six philosophic-scientific works of thorough, logical analysis of every aspect of the universe known at the time. His works laid the foundation for the philosophy and science to follow.

Stephen Hawking [xx] has it that Aristotle and other philosopher-scientists of his day did not refer their theories to the actual things in nature, a flaw in light of the later emphasis on objectivity in the scientific approach. But these early thinkers were indeed mapping the things of nature as they directly observed them and logically construed them to be. Heidegger emphasizes this point: “Aristotle fought in his time precisely to make thought, inquiry, and assertion always . . . [here he quotes the Greek and then translates it] ‘[say] what corresponds to that which shows itself in beings’ (*De caelo*, III, 7, 306a 6).” [“Modern Science, Metaphysics, and Mathematics,” *Basic Writings*281-82]

In fact, we can reverse Hawking’s complaint to turn it against Newton instead. Before Newton, Western thinking had developed rationally, along the path opened up by the early Greeks. But with Newton (and Descartes as he grounded knowledge in pure reason, mentioned above), rational thinking itself moved for the first time onto a foundation which is *not*the things of observable nature or of experience. This difference will appear as we resume our comparison of the laws of motion in the physics of Aristotle and Newton.

We have noted some aspects of Aristotle’s analysis of motion. Now we turn to Newton’s.

The first principle of Newton’s law of motion:

Every body continues in its state of rest, or uniform motion in a straight line, unless it is compelled to change that state by force impressed upon it.

qtd. In *Basic Writings* 279-80, from transl. by Florian Cajori

It is this “every body” in its unmotivated state which lies *outside the reach of objective scientific inquiry*. It is the *unverifiable* lynchpin of Newtonian physics.

Newton’s first law posits that every “body,” i.e., every physical entity, once set in motion, moves in a straight line at a constant speed unless its motion is stopped or altered by the interference of some force. We note that an alteration or interference in the motion of a body is not considered to be “violent,” as Aristotle considered it to be, for the intervention does not violate the body’s “nature–for the meaning of”nature" has changed.

Newton’s second law states that the motion of a body will stop or it will alter, i.e., accelerate or decelerate, in proportion to the speed and the mass of an interfering force (Hawking 16). That is, the effect that an outside force exerts on the motion of a body is twice as great if the force is twice as great (that is, so long as the two bodies have the same mass, since the effect of the outside force is also dependent on the mass of the moving body). We can again compare Aristotle’s physics, in which the difference in the motion of different bodies is due to the differences in the *nature* of the bodies themselves and their relation to *their own place*.

Again, something fundamental has changed here, something a little surprising considering science’s insistence on objectivity of observation and method. The “knowledge” about motion here, according to Newton’s second principle, precedes the motion itself, precedes the act of observing the falling body.

If one takes as a given that motion has the new “nature” or character ascribed to it–that it either remains at rest or it moves uniformly in a straight line unless . . . , etc.—, then when some thing in nature does not move in a straight line, one now looks for the cause *of the difference*. Why does the moon move in a circular motion *instead of a straight line*? Answer: because it is drawn or driven off course by some force (gravity is posited for the first time). The notion that “every body” moves in a certain way is a *notion*, an hypothesis, not an objective observation, since no one has ever or can ever observe “every body,” cannot know that any body observed *represents* “every body” observable. Science relocates its foundation of the observed universe of nature to Descartes’ ground of the human subject’s mind—reason—which foundation, here in Newton’s work, becomes a system of mathematic principles that *pre*scribe and *pre*dict the (new) “nature” of the universe.

The scientist, a human observer, no longer approaches a moving thing directly. No direct relation sets up between the observer and the thing observed. Any individual personal response that might arise in the person confronting the thing is diverted or preconditioned by the rational preconception. You and I noted this blockage of our own experience when we faced the sunrise together at the window, above.

In Newton’s physics of motion, things of nature have no particular motion appropriate to themselves, own no “nature,” no place. Everything that moves is governed by the same laws of motion. A blade of grass or the seed of a thistle rises or falls exactly as a beam of steel does, i.e., by the same principles and laws. As the *thing* (body, entity) loses its “nature” and its “place,” *place* too loses its “own” character. Two miles of Mr. Anderson’s farm in Nebraska can be defined and described in the same language that defines or describes two miles of the Orion Nebula, as “place” becomes an interval of space, a measurable span, a matter of distance between points; and the distinguishing characteristics of each “place” become similarly mathematically determinable. For each place (or location) is defined and described by certain principles and laws that have been adopted before the place is perceived, before the measurements are taken–principles and laws that belong to human reason, the language of the scientific point of view.

It is in this revolutionary period fin the development of science that the notion of the “mathematical” narrows again. From the Greeks’ notion of *mathesis* (science as a kind of human understanding, knowing) through Descartes’ emphasis on human reason as it is applied to intuitive experience, the “mathematical” moves again in Newton’s system of principles to the *measurable*, the *numerical*.

Because the project establishes a uniformity of all bodies according to relations of space, time, and motion, it also makes possible and requires a universal uniform measure as an essential determinant of things, i.e., numerical measurement. The mathematical project of Newtonian bodies leads to the development of a certain “mathematics” in the narrow sense.

(Heidegger, “Modern Science” 292-93)

[MOVE THIS SECTION. GO TO KANT, P. 63.]

