

PRINCIPLES OF EMPIRICAL REALISM

Philosophical Essays

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those dimensions. There may be Platonic entities which are foreign to both space and time; there may be Cartesian spirits which are foreign to space; but the homely realm of natural existence, the total of world history, is a spatiotemporal volume of somewhat uncertain magnitude, chockablock with things and events. Logic, with its law of excluded middle and its tenseless operators, and natural science, with its secular world charts, concur inexorably with the vision of metaphysics and high religion that truth and fact are thus eternal.

I believe that the universe consists, without residue, of the spread of events in space-time, and that if we thus accept realistically the four-dimensional fabric of juxtaposed actualities we can dispense with all those dim nonfactual categories which have so bedeviled our race: the potential, the subsistential, and the influential, the noumenal, the numinous, and the nonnatural. But I am arguing here, not that there is nothing outside the natural world of events, but that the theory of the manifold is anyhow literally true and adequate to that world: true, in that the world contains no less than the manifold; adequate, in that it contains no more.

Since I think that this philosophy offers correct and coherent answers to real questions, I must think that metaphysical difficulties raised against it are genuine too. There are facts, logical and empirical, which can be described and explained only by the concept of the manifold; there are facts which some honest men deem irreconcilable with it. Few issues can better deserve adjudication. The difficulties which we need not take seriously are those made by primitive minds, and by new deliberate primitivists, who recommend that we follow out the Augustinian clue, as Augustine did not, that the man who best feels he understands time is he who refuses to think about it.

Among philosophical complainants against the manifold, some few raise difficulties about space—there are subjectivistic epistemologists, for example, who grant more reality to their own past and future than to things spatially beyond themselves. The temporal dimension of the manifold, however, bears the principal brunt. Sir James Jeans regretted that time is mathe-

matically attached to space by so "weird" a function as the square root of minus one,¹ and the very word "weird," being cognate with "*werden*," to become, is a monument to the uncanniness of our fourth dimension. Maintaining that time is in its essence something wholly unique, a flow or passage, the "time snobs" (as Wyndham Lewis called them) either deny that the temporal spread is a reality at all, or think it only a very abstract phase of real time. Far from disparaging time itself, they conceive themselves thus to be "taking time seriously" in a profounder sense than our party who are content with the vasty reaches of what is, was, and will be.

The more radical opposition to the manifold takes time with such Spartan seriousness that almost none of it is left—only the pulse of the present, born virginally from nothing and devouring itself as soon as born, so that whatever past and future there be are strictly only the memory and anticipation of them in this Now.² One set of motives for this view is in the general romantic polemic against logic and the competence of concepts. The theory of the manifold is the logical account of events par excellence, the teeth by which the jaws of the intellect grip the flesh of occurrence. The Bergsonian, who thinks that concepts cannot convey the reality of time because they are "static," the Marxist who thinks that process defies the cadres of two-valued logic, and the Heideggerian who thinks that temporality, history, and existence are leagued outside the categories of the intellect, thus have incentives for denying, in effect, all the temporal universe beyond what is immanent in the present flare and urge.

To counter their attack, it is a nice and tempting question whether and how concepts are "static," whether and how, in any case, a true concept must be similar to its object, and whether and how history and existence are any more temporal than spatial. But we cannot here undertake the whole defense of the intellect against its most violent critics. We shall rather notice such

¹*The Mysterious Universe*. New York, Macmillan, 1930, p. 118.

²This I think is a fair description of G. H. Mead's doctrine in *The Philosophy of the Present*. See also, e.g., Schopenhauer: *The World as Will and Idea*, Bk. 4, Sec. 54.

doubters as trust and use conceptual analysis and still think there are cogent arguments against the manifold. One argument to that effect is an extreme sharpening of the positivistic argument from the egocentric predicament. For if it is impossible for my concepts to transcend experience in general, it may well be impossible for them to transcend the momentary experience in which they are entertained. Conversely, however, anybody who rejects the arguments for instantaneous solipsism, as most people do, must reject this argument for diminishing the manifold. The chief mode of argument is rather the finding of an intolerable anomaly in the statement that what was but has ceased, or what will be but has not begun, nevertheless is. This reflection has been used against the reality of the future, in particular, by philosophers as miscellaneous as Aristotle and neoscholastics, C. D. Broad, Paul Weiss, and Charles Hartshorne. In so far as it is an argument from logic, charging the manifold with self-contradiction, it would be as valid against the past as against the future; but, I have argued, it is by no means valid.³

The statement that a sea fight not present in time nevertheless exists is no more contradictory than that one not present in space nevertheless exists. If it seems so, this is only because there happens to be a temporal reference (tense) built into our verbs rather than a spatial reference (as in some languages) or than no locative reference (as in canonical symbolic transcriptions into logic).

