Received: 14 June 2019 | Revised: 12 March 2020 | Accepted: 22 July 2020

DOI: 10.1002/tht3.461

ORIGINAL ARTICLE

THOUGHT A JOURNAL OF PHILOSOPHY WILEY

Free will as a higher-level phenomenon?

Alexander Gebharter

Department of Theoretical Philosophy, University of Groningen, Groningen, Netherlands

Correspondence
Alexander Gebharter, Department of Theoretical Philosophy, University of Groningen, Oude Boteringestraat 52, 9712 GL Groningen, Netherlands.
Email: alexander.gebharter@gmail.com

Abstract

List (2014, 2019) has recently argued for a particular view of free will as a higher-level phenomenon compatible with determinism. According to List, one could refute his account by showing that determinism at the physical level implies the impossibility of doing otherwise at the agential level. This paper takes up that challenge. Based on assumptions to which List's approach is committed, I provide a simple probabilistic model that establishes the connection between physical determinism and the impossibility of doing otherwise at the agential level that is needed to refute free will as a higher-level phenomenon.

KEYWORDS

determinism, free will, levels, probabilistic models, the possibility of doing otherwise

1 | INTRODUCTION

One of the central questions within the philosophical freedom debate is whether there could be free will in a deterministic world. Philosophers have proposed a multitude of strategies to render freedom and determinism compatible. Since the ability to do otherwise seems to be difficult to combine with determinism, many of these approaches redefine free will in such a way that it does not presuppose this ability anymore (see, e.g., Dennett, 1984; Frankfurt, 1969; Watson, 1975). Others have suggested to reinterpret the ability to do otherwise. Some philosophers propose a conditional analysis (see, e.g., Ayer, 1954; Moore, 1912). For them an agent has the ability to do otherwise if she would have succeeded in doing otherwise had she chosen to do otherwise. Others prefer a dispositional analysis saying that an agent possesses the

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.
© 2020 The Author. *Thought: A Journal of Philosophy* published by The Thought Trust and Wiley Periodicals LLC.

disposition to do otherwise, when in the right circumstances, she tries to do otherwise (see, e.g., Fara, 2008).

One problem basically all of the approaches mentioned share is that the different notions of freedom they propose do not seem to be strong enough; they seem to fail in reflecting what we have in mind when speaking of free will or making responsibility ascriptions. I agree with List (2014) that, because of this, a modal notion of freedom in the sense of having the possibility of doing otherwise is still something desirable. Ascribing the ability to do otherwise to an agent in this modal sense means that the agent possesses the outright possibility of acting otherwise. This implies that there is more than one way in which the actual world might unfold holding everything else constant, that is, given the actual past and the laws of nature. Recently, List (2014, 2019) claimed that such a modal notion of freedom might still be compatible with determinism.[1] He argues that even if we assume determinism at the fundamental physical level, there might be room for the possibility of doing otherwise at the higher level—let us call it with List the agential level—at which deliberation and decision-making happen. List argues that for evaluating whether we possess freedom of will, only the possibility of doing otherwise at the agential level is relevant, and that determinism at the physical level allows for that. One way to refute his account consists in showing that the impossibility of doing otherwise at the agential level actually—and contrary to what List argues for—follows from determinism at the physical level. The present paper takes up that challenge. I provide a simple probabilistic model to establish the connection between physical determinism and the impossibility of doing otherwise that is needed to refute freedom as a higher-level phenomenon. I will use several assumptions to which List's account is committed in constructing this model and show that once one inputs physical determinism into the model, the impossibility of doing otherwise at the agential level follows.

The paper is structured as follows: In Section 2 I present List's (2014) account of free will as a higher-level phenomenon. I also list several assumptions to which the account is committed and indicate which ones will become relevant for my argument later on. In Section 3 I develop a simple probabilistic model that combines the fundamental physical level and the agential level. The model will also comprise most of the commitments of List's account introduced in Section 2. I then show that once one adds determinism at the physical level into the mix, the impossibility of doing otherwise at the agential level falls out the model. I conclude in Section 4.