With the establishment of Newton’s principles, science, following its rational course toward “truth” and enlightenment, was losing its hold on some prior essentials. In fact, what was slipping away was the “essential” itself— what the Socratics had designated as the “nature” (the “essence”) of things, what the Medieval Christian philosopher Saint Thomas Aquinas had called the *quidditas*, the “*this*-ness,” of each thing.

In his own project, Heidegger, returning to the origin, has a new word for the singular “I”-ness of each thing. The word is *Ereignis*, or Be-ing or, as Emad and Maly translate it in *Contributions*, “enowning,” indicating the “ownness” of every thing that “is.” The new name returns to each phenomenon its uniqueness.

Heidegger’s thinking, while it undermines Plato’s and Aristotle’s (and Descartes’ and Newton’s), retrieves something from the pre-Socratic *phusis*and *aletheia* that we sketched above. It recovers the sense of *event,* of *happening*, when things (phenomena) come into existence (“rise” into “appearance”). In Heidegger’s account, phenomena originate in an event: a confrontation, in fact a *conflict*, that occurs between, on the one hand,\*\*their *unrealized* potentiality and, on the other hand, a human thinking that is striving to *real-ize* the phenomena.

Heidegger’s description of this uncanny origin of “things” reminds us in a striking way of the uncanny behavior of phenomena that twentieth-century physicists describe in their laboratory experiments. (Compare quantum physics’ confrontation with consciousness in *The Quantum Enigma*.) I am thinking especially of phenomena that confound verification of the Schrödinger equation.

Heidegger’s description of this event in *Contributions* can speak to scientists pointedly (sections 239-242, “Time-Space,” sections 239-242, esp. pp. 263-271. See also *What Is Called Thinking*, Part II, Lecture XI, and “The Origin of the Work of Art,” *Basic Writings*, 143-212).

The Schrödinger equation (posited by Erwin Schrödinger in 1926) is the equation that provided the foundation for quantum mechanics. (We described its disturbing influence on physics research briefly above when we mentioned the Heisenberg principle.) It describes and can accurately predict the development of wavefunctions.

That is, given the location of an electron particle in a wavefunction at a particular time, the equation can predict the probability of the location of the particle at another specified time. (We are all familiar with the fact of waves, wavefunctions, in water and in sound and even light, but quantum mechanics finds wave-behavior in every constituent of matter in the universe–including electron particles.) Physical science has verified and adopted the Schrödinger equation to describe and predict the development of wavefunctions.

But there are two stages in the behavior of wavefunctions. Stage one involves the evolution of the wave, the developing changing of its shape as Schrödinger’s equation could reliably describe and predict it. Stage two, however, deals with the next step in the observation: the determination of the location of the electron in the wave. This is the uncanny development I want to cite here.

In the second stage, experiments without fail confirm an unexpected, indeed astounding, fact. To wit: once the scientist/observer makes the measurement to locate the electron, he invariably finds “all of its mass and all of its charge concentrated in one tiny, pointlike region”; i.e., the electro-*wave* becomes an electron-*particle* (Greene 88). Until the measurement is taken, however, the electron is not identifiable in the spread-out “mist” of the wave. Only when the observer enters into the event of the electron’s behavior does the electron “spike” or “collapse” into a single locatable point. (See Greene’s fascinating account of the phenomenon, 200ff.) Of course, this intrusion of the subjective observer into the experiment is debarred from the scientific method.

In 1927 Max Born suggested a resolution of the proble—or not so much a resolution as a re-vision of it, a shift in point of view. He characterized the electron-wave as a “probability wave.” The electron is a wave, he claimed; the electron proper is spread throughout the wave until the laboratory scientist intervenes to measure it, when the particle collapses to settle in one precise location.

The experiments with particle-wave behavior disrupted particle theories in the twenties in the same way that Einstein’s theories had disrupted theories about space and time earlier in the century. You recall our discussion above of the effect of *the observer’s point of view* on the measurement of the movement of an object in space and in time. We have introduced Heisenberg’s “uncertainty principle,” as well. Let me reiterate here that when human subjectivity cannot be excluded from science’s laboratory experiments, we may suspect that something fundamental to the scientific method is breaking up.

Immanuel Kant, more perhaps than any other philosopher, gave rational justification for the Cartesian approach to the world. If you read Kant Heidegger’s way, you will find emphatic evidence of a retention of basic pre-Socratic intuition, of pre-Newtonian sensory experience (*What Is a Thing?* 136, 142), but for Kant this immediate experience does not impart knowledge or understanding of the thing intuited, sensed. No, in order to yield experience or knowledge of things of nature, this intuition must be accompanied by conceptual understanding, human understanding as Descartes prescribed it and Newton systematized it (140).

Kant’s main achievement was to cut the human umbilical with the “thing-in-itself” (he called it*noumena*, the *Ding an sich—* Plato’s *eidos*, now considered to be unknowable). Thus he widened the breach that Descartes had opened up between the subject (the thinking “I”) and the object of thinking, between subjectivity and objectivity. No longer would philosophy consider human understanding to have direct (immediate) access to “things.”

Kant’s influence on philosophy has been compared to the influence of Galileo on physics. Galileo Galilei, as you know, was the mathematician-astronomer who invented the telescope in 1609. Up until that time, astronomy had tried to bring its observations of the heavens into accord with divinely authorized “truth” revealed in Holy Scripture. Galileo shifted the point of reference, relocated the source of authority. That is, he sought to bring man’s understanding of the heavens into agreement with astronomical observations, now extended and intensified dramatically by means of the new telescope.

