
Anomalism and Supervenience: A Critical Survey

ORON SHAGRIR

Departments of Philosophy and Cognitive Science
The Hebrew University, Mt. Scopus
Jerusalem 91905
ISRAEL

I Introduction

The thesis that mental properties are dependent, or supervenient, on physical properties, but this dependence is not lawlike, has been influential in contemporary philosophy of mind. It is put forward explicitly in Donald Davidson's seminal 'Mental Events.' On the one hand, Davidson claims that the mental is anomalous, that 'there are no strict deterministic laws on the basis of which mental events can be predicted and explained' (1970, 208), and, in particular, that there are no strict psychophysical laws. On the other hand, he insists that the mental supervenes on the physical; that 'mental characteristics are in some sense dependent, or supervenient, on physical characteristics' (1970, 214).

Though the thesis has its appeal, some find it untenable. Jaegwon Kim, for example, argues that psychophysical supervenience inherently entails psychophysical laws — 'if you want psychophysical dependence, you had better be prepared for psychophysical laws' (1984, 171) — and hence is at odds with mental anomalism. The paper has three objectives, the first of which is to show that Kim's argument is very general and applies to a wide variety of notions of supervenience, including the different notions of global supervenience found in the

literature (section III). A second goal is to evaluate several more recent attempts to defend the compatibility of supervenience and anomalism. I focus on four Davidsonian responses to Kim's argument (sections IV-VII); three were offered by Davidson himself, and one by William Child. I argue that the responses do not fully address Kim's challenge, and that they can succeed only if we relinquish other central theses of Davidson's philosophy. The last objective is to outline a different Davidsonian response to Kim's challenge (section VIII).

II Indiscernibility, dependence and irreducibility

Let us start with some preliminaries concerning the relations between supervenience, dependence, and psychophysical laws. Supervenience has an interesting history that goes back to Leibniz.¹ Davidson, who is the first to apply it in the psychophysical context, borrows the notion from Moore and Hare, who introduce it in the context of ethics.² In a landmark passage in 'Mental Events,' Davidson writes:

Although the position I describe denies there are psychophysical laws, it is consistent with the view that mental characteristics are in some sense dependent, or supervenient, on physical characteristics. Such supervenience might be taken to mean that there cannot be two events alike in all physical respects but differing in some mental respect, or that an object cannot alter in some mental respects without altering in some physical respects. Dependence or supervenience does not entail reducibility through laws or definition... (1970, 214)

The passage draws attention to three important questions relating to supervenience: how it is characterized, how it is related to dependence, and how it is related to irreducibility.³ Let me consider them in turn. First, the characterization of supervenience. Davidson starts with a characterization in terms of *indiscernibility*, namely, that 'there cannot be two events alike in all physical respects but differing in some mental

1 For a historical exposition, see Kim (1990, 131-8).

2 Moore (1922, 261) characterizes the relationship between moral and non-moral traits in terms of supervenience, but does not use the term. Hare (1952), who does explicitly invoke supervenience, uses the notion to characterize the relations between properties such as being good and behavioral dispositions. According to Hare, it is logically impossible for two people to have exactly the same behavioral dispositions though one is good and the other is not (145). See also Hare (1984, 3-4) and Davidson (1993, 4) on the differences between their notions. See Blackburn (1973; 1985) for a more recent discussion of supervenience in the ethical context.

3 For a parallel discussion, see Kim (1990, 138-40).

respect,' that is, there cannot be two events that are physically indiscernible but mentally discernible. He then offers another characterization of supervenience, one that construes it as a type of covariance: 'an object cannot alter in some mental respects without altering in some physical respects,' that is, mental changes *co-vary* with physical changes.

In his more recent writings, Davidson provides additional covariance definitions, the gist of which is that any mental difference between objects must be accompanied by a physical difference. In 'Reply to Harry Lewis,' Davidson writes:

The notion of supervenience, as I have used it, is best thought of as a relation between a predicate and a set of predicates in a language: a predicate *p* is supervenient on a set of predicates *S* if for every pair of objects such that *p* is true of one and not of the other there is a predicate in *S* that is true of one and not of the other. (1985, 242)

And in his 'Thinking Causes,' he makes a similar claim:

[T]he idea I had in mind is, I think, most economically expressed as follows: a predicate *p* is supervenient on a set of predicates *S* if and only if *p* does not distinguish any entities that cannot be distinguished by *S*. (1993, 4)