2 | LIST ON FREE WILL IN A DETERMINISTIC WORLD

In this section I will, first, present the assumptions List (2014) makes to support the possibility of doing otherwise at the agential level, and, second, sketch his argument for freedom as a higher-level phenomenon. I start with the general metaphysical framework his account presupposes (List, 2014, p. 167): non-reductive physicalism. Non-reductive physicalism consists of the following three main theses (cf. Kim, 2005, p. 33): Higher-level entities and properties are ontologically non-identical (and not reducible) to fundamental physical entities and properties,[2] they supervene on physical entities and properties, and they are indispensable for causal explanations in the special sciences. For easier reference, let us attach a label to each of these assumptions:

(ONI) Higher-level entities and properties are ontologically nonidentical (and not reducible) to fundamental physical entities and properties.

(SUP) Higher-level entities and properties supervene on physical entities and properties.

(ICE) Higher-level entities and properties are indispensable for causal explanations in the special sciences.

(ONI) drives an ontological wedge between the fundamental physical level and higher levels; it guarantees an ontological difference of the agential and the fundamental physical level. Without this ontological difference, assuming determinism for the fundamental physical level would amount to assuming determinism for the agential level as well, and the possibility of doing otherwise for the agent would be excluded from the beginning. **(SUP)** establishes a minimal constraint on how the agential level and the fundamental physical level are connected. Supervenience rules that every change at the agential level is necessarily associated with a change at the fundamental physical level, and that the fundamental physical entities and properties determine their corresponding entities and properties at any higher level (cf. McLaughlin & Bennett, 2018). **(ICE**) finally states that agential level entities and properties are relevant for causal explanations in the special sciences. It expresses the fact that higher-level sciences do not seem to get along with causal explanations in purely physical terms. Contrary to **(ONI)** and **(SUP)**, **(ICE)** will play no role for my argument in Section 3 and I will bracket it from now on.

Another ingredient List (2014, p. 162) subscribes to in the course of his argument for freedom as a higher-level phenomenon is multiple realizability, which allows for agential states to be compatible with more than one physical state[3]:

(MR) There is typically more than one physical state that gives rise to the same agential state; not every variation in the physical state needs to bring about a variation in the agential state.

Also **(MR)** will not be essential for my argument. However, to make it clear that **(MR)** is actually not of any help in arguing for freedom as a higher-level phenomenon, I will implement it into the model to be developed in Section 3 nevertheless.

Now one of the main threats to free will in a deterministic world comes from an incompatibilist argument that roughly runs as follows (List, 2014, p. 160)[4]:

Premise 1: Free will requires that more than one alternative course of action is possible for the agent.

Premise 2: Determinism implies that only one alternative course of action is possible for the agent.

Conclusion: If determinism is true, then free will does not exist.

List (2014) basically accepts **Premise 1**. To save free will in a deterministic world he has, as a consequence, to attack **Premise 2**. He does so by spelling out in more detail what might be meant with the phrase "possible for the agent" that occurs in both premises. According to List, "possible for the agent" means "possible at the agential level." **Premise 1** then expresses List's understanding of freedom as a higher-level phenomenon: For an agent to be free she has to be

able to do otherwise at the agential level. In other words: There has to be more than one alternative course of action possible for her at the agential level. Under this interpretation, however, **Premise 2** might turn out to be false, because determinism is typically not assumed to hold for all levels, but, first and foremost, for the fundamental physical level. An alternative premise that would obviously be true is the following one (List, 2014, p. 161):

> **Premise 2***: Determinism implies that only one future sequence of events is physically possible.

But replacing **Premise 2** with **Premise 2*** in the argument above would clearly not lead to the problematic **Conclusion** anymore. **Conclusion** would only follow if there being only one future sequence of physically possible events implies that there is also only one alternative possible course of action for the agent. Whether this implication holds, so List (2014) argues, depends on the specific metaphysical position to which one subscribes. He argues that if one subscribes to non-reductive physicalism—i.e., to **(ONI)**, **(SUP)**, and **(ICE)**—and **(MR)** holds, then the implication does not hold. So there seems to be room for freedom as a higher-level phenomenon. Different courses of action at the agential level are still possible, even if the fundamental physical level is fully deterministic.