I am not to contend now for the reality of the manifold, however, but against the extra *weirdness* alleged for time both by some champions who reject the manifold out of hand and by some who contend anyhow that it is not the whole story, both parties agreeing that the temporal dimension is not "real time," not "the genuine creative flux." If our temporalist means by this that the theory of temporal extension, along with the spatial models provided by calendars, kymographs, and statistical time charts, is in the last analysis fictitious, corresponding to nothing in the facts, he is reverting, under a thin cloak of dissimulation, to the mere rejection which we have agreed to leave aside. If he means, at the other extreme, no more than that the theory and

³"The Sea Fight Tomorrow," above.

the models themselves are not identical, either numerically or qualitatively, with the actual temporal succession which they represent, he is uttering a triviality which is true of every theory or representation. If he means that the temporal spread, though real and formally similar to a spatial spread, is qualitatively or intuitively very different from it, or lies in a palpably and absolutely unique direction, he says something plausible and important but not at all incompatible with the philosophy of the manifold.

He is most likely to mean, however, another proposition which is never more than vaguely expressed: that over and above the sheer spread of events, with their several qualities, along the time axis, which is analogous enough to the spread of space, there is something extra, something active and dynamic, which is often and perhaps best described as "passage." This something extra, I am going to plead, is a myth: not one of those myths which foreshadow a difficult truth in a metaphorical way, but altogether a false start, deceiving us about the facts, and blocking our understanding of them.

The literature of "passage" is immense, but it is naturally not very exact and lucid, and we cannot be sure of distinguishing in it between mere harmless allegorical phenomenology and the special metaphysical declaration which I criticize. But "passage," it would seem, is a character supposed to inhabit and glorify the present, "the passing present,"⁴ "the moving present,"⁵ the "travelling now."⁶ It is "the passage of time as actual . . . given now with the jerky or whooshy quality of transience."⁷ It is James' "passing moment."⁸ It is what Broad calls "the transitory aspect" of time, in contrast with the "extensive."⁹ It is Bergson's living felt duration. It is Heidegger's *Zeitlichkeit*. It is Tillich's "moment that is creation and fate."¹⁰ It is "the act of becoming,"

⁴Dennes, W. R., in California, University, Philosophical Union, *The Problem of Time*. Berkeley, Univer. of Calif., 1935, p. 103.

⁵Stearns, I., in *Rev. Met.*, 4:198, 1950.

⁶Santayana: *Realms of Being*, in *Works*, Vol. 14, p. 254.

⁷Lewis: *An Analysis of Knowledge and Valuation*, p. 19. This is pretty surely phenomenology, not metaphysics, but it is too good to omit.

⁸James: *A Pluralistic Universe*, p. 254.

⁹Broad: *An Examination of McTaggart's Philosophy*, Vol. 2, Pt. 1, p. 271.

¹⁰Tillich, Paul: *The Interpretation of History*. New York, Scribner's, 1936, p. 120.

the mode of potency and generation, which Hugh King finds properly appreciated only by Aristotle and Whitehead.¹¹ It is Eddington's "ongoing" and "the formality of taking place,"¹² and Dennes' "surge of process."¹³ It is the dynamic essence which Ushenko believes that Einstein omits from the world.¹⁴ It is the mainspring of McTaggart's "A-series" which puts movement in time,¹⁵ and it is Broad's pure becoming.¹⁶ Withal it is the flow and go of very existence, nearer to us than breathing, closer than hands and feet.