Similarly, almost two centuries later, in his *Critique of Pure Reason* (1781), Kant reversed the logic that had guided the search for knowledge of the universe. The doubt that had inspired Galileo to question received authority Kant now fixed on human observation itself. That is, Kant abandoned the attempt to bring human understanding into agreement with observations of the universe, as though observation gave direct access to it, and turned his attention instead to the underlying presumption that there is a transcendental relation at all between human understanding and observed phenomena. That is, his *Critique of Pure Reason* analyzes the mind’s capability to understand the universe beyond itself, analyzes differences between the mind and the objects it observes, and concludes that the mind is ultimately essentially different from them. Human “understanding” does not bring the mind into agreement with the observed universe, he claims, but, rather, it brings natural phenomena into agreement with itself, with human understanding. The natural world or universe is available to human understanding only in terms of the structures of the understanding itself, i.e., only as the universe is commensurate with pure reason.

What Kant approved in Galileo’s experiments was not the emphasis on observation, as though observation could bring the essential object into view, but the emphasis on setting up the plan of the experiment ahead of time, the plan *preceding the observation*. Kant praised Galileo’s approach to the encounter with nature: the work of the mind to frame the observation, to focus the event, to demand of nature the answer to a question devised by reason itself.

Accidental observations, made in obedience to no previously thought-out plan, can never be made to yield a necessary law, which alone reason is concerned to discover. Reason, holding in one hand its principles, according to which alone concordant appearances can be admitted as equivalent to laws, and in the other hand the experiment which it has devised in conformity with these principles, must approach nature in order to be taught by it. It must not, however, do so in the character of a pupil who listens to everything that the teacher chooses to say, but of an appointed judge who compels the witnesses to answer questions which he has himself formulated (qtd. In *Kant and the Nineteenth Century* 17)

In the work of Kant, the *Ding an sich* or the object (the *thing or* the being *as such*, i.e., in its “true” nature, *noumena* [use singular form?]), is taken to exist beyond the reach of human observation and understanding. It is only *phenomena*(Plato’s “appearances”), available to human senses and correspondent with human reason, that we may aspire to “know.” Is Plato’s transcendent realm of ideas abandoned then, you’re wondering? No, not totally. In one exceptional case Kant posits a transcendent bridge between human understanding and “truth” or things-in-themselves. It is art, the artist, who is able to transcend the divide between human understanding and things-in-themselves to attain more-than-objective knowledge.

For philosophy and science, however, the “objective” (rational) approach to the *thing* is validated in Kant’s thinking, and the “subjective” (immediate, personal) approach loses authority, even while it remains the underlying conduit to the natural world.

We have noted the shift in the ground of science/philosophy during the period of the Enlightenment (I separate science and philosophy with only a typing symbol to signify that the two kinds of knowledge were not “two kinds of knowledge” at the time, but one comprehensive science, one body of knowledge).

You may have noticed that in this essay of mine comparing certain notions in physics with corresponding notions in the thought of Heidegger, the word “ground” occurs again and again. There is a reason (or there are “grounds”) for this.

The difference in scientific research today and Heidegger’s thinking stems from the difference in their respective *grounds*.

We know that both science and philosophy have used the word *ground*to indicate the foundation or basis upon which an assertion is made—the grounds for making a claim or an argument, the grounds for reaching a particular conclusion. In traditional philosophy the ground has been “reason”; in science it has more often been “cause,” “evidence for,” or “proof.”

As I have pointed out, in the recent history of the development of science, traditional scientific concepts have been dramatically and substantially revised, and yet the rational ground remains essentially unchanged. Science no longer relies solely on Newtonian laws of nature, of course, but its basic dependence on Newton’s objective, mathematical methods and proofs endures. As we have noted in our discussion of periodic breakthroughs, the “radical” discoveries of modern physics are even yet validated on rational, mathematical “grounds.” For all the disturbance these irruptions have brought to the tradition and to the accumulative body of scientific knowledge (and to our practical lives), they spring from the original root.

A system of thinking (when thinking *is* systematic, e.g., rational) can be turned this way or that, like a map or an architectural schematic\*; it can be modified and emended or even reversed—if A is affirmative and Z is negative, the poles may be reversed so that A is negative, Z affirmative, to the disturbance of everything between—without violence to the underlying system itself.

Similarly, in philosophy in the late nineteenth century, not so long before Einstein would upset the equilibrium of science, Friedrich Nietzsche brought an equally disturbing interruption to the two-thousand-year development of rational philosophy. I discussed this crisis briefly above when I outlined Heidegger’s response to it.

To show the movement in philosophy, I shall return to the climactic point near the end of the nineteenth century when there appeared this brash trail-blazer of a philosopher with his dangerous heresies, denouncing ideological “truth” per se and, scornfully, “goodness” and the rest of the “virtues.” The idealism posited by Plato was negated by Nietzsche’s devastating works—negated on the very grounds that Plato had established, i.e., grounds of reason: the ideals could not after all be justified rationally; they were contradicted by the (new) “truth”: “life.”

I would compare Nietzsche’s achievement to Samson’s triumph, since he seemed single-handedly to bring a two-thousand year development of philosophy crashing down around him, except that of course he did not overthrow philosophy single-handedly; philosophy had been moving toward such conclusions as his for a century. And besides, he did not overcome rational thinking after all, but only reversed it—a reversal something like the one I described above in which A and Z are reversed without changing the underlying system to which they belong. (Heidegger makes the case: (*Nietzsche* ).

