Original Articles

A Novel Argument for Fatalism

KUNIHISA MORITA
https://orcid.org/0000-0003-1620-9944
Osaka University
Suita
Japan
kunihisa@e-mail.jp

Article info
CDD: 121
Received: 01.03.2023; Revised: 09.08.2023; Accepted: 21.08.2023
https://doi.org/10.1590/0100-6045.2023.V46N4.KM

Keywords
Fatalism
Determinism
Future Contingent
Knowability Paradox
Foreknowledge
Quantum Mechanics

Abstract: This paper offers a novel argument for fatalism: if one accepts the logical possibility of fatalism, one must accept that fatalism is true. This argument has a similar structure to the 'knowability paradox', which proves that if every truth can be known by someone, then every truth is known by someone. In this paper, what I mean by 'fatalism' is that whatever happens now was determined to happen now in the past. Existing arguments for fatalism assume that the principle of bivalence holds even for future propositions, that past truths are necessarily true, and/or that possible propositions never change into impossible propositions. However, my argument does not assume such premises. It assumes only the logical possibility of fatalism. Here, what I mean by 'fatalism is logically possible' is that there is at least one possible world where whatever happens now was determined to happen now in the past. Since this assumption is weak (thus is plausible), I believe it to be much stronger than the existing

arguments for fatalism. In addition, I also show that what will happen in the future is determined now.

1. Introduction

Philosophers have long discussed whether human beings' fates are determined. This paper aims to provide a novel argument for fatalism. However, what is fatalism? Emery et al. (2020, § 1) define fatalism as:

> [F_0] Whatever will happen in the future is already *unavoidable* (where to say that an event is unavoidable is to say that no agent is able to prevent it from occurring).

They also formulate the typical argument for fatalism as follows:

Argument for Fatalism I

(I-1) There are now propositions about everything that might happen in the future.

(I-2) Every proposition is either true or false.

(I-3) If (I-1) and (I-2) hold, there is now a set of true propositions that, taken together, correctly predict everything that will happen in the future.

(I-4) If there is now a set of true propositions that, taken together, correctly predict everything that will happen in the future, then whatever will happen in the future is already unavoidable.

(I-5) Whatever will happen in the future is already unavoidable.

Nevertheless, some might deny premise (I-2) (e.g., Emery et al. 2020, § 1; Øhrstrøm and Hasle 2020 § 4). Perhaps, according to such authors, a proposition that you will have lunch tomorrow either has no truth value right now, or else has a third truth value: indeterminate.

Another typical argument for fatalism is the famous 'Master Argument' by Diodorus Cronus (e.g., Øhrstrøm and Hasle 2020):

Argument for Fatalism II

(II-1) Every proposition that is true about the past is necessary.

(II-2) An impossible proposition cannot follow from a possible one.

(II-3) There is a proposition that is possible, but which neither is nor will be true.

Here, (II-1) and (II-2) are seemingly true, however, these two propositions are inconsistent with (II-3), and rejecting (II-3) implies accepting fatalism. If a proposition p neither is nor will be true, then $\neg p$ either is or will be true. Suppose that (II-3) is false (thus, a proposition that neither is nor will be true is impossible), then, $\neg p$ is necessarily true because it is impossible for p to be true. Therefore, rejecting (II-3) means accepting fatalism. However, accepting (II-1) and (II-2) also implies accepting fatalism (thus, these three propositions cannot be simultaneously true). For, since every proposition that is true about the past is necessary from (II-1), every proposition that is now true is also necessary from (II-2). Since (II-1) and (II-2) are seemingly true, while (II-3) is not evidently true, fatalism is true. However, there are some criticisms against (II-1) (e.g., Øhrstrøm and Hasle 2020, § 5)[1].

In summary, some arguments for fatalism have been made,[2] however, whether the premises they use are true continues to be controversial. Note that I do not reject these premises. It is *not* my purpose to thoroughly examine the existing arguments. On the contrary, in this paper, I aim to provide a novel argument for fatalism without such premises; therefore, even if these premises are false, my argument remains intact.

