

【논문】

How Does Consciousness Merely Naturally Supervene on the Physical?

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【Abstract】 The aim of this paper is to show that there seems to be no reason to believe that the mental merely naturally supervenes on the physical. By claiming that phenomenal consciousness does not logically supervene on the physical, David Chalmers wants to be a dualist. However, by claiming that the former merely naturally supervenes on the latter, he wants to rule out the mystery existing between the two without explaining the details. I claim that there are two options for a dualist depending on whether he accepts Humean supervenience. If he accepts it, then there are two paths in front of him. I show that both paths are not acceptable in order. If mental properties are supervenient properties, then the mental logically supervenes on the physical, and if mental properties are subvening base properties, then the mental does not even naturally supervene on the physical. If a dualist denies Humean supervenience, then he should show how phenomenal consciousness could merely naturally supervene on the physical without Humean supervenience. It seems that he should embrace mystery in this case. These considerations invoke the notion of Humean supervenience. I claim that

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Humean supervenience is a natural view and defend it from a couple of objections to it.

I . INTRODUCTION

The term ‘dualism’ has a variety of uses in the history of philosophy. In general, the idea is that, for some particular domain, there are two fundamentally different kinds or categories of things or principles. Dualism is most commonly contrasted with monism, which is the theory that there is only one fundamental kind, category of thing or principle.¹⁾ In the field of philosophy of mind, dualism is the theory that the mental and the physical are fundamentally different kinds of things and are essentially distinct. Dualism goes well with common sense in that it claims that we are composed of non-physical mind and physical body. Dualism, however, has difficulty in explaining the relation between the two, since it posits that they are fundamentally different in kind. Descartes thought that causal interaction between the mind and the body occurred in the pineal gland. Leibniz believed in a pre-established harmony, set in place by God. Even though there have been various explanations in the history of philosophy, it seems not easy to find a good one which is compatible with contemporary science.

Physicalism is roughly the claim that everything including phenomenal consciousness supervenes globally logically on the physical. David Chalmers claims that everything except phenomenal consciousness does globally logically supervene on the physical. If consciousness, as he

1) For some domains, monism is more commonly contrasted with pluralism, which is the view that there are many kinds or categories; examples are moral pluralism, political pluralism, religious pluralism, etc.

claims, does not logically supervene on the physical, then it is fundamentally different in kind from any physical feature. Thus, his claim is a kind of dualism. However, Chalmers asserts that consciousness naturally locally supervenes on the physical. By doing this, he tries to call his view ‘naturalistic dualism’ because it posits that everything is *a consequence of a network of basic properties and laws*, and because it is compatible with all the results of contemporary science (1996, 124-129). He tries to embrace dualism without embracing mystery. I will deny his claim of natural *local* supervenience by arguing that consciousness does not naturally *globally* supervene on the physical.²⁾ My argument depends on Humean supervenience. So, Chalmers has an option to deny Humean supervenience. In this case, however, he should explain how phenomenal consciousness could merely naturally supervene on the physical while all other properties globally logically supervene on the physical. He has a burden to explain how consciousness is *a consequence of a network of basic properties and laws*, as he claims, without Humean supervenience. Otherwise, he should embrace mystery as Descartes,

2) Chalmers claims that the distinction between global and local supervenience does not matter too much when it comes to conscious experience, because it is likely that insofar as consciousness supervenes on the physical at all, it supervenes locally. He asserts that if two creatures are physically identical, then differences in environmental and historical contexts will not prevent them from having identical experiences (1996, 34). This claim seems to rule out externalism about mental content. I won't deal with this issue in this paper, because it is not closely related to my main claims here, and deserves another complete paper. I claim that when minimal physicalism is concerned, it does matter, and mind-body supervenience must be considered within a context, because physicalism is a claim that everything *globally logically* supervenes on the physical. If my argument against natural *global* supervenience would succeed, then it would also work for natural *local* supervenience, because local supervenience implies global supervenience.

Leibniz and many others do.

It was usually accepted that what the laws of nature are is a matter for empirical investigation, and however they turn out, we can imagine them having been otherwise. The laws of nature were usually thought to represent some weaker kind of necessity, that is, nomological, psychological, or physical necessity within a world, but such necessity was usually understood as being compatible with contingency in a wider sense. It seems that we can imagine that the laws of nature don't hold in another world.

After Saul Kripke argued that there are necessary *a posteriori* truths (1972/1999, 1977), many things which seemed contingent on the ground of being empirical were claimed to be necessary. Many philosophers were convinced that it is logically impossible that water is not H₂O in any world. And it is no longer clear that the laws of nature are metaphysically contingent. Kripke and Hilary Putnam (1975) respectively claim that even if the fact that water is H₂O in the actual world can be known only by empirical discovery, it is metaphysically necessary that water is H₂O. They claim that there is no possible world in which water is not H₂O.

There are some philosophers who claim that metaphysical necessity is not logical necessity.³⁾ But I will hold, as many other philosophers do,⁴⁾ that metaphysical necessity is just as strong as logical necessity in that the space of metaphysical possibility is exactly the same as the space of logical possibility. I will equate metaphysical possibility with logical possibility in this sense in this paper.⁵⁾ We

3) See, e.g., Farrell 1981, 141-153.

4) See McLaughlin 1995; Chalmers 1996; and Jackson 1998.

5) As an anonymous reviewer comments, some would say that logical necessity is *a priori*, but metaphysical necessity is *a posteriori* and that they couldn't be equated. Kripke argues that 'necessary' and '*a*

may conceive of different laws of nature holding in a certain world which is not a minimal physical duplicate of the actual world. Many think, however, that if all intrinsic local physical properties of a world are fixed, then the laws of nature metaphysically supervene on them.⁶⁾ I will not try to provide a conclusive argument for this view here. But if the laws of nature themselves are necessitated by such fundamental non-nomic physical properties, then how should we understand Chalmers's claim that consciousness merely naturally supervenes on the physical? If all natural laws globally logically supervene on the physical and consciousness globally naturally supervenes on the physical, then consciousness also globally logically supervenes on the physical.⁷⁾ If Chalmers is right, and there are

priori' are not coextensive, and that necessary *a posteriori* truths and contingent *a priori* truths exist. The ground for this is the fact that '*a priori*' is an epistemic notion and 'necessary' is a metaphysical notion. According to him, there are necessary truths that can be known only *a posteriori* and contingent truths that can be known *a priori*. In this paper, I will put aside the issue of epistemic knowability of metaphysical necessity and logical necessity as tangential to my main claim, since strengths of the two as metaphysical notion are germane to it.