So far as one can interpret these expressions into a theory, they have the same purport as all the immemorial turns of speech by which we describe time as *moving*, with respect to the present or with respect to our minds. Time flows or flies or marches, years roll, hours pass. More explicitly we may speak as if the perceiving mind were stationary while time flows by like a river, with the flotsam of events upon it; or as if presentness were a fixed pointer under which the tape of happenings slides; or as if the time sequence were a moving-picture film, unwinding from the dark reel of the future, projected briefly on the screen of the present, and rewound into the dark can of the past. Sometimes, again, we speak as if the time sequence were a stationary plain or ocean on which we voyage, or a variegated river gorge down which we drift; or, in Broad's analogy, as if it were a row of house fronts along which the spotlight of the present plays. "The essence of nowness," Santayana says, "runs like fire along the fuse of time."¹⁷

Augustine pictures the present passing into the past, where

¹¹King, H. R., in *J. Phil.*, 46:657-670, 1949. This is an exceptionally ingenious, serious, and explicit statement of the philosophy which I am opposing.

¹²Eddington, Arthur S.: *Space, Time, and Gravitation*, New York, Macmillan, 1920, p. 51; *The Nature of the Physical World*, New York, Macmillan, 1928, p. 68.

¹³Dennes: *loc. cit.*, pp. 91, 93.

¹⁴Ushenko, Andrew P.: *Power and Events*. Princeton, Princeton Univer., 1946, p. 146.

¹⁵McTaggart, John M. E.: *The Nature of Existence*. Cambridge, Cambridge Univer., 1927, Vol. 2, Bk. 5, Chap. 33.

¹⁶Broad: *Scientific Thought*, p. 67; *Examination of McTaggart's Philosophy*, Vol. 2., p. 277.

¹⁷*Realms of Being*, in *Works*, Vol. 15, p. 90.

the modern pictures the present as invading the future,¹⁸ but these do not conflict, for Augustine means that the *events* which were present become past, while the modern means that *presentness* encroaches on what was previously the future. Sometimes the surge of presentness is conceived as a mere moving illumination by consciousness, sometimes as a sort of vivification and heightening, like an ocean wave heaving along beneath a stagnant expanse of floating seaweed, sometimes as no less than the boon of existence itself, reifying minute by minute a limbo of unthings.

Now, the most remarkable feature of all this is that while the modes of speech and thought which enshrine the idea of passage are universal and perhaps ineradicable, the instant one thinks about them one feels uneasy, and the most laborious effort cannot construct an intelligible theory which admits the literal truth of any of them. The obvious and notorious fault of the idea, as we have now localized it, is this. Motion is already defined and explained in the dimensional manifold as consisting of the presence of the same individual in different places at different times. It consists of bends or quirks in the world line, or the space-time worm, which is the four-dimensioned totality of the individual's existence. This is motion in space, if you like; but we can readily define a corresponding "motion in time." It comes out as nothing more dramatic than an exact equivalent: "motion in time" consists of being at different times in different places.

True motion then is motion at once in time and space. Nothing can "move" in time alone any more than in space alone, and time itself cannot "move" any more than space itself. "Does this road go anywhere?" asks the city tourist. "No, it stays right along here," replies the countryman. Time "flows" only in the sense in which a line flows or a landscape "recedes into the west." That is, it is an ordered extension. And each of us proceeds through time only as a fence proceeds across a farm: that is, parts of our being, and the fence's, occupy successive instants and points, respectively. There is passage, but it is nothing

¹⁸*Confessions*, Bk. 11, Chap. 14; cf. E. B. McGilvary, in *Phil. Rev.*, 23:121-145, 1914.

extra. It is the mere happening of things, their existence strung along in the manifold. The term "the present" is the conventional way of designating the cross section of events which are simultaneous with the uttering of the phrase, and "the present moves" only in that when similar words occur at successively different moments, they denote, by a twist of language essentially the same as that of all "egocentric particulars," like "here" and "this," different cross sections of the manifold.