What is fatalism? Formulation [F_0] states that whatever will happen in the future is already *unavoidable*. If 'unavoidable' means 'logically necessary,' I posit that it is difficult to prove fatalism.[3] I suggest that 'a future proposition, *P*, is unavoidable' means that *P* is unavoidable *in this actual world*. For example, if the future proposition has definite truth value (true or false) in this actual world (and

[1] Merlussi (2019, p. 98) correctly points out that past propositions are necessarily true only in this *actual world* (namely, this 'necessity' is not metaphysical necessity). I thank the anonymous referee who reviewed the current paper and informed me of this work.

[2] See, for example, Rice (2018), Emery et al. (2020, §1), Øhrstrøm and Hasle (2020), Zagzebski (2021).

[3] Øhrstrøm and Hasle (2020, § 2) provide a formal argument for fatalism, in which fatalism is defined as $F(x)p \vee \Box F(x)\neg p$ (in x time units it will be logically necessarily the case that p, or in x time units it will be logically necessarily the case that $\neg p$). However, they use premises, $P(x)p \rightarrow \Box P(x)p$ (if x time units ago it was the case that p, then x time units ago it was necessarily the case that p: necessity of past truths) and $F(x)p \vee F(x)\neg p$ (the principle of the excluded middle about future propositions). However, as mentioned above, whether these premises are true remains controversial.

the truth value of the future proposition is unchangeable), a future event is already unavoidable. In other words, whereas the existing arguments for fatalism try to prove the logical necessity of the future propositions by assuming the principle of bivalence for future propositions (or necessity of the past proposition) as discussed, what we must prove is that the principle of bivalence holds even for future propositions in this actual world (premise I-2). Note that I presuppose that the law of contradiction always holds.

This implies that it can be the case, even if fatalism is true, that there are possible worlds in which different future propositions from one in the actual world are true, despite that every past and present proposition is the same as one in the actual world. In other words, I distinguish fatalism from causal determinism. This point is discussed later in § 3.

However, a question emerges at this juncture: why is it worth discussing fatalism based on the above definition? For this definition seems different from the standard definition of fatalism, [F_0]; if the phrase 'no agent is able to prevent P from occurring' is interpreted as there is no possible world in which P is false, these definitions are different. However, even if P is a contingently true proposition, there is a case where no agent is able to prevent P from occurring. Namely, where P is a proposition about an event at t_2, P already has a definite truth value (true) at t_1 ($t_2 > t_1$), and the truth value is invariant over time, then no agent is able to prevent P from occurring in *this actual world* (thus, the concept of fatalism discussed in this paper is identical to [F_0]). As noted, it can be stated that this fatalism can be identical to premise (I-2) that is controversial in the argument for fatalism I. This means that if the notion of fatalism considered in this paper is proved, then the argument for fatalism I is also sound (thus, conclusion I-5 is true).

There are two reasons why we care about fatalism. One involves purely metaphysical interest; we would like to know how our world is. The other concerns free will; if every future event is already unavoidable, then there seems to be no free will.[4] However, if these two issues are the reasons that we care about fatalism, then the following definition of fatalism should also be acceptable:[5]

> [F_1] Whatever happens *now* was already *unavoidable in the past.*

In addition to [F_0], the question of whether [F_1] holds is also a metaphysically interesting one. Furthermore, if [F_1] holds, then there also seems to be no free will because whatever choice I make now was already unavoidable in the past, where 'unavoidable' does not mean 'causally determined' as mentioned above. 'Whatever happens now was already unavoidable in the past' means that every present (true) proposition was already true in the past. For example, now (February 2023), I am writing the introduction of this paper. If fatalism [F_1] is true, this fact was already unavoidable in the past (for instance, in February 1923). Note again that [F_1] does *not* imply that A, which is currently true in this actual world, is a *logically* necessary truth; fatalism can be true even if there are possible worlds where truths in this actual world are false. In addition, [F_1] does not imply that A is *causally* determined by a past event. Even if it is the case that there are possible worlds where different present propositions from the ones in this actual world are true, while past propositions are exactly the same, fatalism [F_1] can be true. What [F_1] implies is that there is only one history in this actual world (and *the whole history, including the future, was already*

---

[4] Literature on fatalism and free will is abundant; see, for example, Mackie (2003) and McKenna and Coates (2021).