Nietzsche achieved a reversal, and not an uprooting, of the rational tradition in that he used reason to expose the failure of reason to explain or justify life.

Of course, undermining reason Nietzsche undermined the ground on which he was building his own argument. But the contradiction was unremarked, and Nietzsche’s thought sent Western philosophy reeling, unhinging the cultural constructions that had been built upon it and the personal faith and hopes invested in them.

“Have you not heard,” Zarathustra taunted the crowd of [citizens] gathered in the marketplace, “that God is dead?” (*Thus Spake Zarathustra* xx)

Nietzsche claimed that the future would require a new kind of “man”—*der*Obermensch*–capable of going forward into an uncharted future without relying on the modes of intellectual and emotional reassurance and guidance that philosophy had previously provided: i.e., truths, morals (forms of*ressentiment*, Nietzsche called the latter). In*Thus Spake Zarathustra\* he gave the image of a man balancing on a tightrope crossing an abyss. The human that the times demanded must be capable of negotiating a precipitous passage over the gulf opening up in the path ahead, a dizzying nothingness beneath, where formerly there had been truth and faith. On the other side of the gaping abyss lay the future, which appeared to Nietzsche as an unruly, inscrutable perplexity of competing forces (see the last paragraph in *The Will to Power*). He characterized the ultimate nature of “being” as “will to power”: “*This world is the will to power—and nothing besides!*And you yourselves are also this will to power—and nothing besides” (*The Will to Power* 550).

Nietzsche’s influence was broad and profound and enduring. However, the alarm, the urgency, that his works initially evoked across the modernist spectrum of intellectual life, from philosophy to literature and the arts, subsided over time as its ripple-effects spread across the culture, joining forces with the rapidly shifting realities of life. Science-technology developed exponentially, exploding into a dizzying proliferation of discovery and experimentation via technological advances and devices.

After the fall of faith in founding ideals, philosophers reformulated their thinking in terms of . . . of the philosopher in each case, but in each case in terms of loss of the former ground. Philosophy turned, disillusioned, from the search for ultimate Meaning or Truth. The “ground” of thinking and understanding and knowledge must be searched out anew or set up provisionally and stabilized somehow.

The major philosopher following Nietzsche was Martin Heidegger, to whom this tract you’re reading is dedicated. Of the other philosophers of the twentieth century I shall cite only two or three examples.

If for Nietzsche the new ground of thinking is Will to Power, for Jean-Paul Sartre the new ground is *existence*. Much twentieth-century philosophy is characterized as “existential,” though the philosophy varies from one existentialist to another. In general we can say that all forms of existentialism differ from former philosophy in that they oppose the concept of essence, essentialism, i.e., the Platonic notion that beings have a given, fixed essence—a general “nature” for Aristotle, a “soul” for Christianity; a seed or core from or around which beings develop their original potentialities. Sartre’s thinking, because the notion of *existence* is central in it, can introduce and represent the genre here particularly well.

In Sartre’s terms, each person “is” not who s/he *already* *is* or even who s/he *intends to become*, but is instead whoever s/he *proves* *to be*—proves by action, i.e., by decisions manifest in deeds. Thus Sartre “proved” his own existence in the works of philosophy and literature that he produced, in his direct military participation in the French resistance to the Nazi Occupation, and by his polemical writings inspiring, persuading, and provoking others to act.

Following Sartre in the last half of the twentieth century, other thinkers influenced by Nietzsche and Heidegger, as Sartre had been, attempted a radical re-thinking of *thinking* itself, a project which telescoped into the re-thinking of the nature of language. Philosophy until this century had developed more leisurely and rationally, enduring the shocks of history and of science as it evolved, and also incorporating or appropriating them, carrying them along. But now philosophy broke up and scattered: “Things fell apart,” as the Irish poet William Butler Yeats put it. [“The Second Coming,” Variorum Ed. 401-2]

Jacques Derrida, one of Heidegger’s students, mentioned above, initiated a philosophical movement he called Deconstruction (hi-jacking Heidegger’s project of *Destruktion* and carrying it off to his own purpose), a broad, rigorous program of breaking down the founding and guiding concepts of Western thought. Derrida dominated American and Continental thinking for a few decades, diverting philosophy from the radical path of thinking that Heidegger had attempted to break open. Yet Derrida failed to uproot Platonism (which underlies his new concepts; they depend upon the old verities for their new contradictions) or to break open new ground for the chance, caprice, arbitrariness of the thinking his own artistic genius enjoyed and inspired.

Today mainstream (“analytic”) philosophy, discounting the “ground” as an archaic notion, grounds itself in things themselves, facts, scientific and practical realities, and can programmatically accommodate itself to the social sciences’ displacement of “ideology.”

Science on the other hand, was not unsettled by the radical upheaval in philosophy in the last century. Today it still sets forth upon each investigation it undertakes without questioning its own ground—its own presuppositions about the nature of the object of its investigation or the nature of the investigation—but takes for granted the rational ground established by the Socratic Greeks, and the scientific method that has developed on that ground, the method that Newton established and which Kant secured, an approach to the physical universe via objective questioning and experimentation with mathematical verification.

In short, the ground of science is the human capability to reason–developing over time into a specialized mathematical system amplified and multiplied indefinitely by modern computer technology. This ground is, as we speak, receding from our view, our reach, submerging beneath its own overflowing technological “output.”