Time travel, *prima facie*, then, is analysable either as the banality that at each different moment we occupy a different moment from the one we occupied before, or the contradiction that at each different moment we occupy a different moment from the one which we are then occupying—that five minutes from now, for example, I may be a hundred years from now.¹⁹

The tragedy then of the extra idea of passage or absolute becoming, as a philosophical principle, is that it incomprehensibly doubles its world by reintroducing terms like "moving" and "becoming" in a sense which both requires and forbids interpretation in the preceding ways. For as soon as we say that time or the present or we move in the odd extra way which the doctrine of passage requires, we have no recourse but to suppose that this movement in turn takes time of a special sort: time₁ moves at a certain rate in time₂, perhaps one second₁ per one second₂, perhaps slower, perhaps faster. Or, conversely, the moving present slides over so many seconds of time₁ in so many seconds of time₂. The history of the new moving present, in time₂, then composes a new and higher time dimension again, which cries to be vitalized by a new level of passage, and so on forever.

We hardly needed to point out the unhappy regress to which the idea of time's motion commits us, for any candid philosopher, as soon as he looks hard at the idea, must *see* that it is pre-

¹⁹"He may even now—if I may use the phrase—be wandering on some plesiosaurus-haunted oolitic coral reef, or beside the lonely saline seas of the Triassic Age"—H. G. Wells, *The Time Machine*, epilogue. This book, perhaps the best yarn ever written, contains such early and excellent accounts of the theory of the manifold that it has been quoted and requoted by scientific writers. Though it makes slips, its logic is better than that of later such stories.

posterous. "Taking place" is not a formality to which an event incidentally submits—it is the event's very being. World history consists of actual concrete happenings in a temporal sequence; it is not necessary or possible that happening should happen to them all over again. The system of the manifold is thus "complete" in something like the technical logical sense, and any attempted addition to it is bound to be either contradictory or supererogatory.

Bergson, Broad, and some of the followers of Whitehead²⁰ have tried to soften the paradoxes of passage by supposing that the present does not move across the total time level, but that it is the very fountain where the river of time gushes out of nothingness (or out of the power of God). The past, then, having swum into being and floated away, is eternally real, but the future has no existence at all. This may be a more appealing figure, but logically it involves the same anomalies of meta-happening and metatime which we observed in the other version.

What, then, we must ask, were the motives which drove men to the staggering philosophy of passage? One of them, I believe, we can dispose of at once. It is the innocent vertigo which inevitably besets a creature whose thinking is strung out in time, as soon as he tries to think of the time dimension itself. He finds it easiest to conceive and understand purely geometrical structures. Motion is more difficult, and generally remains vague, while time *per se* is very difficult indeed, but being now identified as the principle which imports motion into space, it is put down as a kind of quintessential motion itself. The process is helped by the fact that the mere further-along-ness of successive segments, either of a spatial or of a temporal stretch, can quite logically be conceived as a degenerate sort of change, as when we speak of the flow of a line or say that the scenery changes along the Union Pacific.

A rather more serious excuse for the idea of passage is that it is supposed necessary and sufficient for adding to the temporal

²⁰Bergson's theory of the snowball of time may be thus understood: the past abides in the center while ever new presents accrete around it. For Broad, see *Scientific Thought*, p. 66, and on Whitehead, see King, *loc. cit.*, esp. p. 663.

dimension that intrinsic *sense* from earlier to later in which time is supposed to differ radically from any dimension of space.²¹ A meridian of longitude has only a direction, but a river has a "sense," and time is in this like the river. It is, as the saying goes, irreversible and irrevocable. It has a "directed tension."²² The mere dimension of time, on the other hand, would seem to be symmetrical. The principle of absolute passage is bidden to rectify this symmetry with what Eddington called "time's arrow."

It might be replied that science does not supply an arrow for time because it has no need of it. But I think it plain that time does have a sense, from early to late. I only think that it can be taken care of on much less draconian principles than absolute passage. There is nothing in the dimensional view of time to preclude its being generated by a uniquely asymmetrical relation, and experience suggests powerfully that it is so generated. But the fact is that every real series has a "sense" anyhow. This is provided, if by nothing else, then by the sheer numerical identity and diversity of terms.

In the line of individual things or events, *a, b, c, . . . z*, whether in space or in time, the "sense" from *a* to *z* is *ipso facto* other than the "sense" from *z* to *a*. Only because there is a difference between the ordered couple *a; z* and the couple *z; a* can we define the difference between a symmetrical and an asymmetrical relation. Only because there are already two distinguishable "ways" on a street, determined by its individual ends, can we decide to permit traffic to move one way and prohibit it the other. But a sufficient difference of sense, finally, would appear to be constituted, if nothing else offered, by the inevitably asymmetrical distribution of properties along the temporal line (or any other). Eddington has been only one of many scientists who think the arrow is provided for the cosmos by the principle of entropy, and entropy has been only one principle thus advocated.²³

²¹See, for example, Broad: *Scientific Thought*, p. 57.