[5] However, I also prove [F_0] in § 5.

fixed in the past). Therefore, it can be the case that nothing in the past determines the current state of the world (certainly, causal determinism can also be the case).

[F_1] can be written as follows:

[F] $A \rightarrow \mathbb{F}A$

where $\mathbb{F}A$ represents 'it was already unavoidable in the past that A would be true now.' Therefore, [F] means that if A is true now, it was already unavoidable in the past that A would be true now; I restrict A as a proposition expressing an event because fatalism concerns only events.

I offer a novel argument for fatalism [F] (NAF) in § 2, which has a structure similar to the argument for the so-called knowability paradox: If it is possible that every truth *can be* known to anyone, then every truth *is* known by someone (Salerno 2009). Recently, Jago (2020) proved that if truthmaker maximalism is logically possible, then truthmaker maximalism is true. Furthermore, Loss (2021) proved that if it is logically possible that every fact is grounded, then every fact is grounded (thus, there are no fundamental facts). They also use the same line of argument as the knowability paradox.

As discussed above, the existing arguments for fatalism assume the principle of bivalence for future propositions (PBF), the temporal unchangeability of the modality (TUM), and/or the necessity of past truths. However, these premises are still controversial. Therefore, in my argument in this paper, I opt for only evident or highly plausible premises, creating a novel and strong argument for fatalism. In addition, although formulation [F] is philosophically interesting to examine, I also offer an argument for formulation [F_0] using the conclusion of NAF in § 5.

2. The Argument

My arguments' premises are as follows:

[P1] $\mathbb{F}(A \wedge B) \rightarrow \mathbb{F}A \wedge \mathbb{F}B$

[P2] $\mathbb{F}A \rightarrow A$

[P3] $\frac{\vdash \neg A}{\vdash \neg \Diamond A}$

[P4] $A \rightarrow \Diamond \mathbb{F}A$

My argument, the novel argument for fatalism (NAF), is as follows:

(1) $\mathbb{F}(A \wedge \neg \mathbb{F}A)$	assumption
(2) $\mathbb{F}A \wedge \mathbb{F}\neg \mathbb{F}A$	1, [P1]
(3) $\mathbb{F}A \wedge \neg \mathbb{F}A$	2, [P2]
(4) $\neg \mathbb{F}(A \wedge \neg \mathbb{F}A)$	1, 3, *reductio*
(5) $\neg \Diamond \mathbb{F}(A \wedge \neg \mathbb{F}A)$	4, [P3]
(6) $(A \wedge \neg \mathbb{F}A) \rightarrow \Diamond \mathbb{F}(A \wedge \neg \mathbb{F}A)$	[P4]
(7) $\neg(A \wedge \neg \mathbb{F}A)$	5, 6, *modus tollens*
(8) $A \rightarrow \mathbb{F}A$	7, logic

Evidently, premises [P1]–[P3] are not problematic. Thus, I focus only on premise [P4] in § 3.[6]

[6] As mentioned in the Introduction, I do not consider that fatalism means that all true propositions are logically necessarily true. If fatalism is such a view, then accepting the logical possibility of

3. Examination of Premise [P4]

[P4] is true if there is at least one possible world where it was already unavoidable in the past that *A* is currently true among possible worlds where every current truth *A* in this actual world is true. Note that logical possibility is a really weak claim, and thus highly plausible.