6) See Shoemaker 1984, 234-260., 1998, 59-77; Swoyer 1982, 203-223; Lewis 1986a, 1986b, 1994a, 473-489, 1994b; and Loewer, 1996, 101-128.

7) Let us suppose that all natural laws globally logically supervene on and are metaphysically necessitated by the physical. Let us also suppose that consciousness globally naturally supervenes on and is naturally necessitated by the physical. This means that all possible worlds with the same distribution of basic physical properties, would have the same natural laws, and that all possible worlds with the same natural laws, which have the same distribution of basic physical properties, would have the same distribution of mental properties. Thus, if all natural laws globally logically supervene on the physical and consciousness globally naturally supervenes on the physical, then there could not be two possible worlds with the same distribution of basic physical properties, which have different distributions of mental properties. Thus, consciousness would also globally logically supervene

fundamentally non-physical properties, then he must assume that at least some natural laws, for example, the laws that govern the relation between consciousness and the physical, do not globally logically supervene on the physical, and that these psychophysical laws, which are also kinds of natural laws, merely globally naturally supervene on the physical.

There are mental properties in the actual world. Most minimal physicalists do not deny it, but claim that mental properties are nothing over and above the physical properties and globally logically supervenient on them. Chalmers claims that these mental properties are fundamentally non-physical properties, and also merely naturally supervenient on the physical. By claiming this, he seems to imply that there are psychophysical natural laws between the mental and the physical. Some terminology here needs explanation. Chalmers says that it is useful to stipulate that the world's physical facts include its basic physical laws (1996, 33, 86). So when Chalmers says that the mental merely naturally supervenes on the physical, 'the physical' includes basic physical properties and basic physical laws. I accept the view that the physical natural laws are necessitated by fundamental non-nomic spatiotemporal physical properties. Thus, in what follows, I will restrict the basic physical properties to the fundamental, intrinsic non-nomic physical properties, unless I indicate otherwise. When 'the physical' is used to mean 'these fundamental non-nomic physical properties plus the physical laws' as Chalmers uses, it will be explicit. Then, Chalmers seems to claim (1) that there are psychophysical laws, (2) that these laws are natural laws, (3) that phenomenal consciousness depends on the physical – in his sense – and the psychophysical laws, and (4)

that the psychophysical laws are not logically supervenient upon but merely naturally supervenient upon the physical. If all of these claims are right, we can say that phenomenal consciousness merely naturally supervenes on the physical in his sense.⁸⁾

II. TWO OPTIONS FOR A DUALIST

If there are psychophysical laws, then there seem to be two options for a non-physicalist. A dualist could hold that the psychophysical laws supervene on matters of particular physical and mental facts, or he could hold that the psychophysical laws do not supervene on matters of particular physical and mental facts. The first view is a dualistic version of Humean supervenience of psychophysical laws. The second view is a dualistic denial of Humean supervenience.

8) Let $\{\text{Phy}^{\text{base}_1}, \dots, \text{Phy}^{\text{base}_n}\}$ be the set of base physical properties, and $\{\text{NL}_1, \dots, \text{NL}_n\}$ be the set of natural laws in W_a , which is the sum of physical natural laws and psychophysical natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n, \text{PsyNL}_1, \dots, \text{PsyNL}_n\}$. Let $\{\text{Pheno-Con}^{\text{sup}_1}, \dots, \text{Pheno-Con}^{\text{sup}_n}\}$ be the set of supervening mental properties in W_a . The claim that phenomenal consciousness $\{\text{Pheno-Con}^{\text{sup}_1}, \dots, \text{Pheno-Con}^{\text{sup}_n}\}$ is merely naturally supervenient on the physical $\{\text{Phy}^{\text{base}_1}, \dots, \text{Phy}^{\text{base}_n}, \text{PhyNL}_1, \dots, \text{PhyNL}_n\}$ would be an interesting claim only when there is a world W_b with the same distributions of base physical properties $\{\text{Phy}^{\text{base}_1}, \dots, \text{Phy}^{\text{base}_n}\}$ and physical natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n\}$ in which another set of supervening properties $\{\text{Pheno-Con}^{\text{sup}'_1}, \dots, \text{Pheno-Con}^{\text{sup}'_n}\}$ and another set of natural laws $\{\text{NL}'_1, \dots, \text{NL}'_n\}$ hold. It should be noted that, as I claimed earlier, the set of natural laws must be different in both worlds, because if laws are the same in both worlds, then supervening properties couldn't be different. This situation implies that in order for natural laws to be different in the two worlds, W_a and W_b , psychophysical natural laws $\{\text{PsyNL}'_1, \dots, \text{PsyNL}'_n\}$ must be different, since physical natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n\}$ are the same in both worlds.

Let us consider the first option, a dualistic version of Humean supervenience. When we say that higher-level physical facts or the physical laws supervene on microphysical facts or fundamental non-nomic physical properties, we suppose that there are more basic or lower-level physical properties. There may be higher-level mental properties and lower-level mental properties. Someone may claim that higher-level mental properties, for example, love, supervene on lower-level mental properties, for example, qualia, in a certain way, and that there are law-like relationships between them. Even though there are such things, they cannot be psychophysical laws, but can only be psychological laws. I will not discuss this kind of psychological laws in this paper. To claim that there are psychophysical laws, we seem to suppose at least that there are lower-level basic mental properties so that we can examine whether psychophysical laws supervene on matters of particular fundamental physical and mental properties. If a dualist holds that (a) the psychophysical laws supervene on matters of particular physical and mental properties and (b) the physical laws supervene on the distribution of particular physical properties, then he seems to have to hold that the psychophysical laws are metaphysically necessitated by matters of particular physical and mental fact. Imagine God creating a world *W*. Suppose that he can fix all physical properties including physical laws just by fixing the distribution of all fundamental physical properties. Now suppose that he adds a distribution of basic mental properties to this world. Then it seems natural to think that this, together with the distribution of fundamental physical properties, is sufficient to fix all mental properties including the psychophysical laws.⁹⁾ Otherwise,