Supervenience thus has to do with the relations between properties or characteristics or respects, e.g., mental and physical properties, which Davidson understand as *predicates*.⁴ These properties are ascribed to particulars such as events, objects and entities.⁵ Psychophysical supervenience is a thesis about the relations between mental and physical properties of the same particulars.⁶

To make things more explicit, let us take two sets of properties, R and S. We can think of R as a set of mental properties, and of S as a set of physical properties. We would say that R *supervenes* on S just in case the following condition holds:

4 I follow Davidson in labeling all these terms *properties* (1993, see his note 3 on p. 4).

5 A major theme in Davidson's metaphysics is that particulars can be redescribed by different predicates, see Davidson (1963, 4-5; 1970, 209-10). Another major theme is that a particular, even an event, can be described both by mental and physical predicates, see Davidson (1970, 212-15).

6 In the rest of the paper, unless specified otherwise, I take supervenience to mean *psychophysical* supervenience.

(Indiscernibility) for every M of R and for every pair of objects (events, entities) x and y, if for every P of S, $Px \leftrightarrow Py$ (i.e., x and y are S-indiscernible), then $Mx \leftrightarrow My$ (i.e., x and y are R-indiscernible).⁷

On a charitable reading, Davidson's definitions are all equivalent. The first definition, in terms of indiscernibility, is just the contrapositive formulation of the later covariance definitions. Physically indiscernible objects are mentally indiscernible iff mentally discernible objects are physically discernible. And mentally discernible objects are physically discernible iff for every mental property M that distinguishes between x and y (e.g., Mx , but $\sim My$) there is a physical property P of S that also distinguishes between x and y.⁸

A second issue mentioned by Davidson is the linkage between supervenience and dependence. In saying that 'mental characteristics are in some sense dependent, or supervenient, on physical characteristics,' Davidson implies that supervenience is some sort of dependence relation. At first glance, this does not seem right. There seems to be an unbridgeable gap between supervenience and dependence. As Kim put it, dependence is a *metaphysical* relation, whereas 'property covariation *per se* is metaphysically neutral' (1990, 148). Supervenience 'merely states a pattern of property covariation between the mental and the physical' (1998, 10). It expresses the idea that objects that are physically alike are also mentally alike; or that each mental difference between two objects must be accompanied by a physical difference between them. But according to Kim, supervenience 'leaves open the question of what *grounds* or *accounts* for it — that is, why the supervenience relation obtains between the mental and the physical' (1998, 9). In fact, supervenience is consistent with different, and even conflicting, dependence

7 The definition has a notorious deficiency: it allows for objects that have no physical properties, but do have mental properties (requiring only that all such non-physical objects have the *same* mental properties). This seems to contradict Davidson's assertion that 'supervenience in any form implies monism' (1993, 5). An elegant way to correct this (if this correction is deemed necessary) is to work with the equivalent covariance definition, and add the requirement that objects that are physically distinguishable (by S) have at least one 'non-negative' physical property.

8 Formally speaking, the first definition, in terms of indiscernibility, is stronger, as it applies to all mental properties, whereas the latter definitions target only a single mental property M. This can be addressed by universalizing M. The second definition of supervenience given in 'Mental Events,' viz. in terms of change, is also weaker in that it imposes no constraints on properties of *different* objects. But this can be dealt with by extending the change-in-an-object condition to apply to differences across objects.

relations, such as identity, emergentism, realization, certain forms of epiphenomenalism, and perhaps even Cartesian interactionism. Kim maintains that this shows that 'mind-body supervenience... points to the existence of a dependency relation' (1998, 10), but it cannot constitute the required grounding or account of the dependence relation. If anything, it is the dependence relation that grounds and explains the property covariation.

While Kim's point is well-taken, it does not pose a real difficulty in the present context. Even were there a gap between supervenience and dependence, this would be no cause for concern. Even if supervenience itself is not a dependency relation, it points, according to Kim, 'to the existence of a dependency relation,' which is good enough for our purposes. A notion of supervenience that points to dependence, but that does not lead to psychophysical laws, would suffice to repel Kim's challenge.