Some might argue that quantum mechanics implies that fatalism, in the sense that it is deliberated in this paper, is false. If quantum mechanics logically implies that fatalism is false, this means that fatalism is logically impossible. For what the NAF shows is that if fatalism is logically possible, then fatalism is true (in this actual world and in all possible worlds); this means that if fatalism is false in this actual world, then fatalism is impossible. However, first, quantum mechanics might be false (or incomplete) in this actual world; scientists have only clarified that quantum mechanics is empirically adequate.

Second, even if quantum mechanics is actually true and complete, this does not imply that fatalism is false. Note that causal determinism and fatalism must be distinguished as discussed in § 1, the Introduction, and that quantum mechanics is considered to only reject causal determinism even if quantum mechanics is in fact true and complete. In this paper, the term 'causal determinism' implies that the current state of the system was causally and uniquely determined by the past state of the system. Therefore, fatalism includes causal determinism, while causal determinism does not include fatalism (thus, if causal determinism is true, fatalism is also true; by contrast, even if fatalism is true, causal determinism may not necessarily be true). If quantum mechanics is true and complete, causal

---

fatalism immediately implies accepting fatalism; for, $\Diamond\Box A \rightarrow \Box A$ (S5). In addition, to prove $\Diamond\Box A$ is difficult.

determinism might be false (unless some kinds of interpretation—such as the many-worlds interpretation—hold true). Nevertheless, this does not necessarily imply that fatalism is also false.

It is possible that the current state was unavoidable even if the past state did not causally determine the current state (thus, the current state was unpredictable in principle). In the case of quantum mechanics, the meaning of 'the current state was unavoidable' could be ascertained as follows. Consider the situation where an observer obtains a definite value, *a*, of a physical quantity, *Q*, at the present time. If *Q* has already had the value *a* since any given time before *t*, then fatalism, as defined in this paper, holds. Here, it does not have to be predictable in the past that *Q* will take the value *a* when it is measured.

We now consider the following example to explain why such a situation is possible in the quantum world. Suppose there is a computer program that can produce a completely random series of binary values ('0' or '1'). Suppose that the probability that either '0' or '1' appears next in the series is exactly 0.5, and thus the average probability of all the values in the entire series occurring is 0.5. We instruct the program to produce a series with 100 elements from left to right on a piece of paper without observing the process. Then, we read the values on the paper from left to right after the program has finished printing them out. Since the only information related to the unseen values on the paper we know is that the probability of '1' appearing in the next element is 0.5 at any point in the series, we cannot know which value, '0' or '1', appears next on the paper before we read it. This, certainly, does not imply that both '0' and '1' exist (or that neither of them exists) before we read these values. The program has already printed the next value, '0' or '1' (the next value was definite before we read it). A similar process may occur in the quantum world. Even if the current state could not be predicted in principle from the past state, the current state might have already been unavoidable in the past (thus, fatalism might be true).

Actually, some interpretations of quantum mechanics, such as the modal interpretations, allow us to consider the quantum mechanical world as fatalistic even though it is not causally deterministic (Morita 2020). Thus, it is at least logically possible that the quantum world is fatalistic.

In addition, Brown (1985) and Morita (2020; 2022) point out that an interpretation of quantum mechanics that could be considered not fatalistic (the Copenhagen interpretation) is implausible because this interpretation presupposes extra-physical entities (e.g., mental entities). Let me explain why.

Suppose that the wave-function φ *completely* describes the *physical* state of the physical system S. Suppose also that the present time is t_0, and that $\varphi(t_1)$ is not an eigenfunction of a physical quantity, Q, in S, where t_1 is a future time. This means that the measurement value of Q at t_1 is indefinite at t_0. Since $\varphi(t_1)$ completely describes the physical state of S at t_1, the value of Q at t_1 is not only unpredictable but also has an indefinite value when t_0 is the present. Thus, this interpretation implies that the future is open (i.e., fatalism is false). Suppose that t_1 becomes the present. If one measures the value of Q at t_1, one can obtain a definite value of Q. Accordingly, $\varphi(t_1)$ becomes an eigenfunction of Q when t_1 is the present (although $\varphi(t_1)$ was not an eigenfunction when t_0 was the present).