²²Tillich, *op. cit.*, p. 245.

²³*The Nature of the Physical World*, Chap. 3. For the present scientific state of the question, see Adolf Grünbaum: *Philosophical Problems of Space and Time*, New York, Knopf, 1963.

In so far as what men mean by "the irrevocability of the past" is the causal circumstance that we can affect the future in a way we cannot affect the past, it is just a trait of the physicist's arrow. They often mean by it, however, only the inexorability of fact, that what is the case is the case, past, present, or future; or the triviality that the particular events of 1902, let us say, cannot also be the events of 1952. Very similar events might be so, however, and if very few of them are, this is the fault of the concrete nature of things and not of any grudge on the part of time.²⁴

The final motive for the attempt to consummate or supplant the fourth dimension of the manifold with the special perfection, the grace and whiz, of passage is the vaguest but the most substantial and incorrigible. It is simply that we *find* passage, that we are immediately and poignantly involved in the whoosh of process, the felt flow of one moment into the next. Here is the focus of being. Here is the shore whence the youngster watches the golden mornings swing toward him like serried bright breakers from the ocean of the future. Here is the flood on which the oldster wakes in the night to shudder at its swollen black torrent cascading him into the abyss.

It would be futile to try to deny these experiences, but their correct description is another matter. If they are in fact consistent with our theory, they are no evidence against it; and if they are entailed by it, they are evidence in its favor. Since the theory was originally constructed to take account of them, it would be odd if they were inconsistent with it or even irrelevant to it. I believe that in fact they are neither, and that the theory of the manifold provides the true and literal description of what the enthusiastic metaphors of passage have deceptively garbled.

The principal reason why we are troubled to accommodate our experience of time to the intellectual theory of time goes very deep in the philosophy of philosophy. It is that we must here scrutinize the undoctored fact of perception, on the one hand, and must imagine our way into a conceptual scheme, and envisage the true intrinsic being of its objects, on the other hand,

²⁴Dennett argues thus, *loc. cit.*

and then pronounce on the numerical identity of the first with the second. This is a very rare requirement. Even such apt ideas as those of space and of physical objects, as soon as we contemplate them realistically, begin to embarrass us, so that we slip into the assumption that the real objects of the conceptions, if they exist at all, exist on a different plane or in a different realm from the sensuous spread and lumpiness of experience. The ideas of time and of the mind, however, do not permit of such evasion. Those beings are given in their own right and person, filling the foreground. Here for once we must fit the fact directly into the intellectual form, without benefit of precedent or accustomed criteria. First off, then, comparing the calm conceptual scheme with the turbid event itself, we may be repelled by the former, not because it is not true to the latter, but because it is not the latter. When we see that this kind of diversity is inevitable to every concept and its object, and hence is irrelevant to the validity of any, we demur because the conceptual scheme is indifferently flat and third-personal, like a map, while the experienced reality is centripetal and perspectival, piled up and palpitating where we are, gray and retiring elsewhere.

But this is only because every occasion on which we compare the world map with experience has itself a single specific location, confronting part of the world, remote from the rest. The perspectivity of the view is exactly predictable from the map. The deception with respect to time is worse than with respect to space because our memories and desires run timewise and not spacewise. The jerk and whoosh of this moment, which are simply the real occurrence of one particular batch of events, are no different from the whoosh and being of any other patch of events up and down the eternal time-stretch. Remembering some of the latter, however, and anticipating more, and bearing in mind that while they happen they are all called "the present," we mistakenly hypostatize *the Present* as a single surge of bigness which rolls along the time axis. There is in fact no more a single rolling Now than there is a single rolling Here along a spatial line—a standing line of soldiers, for example, though each of them has the vivid presentment of his own here.