The third question introduced in the Davidson passage concerns the relationship between supervenience and irreducibility: 'dependence or supervenience does not entail reducibility through laws or definition.' Our concern, then, is *nomological* reducibility. But what precisely does this refer to? Davidson leans toward the traditional *inter-theoretic* account of reduction, on which a psychological theory is reduced to a physical theory if there are connecting principles ('bridge laws') of the form $M \leftrightarrow P$ between psychological and physical predicates.¹⁰ If there are such laws — if every mental predicate is lawfully connected with some physical predicate — then the psychological has been reduced to the physical.

Davidson does, then, indeed maintain that such connecting laws would suffice for nomological reduction, but it is important to attend to two details here. First, Davidson repeatedly stresses that by laws he means *strict* laws. Davidson often contrasts the notion of strict laws to that of *ceteris paribus* conditionals, and means that the laws in question are 'precise, explicit, and ... exceptionless' (1970, 219).¹¹ A conditional $B \rightarrow C$ is strict just in case any B-event is, or is followed by, a C-event, no matter what. This does not mean that Davidson denies that there are

9 Even this assertion should be made with caution. The supervenience of A on B might not reflect the dependence of A on B. It might be that there is, instead, a set C on which both A and B depend; see Kim (1990).

10 This view is often identified with Nagel (1961).

11 Thus Davidson adds that 'what I was calling a law... was as deterministic as nature can be found to be, was free from caveats and *ceteris paribus* clauses' (1993, 8).

ceteris paribus *laws*, but only that they are not relevant in the present context, as they do not entail reduction.¹²

Second, it must be kept in mind that Davidson argues not just against reductive bridge laws, but also against any strict laws that invoke mental properties. In upholding anomalism, he is denying that there are either psychophysical laws, whether causal or correctional, of the form $P \rightarrow M$ or $M \rightarrow P$, or, psychological laws of the form $M_1 \rightarrow M_2$. Thus our task here is to examine whether supervenience is consistent with the thesis of anomalism in general, and with the denial of psychophysical laws, in any form, in particular.¹³

Lastly, we might ask why introducing supervenience at all: What is the philosophical role of supervenience? One answer is that supervenience aims to reinforce anomalous monism. The concern is that anomalous monism says too little about the relations between mental and physical *properties*. Monism ensures that every object with mental properties also has physical properties, but, beyond that, anything goes: my physical counterpart might have no mentality whatsoever, while my cup of coffee does. The role of supervenience is to put more significant constraints on the psychophysical relations between mental and physical properties, without reducing mental properties to physical properties.¹⁴

Another answer, which is suggested in more recent writings, is that the role of supervenience is demonstrating that anomalous monism is a consistent view. In his 'Reply to Harry Lewis' (1985) Davidson declares that 'supervenience in any form implies monism; but it does not imply either definitional or nomological reduction,' and in 'Thinking Causes' he concludes that 'if (non-reductive) supervenience is consistent (as the

12 'In fact I repeatedly said that if you want to call certain undeniably important regularities laws — the familiar regularities that link the mental with the mental (as formulated, for example, in decision theory) or the mental with the physical — I have no objection; I merely say that these are not, and cannot be reduced to, *strict laws*' (1993, 9).

13 The thesis of anomalism is sometimes broken down into two different theses; see, e.g., (Kim 1984). One is *psychological* anomalism, which denies psychological laws such as $\forall x(M_1x \rightarrow M_2x)$. The other is *psychophysical* anomalism, which denies psychophysical laws of any kind: bridge laws of the form $\forall x(Mx \leftrightarrow Px)$; unidirectional laws of the form $\forall x(Mx \rightarrow Px)$ and $\forall x(Px \rightarrow Mx)$; and causal laws that are, roughly, of the form: $\forall x(Mx \rightarrow \exists yPy)$ and $\forall x(Px \rightarrow \exists yMy)$; for Davidson's formulation see (1967, 158). Our main concern here is psychophysical anomalism.

14 This is Kim's impression: 'Clearly, mind-body supervenience is a net addition to anomalous monism. By adopting it, Davidson has substantially strengthened his position on the mind-body problem' (2003, 130).

syntax-semantics example proves it is) so is AM [anomalous monism]' (1993, 5).

One way or another, our question is whether psychophysical supervenience is consistent with the lack of psychophysical laws. The question, more specifically, is whether we can uphold the theses of supervenience, dependence, and anomalism together: Is there a notion of supervenience that points to dependence without yielding psychophysical laws? Contra Davidson, Kim argues that there is not. Let us examine his argument.