Recall that we assume that the wave-function completely describes the physical state. Therefore, this situation shows that when the future time t_1 becomes the present time, the value of Q at t_1 actually changes from indefinite to definite. Note that this discrete change is a physical one (because, again, the wave-function completely describes the *physical* state). However, since the fundamental equation of quantum mechanics, the Schrödinger equation, is a continuous differential equation, it cannot describe this discrete change. If the measurement process is a purely physical one, there is no reason that the Schrödinger equation cannot apply to this process (in other words, there is no reason to distinguish the measurement process from other physical ones). Therefore, this process cannot be purely physical (it is the physical state that has changed, but the cause of the change is not purely physical). Note that I do not insist that this discontinuous process cannot be described mathematically. One can describe this process given an *extra* assumption (i.e., the projection postulate). However, the argument is that there is no reason to apply this postulate only to the measurement process since there is no reason that the measurement process can be distinguished from other physical processes (both are physical processes).

Nevertheless, one might object that the reason the Schrödinger equation cannot describe the measurement process is that this equation is applied only to a closed system, whereas the system in question, *S*, is not a closed system, because of its interaction with the measurement apparatus and the observer. Therefore, this interaction might cause indefinite values to become definite (thus, this process is actually continuous and is described only by the Schrödinger equation). Certain physicists and philosophers of physics try to explain the collapse of the wave-function by arguing that the interaction between the system and the measuring apparatus, including the observer, brings about this collapse (Myrvold 2018, § 2.3.2). However, supposing that the Schrödinger equation could completely describe the behavior of the wave-function of the whole system *S* and its environment system, including the measurement apparatus and observers, and that this equation could *deterministically* predict the state of this whole system, this would also mean that this world is causally deterministic. Therefore, if quantum mechanics is complete and the future is open, the measurement process that changes the indefinite value of Q into a definite value cannot be a purely physical process.

In conclusion, given that quantum mechanics is complete and that the wave-function completely describes the physical state, it is sure that the future is open. However, this also implies that there are extra-physical entities, and they causally influence measurement processes. Nevertheless, this conclusion is implausible. To avoid this conclusion (and to hold the completeness of quantum mechanics), we have to interpret that the wave-function describes our *knowledge* of the physical state (QBism and some kinds of modal interpretation), that we do not obtain one definite value by measurement (many-worlds interpretation), or that if the Schrödinger equation applies to the whole system, including the measurement apparatus and observers, the Schrödinger equation could deterministically predict the state of this whole system.[7] Thus, even if quantum mechanics is complete, it is still plausible that the future is *not* open. In addition, Morita (2022) shows that quantum mechanics should be interpreted as fatalistic unless mind-body dualism is true and mind interacts with body using a thought experiment.

Some might still object that I presuppose mind-body dualism is false, and that this supposition is not plausible. I do not reject that mind-body dualism can be true. However, what I should show is the logical possibility of fatalism. Even if mind can interact with body, this does not directly imply that fatalism is impossible. In addition, even if there is 'agent causation,' this too does not directly imply that fatalism is impossible because, again, fatalism in this paper is not causal determinism. Therefore, even if there is agent causation, which has no cause, it is possible that the agent causation

[7] Note that the Bohm interpretation assumes a kind of hidden variable (thus, quantum mechanics is incomplete).

that appears now has been determined in the past.

Therefore, [P4] is acceptable enough. Accordingly, if anti-fatalists would like to deny [P4], then the burden of proof (of the falsity of [P4]) is on them.

4. Objections and Answers

Trueman (2021) offers two objections to Jago's (2020) and Loss's (2021) arguments. Note that I have slightly revised his objections to fit the argument of this paper.