Let us hug to us as closely as we like that there is real succession, that rivers flow and winds blow, that things burn and burst, that men strive and guess and die. All this is the concrete stuff of the manifold, the reality of serial happening, one event after another, in exactly the time spread which we have been at pains to diagram. What does the theory allege except what we find, and what do we find that is not accepted and asserted by the theory? Suppose a pure intelligence, bred outside of time, instructed in the nature of the manifold and the design of the human spacetime worm, with its mnemonic organization, its particular delimited but overlapping conscious fields, and the strands of world history which flank them, and suppose him incarnated among us: what could he have expected the temporal experience to be like except just about what he actually discovers it to be? How, in brief, could processes and experiences which endure and succeed each other along the time line appear as anything other than enduring and successive processes and a stream of consciousness?

The theory of the manifold leaves abundant room for the sensitive observer to record any describable difference he may find, in intrinsic quality, relational texture, or absolute direction, between the temporal dimension and the spatial ones. He is welcome to mark it so on the map. The very singleness of the time dimension, over against the amalgamated three dimensions of space, may be an idiosyncrasy with momentous effects; its *fourthness*, so to speak, so oddly and immensely multiplying the degrees of freedom embodied in the familiar spatial complex, was bound to seem momentous too.

The theory has generally conceded or emphasized that time is unique in these and other respects, and I have been assuming that it was right to do so. In the working out of this thesis, however, and in considering the very lame demurrals which oppose it, I have come a little uneasily to the surmise that the idea of an absolute or intrinsic difference of texture or orientation is superfluous, and that the four dimensions of the manifold compose a perfectly homogeneous scheme of location relations, the same in all directions, and that the oddity of temporal

distances is altogether a function of features which occupy them—a function of *de facto* pattern like the shape of an arrow, like the difference between the way in and the way out of a flytrap, and like the terrestrial difference between up and down.

Even a person who believes that temporal distances are a categorially peculiar mode of relation, intrinsically different from spatial distance, regardless of how they are filled, must grant that they nevertheless *are* filled differently: things, persons, and events, as a matter of natural fact, are strung along with respect to the time axis in rhythms and designs notably different from those in which they are deployed spacewise. Entropy and the other scientific criteria for the “sense” from past to future distinguish no less the whole temporal direction from the spatial ones. The very concept of “things” or “individual substances” derives from a peculiar kind of coherence and elongation of clumps of events in the time direction. Living bodies in particular have a special organized trend timewise, a *conatus sese conservandi*, which nothing has in spatial section. Characteristic themes of causation run in the same direction, and paralleling all these, and accounting for their importance and obviousness to us, is the pattern of mental events, the stream of consciousness, with its mnemonic cumulation and that sad anxiety to *keep going* futureward which contrasts strangely with our comparative indifference to our spatial girth.

The same fact of the grain and configuration of events which, if it does not constitute, certainly accompanies and underlines the “senses” of space and time, has other virtues which help to naturalize experience in the manifold. It accounts for the apparent *rate* of happening, for example; for the span of the specious present; and for the way in which the future is comparatively malleable to our present efforts and correspondingly dark to our present knowledge. An easy interpretation would be that the world content is uniquely organized in the time direction because the time direction itself is aboriginally unique. Modern philosophical wisdom, however, consists mostly of trying the cart before the horse, and I find myself more than half convinced by the oddly repellent hypothesis that the peculiarity of the time

dimension is not thus primitive but is wholly a resultant of those differences in the mere *de facto* run and order of the world's filling.

It is conceivable, then, though perhaps physically impossible, that one four-dimensional part of the manifold of events be slued around at right angles to the rest, so that the time order of that area, as composed by its interior lines of strain and structure, runs parallel with a spatial order in its environment. It is conceivable, indeed, that a single whole human life should lie thwartwise of the manifold, with its belly plump in time, its birth at the east and its death in the west, and its conscious stream perhaps running alongside somebody's garden path.²⁵

It is conceivable too then that a human life be twisted, not 90° but 180°, from the normal temporal grain of the world. F. Scott Fitzgerald tells the story of Benjamin Button who was born in the last stages of senility and got younger all his life till he died a dwindling embryo.²⁶ Fitzgerald imagined the reversal to be so imperfect that Benjamin's stream of consciousness ran, not backward with his body's gross development, but in the common clockwise manner. We might better conceive a reversal of every cell twitch and electron whirl, and hence suppose that he experienced his own life stages in the same order as we do ours, but that he observed everyone around him moving backward from the grave to the cradle. True time travel, then, is conceivable after all, though we cannot imagine how it could be caused by beings whose lives are extended in the normal way: it would consist of a man's life-pattern, and the pattern of any appliances he employed, running at an abnormal rate or on an abnormal heading across the manifold.