But, as we have seen, there are surprising correspondences between certain aspects of Heidegger’s thinking and certain aspects of advances in quantum physics research today. It is such coincidences that prompted the writing of this essay you are reading. The most striking and essential one, to my mind, lies ahead of us now. We shall make our way to it routing through Heidegger’s notion of “ground.”

*In Heidegger’s works the meaning of “ground” is deepened, enlarged, and enriched.*Ground*is what underlies or supports, but “underlying” and “supporting” are not taken to be*rational\* grounds. G*round* is not an abstract term or concept here. *Ground* is what something comes from and what it depends on–that from which something arises or upon which it stands. It is something *prior* to something else in the sense in which root was taken to be prior to stems in the description of time and space above.

Thus, the task for human thinking is to determine or discover the ground of something by following the something (the sunrise, for example) . . . wherever it leads. Heidegger’s phrase for it is “letting [the something] be”—as opposed to “grasping” it by means of a concept.

Heidegger discusses *ground* again and again in his works, and in many ways. There are certain esoteric forms of “ground”—for example, there is *ur-ground* as the [primary ground of *ground*], and there is *un-ground* as the false or mistaken understanding of *ground* (*Contributions* 265). But the Heideggerian “ground” that is the focus of this essay is the ground I mentioned when we discussed the site of the origin in Heidegger’s thought, the site which he often calls the “Open” and also calls “ab-ground”—the time-space *where you are*.

It would seem that the “open” space *where you are* at this moment would need no elucidation. You look about. You “are” “here,” and the world surrounds you; you can see it. But we “know” after our whirlwind flyover of the history of the rise and fall of philosophy and the ascendance of science-technology, that what “seems” obvious at once is in fact a naive oversimplification of any matter we consider.

And yet. Whether naively or originally, the mystery of the universe envelops us right here. The fundamental human questions arise anew right here.

The mystery of the universe is by definition that which we can *not* see, what seems to lie *beyond* what we see when we look about. We sensed it when we were drawn to the sunrise at the window, feeling that whatever was drawing us (mystery, wonder) was withdrawing from us at the same time. The elusive source of this attraction is what Heidegger is calling the *ab-ground*. [“It”] *Ab* is in Latin “from” or “away from.” The *ab-ground* is the mystery that eludes us, the ground that is “away.”

In Heidegger’s phrase “the absence of ground” (*ab-ground*), the word *ground* has special significance. It means “truth.” (You will not be surprised to learn that the word “truth” is emptied of its former “meaning” and renewed from the root.) But if the “ground” in the phrase means “truth,” then the phrase presents a logical impasse:

If truth = the absence of ground,  
and ground = truth,  
then truth = the absence of truth.  
We see that “we are moving in a circle.” (This sentence recurs throughout Heidegger’s works.)

The circle looks suspiciously like a zero.

But, as I mentioned above, for Heidegger the solution to the problem of the circle is not to get out of the circle (we *cannot* get out of it—the circle is ours; it belongs to us alone), but to use it properly (physicists should take notice). We must examine Heidegger’s use of it in this case.

What is the meaning of this claim that “truth” means the absence of ground (truth).

In my account of the history of philosophy, above, you have already witnessed the disappearance of “truth.” I have described the crisis in Western thinking in the last century or so, when “truth” slipped out of the grasp of philosophy.

For the Greeks, “truth” meant “absolute truth,” and it always lay out of sight, beyond the “world”— for Plato in another, ideal realm. Truth resided in heaven or in the mind of God for Christianity, and in the abstract mathematics of natural law for Newtonian physics after the Enlightenment. The ground, the truth, was in each case out of sight, but it was certain nonetheless, secure; and it ensured the validity of rational thought. However, as I recounted, in the philosophy of the late nineteenth century, “truth” lost its former meaning, lost its certainty, security.

If there is nothing, or nothing knowable, outside of language/thought that “is”—if there is no “truth” to validate human thinking and understanding and knowledge— then we (humans and language) are adrift in non-sense, language is babble, and “understanding” is an obsolete concept, a delusion.

This bleak prospect seems to aptly describe our situation today. We cannot *fix* language, tie it to [ground it in] “truth.” When we listen to each other, we [hear references to and implications of] various, multiple “truths.” But if truth is truly *true*, how can there be various, multiple truths? People’s language and their lives seem to rely on truths, or at least on facts or principles or tenets that are taken for truths and used as grounds for understanding life and for making the decisions that choose and shape life. And yet when people’s “truths” vary, even contradict each other, there is no way to “tell” (distinguish, know, say) the Truth.

The problem of truth hinges on the language phenomenon.

In the Western rational tradition since the Socratics, language has been taken to be mimetic (it imitates life) or representative (it re-presents, repeats life). We have taken “life” to be separate from what we think and say about it, and the correct correspondence between the two has been the guarantee of the truth of what we think and say.

But after Kant, who led us to think that we cannot “see” (know, understand) the *Ding an sich* (the thing-in-itself), we are faced with this dilemma: if we cannot “see” what life “is,” how can we correctly “say” (repeat or represent) it in language? Thus we lose our confidence in the correspondence between what we see and what we say, between life and language.

You can see that this is the very problem that Heidegger traces (as I sketched above) from Descartes through Kant to Nietzsche and into the present. Once *thought* (Descartes’ “I think”), ergo language, became separated conceptually from *the object of thought* (“life”), the two–philosophy (thinking, language) and life–drifted farther and farther apart, so that today it is uncertain that we can discern or understand the connection between the two or even that we can know that the two *are* connected.