III Kim's argument¹⁵

To begin, some familiar definitions and results essential to Kim's argument must be considered. The first concerns an alleged equivalence between the above characterization of supervenience in terms of indiscernibility (or covariance), and another characterization, namely, that formulated in terms of *entailment*. The underlying idea of this characterization is that for any mental property M, there is some sort of 'complex' physical basis, P*, such that any object that has P* has M. To make the idea more precise, let us define the complex physical base, P*, in terms of a maximal S-property. Maximal S-properties are 'the strongest consistent properties constructible' in S (Kim, 1984, 58). One way to understand maximal properties is in terms of conjunctions of 'simple' properties, or their negations. Thus if S includes P₁, P₂ and P₃, one maximal S-property is (P₁ & P₂ & P₃), another is (P₁ & P₂ & ~P₃), and so on. If S is closed under negation and Boolean operations, as Kim takes it to be, then maximal S-properties are themselves in S. We can now define the entailment condition as follows:

(Entailment) For every M of R there is a maximal S-property P* such that for every object x, if x has P*, then x has M.

Entailment is, arguably, equivalent to the indiscernibility principle. A proof that indiscernibility implies entailment, which is the more important direction for our purposes, proceeds as follows:

- (1) Take an arbitrary property M of R and an object **a**, that has M.

15 The argument I present here is a reconstruction of the arguments advanced in Kim (1984; 1990; 2003).

- (2) Take the maximal S-property of **a**, P^* .^{16,17}
- (3) Take any object **b** that is physically-indiscernible from **a**, i.e., has P^* .
- (4) By indiscernibility, **b** has M.

This shows that for every mental property M, there is a maximal S-property, P^* , such that for any object x , $P^*x \rightarrow Mx$ (in short, $P^* \rightarrow M$). Given a similar proof, from entailment to indiscernibility, the characterizations are equivalent.¹⁸

A second issue has to do with modality. It is customary to distinguish between strong and weak supervenience. Strong supervenience holds that the indiscernibility condition applies to any pair of *possible* objects x and y , even if they inhabit 'different worlds.' Weak supervenience deems it applicable to any pair of objects belonging to the same world (any world), but need not apply to objects across worlds.

The standard formulation (Kim, 1987) of these two variants is as follows:

R strongly supervenes on S just in case for every pair of possible worlds v and w , and for every pair of objects x in v and y in w , if x in v is S-indiscernible from y in w (i.e., for every P of S, $Px \leftrightarrow Py$), then x in v is R-indiscernible from y in w (i.e., for every M of R, $Mx \leftrightarrow My$).

R weakly supervenes on S just in case, for every possible world w and for every pair of objects x and y in w , if x and y are S-indiscernible in w (i.e., for every P of S, $Px \leftrightarrow Py$), then they are R-indiscernible in w (i.e., for every M of R, $Mx \leftrightarrow My$).

It is not hard to see that strong and weak supervenience yield strong and weak entailment principles:

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- 16 The object **a** must have some maximal property. If we want to make sure that the maximal property is not a conjunction of negative P_i 's, we either have to modify the definition of indiscernibility (see the comments in note 7), or to invoke the thesis of monism, according to which **a** must have some non-negative physical property.
 - 17 It is assumed that P^* is in S, that is, in the closure of S; see McLaughlin (1995). This assumption simplifies things significantly, but Kim's argument does not depend on it. Even if P^* is not in S, we still get the principle $P^* \rightarrow M$, which jeopardizes anomalism.
 - 18 Thus Kim (1990, 141) provides definitions of supervenience both in terms of indiscernibility and in terms of entailment (both definitions being termed covariance).

Strong entailment: For every M of R there is a maximal S -property P^* such that for every world w , and for every object x in w , if x has P^* , then x has M .¹⁹

Weak entailment: For every M of R and for every world w there is a maximal S -property P^* such that for every object x in w , if x has P^* , then x has M .²⁰

Keeping these results in mind, let us turn to Kim's argument. It is presented as a dilemma the upshot of which is that no notion of supervenience can secure dependence and anomalism at the same time. Weak supervenience does not establish dependence, whereas strong supervenience entails psychophysical laws. Consider strong supervenience. The problem is that strong supervenience leads to entailment conditionals of the form: *Necessarily, for any x , if x has P^* then x has M* . But any such $P^* \rightarrow M$ conditional is a strict psychophysical law. It is *strict* because it fully determines M 's applicability. It establishes that if anything has P^* , it has M . And it is a law because it applies to *all* possible objects, particularly those that are *nomologically* possible.