9) In this scenario, we are considering a dualistic version of Humean supervenience. Thus, all physical natural laws are logically supervenient upon or metaphysically necessitated by the distribution of base physical

we should explain why psychophysical laws are not metaphysically necessitated while other natural physical laws are.¹⁰⁾

Let us consider the second option, a dualistic denial of Humean supervenience. If a dualist holds that the psychophysical laws do not supervene on matters of particular physical and mental properties, then he seems to imply that there are no physical natural law like relations between higher-level mental properties or psychophysical laws, and particular basic mental properties, in a sense that they are not somehow necessitated by the distribution of matters of particular physical and mental properties. This seems to mean that when God adds basic mental properties to the world *W*, He must add psychophysical laws themselves and higher-level mental properties too. Then it seems that psychophysical laws and higher-level mental properties are something over and above the physical – in Chalmers’s sense – and basic mental properties.¹¹⁾ In this case, in order not to embrace mystery, Chalmers should explain how psychophysical laws merely naturally supervene on the distribution of fundamental physical and mental properties, and thus how phenomenal consciousness merely naturally supervenes on the physical – in Chalmers’s sense.

properties. If all natural laws are humeanly supervene on the Humean base properties, then it is natural to think that psychophysical natural laws also humeanly supervene on the distribution of base physical properties and base mental properties. If Chalmers is correct, then phenomenal consciousness should merely naturally supervene on the physical while psychophysical natural laws are metaphysically necessitated by the Humean base properties.

- 10) This claim needs support. It will be discussed in detail soon after I address Humean Supervenience. Roughly speaking, if a dualist holds Humean supervenience, then it seems to imply that he accepts that everything including psychophysical natural laws logically supervenes upon the Humean base properties.
- 11) This is a view that if there are psychophysical laws, then these laws are fundamental. It is a view that denies Humean supervenience.

Chalmers's claim that phenomenal consciousness merely naturally supervenes on the physical, at least, can have appropriate meaning only when we assume that it is logically possible that the psychophysical nature laws which hold in w_j , fail to obtain in world w_k when w_k is a minimal physical duplicate of world w_j .¹²⁾ I will examine these issues soon after I address Humean supervenience.

III. TWO PATHS FOR A DUALIST WHO ACCEPTS HUMEAN SUPERVENIENCE

Humean supervenience is a natural view, and I will argue that the arguments against this view fail. Laws of nature either exhibit what has been called 'Humean supervenience' or they do not. As characterized by David Lewis,¹³⁾ Humean supervenience is the doctrine that all there is to the world is its point-by-point distribution of local qualitative character, that is, a vast mosaic of local matters of particular fact. Then, there would be no difference without

12) The claim that A-properties globally logically supervene on B-properties would be an interesting one when we fix the distribution of B-properties in a world. Minimal physicalist's claim that mental properties globally logically supervene on the physical would have appropriate meaning only when we consider minimal physical duplicates of the actual world. Since it is too easy to deny the logical supervenience of the mental on the physical if we consider worlds which are not minimal physical duplicates of the actual world. Minimal physicalist's claim that mental properties logically supervene on the physical is compatible with there being a Cartesian soul in a world. On the same ground, when we examine natural supervenience of the mental on the physical, it is unfair to Chalmers if we consider worlds which are not minimal physical duplicates of the actual world which may have different natural laws.

13) Lewis 1986a, ix-x., 1986b, 14-16.

difference in the arrangement of qualities. According to this, laws of nature so supervene on them that pairs of worlds differing in no local matter of fact could not differ in their laws. When I say that every pair of possible worlds that have the same Humean base has the same laws of nature, I intend that this quantification over worlds ranges over all metaphysically possible worlds. The result is that if Humean supervenience is true, then it is necessarily true. Some philosophers claim that this is a pretty standard way of defining supervenience in the literature on Humean supervenience.¹⁴⁾ From now on, I will take it for granted that the quantification ranges over all metaphysically possible worlds and Humean supervenience is necessarily true, if it is true.

Let us suppose that there are basic mental properties and psychophysical laws, and examine what options a dualist has if he accepts Humean supervenience, that is, that two possible worlds cannot differ on what is a law of nature unless they also differ on their Humean base properties. Before I deal with this issue, one thing should be noted. As far as I know, no one explicitly claimed that the Humean base includes basic mental properties. No one seems to claim that a world's point-by-point distribution of local qualitative character includes basic mental properties. Lewis explicitly claims that it is no part of the Humean supervenience thesis that these local matters are mental (1986a, ix). Lewis says that he defends Humean supervenience to resist philosophical arguments that there are more things in heaven and earth than physics has dreamt of (1994a, 474). He defends Humean supervenience to support physicalism. However, there might be a dualist who accepts Humean supervenience. A dualist may regard the Humean base properties

14) See Earman and Roberts 2005, 1-22, Loewer 1996, 101-123.

either as only particular fundamental physical properties or as particular fundamental physical and mental properties. In the latter case, he should have the burden of explaining how mental properties can be instantiated in a point-by-point distribution of local qualitative character.