4.1. Objection and answer 1

The knowability paradox (Fitch's paradox) is as follows. If one accepts that for A (every truth), A can be known to anyone, then A is known to someone. However, it is clearly false that every truth is known to someone and thus it is impossible that every truth can be known; Trueman (2021) applies this reasoning. Namely, if there is at least one current truth that it was not unavoidable in the past that it would be true now, it is impossible that, for every current truth, it was unavoidable in the past that it would be true now.

Answer. It is certain that if there is a truth that was not unavoidable in the past, then it must be concluded that it is impossible that every truth was unavoidable in the past, according to the NAF. However, there remains the problem of which is more plausible. First, there are no clear or even plausible counterexamples to fatalism, however, as mentioned in § 1, the Introduction, there are some logical arguments that support fatalism (they surely assume some doubtful premises, however, these premises are not logically impossible; thus, fatalism is, at least, logically possible). Furthermore, there are no arguments that demonstrate the impossibility of fatalism (as discussed in the previous section, quantum mechanics does not offer a counterexample against fatalism). Accordingly, the logical possibility of fatalism is more plausible than is the existence of a truth that was not unavoidable in the past.

Regarding the knowability paradox, the statement that every truth is known to someone is clearly false (e.g., no one knows how many living things on Earth have died today). Likewise, regarding truthmaker maximalism, it is certain that some plausible (though not evident) counterexamples exist; for example, negative truths may have no truthmakers (although some hold the view that negative truths do have truthmakers). However, typical challenges to logical fatalism do not provide counterexamples. Opponents of fatalism have, instead, only shown the premises used in extant arguments to be dubious. For example, if the future does not exist, the PBF can be false (however, it is not certain that the future does not exist).

4.2 Objection and answer 2

Trueman's second objection is as follows. One can prove that no truth was unavoidable in the past, along the same lines as the NAF (we call this argument 'the argument for an open future'). For example, let us replace $\mathbb{F}$ with $\mathbb{O}$ in the NAF. $\mathbb{O}A$ signifies that, for the current truth A, it was not unavoidable that A is true now or in the past. If one accepts the logical possibility that no truth was unavoidable, one has to accept that no truth was unavoidable.

Answer. The point of Trueman's second objection is that one can exchange premise [P2] $\mathbb{F}A \rightarrow A$ for another: $\mathbb{O}A \rightarrow A$ (we call this premise [P2*]). However, $\mathbb{O}A \rightarrow A$ is clearly at least not always true because even if $\mathbb{O}A$ were true, it is not guaranteed that A is true now, since it was not unavoidable that A is true now.

In addition, if we consider that $\mathbb{O}A$ means that A is true, and it was not unavoidable for A to be true, it is certain that $\mathbb{O}A \rightarrow A$ is true. However, in this case, $\mathbb{O}(A \wedge B) \rightarrow \mathbb{O}A \wedge \mathbb{O}B$ (we call this premise [P1*]) is not always true. For, even if $A \wedge B$ were true and it was not unavoidable that $A \wedge B$, it could be the case that A is true and A being true was unavoidable, while B is true and B being true was not unavoidable. Therefore, Trueman's second objection does not hold.

Furthermore, unlike the NAF, this argument (the argument for an open future) has a counterexample (the conclusion is false). Even if the interpretation of quantum mechanics that the future is open (the Copenhagen interpretation), which we have rebutted in § 3, is true, there are currently true propositions that were unavoidable to be true. Suppose that one measures the value of Q at t_2, and obtained a definite value, a. Suppose also that a wave-function, $\varphi(t_2)$, was already an eigenfunction of Q, and its eigenvalue was a at t_3 ($< t_2$). In this case, the fact that one obtains the definite value a at t_2 was already unavoidable at t_3, even if the Copenhagen interpretation is true.[8]

Therefore, one must accept at least one of the following propositions: (1) an open future is logically impossible (because the conclusion of the argument for an open future is false); (2) premise [P1*] is false; and (3) the achievement of modern physics is false. If one accepts (1), this follows that fatalism is true because premise [P4] in the NAF is true. If one accepts (2), then the argument for an open future does not hold. Consequently, if one would like to support the argument for an open future, then they must accept (3).