Figure 1a,b can be used to illustrate how free will and determinism are intended to become compatible in List's (2014) view. The small dots in (a) stand for different possible physical states, the large dots in (b) for different possible agential states. Lines connecting dots represent their possible world histories.[5] Agential states supervene on and are multiply realizable by physical states. Now let us assume that all small dots in one of the rectangular fields in (a) realize the

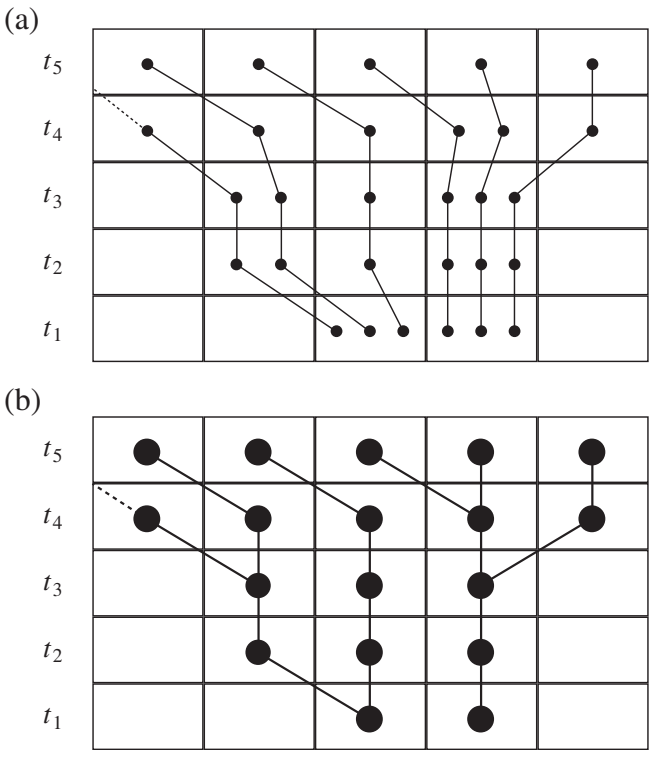

FIGURE 1 World histories at the physical level (a) and corresponding world histories at the agential level (b); reproduced from (List, 2014, p. 166)

same large dot in the corresponding rectangular field in (b). Finally, we assume determinism for the physical level. This amounts to the fact that there is no branching in any of the possible world histories in (a). Such branchings exist, however, in some of the world histories at the agential level. For the agent whose agential state at t_1 is represented by the large dot in the box in the middle of line t_1 in (b), for example, there are three possible alternative future courses of action. Though we have determinism at the fundamental physical level, this agent would have the possibility of doing otherwise at the agential level, which is, according to List, everything required for free will.

Before we go on, let us briefly reflect about what exactly List's (2014) argument should establish. We can distinguish between two different philosophical projects here:

(i) establishing that free will is possible if determinism is true

(ii) establishing that an agent can feel free if determinism is true

Clearly, List's (2014) argument sketched above is intended to establish the first project. He is explicitly interested in metaphysics and in countering the incompatibilist argument presented above. The latter does not aim at ruling out that an agent can experience free will if determinism is true, but at establishing the metaphysical incompatibility of free will and determinism. Hence, the epistemic possibility that an agent might not know how exactly an agential state is physically realized is not relevant for List's point at all. I will come back to the distinction between these two different projects later on in Section 3.

3 | A SIMPLE PROBABILISTIC MODEL

In this section I will develop a simple probabilistic model that captures both, the physical level and the agential level, and that involves the assumptions introduced in Section 2 to which List's (2014) view of freedom as a higher-level phenomenon is committed. I use six random variables A_0, A_1, A_2, P_0, P_1, P_2. A_0, A_1, A_2 are intended to represent the agential level and P_0, P_1, P_2 to represent the fundamental physical level. Using different variables for the agential level than for the fundamental physical level reflects the assumption that agential entities and properties are ontologically different from fundamental physical entities and properties expressed in **(ONI)**.