Let us first restrict the Humean base properties only to fundamental non-nomic physical properties. By accepting Humean supervenience as stipulated, he should accept that basic mental properties and psychophysical natural laws are determined only by the distribution of particular fundamental non-nomic physical properties, and are metaphysically necessitated by the instantiation of those particular fundamental physical properties. This cannot be an option for a dualist, since even a minimal physicalist holds that there are mental properties and that these properties are metaphysically necessitated by the physical properties. In this case, all natural laws, including psychophysical natural laws, if there are any, are logically supervenient on the distribution of particular fundamental non-nomic physical properties. Therefore, all mental properties, regardless of whether they are basic or higher-level properties, are logically supervenient on the physical. Let $\{\text{Phy}^{\text{base}}_1, \dots, \text{Phy}^{\text{base}}_n\}$ be the set of particular fundamental non-nomic physical properties, and $\{\text{NL}_1, \dots, \text{NL}_n\}$ be the set of natural laws in W_a , which is the sum of physical natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n\}$ and psychophysical natural laws $\{\text{PsyNL}_1, \dots, \text{PsyNL}_n\}$. Let $\{\text{Pheno-Con}^{\text{sup}}_1, \dots, \text{Pheno-Con}^{\text{sup}}_n\}$ be the set of supervening mental properties in W_a . As it is argued, the claim that phenomenal consciousness $\{\text{Pheno-Con}^{\text{sup}}_1, \dots, \text{Pheno-Con}^{\text{sup}}_n\}$ is merely naturally supervenient on the physical $\{\text{Phy}^{\text{base}}_1, \dots, \text{Phy}^{\text{base}}_n, \text{PhyNL}_1, \dots, \text{PhyNL}_n\}$ would be an interesting claim only when there is a world W_b with the same distributions of base physical properties $\{\text{Phy}^{\text{base}}_1, \dots, \text{Phy}^{\text{base}}_n\}$ and physical natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n\}$ in which another set of supervening properties

{Pheno-Con^{sup}₁, ..., Pheno-Con^{sup}_n} and another set of natural laws {NL'₁, ..., NL'_n} hold. In this scenario, the set of natural laws must be different in both worlds, because if laws are the same in both worlds, then supervening properties couldn't be different. However, by accepting Humean supervenience and restricting Humean base properties to fundamental non-nomic physical properties {Phy^{base}₁, ..., Phy^{base}_n}, he must accept that all natural laws {NL₁, ..., NL_n} including psychophysical natural laws {PsyNL₁, ..., PsyNL_n} are logically supervenient on and are metaphysically necessitated by the instantiation of the Humean base properties {Phy^{base}₁, ..., Phy^{base}_n}. It is logically impossible that psychophysical natural laws in two worlds, W_a and W_b, are different. It is logically impossible that natural laws in those two worlds are different. If all natural laws cannot differ in both worlds, then all mental properties cannot differ in both worlds. Therefore, if mental properties are supervening properties and are excluded from Humean base properties, then the mental logically supervenes on the distribution of particular fundamental non-nomic physical properties, and cannot be merely naturally supervenient upon the physical.¹⁵⁾

A dualist may try to regard the Humean base properties as including particular basic mental properties {Men^{base}₁...Men^{base}_n}. By accepting Humean supervenience as stipulated, he should further accept that the psychophysical laws and higher-level mental properties are necessitated by the distribution of particular fundamental physical and mental properties {Phy^{base}₁, ..., Phy^{base}_n, Men^{base}₁, ..., Men^{base}_n}.

One thing should be noted: when physical natural laws {PhyNL₁, ..., PhyNL_n} are metaphysically necessitated by the distribution of particular fundamental non-nomic physical properties {Phy^{base}₁, ..., Phy^{base}_n}, these

15) Even if we take, as Chalmers claims, the subvening base as one that includes physical natural laws – {PhyNL₁, ..., PhyNL_n} – supervening mental properties {Pheno-Con^{sup}₁, ..., Pheno-Con^{sup}_n} cannot be merely naturally supervenient on the physical {Phy^{base}₁, ..., Phy^{base}_n, PhyNL₁, ..., PhyNL_n}.

fundamental physical properties logically entail physical natural laws. However, this does not also indicate that physical natural laws logically entail what the particular distribution of fundamental physical properties is. It is logically possible that in some world, the same physical natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n\}$ could supervene on another set of particular fundamental physical property instantiations $\{\text{Phy}^{\text{base}'_1}, \dots, \text{Phy}^{\text{base}'_n}\}$. Both of these base physical sets, $\{\text{Phy}^{\text{base}_1}, \dots, \text{Phy}^{\text{base}_n}\}$ and $\{\text{Phy}^{\text{base}'_1}, \dots, \text{Phy}^{\text{base}'_n}\}$ metaphysically necessitate the same physical natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n\}$ respectively, but not vice versa.

If a dualist accepts Humean supervenience, then with the assumption that the Humean base includes both fundamental physical and mental properties, by definition he has to accept that the psychophysical laws are metaphysically necessitated by the distributions of fundamental physical and mental properties. This implies that there logically cannot be two worlds in which the distributions of all of the particular fundamental physical and mental properties are the same, but the physical or psychophysical laws are different. Therefore, if we accept Humean supervenience, it seems that a dualist should accept that the psychophysical laws of a world which has the same distribution of fundamental non-nomic physical and mental properties as the one in the actual world, must be the same as the ones in the actual world. If a dualist holds that the psychophysical laws supervene on matters of particular physical and mental properties, in just the way that the physical laws supervene on the distribution of particular physical properties, then he has to hold that the psychophysical laws are metaphysically necessitated by the distribution of particular physical and mental properties.

Another thing should be noted: when all natural laws $\{\text{NL}_1, \dots, \text{NL}_n\}$ which include both physical natural laws and psychophysical

natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n, \text{PsyNL}_1, \dots, \text{PsyNL}_n\}$ are metaphysically necessitated by the distribution of particular fundamental non-nomic physical and mental properties $\{\text{Phy}^{\text{base}}_1, \dots, \text{Phy}^{\text{base}}_n, \text{Men}^{\text{base}}_1, \dots, \text{Men}^{\text{base}}_n\}$, these Humean base properties logically entail all natural laws. However, this does not also indicate that natural laws logically entail a particular distribution of Humean base properties. It is logically possible that in some world, the same physical and psychophysical natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n, \text{PsyNL}_1, \dots, \text{PsyNL}_n\}$ could supervene on another set of particular fundamental physical and mental property instantiations $\{\text{Phy}^{\text{base}'_1}, \dots, \text{Phy}^{\text{base}'_n}, \text{Men}^{\text{base}'_1}, \dots, \text{Men}^{\text{base}'_n}\}$. Both of these Humean base sets, $\{\text{Phy}^{\text{base}}_1, \dots, \text{Phy}^{\text{base}}_n, \text{Men}^{\text{base}}_1, \dots, \text{Men}^{\text{base}}_n\}$ and $\{\text{Phy}^{\text{base}'_1}, \dots, \text{Phy}^{\text{base}'_n}, \text{Men}^{\text{base}'_1}, \dots, \text{Men}^{\text{base}'_n}\}$, metaphysically necessitate the same natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n, \text{PsyNL}_1, \dots, \text{PsyNL}_n\}$ respectively, but not vice versa.