Moreover, a disjunction of the maximal physical properties, P_1^*, P_2^*, \dots , that are sufficient for M yields a bi-directional principle $\cup P_i^* \leftrightarrow M$. This principle states that an object x has M if and only if it has at least one of the properties P_i^* . The inference from P_i^* to M is based on the aforementioned law, $P_i^* \rightarrow M$. The inference from M to $\cup P_i^*$ is based on the assumption of a disjunction of *all* the P_i^* that entail M . So M and $\cup P_i^*$ 'are necessarily coextensive, and whether the modality here is metaphysical, logical, or nomological, it should be strong enough to give us a serviceable 'bridge law' for reduction' (Kim, 1990, 152).

Let us consider the notion of weak supervenience. Here the problem is that the supervenience condition does not apply to pairs of objects from different worlds. Weak supervenience ensures that any two physically indiscernible objects from the same world are mentally indiscernible. But should the physically indiscernible objects be, as it were, from different worlds, they may well be mentally discernible. Or to put it in terms of entailment, weak supervenience is consistent with P^* 's entailing, in one world, an instantiation of M , but in another world, the instantiation of a different mental property, M' , or even the instantiation of no mental property. Thus weak supervenience is consistent with a

19 The proof is similar to the proof for entailment. In line 3, take some *possible* **b**. **Mb** follows by strong supervenience.

20 Similarly, in line 3, take some **b** that is in the same world as **a**. **Mb** follows by weak supervenience.

scenario in which my physical twin, in some other world, has very different mental states, or no mental states whatsoever.²¹

These scenarios indicate that weak supervenience cannot suffice for a dependency thesis. On the one hand, if mental properties are indeed dependent on physical properties, then a mental difference between two objects must somehow be grounded in physical properties. On the other, since the two possible objects have exactly the same physical properties, P^* , nothing physical can be responsible for the mental difference between them. There must be something about their mental properties that is not dependent on physical properties. So there must, after all, be a mental aspect of the said objects that is not dependent on their physical makeup.

Thus far I have presented a simplified account of Kim's argument. But the argument can be strengthened significantly. First, there is no need to restrict the argument to two notions of supervenience, weak and strong. Kim's argument is more general still: the argument is that *any* notion of supervenience satisfying a certain indiscernibility condition entails psychophysical laws, and *any* notion that does not satisfy this condition does not ensure dependence. The relevant indiscernibility condition is as follows:

(C) Any pair of possible objects that are physically indiscernible (i.e., P^* -twins) are also mentally indiscernible.

And the claim is that any notion of supervenience that satisfies (C) yields conditionals of the form $P^* \rightarrow M$ that are strict psychophysical laws. And any notion of supervenience that does not satisfy (C) allows for P^* -twins that are mentally discernible, and thus cannot ensure dependence.

Second, the set of physical properties, S , need not be limited to microphysical properties, or even to 'intrinsic' properties and physical behavior. Given Davidson's externalism, S could include causal relations with the physical environment, and even bits of causal history.²² S could even include physical properties of remote objects if such properties are indeed relevant to the ascription of mental properties. Thus when we speak of a maximal S -property, we need not limit S to monadic, micro, local, or intrinsic properties. We can take as the maximal property the object's complete 'world-perspective' in terms of S properties.

21 See also Kim (1990, 143).

22 See Davidson (1990a) for a list of the relevant factors in the attribution of mental states.

This world-perspective will include a full description, from the object's perspective, of all the physical properties and relations in the relevant world.^{23,24}

So amended, Kim's argument applies to *global supervenience*. Global supervenience is formulated in terms of indiscernibility of worlds. It states that any two *worlds* indiscernible with respect to their S-properties are also indiscernible with respect to their R-properties. This means, roughly, that if two worlds have the same number of objects, and each object in one world has a physical twin in the other, then each object in one world also has a mental twin in the other.²⁵ It turns out, however, that there are various ways to understand this statement: strong, intermediate (middling) and weak.²⁶ I analyze the differences between the varieties of global supervenience elsewhere.²⁷ Here I will just mention where they stand vis-à-vis Kim's argument. Strong global supervenience does satisfy condition (C),²⁸ and indeed yields strict principles

- 23 See Stalnaker (1996) and Sider (1999). Roughly, this global maximal S-property can be described by an open formula that mentions every S-property of x and its worldmates, and every S-relation in x 's world. E.g., assume that the world has only two objects, a and b , that there is a single S-property, P , and that Pa and $\sim Pb$. The formula expressing the maximal S-property of a would be:

x has P ; other than x , there is only one other object, y ; y does not have P .