Each value of one of the variables A_i (with $0 \leq i \leq 2$) shall stand for a state an agent might be in at a certain time t_i. In addition, we assume that for every possible state the agent might be in at t_i there is a corresponding value of A_i. Note that A_0, A_1, A_2 can be used to represent possible world histories at the agential level. A possible world history at the agential level corresponds to an instantiation $A_0 = a_0$, $A_1 = a_1$, $A_2 = a_2$ such that $P(a_0, a_1, a_2) > 0$.[6] This means that every path of an agent through a compatible combination of possible states a_0, a_1, a_2 (i.e., through states a_0, a_1, a_2 whose joint probability is greater than 0) is a possible world history. We can graphically represent such a possible world history at the agential level as a_0—a_1—a_2. Now we have determinism at the agential level if all the conditional probabilities $P(a_1|\, a_0)$ and $P(a_2|\, a_1)$ are extreme, that is, are either 1 or 0. Since extreme conditional probabilities $P(y|\, x) = 1$ render an X-value x compatible with only one Y-value y, such extreme probabilities would clearly exclude branching in any one of the possible world histories and, hence, would imply the impossibility of doing otherwise for the agent. We do—in accordance with List (2014)—leave it open whether determinism rules the agential level.

The values p_0, p_1, and p_2 of the variables P_0, P_1, and P_2, respectively, shall describe the fundamental physical states a certain physical system might be in at times t_0, t_1, and t_2.[7] Also P_0, P_1, P_2 can represent possible world histories, but this time at the fundamental physical level. World histories can, again, be graphically represented by p_0—p_1—p_2, where a world history is possible if $P(p_0, p_1, p_2) > 0$. And, again, we get determinism at the physical level if all the conditional probabilities $P(p_1 | p_0)$ and $P(p_2 | p_1)$ are extreme, which would imply that there is no branching in possible world histories at the fundamental physical level. Let us from now on—and in accordance with List (2014)—assume determinism for the fundamental physical level.

Let us come to supervenience next. According to **(SUP)**, entities and properties at the agential level supervene on physical entities and properties. We assume that A_0 supervenes on P_0, that A_1 supervenes on P_1, and that A_2 supervenes on P_2. Note that assuming supervenience demands at least the following constraints on our probability distribution (cf. Gebharter, 2017), where $0 \leq i \leq 2$:

$$\forall a_i \forall a_i' \exists p_i : \text{If } a_i \neq a_i', \text{then } P(p_i|a_i) \neq P(p_i|a_i') \tag{1}$$

$$\forall p_i \exists a_i : P(a_i|p_i) = 1 \tag{2}$$

Equation (1) states that whenever the value of one of the agential level variables A_i changes, also the probability distribution over A_i's supervenience base P_i has to change. And Equation (2) captures the fact that conditioning on any value of one of the physical variables P_i will force the corresponding agential level variable A_i to take a specific value a_i with probability 1. Note that Equations (1) and (2) are not intended as a definition of supervenience, but rather as implications of assuming supervenience for our probabilistic model. In fact, they are weak enough to represent any one of the prevalent notions of supervenience in probabilistic terms.

Let us finally implement the last one of the four commitments introduced in Section 2: multiple realizability. According to **(MR)**, some agential states must be multiply realizable by fundamental physical states. Thus, multiple realizability gives us the following constraint on our probability distribution, where $0 \leq i \leq 2$:

$$\exists p_i \exists a_i : 0 < P(p_i|a_i) < 1 \tag{3}$$

Equation (3) says that some states of some agential variable A_i do not fully determine the value of their corresponding physical level variable P_i, or, in other words, that some agential states are compatible with more than just one fundamental physical state.

Note that until now we did not make any assumptions about determinism/indeterminism at the agential level. Recall that, according to List (2014), whether the incompatibilist argument presented in Section 2 goes through hinges on whether there only being one future sequence of physically possible events implies that there is also only one course of action that is possible for the agent. To decide whether this implication holds and whether the argument goes through, we have to translate **Premise 1**, **Premise 2**, and **Premise 2*** into the language of our probabilistic model:

Premise$_P$ 1: Free will requires that there is branching in possible world histories at the agential level.

Premise$_P$ 2: If the conditional probabilities $P(p_1 | p_0)$ and $P(p_2 | p_1)$ are extreme, then there is no branching in possible world histories at the agential level.

Premise$_P$ **2***: If the conditional probabilities $P(p_1|\, p_0)$ and $P(p_2|\, p_1)$ are extreme, then there is no branching in possible world histories at the fundamental physical level.