We have not been able to regain or reconstruct a reliable bridge between our *understanding* and our *life*. We have been unable to regain or reconstruct a common meaning that can explain “life” or can explain us to each other. “Meaning” has lost its meaning.

In Heidegger’s thought, language and life are securely, intimately, and essentially intertwined from their origin, in the Open. In this view, the work of language is not to imitate or represent life, as though language and life were separate and comparable things, but instead language works as something of a midwife to life, takes part in the original appearing of “things.” For Heidegger, the site of the origin, where a being comes to “be,” is at the same time the moment of the origin *of language*.

Aristotle’s shadow falls across our path again. Ever since Aristotle defined man as the talking animal, speech has been considered the primary characteristic of the human.

But where does the human get language? From noone? nowhere? It just “is”??

(Yes.)

Language, it seems, does not exist or work except as an *already* existing, working system of language, nor can it exist or work outside a “world” for it to signify (a system of relations *already* in place and operating among speakers and things). Nietzsche as well as Ferdinand Saussure, a founding scholar of linguistics and semiotics at the turn of the last century, followed by thinkers such as Sigmund Freud, Michel Foucault and Jacques Derrida, have made the case that humans do not acquire and develop language piecemeal, i.e., by learning single words and accumulating them, but that language must *already* be working *in toto*, as a whole, in order for individual words to work to give “meaning.”

Heidegger has written extensively on the character of language as the site of the “It gives” at the origin (i.e., in space-time, in the Open). In work after work it is human language, words, decision, that brings things or beings into existence. What is potential or “covered-over,” “sheltered,” is drawn into the light, into “being,” at the human site of *Dasein*(27)*—in the event of language*.

If the ideas packed into the last sentence seem to defy credibility (they do), perhaps I can reassure you (or alarm you further) by drawing another couple of comparisons with recent research in physics.

When we cited the Heisenberg principle above, we referred to the dramatic enactment of an event in scientific research as strange as the event of language in Heidegger’s thought.

There in the scientific laboratory, where subjective human “contamination” of objective experimentation is eliminated as far as possible, Heisenberg found what amounts to human participation and intervention in the event under observation, as the scientist sets up the parameters, sets the “trap,” so to speak [Kant??], to catch an event as it occurs—for example, particle/wave behavior, mentioned above—and determines precisely what transpires in it and to what effect. Heisenberg’s discovery of the “uncertainty principle” and physics’ continuing discoveries of uncanny quantum behavior that baffles and tempts modern physics seem to have crossed the line that used to separate the observer from the observed.

In an essay entitled “If Science is Conscious of Its Limits . . . . ,” Heisenberg cites as “the essential insight of modern physics” a statement by Sir Arthur Eddington, an eminent astronomer and physicist of the preceding generation:

We have found that where science has progressed the farthest, the mind has but regained from nature that which the mind has put into nature. We have found a strange footprint on the shore of the unknown. We have devised profound theories, one after another, to account for its origin. At last, we have succeeded in reconstructing the creature that made the footprint. And Lo! It is our own. (Qtd. in *Quantum Questions*73.)

The uncanny “truth” of the matter for both Heidegger and modern physics is that the observer, the human, does not stand outside the event he observes (call it “life”), separate from it, and, further, that in the very act of examining life (in physics) or “saying” it (Heidegger’s word), he cannot but take part in it. The human is not a mere observer, a mere witness to events; s/he is a participant. And as an actor s/he cannot escape a share of responsibility for what transpires in the “observing” or “saying.”

Let us return again to the window and the sun rising in the east (or the earth setting in the west). Something unseeable, unsayable, draws us to the event, something that eludes our understanding. I have called this point of encounter the site of the origin, the Open, “where you are.”

Heidegger describes the role of the human, Dasein, at the site of the origin in this way: Dasein stands “there” at the interface between what Heidegger calls “Earth” and what he calls “World.” “Earth” refers to what is “concealed” (what is only potential as yet)— what lies beyond our questions about what confronts us within and without. “World” refers to that which we do “see,” “understand,” “know”–the world that has already been brought forward into the light: the human abode.

Earth as the concealed or the “sheltered-over” is what the Greeks called *phusis*. In “The Origin of the Work of Art,” Heidegger offers another telling phrase for it. Earth is s“irreducible spontaneity” ( )—it is potentiality, the possible, the yet-to-be-decided.

In opposition to Earth, World is the “unconcealed”—the world of things which have been *decided*, i.e., “wrested” out of the concealed bed of potentiality into the Open, *as things*—knowable, related.

In “The Origin of the Work of Art,” [*Basic Writings*, rev. & expanded ed., ed. David Farrell Krell 139-212] Heidegger describes the dramatic movement of Earth into World at the site of human decision, here mainly in artworks (see, for example, how a Greek temple gathers, holds, and even today discloses, reopens up, the ancient Greek world, 167-69). Another essay in the same collection, “Building, Dwelling, Thinking” 347-63), shows the same dramatic movement at the same site, this time in the work of designing, engineering, and constructing the world of the human abode, a place for human “dwelling.”

For Heidegger the point of origin, the place where things or entities or beings originate, the place where World is real-ized, is not the site of a “natural” event (such as a spontaneous Big Bang), but the Moment of *decision,* the Moment when Dasein “wrests” the “thing” from Earth into World–from the concealed into the unconcealed, from “irreducible spontaneity” (*phusis*, potentiality) into language, from the dark into the light.