As the dimensional theory accommodates what is true in the notion of passage, that is, the occurrence of events, in contrast

²⁵I should expect the impact of the environment on such a being to be so wildly queer and out of step with the way he is put together, that his mental life must be a dragged-out monstrous delirium. Professor George Burch has suggested to me that it might be the mystic's timeless illumination. Whether these diagnoses are different I shall not attempt to say.

²⁶“The Curious Case of Benjamin Button,” in *Tales of the Jazz Age*. New York, Scribner's, 1922.

with a mythical rearing and charging of time itself, so it accounts for what is true in the notions of "flux," "emergence," "creative advance," and the rest. Having learned the trick of mutual translation between theory and experience, we see where the utter misrepresentation lies in the accusation that the dimensional theory denies that time is "real," or that it substitutes a safe and static world, a block universe, a petrified *fait accompli*, a *totum simul*, for the actuality of risk and change.

Taking time with the truest seriousness, on the contrary, it calmly diagnoses "novelty" or "becoming," for example, as the existence of an entity, or kind of entity, at one time in the world continuum which does not exist at any previous time. No other sort of novelty than this, I earnestly submit, is discoverable or conceivable—or desirable. In practice, the modern sciences of the manifold have depicted it as a veritable caldron of force and action. Although the theory entails that it is true at every time that events occur at other times, it emphatically does not entail that all events happen at the same time or at every time, or at no time. It does not assert, therefore, that future things "already" exist or exist "forever." Emphatically also it does not, as is frequently charged, "make time a dimension of space,"²⁷ any more than it makes space a dimension of time.

The theory of the manifold, which is thus neutral with respect to the amount of change and permanence in the world, is surprisingly neutral also toward many other topics often broached as though they could be crucial between it and the extra idea of passage. It is neutral, so far, toward whether space and time are absolute and substantival in the Democritean and Newtonian way, or relative and adjectival in Spencer's and Whitehead's way, or further relativistic in Einstein's way. The theory of space does not, as Bergson pretended, have any preference for discontinuity over continuity, and while a time order in which nothing exists but the present would be fatal to any real continuity, the philosophy of the manifold is quite prepared to accept any

²⁷See Charles Hartshorne: *Man's Vision of God, and the Logic of Theism*, Chicago, Willett, Clark, 1941, p. 140, and Tillich, *op. cit.*, pp. 132, 248; and remember Bergson's allegation that the principle of the manifold "spatializes" time.

verdict on whether space or time or both are continuous or discrete, as it is also on whether they are finite or infinite. Instead of "denying history," it preserves it, and is equally hospitable to all philosophies of history except such as themselves deny history by disputing the objectivity and irrevocability of historical truth. It does not care whether events eternally recur, or run along forever on the dead level as Aristotle thought, or enact the ringing brief drama of the Christian episode, or strive into the Faustian boundless. It is similarly neutral toward theories of causation and of knowledge.

The world manifold of occurrences, each eternally *determinate* at its own place and date, may and may not be so *determined* in its texture that what occurs at one juncture has its sufficient reason at others. If it does evince such causal connections, these may be either efficient (as apparently they are) or final (as apparently they are not). The core of the causal nexus itself may be, so far as the manifold is concerned, either a real connection of Spinoza's sort, or Whitehead's, or the scholastics', or the mere regular succession admitted by Hume and Russell. It was a mistake for Spinoza to infer, if he did, that the eternal manifold and strict causation entail one another, as it is a worse mistake for the scholastics, Whitehead, Ushenko, and Weiss to infer the opposite (as they seem to), that "real time" and "real causation" entail one another.²⁸ The theory is similarly noncommittal toward metaphysical accounts of individual substances, which it can allow to be compounds of form and matter or mere sheaves of properties.