Another way of defining these maximal properties is via closure under quantification.

- 24 As Blackburn (1985, 133) points out, however, we might not want S to encompass all physical properties. This is because, arguably, any pair of distinct objects differs in some physical property. Including all properties in S will make the definition of supervenience trivially true, as there is no pair of physically indistinguishable objects. We thus need some sort of limiting condition that puts in S exactly those physical properties relevant to the determination of mental properties.
- 25 More precisely:
- Two possible worlds, w_1 and w_2 are A-indiscernible =_{df} There is an A-isomorphism from the domain of (i.e., set of objects existing at) w_1 onto the domain of w_2 .
 - A function f is an A-isomorphism =_{df} f is one-to-one, and for any n -place relation R in A and for any n objects in f 's domain, $R(a_1, \dots, a_n)$ iff $R(f(a_1), \dots, f(a_n))$. See Sider (1999, 915-916).
- 26 Definitions of the weak and strong variants are provided by Stalnaker (1996), McLaughlin (1997) and Sider (1999); and of the intermediate by Shagrir (2002) and Bennett (2004).
- 27 Shagrir (2002); see also Bennett (2004).
- 28 Strong global supervenience of R on S expresses the idea that every pair of possi-

$P^* \rightarrow M$, which apply to any possible object.²⁹ Weak and intermediate global supervenience do not satisfy (C). They allow worlds in which P^* -twins from the same world have very different mental properties.³⁰ They thus cannot support the required dependency.

The last issue is modality. There is an obvious disparity between the positions of Kim and Davidson. Kim is fairly generous about necessities and possibilities, often explicating them in terms of possible worlds. Davidson, on the other hand, refrains from talking about possible worlds. But in fact, Kim's argument is not committed to a particular stance on modality, and can easily be adjusted to accommodate the Davidsonian outlook. More to the point, the relevant notion here is that of *nomological* possibility and necessity, for the question under consideration is the relationship between supervenience and laws. And it is well known that according to Davidson, 'lawlike statements are general statements that support counterfactual and subjunctive claims, and are supported by their instances' (1970, 217). For Davidson, possible cases, at least in the nomological context, are either actual or counterfactual, whereas counterfactual cases include future events and objects, as well as imaginary cases he uses as examples: Swampman, the objects that populate Twin-Earth, and so on.

Thus all it takes to adjust Kim's argument is to read the 'possible' in condition (C) as *nomologically possible*, understood in terms of counterfactuals. The rest of the argument remains unchanged: If Davidson's supervenience satisfies condition (C), then his notion yields conditionals $P^* \rightarrow M$, and bi-conditionals $\cup P_i^* \leftrightarrow M$, that, being strict and counterfactual-supportive, are psychophysical laws. And if Davidson's supervenience does not satisfy (C), then it allows for nomologically possible P^* -twins that are mentally discernible, and therefore does not ensure dependence.

We can now better understand Kim's assertion: 'if you want psychophysical dependence, you had better be prepared for psychophysical laws.' What he means is that any notion of psychophysical supervenience

ble objects that are indiscernible with respect to their maximal (world-perspective) S-properties are also indiscernible with respect to their R-properties. See Stalnaker (1996) for a proof, and also Sider (1999), Shagrir (2002) and Bennett (2004).

29 Sider (1999, 920-1) proves that strong global supervenience is equivalent to the claim that for every M of R there is a maximal (world-perspective) S-property that entails M.

30 See Shagrir (2002) and Bennett (2004).

nience either does not support psychophysical dependence, or entails psychophysical laws.³¹

In the next sections, I discuss several Davidsonian responses to the claim that anomalism is incompatible with supervenience. I argue that these responses are not fully satisfying, and some even conflict with other central theses of Davidson's philosophy.