[8] The Einstein–Podolsky–Rosen experiment is an example of such a situation (Einstein et al. 1935; Bohm 1951, 614ff.).

However, this is highly implausible compared to the other choices.

5. Unavoidable Future

Finally, some might complain about my definition of fatalism [F]. This definition does not state that whatever will happen *in the future* is already *unavoidable* ([F_0]). I myself consider that the logical proof that it was already unavoidable in the past that every current truth would currently be true is a significant contribution to the philosophy of time, life, and free will, and other forms of philosophical pursuits, as mentioned in § 1, the Introduction.[9] For example, if it was already unavoidable in the past that what happens now would happen now, then a person's attitude toward negative events might differ from someone who considers such events contingent. In addition, certainly, this conclusion strongly influences the discussion of the existence of free will. However, I try to answer the above dispute through the following example.

Let us suppose that today is February 1, 2023. Suppose also that a proposition A is 'I write this section of the paper on February 1, 2023.' Based on the NAF, 'it was unavoidable in the past (e.g., on February 1, 1923) that A is now (February 1, 2023) true when today is February 1, 2023.' Let us call this proposition P_1. Next, suppose that today is February 1, 1923. To state that a future event is *not* unavoidable now ([F_1] is false) means that proposition P_2—

[9] Regarding the relationship between the philosophy of time and fatalism, see, for example, Diekemper (2007). Although at first glance the B-theory, which insists that flow of time is unreal and the future already exists, implies fatalism, Diekemper (2007) insists that the B-theory can support an open future view.

that 'it is unavoidable that *A* will be true on February 1, 2023 when today is February 1, 1923'—is false (namely, [F_1] is false). However, suppose that P_2 is false, while P_1 is true (i.e., [F_1] is false, while [F] is true). Then 'it is *not* unavoidable on February 1, 1923 that *A* will be true on February 1, 2023 when today is February 1, 1923' is true, and 'it was unavoidable on February 1, 1923 that *A* is true on February 1, 2023 when today is February 1, 2023' is also true. This is clearly implausible.

Note that I do not assume the TUM (an impossible proposition cannot follow from a possible one). Suppose that today is February 1, 2023; then, it can be said that it is unavoidable that *A* (I write this section of the paper on February 1, 2023) will always be true in the future (call this proposition R_1) if one accepts the necessity of past truths. However, it does not follow from R_1 that it was unavoidable that *A* is true (call this proposition R_2), without accepting the TUM. Therefore, at first glance, I seem to assume the TUM in the above discussion. Nevertheless, when '*A* is true' is unavoidable, it differs at R_1 and R_2: that is, at R_1, '*A* is true' is unavoidable since today, while '*A* is true' was already unavoidable before today at R_2. However, when '*A* is true' is unavoidable, it is the same at P_1 and P_2 (in 1923, or more exactly, at an arbitrary time in the past). If the time when it is unavoidable that '*A* is true' is fixed, then it is irrelevant when the present is. Therefore, if one can state in the future that 'it was unavoidable that *A* is true now,' one can also state that 'it is now unavoidable that *A* will be true in the future if *A* is true in the future.'

In addition, I do not assume the PBF in advance; the PBF follows from the NAF because it is already unavoidable now that future true propositions will be true in the future.

6. Summary

In this paper, I provide a new argument for fatalism. This argument does not assume controversial premises such as the principle of bivalence for future propositions or the necessity of past truths. However, some might question a premise my argument assumes; namely, that it is logically possible that for each current truth A in this actual world, it was unavoidable in the past that A would be true now. This means that there is at least one possible world where A being true now was already unavoidable in the past among the possible worlds where every current truth A in this actual world is true now. Some might criticize this premise by highlighting that the quantum mechanics world seems to be indeterministic. However, fatalism and causal determinism (or predictability of the future) are different. Even if quantum mechanics is true and complete, it is logically possible that the quantum mechanics world is fatalistic.