The “Moment” of decision is the very “there” (here, now) of time-space. We find ourselves again at the site of the ab-ground. We know this place. It is the Open, where-you-are, facing the sunrise.

The emptiness of time-space is the site of the origin. But however the emptiness of time-space “calls” or tempts, nothing happens, nothing originates, until Dasein contests the emptiness by dint of its own “there”-being. In the struggle of this contest, “things” appear/occur in the Open in relation to Dasein.

As you see, the meeting or relationship between the emptiness of time-space and Dasein is not a consummating event—a poignant/yearning/needful call met by a joyous response: a marriage of lovers. No, the site of origin at the moment of decision is a site of confrontation, conflict—the encounter of “counter-turning” contestants. Against the “hesitating refusal” of empty time-space Dasein sets its own reticence, its “holding back”; the issue is uncertain, undecided. (You have read accounts of artists, saints, or scientists wrestling with angels through the night, the agony and the ecstasy of discovering/deciding “the answer” to problems their work presents to them.)

*Ergo*: since Decision is Dasein’s, and Dasein is the human as it “is” (being-historically) in relation to “being,” then whatever “is” (from being’s inexhaustible store of potentiality) depends on our Decision.

We are deciding today to follow the lead of science as it “decides” our “truth,” our “good,” on its own terms, i.e., on the basis of a systematic rational process, even though in the last century and a half we have witnessed the philosophical unraveling of reason.

It is as if we think we have cut the umbilical that connects science to philosophy, as though we think we can hold a scientific relation with things and abandon “thinking” (now considered to be ideology), as though we think that science operates in a realm of the “real” unrelated to “ideas.” The actual, the pragmatic, the practical, has risen in our imagination to dominate our conceptual landscape.

But our scientific landscape is, after all, a conceptual construction, a rational system of concepts that neglects any consideration of the concept itself, *as concept*. We equate the *concept* with thinking per se. We mistake the concept for a transparent window onto “life.” But the concept is a singular way of thinking, a child of Western philosophy. Above we glimpsed Heidegger’s unveiling of the concept as a way of *grasping* what it construes rather than a way of receiving “what calls for thinking,” letting it “be” in its own “being.”

Nowadays, without recognizing its scope and its significance, we observe the transformation that science-technology is working in our lives. We see, for example, miraculous technological revolutions in communication, transportation, health care, etc., and, thus, in our expectations and hopes for the future. We are being swept up into a world which proliferates into worlds of possibilities that transcend the capabilities and, for that matter, the sensibilities and needs of individual human beings.

The more-than-breathtaking, whirlwind changes which shock and amaze our understanding and move us, whether we choose or not, into new territories before we can gather ourselves together, seem to threaten our very “nature,” human nature.

We know that scientific research regards “beings” as objective phenomena, subject to observation, to systematic classification, to experimentation and statistical analysis, to technological modification and exploitation. We know that individual human beings, along with other living beings, are regarded as specimens, the human race as a species.

A signal purpose of this essay is to point out the essential loss that attends this objective approach to “beings”: the loss, first, of the individual, unique “own-ness” of each individual “specimen,” of each “species.” We shake off our habitual, drowsy passivity or apathy to discover that we have lost, surrendered, our own personal access to nature and the world, to our own “nature” and the world’s. We no longer trust our own senses, intuition, our experience and understanding, to be the arbiter of “truth,” to call forth, guide, and validate our judgment. Instead we concede authority to the latest pronouncements of the latest experts, their latest research, findings, however conditional, temporary, and arbitrary they may appear. Whatever could I, myself, “know” that could counter or contest the prestige of specialized scientific knowledge?

Meanwhile, human and non-human experimentation is conducted by scientific institutions, by private corporations, and by the military establishment. The latter is especially, egregiously, troubling, for this secret (though publicly-sponsored) research often takes its subjects from among its own ranks or prisoners or, indeed, private citizens (in all these cases the subjects are often unaware that they are subjects). We discover, therefore, after the fact, unconstrained, unreported human experimentation as well as ecological contamination, affecting not only the people involved directly in the experiments but also people in the geographical vicinity (an area impossible to determine or control), and affecting also the earth, its ecological constitution and balance–and its future, along with our own.

Research in the chemical industry, including pharmaceutical research, extends beyond experimental and developmental stages to exploit human subjects when it introduces new drugs for consumption among willing, even eager, participants in “studies” or “trials” and also when it is allowed to bring drugs onto the market where the research is continued, the data gathered into statistics that guide the ongoing “experimentation.” The public experimentation continues unchecked until there have been enough devastating effects or deaths to warrant public (and corporate) objections and enough alarm to threaten sales, at which point drugs are taken off the market. (Of course, before it is offered to humans this research, has been applied to animals with the same disregard for their “being” as for human being, since they, more freely and unsparingly than human subjects, are taken as specimens of species.)

Perhaps more invidious yet is the chemical and genetic standardization of the human subject under way at this time under our surveillance and with our outright or tacit approval. That is, the standard for our health and well being set by our medical establishment is the ideal of normalcy. The blood test report returns results, setting our scores against the range of scores that denote normalcy, ergo health. To move our scores into line we apply medications, therapies, or more severe “interventions.” Of course, the process of acculturation and education has always nudged or urged people into agreement, conformity, always tended to reduce or eliminate variant or contrary elements of social behavior, both by accident and intention. But never before has it been possible for society to so easily and militantly effect and enforce such standardization.