The translation of **Premise 1** into the language of the model is quite straightforward. It directly reflects the idea of freedom as an agential-level phenomenon which requires that more than one future course of action is possible at the agential level. **Premise**$_P$ **2*** turns out to be an analytic truth. That there is no branching in possible world histories at the fundamental physical level directly follows from the definition of possible world histories and the assumption that the conditional probabilities $P(p_1|\, p_0)$ and $P(p_2|\, p_1)$ are extreme. This nicely reflects the view—that also List (2014, p. 161) shares—that determinism first and foremost means that there are no physically possible alternatives. Now the big question is whether **Premise**$_P$ **2** fares better. According to List, **Premise**$_P$ **2** is not an analytic truth and, in fact, can be false. Let us check whether this is actually possible from the viewpoint of our probabilistic model. Until now we have established the following probabilistic constraints:

$$\begin{aligned} P(p_1|p_0) = 1/0 \quad & P(a_0|p_0) = 1/0 \\ P(p_2|p_1) = 1/0 \quad & P(a_1|p_1) = 1/0 \\ & P(a_2|p_2) = 1/0 \end{aligned}$$

Note that further specifying these constraints does not suffice to specify a full probability distribution over $\{A_0, A_1, A_2, P_0, P_1, P_3\}$. This can easily be seen as follows: Conditional probabilities of 1 and 0 do not change when conditioning on additional variables. On the basis of this observation we can reduce the probabilistically valid chain rule formula

$$\begin{aligned} P(p_0,p_1,p_2,a_0,a_1,a_2) = P(p_0)\cdot P(p_1|p_0)\cdot P(p_2|p_0,p_1)\cdot \\ P(a_0|p_0,p_1,p_2)\cdot P(a_1|p_0,p_1,p_2,a_0)\cdot P(a_2|p_0,p_1,p_2,a_0,a_1) \end{aligned} \tag{4}$$

for arbitrarily chosen values p_0, p_1, p_2, a_0, a_1, a_2 to

$$\begin{aligned} P(p_0,p_1,p_2,a_0,a_1,a_2) = P(p_0)\cdot P(p_1|p_0)\cdot P(p_2|p_1)\cdot \\ P(a_0|p_0)\cdot P(a_1|p_1)\cdot P(a_2|p_2). \end{aligned} \tag{5}$$

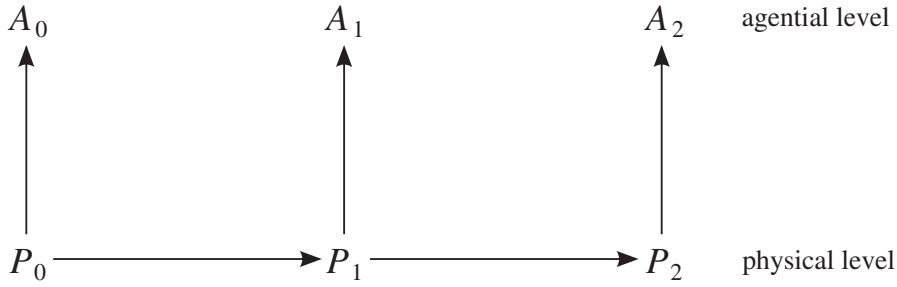

FIGURE 2 Bayesian network structure of the probabilistic model; all parameters except $P(p_0)$ are defined by the probabilities in the table

Equation (5) allows us to construct the Bayesian network in Figure 2 as a device for graphically illustrating our model's dependence structure.[8] The Bayesian network and the fact that we can reduce Equation (4) to Equation (5) make it clear that for a full probability distribution we need not only to further specify the constraints above, but also the probabilities $P(p_0)$ for the model's only exogenous variable P_0. To get a better grasp on what is going on, assume that each agential variable is binary (0,1), while each physical variable has three values (0,1,2). The probabilistic constraints above could, for example, then be further specified as follows[9]:

$$P(P_1 = 0 | P_0 = 0) = 1 \qquad P(A_0 = 0 | P_0 = 0) = 1$$
$$P(P_1 = 1 | P_0 = 1) = 1 \qquad P(A_0 = 1 | P_0 = 1) = 1$$
$$P(P_1 = 2 | P_0 = 2) = 1 \qquad P(A_0 = 1 | P_0 = 2) = 1$$
$$P(P_2 = 0 | P_1 = 0) = 1 \qquad P(A_1 = 0 | P_1 = 0) = 1$$
$$P(P_2 = 1 | P_1 = 1) = 1 \qquad P(A_1 = 1 | P_1 = 1) = 1$$
$$P(P_2 = 2 | P_1 = 2) = 1 \qquad P(A_1 = 1 | P_1 = 2) = 1$$
$$P(A_2 = 0 | P_2 = 0) = 1$$
$$P(A_2 = 0 | P_2 = 1) = 1$$
$$P(A_2 = 1 | P_2 = 2) = 1$$