Acknowledgments

I would like to thank two anonymous reviewers for their helpful comments. I also would like to thank Editage (www.editage.com) for English language editing. This work was supported by JSPS KAKENHI (Grant Number JP19H01187).

References

BOHM, D. *Quantum Theory*. New York: Dover Publication, 1951.

BROWN, J. R. "Von Neumann and the anti-realists". *Erkenntnis*, 23, pp. 149–159, 1985.

DIEKEMPER, J. "B-theory, fixity, and fatalism". *Noûs,* 41(3), pp. 429–452, 2007. doi: 10.1111/j.1468-0068.2007.00654.x

EINSTEIN, A., PODOLSKY, B., ROSEN, N. "Can quantum-mechanical description of physical reality be considered complete?". *Physical Review,* 47, pp. 777–780, 1935. doi: 10.1103/PhysRev.47.777

EMERY, N., MARKOSIAN, N., SULLIVAN, M. "Time". In *Stanford Encyclopedia of Philosophy (Winter 2020 Edition)*, E. N. Zalta (ed.), 2020. https://plato.stanford.edu/archives/win2020/entries/time/

JAGO, M. "A short argument for truthmaker maximalism". *Analysis,* 80(1), pp. 40–44, 2020. doi: 10.1093/analys/anz064

LOSS, R. "There are no fundamental facts". *Analysis,* 81(1), pp. 32–39, 2021. doi: 10.1093/analys/anaa008

MACKIE, P. "Fatalism, incompatibilism, and the power to do otherwise". *Noûs,* 37(4), pp. 672–689, 2003.

MCKENNA, M., COATES, D. J. "Compatibilism". In *Stanford Encyclopedia of Philosophy (Fall 2021 Edition),* E. N. Zalta (ed.), 2021. https://plato.stanford.edu/archives/fall2021/entries/compatibilism/

MORITA, K. "Did Bohr succeed in defending the completeness of quantum mechanics?". *Principia: An International Journal of Epistemology,* 24(1), pp. 51–63, 2020. doi: 10.5007/1808-1711.2020v24n1p51

MORITA, K. "Why the future cannot be open in the quantum world". *Principia: An International Journal of*

Epistemology, 26(3), pp. 585–595, 2022. doi: 10.5007/1808-1711.2022.e84794

MYRVOLD, W. "Philosophical issues in quantum theory". In *Stanford Encyclopedia of Philosophy (Fall 2018 Edition),*E. N. Zalta (ed.), 2018. https://plato.stanford.edu/archives/fall2018/entries/qt-issues/

ØHRSTRØM, P., HASLE, P. "Future contingents". In *Stanford Encyclopedia of Philosophy (Summer 2020 Edition),* E. N. Zalta (ed.) (2020). https://plato.stanford.edu/archives/sum2020/entries/future-contingents/

RICE, H. "Fatalism". In *Stanford Encyclopedia of Philosophy (Winter 2018 Edition),* E. N. Zalta (ed.) (2018). https://plato.stanford.edu/archives/win2018/entries/fatalism/

SALERNO, J. "Introduction". In J. Salerno (ed.) (2009), pp. 1–10.

TRUEMAN, R. "Truthmaking, grounding, and Fitch's paradox". *Analysis,* 81(2), pp. 270–274, 2021. doi: 10.1093/analys/anaa042

ZAGZEBSKI, L. "Foreknowledge and free will". In *Stanford Encyclopedia of Philosophy (Spring 2021 Edition),* E. N. Zalta (ed.), 2021. https://plato.stanford.edu/archives/spr2021/entries/free-will-foreknowledge/