This factual, physical standardization of the human, as radical as it appears to be and as irreversible its ramifications, is an abstract notion available only to intellectual speculation, for the most part, and not to the conscious observation of busy people involved in the immediate practicalities of life. However, the mechanical effects that accrue to the process appear to the public as miraculous cures and revolutionary possibilities for sustaining and prolonging life.

In fact, we do not hesitate to install actual machine parts–organic as well as structural–in our bodies to substitute for malfunctioning natural parts. Further, we have begun to consider fetuses and actual offspring as sources of materiel or spare parts (we have long considered animals so) for building or rebuilding the human machine. At our death, we willingly assign our own bodily parts to be divided up among others. The practice has become a “moral” imperative.

We have been tracing science’s story, its origin in rational Greek philosophy and its progress through history, through Christian theology into humanistic Enlightenment philosophy, where it branched off from its broad, comprehensive base and narrowed its mathematic scope to an objective, systematic method of ascertaining and validating knowledge. We followed its subsequent channeling into technology.

I have summarized Heidegger’s account of this history, this development of a scientific *method*of formulating and accumulating knowledge, beginning with the assumption that the “thing” (any entity to be observed, understood, known) is an “object” and that the object is separate from and essentially different from the subjective observer who analyzes it.

In contrast to science’s objective *cosmos* I have attempted to set our human *experience* of the *world*“—experience which is not subjective, but originary, prior to science’s cosmos. Thus I have exposed some of the losses our”experience of the world" undergoes as we are drawn these days farther and farther into the scientific-technologic conceptualization of life and farther and farther away from our own personal observations (which are more than perceptions), from our own access to insights (which are more than concepts).

I have reviewed some of Heidegger’s discussion of the nature of technology. One little pair of essays, first published in 1959 as *Gelassenheit*(Verlag Günther Neske, Pfullingen; transl. as *Discourse On Thinking*, Harper & Row 1966), can serve as an envoy for my treatise here.

The first essay, “Memorial Address,” presents a public address Heidegger delivered in Messkirch, Germany, on October 30, 1955, to commemorate the 175th birthday of the composer Conradin Kreutzer (1780-1849). The second essay is a dramatic narrative called “Conversation On a Country Path About Thinking.” In this piece Heidegger sets forth–proposes and demonstrates at the same time–his antidote to our age’s hyper-technological disorientation: it is meditative thinking.

In the commemoration address Heidegger notes that the enduring work of Kreutzer was rooted in his homeland. We have noted throughout this work the significance that *roots* and *ground*have in Heidegger’s thinking. In this essay Heidegger points out that such “rootedness” or “autochthony” is threatened or doomed by the overwhelming technological transformation of the world in the atomic age. His dire prediction:

. . . “No one can foresee the radical changes to come. But technological advance will move faster and faster and can never be stopped. In all areas of his existence, man will be encircled ever more tightly by the forces of technology. These forces, which everywhere and every minute claim, enchain, drag along, press and impose upon man under the form of some technical contrivance or other–these forces, since man has not made them, have moved long since beyond his will and have outgrown his capacity for decision. . . (Discourse On Thinking 51).

His antidote:

. . . “We can use technical devices and yet with proper use also keep ourselves so free of them, that we may let go of them any time. We can use technical devices as they ought to be used, and also let them alone as something which does not affect our inner and real core. We can affirm the unavoidable use of technical devices, and also deny them the right to dominate us, and so to warp, confuse, and lay waste our nature” . . . . I would call this comportment toward technology which expresses “yes” and at the same time “no,” by an old word, *releasement toward things* . . . (54).

And so, against the unavoidable onslaught of radical technological change, Heidegger pits the possibility of “a new autochthony which someday even might be fit to recapture the old and now rapidly disappearing autochthony in a changed form” (55). As I indicated above, the new root or ground is introduced \*as it is being demonstrated in the “Conversation.” The new root for human thinking is “our inner and real core.” The new ground is “meditative thinking” (56).

Living among technological wonders, the human will be challenged to “*think*” what technology “*is*.” Heidegger writes, “*The meaning pervading technology hides itself*.” We have seen, above, that for Heidegger, from the dawn of Western thinking a nameless “It gives” has withdrawn from thinking even as it has “called” for thinking. I have cited as examples of this phenomenon our experience with the sunrise at the window and Hamlet’s experience with his father’s ghost. In the essay I am discussing here, Heidegger refers to this phenomenon (“That which hides itself from us, and hides itself just in approaching us”) as the *mystery*.

Our new comportment toward things in our technological age, then, will have two aspects: (1) “releasement toward things,” which is the yes-no attitude toward them described above, and (2) “openness to the mystery,” which is a thinking that opens-to and awaits thinking-toward the “meaning pervading technology.”

The new thinking that opens up for the scientist, the scholar, and the teacher in their “Conversation” brings new thoughts and vocabulary which come as the speakers open themselves up to the questions they contemplate and discuss together. They are able thus to approach, to “say,” a new understanding of, in this case, the nature of man, the nature of thinking, the part that “willing” plays in thinking, as well as “releasement” of the will, a waiting-for and an opening-to thinking.

What we can do is to pit our own nature—to think meditatively—against the temptation/compulsion to submit to technological domination.

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