I will understand that the mental naturally supervenes on the physical as follows:

for any world W_a and W_b , if W_a and W_b has the same distribution of fundamental physical properties and the same natural laws, then W_a and W_b has the same distribution of mental properties.

Now let us examine, in this case, whether we can say that the mental naturally supervenes on the physical. This indicates that for all worlds with the same distribution of fundamental physical properties and the same natural laws including psychophysical laws, mental properties must be the same. As we saw, however, it is logically possible that another set of Humean base properties with the same distribution of fundamental physical properties and different base mental properties $\{\text{Phy}^{\text{base}}_1, \dots, \text{Phy}^{\text{base}}_n, \text{Men}^{\text{base}'_1}, \dots,$

$\text{Men}^{\text{base}, n}$ than the one in the actual world metaphysically necessitate the same set of natural laws $\{\text{PhyNL}_1, \dots, \text{PhyNL}_n, \text{PsyNL}_1, \dots, \text{PsyNL}_n\}$. Natural laws do not metaphysically necessitate Humean base properties. Both worlds, this possible world and the actual world, have the same distribution of particular fundamental non-nomic physical properties and all the same natural laws, but have different mental properties respectively. Thus, I conclude that if we include basic mental properties as Humean base properties, then the mental does not even naturally supervene on the physical. Therefore, this case also could not be an option for a dualist.

On the one hand, if mental properties are supervenient properties and are excluded from Humean base properties, then the mental logically supervenes on the physical. Then, mental properties are not something over and above physical properties. Thus, we should give up dualism in this case. On the other hand, if mental properties are base properties, then the mental does not even naturally supervene on the physical. Mental properties are anomalous properties with regard to physical properties. Thus, phenomenal consciousness cannot merely naturally supervene on the physical in this case.¹⁶⁾

16) This argument also shows that for a dualist who sticks to Humean supervenience, natural supervenience is untenable. For him, as a dualist, mental properties are fundamentally different in kind from any physical features in this world. Thus, if my argument succeeds, then he, as a Humean, would rather accept logical supervenience than natural supervenience. This implies that everything including phenomenal consciousness globally logically supervenes on matters of both particular fundamental physical and mental properties. In this case, as it is claimed above, he should have the burden of explaining how mental properties can be instantiated in a point-by-point distribution of local qualitative character. And also he should explain how higher-level mental properties and natural laws concerning mental properties globally logically supervene on both fundamental physical and mental properties, while higher-level physical properties and all

Therefore, I conclude that a dualist must deny Humean supervenience to hold the claim that consciousness merely naturally supervenes on the physical.

IV. CRITICISMS OF HUMEAN SUPERVENIENCE AND REPLIES

Some philosophers have criticized Humean accounts of laws of nature by claiming that laws are fundamental features of our world that are completely distinct from and not supervenient on the particular facts that they govern.¹⁷⁾ They independently argue that laws of nature are metaphysically contingent, that is, they might have been other than they are. According to Humean supervenience, two possible worlds cannot differ on what a law of nature is unless they also differ on the Humean base. Therefore, one of the most straightforward arguments against the Humean Supervenience Thesis would be to provide a pair of possible worlds which is a counterexample to it.

Michael Tooley (1977, 669) describes a possible world containing ten different types of fundamental particles and asks us to suppose that the behavior of particles in interactions depends upon the types of the interacting particles. Hence, considering only interactions involving two particles, there are 55 different kinds of possibilities. Suppose that 54 of these interactions have been studied, with the

physical natural laws globally logically supervene only on fundamental physical properties. Otherwise, he should embrace mystery.

17) Among the more visible are Armstrong 1985, esp. 158-173; Dretske 1977, 248-268; Tooley 1977, 667-698; Carroll 1990, 185-219, 1994.

result that 54 laws have been discovered, which are not interrelated in any way. But the 55th kind of interaction of X-particles with Y-particles has not been studied, not because there is a law forbidding such interactions, but because, given the way particles of types X and Y are currently distributed, it is impossible for them ever to interact at any time.¹⁸⁾ Tooley claims that in such a situation it would seem very reasonable to believe that there is some underived law dealing with the interaction of particles of types X and Y, and that the law can go various ways. But nothing said so far settles what that law is. It seems that there are multiple possible worlds, each answering to the description given so far, each of which has a different law for particles X and Y interactions. There seems to be nothing about the local matters of particular fact in this world that fixes which of these is the law. But all such worlds agree with respect to the Humean base. Thus, these worlds seem to provide a counterexample to Humean Supervenience Thesis.

There are questions about the legitimacy of this kind of argument. How do we know that the worlds described in cases like this are genuinely possible? Conceivability is not always a good guide to genuine possibility. As a defender of the Humean Supervenience Thesis, we can deny that these possible worlds are genuinely possible. It may be the case that in any world answering to Tooley's description, either there is no law governing how these particles interact in that world or there is a law only in a certain way. There is no incoherence in Tooley's description, but it doesn't

18) Some may argue that the description should be such that particles of type X and Y just in fact don't interact. Because if it is impossible for them ever to interact, then there would be a law that governs it. I have used Tooley's description, since it would be best to use his own description to argue against him. I will put aside this issue of description as tangential and stick to Tooley's description in this paper.

mean that his description of the world is complete. If we know everything about the world, including all fundamental properties and distributions of particles of types X and Y, then the result of the thought experiment would be different: that properties of particles of types X and Y may specify the law between them only in a certain way, which excludes all other apparent possibilities. Let us suppose that there is a triangle. If we don't specify whether the triangle is right-angled, isosceles, equilateral, or regular, then we don't know the relation between hypotenuse and legs. However, if there is a triangle, then it must be a specific one, and we would know the relation between three sides. Likewise, if we specify how these particles X and Y are, then that would fix the law between them only in a certain way. If electrons and up-quarks have slightly different masses and electric charges, then there may only be strong interactions between them, or that their non-interactions are not because of physically contingent conditions, but there really is a law forbidding such interactions. For example, it may be a law that quarks can never be found in isolation but can only be found within hadrons. It may even be possible that there is really no law that governs the interactions if we fix the fundamental properties and distributions of particles of types X and Y. Tooley's example may only show that the description of the two worlds is incomplete.