These probabilities seem—at least at first glance—to still allow for branching of possible world histories at the agential level. If we specify $P(P_0 = 0) = 0.2$, $P(P_0 = 1) = 0.3$, and $P(P_0 = 2) = 0.5$, for example, one can easily verify that our model satisfies **(SUP)**—by satisfying Equations (1) and (2)—and **(MR)**. In addition, the extreme conditional probabilities $P(p_1 | p_0)$ and $P(p_2 | p_1)$ seem to account for the assumption of determinism at the fundamental physical level. On the other hand, not all of the corresponding agential level conditional probabilities $P(a_1 | a_0)$ and $P(a_2 | a_1)$ are extreme. In particular, the conditional probabilities $P(A_2 = 0 | A_1 = 1)$ and $P(A_2 = 1 | A_1 = 1)$ can be computed as 0.375 and 0.625, respectively. Accordingly, the joint probabilities $P(A_0 = 1, A_1 = 1, A_2 = 0)$ and $P(A_0 = 1, A_1 = 1, A_2 = 1)$ are both greater than 0 and the probability distribution specified above gives rise to the possible world histories depicted in Figure 3. There is branching in the possible world histories at the agential level at $A_1 = 1$, which seems to support List's (2014) claim that determinism at the fundamental physical level does not imply

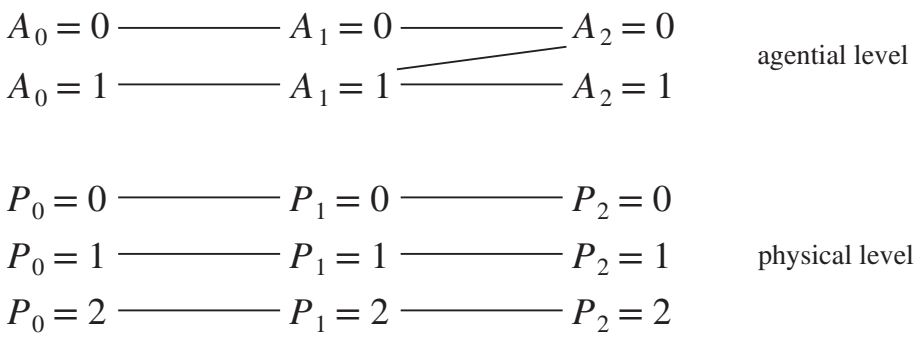

FIGURE 3 Possible world histories at the agential and the fundamental physical level

that there is only one possible future course of action available for the agent. So the model seems to support the possibility of freedom as a higher-level phenomenon, at least at first glance.

Let us once more think about the distribution over the model's only exogenous variable P_0. Above we chose all probabilities $P(p_0)$ as non-extreme, that is, as $0 < P(p_0) < 1$. But is this move really justified? To answer this question, recall the distinction between the following two different philosophical projects introduced in Section 2:

(i) establishing that free will is possible if determinism is true

(ii) establishing that an agent can feel free if determinism is true

The first project is the one explicitly pursued by List (2014). The problem is that going for non-extreme probabilities $P(p_0)$ only makes sense if List were interested in the second project (which he is not). When pursuing the second project the probabilities would not indicate the actual physical state (modeled by P_0), but rather the agent's knowledge (or lack of knowledge) about that state. The model could then explain the agent's experience of free will: As we saw earlier, non-extreme probabilities $P(p_0)$ allow for branching at the agential level. Thus, the agent would feel free because her lack of knowledge of (or epistemic access to) the actual physical state generates the subjective impression that there actually are different future paths for her to choose at the agential level. But recall that we are—in accordance with List—interested in metaphysics here. Thus, List is committed to the first project and, hence, to full blown determinism at the fundamental physical level regardless of what the agent knows or might know about the world's actual physical state. But if determinism is true for the fundamental physical level, then the world has to be in a particular physical state at any point in time. This means that P_0 has to take exactly one of its three values and that which value P_0 takes is fully determined by the actual past and the laws of nature. To arrive at an adequate model for evaluating the success of List's project—which is, again, the first project—we have, thus, to choose the probabilities $P(p_0)$ as extreme too. There are three possible ways to do that: (a) $P(P_0 = 0) = 1$, (b) $P(P_0 = 1) = 1$, or (c) $P(P_0 = 2) = 1$. These specifications result in the following corresponding possible world histories at the agential level:

$$P(A_0 = 0, A_1 = 0, A_2 = 0) = 1$$
$$P(A_0 = 1, A_1 = 1, A_2 = 0) = 1$$
$$P(A_0 = 1, A_1 = 1, A_2 = 1) = 1$$

Thus, replacing the non-extreme probabilities $P(p_0)$ by extreme probabilities, as determinism and the metaphysical project demand, forces the possible world histories at the agential level to collapse to a single world history and, hence, destroys any branching in possible world histories at the agential level. (For a graphical illustration, see Figure 4.)

So in the end also **Premise**$_P$ **2** turns out as an analytic truth about determinism. If determinism is true, then the past and the laws of nature force the system to be in a certain physical state p_0 at time t_0 and also the system's states p_1 and p_2 at t_1 and t_2, respectively, are fully determined. The interesting thing to observe here is that determinism together with Equation (2) suffices for **Premise**$_P$ **2** to come out as true. If a physical system on

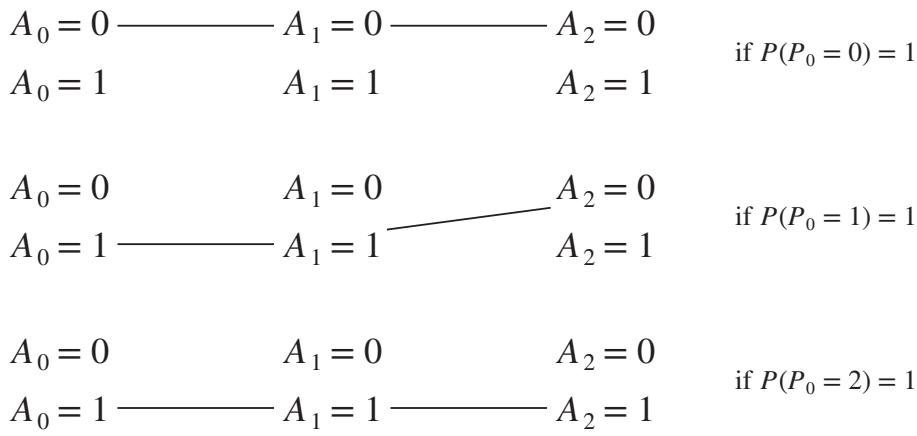

FIGURE 4 Possible world histories at the agential level if the distribution over P_0 is extreme

which an agent's behavior at the agential level supervenes is in a certain state p_0 at t_0, then not only the development of that system at the fundamental physical level, but also the states in which the agent will be at t_0, t_1, and t_2 at the agential level are fully determined. In other words: If the agent is in a certain physical state p_0 at t_0—as determinism demands—, then her possible future courses of action collapse to a single one and there is no possibility of doing otherwise at any level. It then follows with **Premise**$_P$ **1** that there is no room for freedom as a higher-level phenomenon in the sense of List (2014).

4 | CONCLUSION

In this paper I argued against the view recently put forward by List (2014) that a notion of freedom that is committed to the ability to do otherwise interpreted in a modal sense is compatible with determinism if freedom is understood as a higher-level phenomenon. According to List, his account can be refuted by showing that the impossibility of doing otherwise at the agential level follows from the assumption of determinism at the fundamental physical level. In this paper, I took up this challenge. I built a simple probabilistic model that combines both, the agential level and the physical level, and that implements the assumptions List's view makes. It could then be shown that, once one adds physical determinism into the mix, the model outputs that it is not possible to do otherwise at the agential level. Once the actual state of the world at the physical level is taken into account, the agent's possibilities to act at the higher level collapse to a single one. Hence, in a deterministic world there is still no room for the strong kind of freedom List desires.[10]

ACKNOWLEDGEMENTS

I would like to thank Sander Beckers, Christian J. Feldbacher-Escamilla, Christian List, Christian Loew, Gerhard Schurz, and Maria Sekatskaya for important discussions. Thanks also to two anonymous reviewers for helpful comments.