The theory of the manifold makes a man at home in the world to the extent that it guarantees that intelligence is not affronted at its first step into reality. Beyond that, the cosmos is as it is. If there is moral responsibility, if the will is free, if there is reasonableness in regret and hope in decision, these must be ascertained by more particular observations and hypotheses than the doctrine of the manifold. It makes no difference to our theory whether we are locked in an ice pack of fate, or

²⁸See, for example, Whitehead: *Process and Reality*, p. 303; Weiss, Paul: *Nature and Man*, New York, Holt, 1947.

whirled in a tornado of chance, or are firm-footed makers of destiny. It will accept benignly either the Christian Creator, or the organic and perfect Absolute, or Hume's sand pile of sensation, or the fluid melee of contextualism, or the structured world process of materialism.

The service which the theory performs with respect to all these problems is other than dictating solutions of them. It is the provision of a lucent frame or arena where they and their solutions can be laid out and clearheadedly appraised in view of their special classes of evidence. Once under this kind of observation, for example, the theories of change which describe becoming as a marriage of being and not-being, or an interpenetration of the present with the future and the past, become repulsive, not because they conflict especially with the philosophy of the manifold, but because if they are not mere incantations they contradict themselves. When we see that the problem how Achilles can overtake the tortoise is essentially the same as the problem how two lines can intersect one another obliquely, we are likely to be content with the simple mathematical intelligibility of both. When we see that the "change" of a leaf's color from day to day is of the same denomination as its "change" from inch to inch of its surface, we are less likely to hope that mysterious formulas about the actualization of the potential and the perdurance of a substratum are of any use in accounting for either of them.

If then there is some appearance of didactic self-righteousness in my effort here to save the pure theory of the manifold from being either displaced or amended by what I think is the disastrous myth of passage, this is because I believe that the theory of the manifold is the very paradigm of philosophic understanding. It grasps with a firm logic, so far as I can see, the most intimate and pervasive of facts; it clarifies the obscure and assimilates the apparently diverse.

Most of the effect of the prophets of passage, on the other hand, is to melt back into the primitive magma of confusion and plurality the best and sharpest instruments which the mind has forged. Some of those who do this have a deliberate preference

for the melting pot of mystery as an end in itself. Others, I suppose, hope eventually to cast from it a finer metal and to forge a sharper point. No hope of that sort is altogether chimerical. But I suggest that if a tithe of the animus and industry invested in that ill-omened enterprise were spent on the refinement and imaginative use of the instrument we have, whatever difficulties still attend it would soon be dissipated.

not exist. All reality, all the content of a man's life, resides in the vast depths of past and future on either side. Thus Amy Lowell:²¹

Do you wish to remind me that there is never any present,

Only a future and a long, long past?

The lesson of this chaos of preference and hypothesis, I propose, is one which coincides with our thesis: past, present, and future are ontologically on a level with one another and with west and south, and are equally real.

²¹"Reflection," from *Ballads for Sale*, in *Complete Poetical Works*. Boston, Houghton, Mifflin, 1955, p. 560.

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The Myth of Passage

AT EVERY MOMENT each of us finds himself the apparent center of the world, enjoying a little lit foreground of the here and now, while around him there looms, thing beyond thing, event beyond event, the plethora of a universe. Linking the furniture of the foreground are sets of relations which he supposes also to bind the things beyond and to bind the foreground with the rest. Noteworthy among them are those queerly obvious relations, peculiarly external to their terms, which compose the systems of space and time, modes of connection exhaustively specifiable in a scheme of four dimensions at right angles to one another. Within this manifold, for all that it is so firmly integrated, we are immediately struck by a disparity between the three-dimensional spread of space and the one dimension of time. The spatial dimensions are in a literal and precise sense perpendicular to one another, and the submanifold which they compose is isotropic, the same in all directions. The one dimension of time, on the other hand, although it has the same formal properties as each of the other three, is at least sensuously different from them as they are not from one another, and the total manifold is apparently not isotropic. Whereas an object can preserve the same shape while it is so shifted that its height becomes its breadth, we cannot easily conceive how it could do so while being shifted so that its breadth becomes its duration.

The theory of the manifold, I think, is the one model on which we can describe and explain the foreground of experience, or can intelligibly and credibly construct our account of the rest of the world, and this is so because in fact the universe is spread out in