Tooley may claim that each of his descriptions, supplemented by respectively specified X-Y interaction laws, describes a genuine possible world. I agree that there might be nothing logically incoherent with each of these descriptions supplemented by each different law that governs X-Y interactions. However, it also doesn't mean that every logically coherent description of a world represents a genuinely possible world. Mere coherence doesn't guarantee a

genuine possibility of a situation.

Kripke argues that even if there is nothing logically incoherent in the claim that lightning is not an electrical discharge, there is no possible world in which it is true. It might be that Tooley's possible worlds are of the same kind. Tooley's argument is apparently plausible. But it appeals only to our intuitions about modality and nomicity. We can deny Tooley's argument, if we think that our intuition for Humean supervenience outweighs the intuition that the argument appeals to. It seems that the description of his world supplemented by the claim that lightning is an electrical discharge is logically coherent. It also seems that the description of his world supplemented by the claim that lightning is not an electrical discharge is logically coherent. However, this doesn't mean that both worlds are genuinely possible. The description of Tooley's world supplemented by all the descriptions for the fundamental properties of ten particles in that world may exclude all of Tooley's apparent possible worlds.

Chris Swoyer (1982) claims that the identity conditions of properties, individuals, and natural kinds include the laws of nature in which they figure.¹⁹⁾ According to his claim, two possible worlds with different laws of nature could not contain instances of the very same kinds or instantiations of the very same properties. Tooley's world descriptions label the kind of particle that exists in the first world 'X-particles' and also label the kind of particle that exists in the second world 'X-particles.' According to Swoyer's claim on the identity of properties, however, the two kinds in both worlds could not be identical, and hence the non-nomic histories of the two

19) This view is consistent with Humean supervenience, but a Humean is also free to reject it. This view is stronger than Humean supervenience.

worlds could not be exactly the same.

As Armstrong said (1985, 158-171), one of the main reasons that have led many philosophers to view laws of nature as contingent is that laws of nature can only be discovered to be true *a posteriori*, using the method of hypothesis, observation and experiment. By contrast, the necessary truths of logic and mathematics are, in general at least, established *a priori*, by thought, reason, and calculation alone.²⁰ Many philosophers, however, now accept that there are metaphysically necessary truths that can be known only *a posteriori*. Thus, the reason for supposing natural laws to be contingent has lost much of its power.

John Carroll attempts to provide a counterexample to Humean supervenience which has evolved from an example given by Tooley (1990, 185-219, 1994, 60-68). Carroll begins by describing two possible worlds, U_1 and U_2 , which, according to him, even a philosopher who accepts Humean supervenience has no apparent reason to deny. He tries to show that if certain conditions are accepted, then the existence of the two worlds, U_1 and U_2 , entails the existence of two other possible worlds, U_1^* and U_2^* , which constitute a counterexample to Humean supervenience. U_1 and U_2 are worlds that contain X-particles and Y-fields. U_1 is a world in which L_1 , the generalization that all X-particles subject to Y-fields have spin up, is a law. Focusing on one specific moment t , Carroll asks us to suppose that there is a specific X-particle b , that is subject to a Y-field. It has spin up, since L_1 is a law in U_1 . U_2 is very similar to U_1 . It has X-particles and Y-fields. X-particles that

20) He also accepted that this argument is not conclusive, since the distinction between truths known, or rationally believed, *a posteriori* and those known, or rationally believed, *a priori*, is an epistemological one. *Ibid.*

enter Y-fields even do so at exactly the same time and place that they do in U_1 . So, for instance, particle b enters that same Y-field at time t . The only difference is that when particle b enters the Y-field at time t in U_2 , it has spin down. Thus, even though L_1 is a law in U_1 , L_1 could not be a law of U_2 , since L_1 has a counterexample in U_2 and is not true in U_2 . Carroll claims that there is nothing particularly remarkable about either U_1 or U_2 which makes a Humean suspicious. He claims that it is natural to think that L_1 's status as a law in U_1 does not depend on the fact that b entered that Y-field at time t . That is, even if particle b had not been subject to a Y-field at time t , L_1 would surely still be a law. Yet it is just as natural to think that L_1 's status as a non-law in U_2 does not depend on the fact that b entered that Y field at time t . L_1 would not be a law in U_2 even if particle b had not been subject to that Y-field then. He claims that just as we can't prevent L_1 from being a law in U_1 by stopping b from entering that Y-field, so we can't make L_1 a law by doing the same in U_2 . Now he asks us to make a slight change in circumstances in both U_1 and U_2 , the position of a certain mirror, which would have prevented particle b from entering the Y-field. Carroll claims that there seems to be two more possible worlds. In one, U_1^* , X-particles are subject to a Y-field, all of them have spin up, and L_1 is a law. In the other, U_2^* , X-particles are subject to a Y-field, all of them have spin up, but L_1 is not a law. Like Tooley's case, U_1^* and U_2^* constitute an apparent counterexample to Humean supervenience.

This argument supposes that it is possible that we can change the location of the mirrors in both U_1 and U_2 , and the changes in both worlds do not lead to changes in laws in both worlds. Let us accept that the changes in both worlds are possible for the sake of

argument. Then, there seem to be two ways that we can respond to Carroll's argument. First, we can reject the genuine existence of at least one of the two possible worlds, U_1 and U_2 . Second, we can reject that the changes in both worlds do not lead to changes in laws in both worlds. I will consider these replies in order.