ORCID

Alexander Gebharter https://orcid.org/0000-0003-1708-2949

ENDNOTES

[1] Since the arguments provided in List (2014, 2019) are essentially the same, I focus on the more compact presentation in List (2014) throughout the paper.

[2] When speaking of higher-level entities and properties I basically mean all kinds of entities and properties not described by fundamental physics. Examples for higher-level entities are agents, societies, biological organisms, and billiard balls. Examples for higher-level properties are all kinds of mental or psychological, biological, and chemical properties.

[3] An agential state can be understood as an instantiation of agent-level properties for a particular agent, and a physical state as an instantiation of physical properties for a particular physical system.

[4] For much more sophisticated discussions of incompatibilist arguments of this kind, see, for example, (Hausmann, 2019; Kapitan, 2002; van Inwagen, 1975, 1983).

[5] World histories are temporal paths of the agent (or system of interest) through her (or its) possible agential (or physical) states.

[6] The a_i (with $0 \leq i \leq 2$) are individual variables ranging over the values of the corresponding random variables A_i.

[7] Again, the p_i (with $0 \leq i \leq 2$) are individual variables ranging over the possible values of variables P_i.

[8] A structure like the one in Figure 2 is called a Bayesian network if the probability distribution over its variables X_1, ..., X_n satisfies the Markov factorization: $P(x_1,...,x_n) = \prod_{i=1}^{n} P(x_i|\mathbf{par}(X_i))$, where $\mathbf{Par}(X_i)$ stands for the set of X_i's direct predecessors in the graph.

[9] Note that nothing hinges on this particular specification. It only serves as an example to illustrate the more general point I want to make in this section.

[10] For recent critique of List's (2014) position on different lines (see Elzein & Pernu, 2017).

REFERENCES

Ayer, A. J. (1954). Freedom and necessity. In *Philosophical essays* (pp. 271–284). London, England: Macmillan.

Dennett, D. C. (1984). *Elbow room: The varieties of free will worth wanting*. Cambridge, MA: MIT Press.

Elzein, N., & Pernu, T. K. (2017). Supervenient freedom and the free will deadlock. *Disputatio*, *IX*(45), 219–243.

Fara, M. (2008). Masked abilities and compatibilism. *Mind*, *117*, 843–865.

Frankfurt, H. (1969). Alternate possibilities and moral responsibility. *Journal of Philosophy*, *66*, 829–839.

Gebharter, A. (2017). Causal exclusion and causal Bayes nets. *Philosophy and Phenomenological Research*, *95*(2), 153–375.

Hausmann, M. (2019). The consequence of the consequence argument. *Kriterion—Journal of Philosophy*. Retrieved from http://www.kriterion-journal-of-philosophy.org/kriterion/issues/Permanent/Kriterion-hausmann-01.pdf

Kapitan, T. (2002). A master argument for incompatibilism? In R. Kane (Ed.), *The Oxford handbook of free will* (pp. 127–157). Oxford, England: Oxford University Press.

Kim, J. (2005). *Physicalism, or something near enough*. Princeton, NJ: Princeton University Press.

List, C. (2014). Free will, determinism, and the possibility of doing otherwise. *Noûs*, *48*(1), 156–178.

List, C. (2019). *Why free will is real*. Cambridge, MA: Harvard University Press.

McLaughlin, B., & Bennett, K. (2018). Supervenience. In E. N. Zalta (Ed.), *Stanford encyclopedia of philosophy*, Stanford: Metaphysics Research Lab, Stanford University. Retrieved from https://plato.stanford.edu/archives/win2018/entries/supervenience/

Moore, G. E. (1912). *Ethics*. Oxford, England: Oxford University Press.

van Inwagen, P. (1975). The incompatibility of free will and determinism. *Philosophical Studies*, *27*, 185–199.

van Inwagen, P. (1983). *An essay on free will*. Oxford, England: Oxford University Press.

Watson, G. (1975). Free agency. *Journal of Philosophy*, *72*, 205–220.

How to cite this article: Gebharter A. Free will as a higher-level phenomenon? *Thought: A Journal of Philosophy*. 2020;9:177–187. https://doi.org/10.1002/tht3.461