The first response is to reject the genuine existence of one of the two possible worlds. If we accept Humean supervenience, then we accept that the laws of nature are not independent metaphysical ingredients of the world, standing over and above the totality of fundamental physical properties. Everything in the world is metaphysically necessitated by local matters of particular properties. According to Carroll, U_1 and U_2 are exactly same in all local matters of particular fact except that a specific X-particle b has spin up in a particular Y-field in U_1 , and a specific X-particle b has spin down in a particular Y-field in U_2 . Carroll also supposes that the generalization that all X-particles subject to Y-fields have spin up, is a law in U_1 . There is no incoherence in this description of the world, but it doesn't mean that this description of U_1 is complete. If we know everything about the world in more detail, including what the properties of these particular particles and fields are in more detail and all the distributions of these particles and fields in U_1 , then we would know whether L_1 is really a law and metaphysically necessitated by the Humean base of U_1 . Let us suppose that there is a law that all electrons bear the charge of -1.6×10^{-19} Coulombs. Some may try to suppose that in another world there is an electron that has a slightly different electrical charge or rest mass. This description seems coherent, if we say that X-particles in U_1 have the charge -1.6×10^{-19} Coulombs but an X-particle b in U_2 has the charge -1.6×10^{-18} Coulombs. However,

if we know everything about electrons, then we would know that it is impossible that there is an electron that has a slightly different electrical charge or rest mass in U_2 . According to the Humean supervenience thesis, laws of nature are not some objective things in the worlds over and above the totality of local matters of particular properties. If it is just a fact in U_1 that every electron has the charge, then it is a natural law that all electrons have the charge. Natural laws must be metaphysically necessitated by the Humean base of U_1 . If we accept this, then it is intuitively hard to accept that in U_2 , the same specific X-particle b has spin down in the same particular Y-field. If all things are identical in U_1 and U_2 , as Carroll claims, and L_1 is really a law in U_1 , then we should say that before time t — when the specific X-particle b enters the specific Y-field — L_1 should predict that if the specific X-particle b enters the specific Y-field in U_1 and U_2 , then b has spin up, because everything is identical in U_1 and U_2 before time t . Intuitively, it seems that we should say either that U_2 is not a genuinely possible world, if b has spin down, given that for everything U_2 is identical with U_1 before t , or that L_1 , all X-particles subject to Y-fields have spin up, is not a law in U_1 . Some regularities are in some sense accidental, and are hard to be called *laws*. For example, it is probably true that there is no sphere of solid gold that is over one mile in diameter, nor will there ever be. But it would not be inconsistent with the laws of nature if there were such a sphere. Neither is there, nor will there ever be, a sphere of Uranium-235 over one mile in diameter. But this is not accidental in this sense: the laws of nature rule out this possibility, for such a sphere would exceed critical mass and explode immediately. If the identical X-particle b has spin down in the

identical Y-field in U_2 , then L_1 , all X-particles subject to Y-fields have spin up, could be a mere accidental regularity at best. If we know about X-particles and Y-fields in more detail, then we would know whether L_1 is a law in U_1 or whether it is genuinely possible that there is U_2 .

Let us consider a possible world U_1 , and a time t in the history of U_1 . Suppose that there is a kind of event that occurs a great many times in U_1 . Let us call the kind of event 'coin-toss.' The events have two possible outcomes, 'head-up' and 'head-down,' and suppose that in U_1 , the chance that any particular coin-toss will give the result 'head-up' is $\frac{1}{2}$. Let us further suppose that till time t in U_1 , all coin-tosses end with 'head-up'. There is a possible world U_2 , which is exactly the same as U_1 except that at time t in U_2 , the coin-toss ends with 'head-down.' In this case, the statement that all coin-tosses result in head-up cannot be a law even in U_1 . According to the Humean supervenience thesis, laws are not independent metaphysical ingredients of a world, standing over and above the totality of local fundamental properties. Laws are metaphysically necessitated by the Humean base. But Carroll supposes that L_1 is a law in U_1 without filling out some details of the Humean base in U_1 . If L_1 is really a law in U_1 , and if all particles and fields in U_2 are identical with particles and fields in U_1 , then b cannot have spin down at t in U_2 .

When we considered the legitimacy of Tooley's argument, we considered Swoyer's claim that two possible worlds with different laws of nature could not contain instances of the very same kinds or instantiations of the very same properties. Then, we can also claim either that one of both worlds, U_1 and U_2 , are not genuinely possible, or that particles and fields in both worlds, even though

they are labeled the same, that is, X-particles and Y-fields, could not be identical. If one of these two worlds is not genuinely possible, then the Mirror argument cannot succeed. If they are all identical, then it is impossible that particle *b* has spin up in a Y-field in U_1 and it has spin down in the same Y-field in U_2 , if Humean supervenience is true. If we assume that both worlds are genuinely possible in a sense that particles and fields in both worlds are labeled and look the same but are really different from each other, then the Mirror argument cannot succeed either. Because U_1^* and U_2^* would have different Humean bases for the result, that is, even if particles and fields in U_2^* are labeled as X-particles and Y-fields and look the same as ones in U_1^* , they are actually different particles and different fields from ones in U_1^* , provided that L_1 is a law in U_1^* and is not a law in U_2^* .

Let us now consider the second way; namely rejecting the claim that the changes in both worlds do not lead to changes in laws in both worlds. In order for Carroll's argument to succeed, the total set of Humean base facts that would have resulted in U_1 , if the change were made, should be the same as the one that would have resulted in U_2 , if the same change were made. According to Carroll's description, if the changes were made in both worlds — we accepted that the changes are possible for the sake of argument — then particle *b* would never enter a Y-field. However, the only apparent difference we are supposed to imagine between Humean base facts in U_1 and U_2 is in the spin of particle *b* as it enters a particular Y-field. Here we are supposed to accept both that there is no difference between the Humean base facts in U_1^* and U_2^* , and that in U_1^* , L_1 is a law — because L_1 is a law in U_1 , and the change of the position of the mirror is not supposed to lead a

change in a law — and in U_2^* , L_1 is not a law — because L_1 is not a law in U_2 , and the change of the position of the mirror is not supposed to lead a change in a law. As we considered, however, we can move to this next step only when we accept that both worlds, U_1 and U_2 , are genuinely possible in a sense that particles and fields in both worlds have the same appearance and same label, but they are not identical. Since if they are all identical, then it is impossible that particle b has spin up in a Y-field in U_1 and it has spin down in the same Y-field in U_2 , if Humean supervenience is true. This means that the Humean base facts in U_1^* and U_2^* are different even though particles and fields in both worlds have the same appearance and same label.

U_1^* and U_2^* are not just two possible worlds that we are supposed to imagine to start this thought experiment. If we are supposed to start with these two possible worlds, U_1^* and U_2^* , in which exactly the same particles and fields exist, and are minimal physical duplicate of each other, then we should accept that there is no difference between the total sets of Humean base facts in both worlds. If U_1^* and U_2^* contain the same Humean base facts and histories, then they have the same laws. But they have different Humean base facts and different histories. So we also don't need to accept the claim that the changes in both worlds do not lead to changes in laws in both worlds, because we do not know how important the changes are in both worlds. Carroll's descriptions of the two worlds are not complete and we do not know how there are changes in spin when particle b enters specific Y-field, if both worlds are supposed to be identical. Thus if changing the position of mirrors are supposed to exclude the only difference in the two possible worlds, then we just can't simply accept that the change

does not lead to changes in laws. And also it should be noted that his claim that in U_1^* , L_1 is a law – because L_1 is a law in U_1 , and the change of the position of the mirror is not supposed to lead a change in a law – seems to presuppose that the laws of nature are some objective things in the worlds over and above the totality of fundamental physical properties.²¹⁾ This notion of the laws of nature would be rejected by defenders of Humean supervenience. We can deny Carroll's argument too.

I argued for the view that the laws of nature are metaphysically necessitated by matters of particular fact. Chalmers, however, could deny Humean supervenience. He could hold that psychophysical laws do not supervene on matters of particular fundamental physical and mental properties, which means that there are no natural physical law-like relations between psychophysical laws and the particular physical and mental properties – in the sense that psychophysical laws are not metaphysically necessitated by fundamental physical and mental properties. Chalmers may think that the psychophysical laws are something over and above the physical – in his sense – and fundamental mental properties. He may also want to stipulate that the mental includes psychophysical natural laws as he simply stipulates that the physical includes physical natural laws. In this case, however, he should explain why phenomenal consciousness, which depends on psychophysical natural laws, merely naturally supervenes on the physical while all other properties, which depend on physical natural laws, globally logically supervene on the physical.

21) Carroll asserts that the change of the position of the mirror is not supposed to lead a change in a law. However, we don't know how important the change is. It may be a big change in the distribution of Humean base. Then, to claim that laws would be the same while there are changes in the Humean base seems to presuppose that laws are something over and above the Humean base.

On this view, when God adds basic mental properties to the world *W*, He must also add psychophysical laws themselves and higher-level mental properties to the world *W* too, because psychophysical laws and higher-level mental properties are something over and above particular fundamental physical and mental properties and are not metaphysically necessitated by them. Chalmers should explain why psychophysical laws are not metaphysically necessitated while other natural physical laws are if both kinds of natural laws are included by stipulation. He, however, doesn't say anything in detail. As I earlier noted, if he is claiming that all genuine laws of nature except the laws of consciousness globally logically supervene on the physical, then there seems to be no reason to believe that there are special natural laws holding between consciousness and physical beings which hold only in this actual world.

V. CONCLUSION

I claimed that Humean supervenience is a plausible view. It seems that supervenience on the physical bases seems most plausible, given what we know about laws at this point. I argued that if we accept Humean supervenience, then we should regard the Humean base properties either as only particular fundamental physical properties or as particular fundamental physical and mental properties. I argued that if we restrict the Humean base properties only to fundamental non-nomic physical properties, then we should accept that the mental logically supervenes on the distribution of particular fundamental non-nomic physical properties.²²⁾ I also argued that if

22) In this case, we should accept that basic mental properties and

we regard the Humean base properties as including particular fundamental mental properties, then we should accept that the psychophysical laws and higher-level mental properties are necessitated by the distribution of particular fundamental physical and mental properties. I showed that if we include fundamental mental properties as Humean base properties, then the mental does not even naturally supervene on the physical. Therefore, I concluded that if we accept Humean supervenience, we should deny that phenomenal consciousness merely naturally supervenes on the physical. If mental properties are supervenient properties, then the mental logically supervenes on the physical, and if mental properties are subvening base properties, then the mental does not even naturally supervene on the physical. Therefore, phenomenal consciousness cannot merely naturally supervene on the physical in either case.

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psychophysical natural laws are determined only by the distribution of fundamental particular non-nomic physical properties. Thus, all natural laws, including psychophysical natural laws if there are any, are logically supervenient on the distribution of fundamental particular non-nomic physical properties. If mental properties are subvening properties and are excluded from the Humean base properties, then the mental logically supervenes on the physical and cannot merely naturally supervene on the physical.

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국문요약

현상적 의식이 물질에 단지 자연적으로 수반할 수 있는가?

김태량

이 글의 목적은 정신이 물질에 단지 자연적으로 수반한다는 주장을 고찰하고, 논박하기 위함이다. 현상적 의식이 물질에 논리적으로 수반하지 않는다고 주장함으로써 차머스는 이원론의 입장에 선다. 하지만 의식이 물질에 단지 자연적으로 수반한다고 받아들임으로써, 심신관계의 난제를 설명함 없이 제거해버리려 한다. 필자는 흄적 수반을 받아들이나의 여부에 따라 이원론자에게 두 입장이 있을 수 있음을 주장한다. 만약 이원론자가 흄적 수반을 받아들이면, 그에게는 또 다시 두 가능성이 있다. 필자는 두 개의 길이 모두 받아들여질 수 없는 길임을 차례로 보인다. 만약 심적 속성들이 수반하는 속성들이라면, 정신은 물질에 논리적으로 수반해야하고, 만약 정신이 기저가 되는 속성들이라면, 정신은 물질에 자연적으로 수반할 수 없다. 만약 이원론자가 흄적 수반을 거부한다면, 그는 어떻게 현상적 의식이 물질에 흄적으로 수반함 없이 자연적으로 수반할 수 있는지를 설명해야만 한다. 이 경우에는 두 관계 간의 설명의 난제를 그대로 떠안게 된다. 이들 논변은 흄적 수반의 개념에 의존한다. 필자는 흄적 수반이 받아들일 수 있는 자연스러운 입장이라고 주장하며, 이에 대한 몇몇 주요 반론들로부터 흄적 수반을 옹호한다.

주요어: 자연적 수반, 흄적 수반, 자연법칙, 이원론, 물리주의