IV Weak supervenience

At the outset of 'Thinking Causes,' Davidson invokes weak supervenience:

Kim himself (correctly, I think) finds my version of supervenience very close to his 'weak' supervenience, and as not entailing connecting laws. (1993, 4, n. 4)

Indeed, it is widely agreed that weak supervenience does not lead to psychophysical laws. It entails only that any pair of physically indiscernible objects from the same world are mentally indiscernible. Should physically indiscernible objects **a** and **b** be from different worlds, they may well be mentally discernible. Thus even if weak supervenience yields connecting conditionals $P^* \rightarrow M$, these conditionals have no modal force, and hence are not laws.³²

It is difficult to see, however, why Davidson thinks that weak supervenience can avoid laws and yet support dependence at the same time. If the P^* -twins, **a** and **b**, have different mental properties, we will certainly, like Kim, question the dependency. Given that the mental difference is not due to the objects' physical properties, since nothing related to their physical makeup, including their past and present causal relations with their environment, differs, it would seem that there *are*

31 Could we escape Kim's dilemma by invoking objects that are logically or metaphysically but not nomologically possible, e.g., zombies? This would fail, as these cases fall under *both* horns of the dilemma. They entail psychophysical laws, as any pair of nomologically possible P^* -twins are mentally indiscernible; and they do not ensure the requisite dependence, as nothing physical can account for the mental difference between me and my P^* -twin zombie.

32 See Kim (2003, 131-2). But note that Blackburn (1985, 134-5) is uncomfortable with the argument, pointing out that there could be yet another world inhabited by counterparts of **a** and **b**. Given weak supervenience, these counterparts must have the same mental properties. But we then have to explain why **a** and **b** differ mentally, whereas their counterparts do not. If Blackburn is right about this, then weak supervenience is just strong supervenience in disguise, and does indeed lead to strict psychophysical laws.

mental properties that do not depend on physical properties.³³ And if, deferring to Davidson's aversion to possible worlds, we stipulate that only cases found in our world will be considered, then weak supervenience does not allow **a** and **b** to differ mentally. There will be dependence, but the conditionals $P^* \rightarrow M$ will be counterfactual-supportive, that is, they will be connecting laws.

To make things more concrete, consider what Davidson says about psychophysical relations in the Twin-Earth and Swampman thought-experiments. In discussing these counterfactual scenarios Davidson explicitly insists that the mental depends on the physical, that the mental differences *are* accompanied by physical differences:

What I take Burge's and Putnam's imagined cases to show (and what I think the Swampman example shows more directly) is that people who are in all relevant physical respects similar (or 'identical' in the necktie sense) can differ in what they mean or think... But of course there is *something* different about them, even in the physical world; their causal histories are different. (1987, 32-3)

How is this passage to be understood in the context of weak supervenience? If my Twin-Earth counterpart and I live in different worlds, in the sense of living in different contexts, then weak supervenience lacks the modal force to support the required psychophysical dependencies. For, on the one hand, Davidson insists that the mental differences must be accompanied by physical differences. But, on the other, as it applies within, but not across, contexts, weak supervenience cannot support these dependencies. If my twin-Earth counterpart and I live in the same world, then weak supervenience does support the psychophysical dependencies. In this case, however, the worry is that the derivable entailment conditionals $P^* \rightarrow M$ will be counterfactual-supportive, namely, connecting laws.

Why, then, does Davidson invoke weak supervenience? I hope to shed light on this in the last section. But for now we can conclude that the standard notion of weak supervenience is inadequate for the role it is intended to play. Either it cannot support the dependency relations Davidson discusses in the thought-experiments, or it leads to physical-to-mental connecting laws.³⁴

33 Kim (2003, 131-2) goes on to argue that weak supervenience cannot support the modal force required for the causal relevance of mental properties.

34 What about other, weaker notions of supervenience? Sider (1999) argues that the notion of *weak global supervenience* does support dependency relations, for it preserves certain covariance relations across worlds. At first glance, the combination of 'global' and 'weak' seems attractive in the Davidsonian context. But, in fact, the notion is decidedly unDavidsonian (Sider, of course, does not suggest that weak

V Multiple realization

In 'Thinking Causes,' Davidson tries another strategy in attempting to escape Kim's conclusion:

But supervenience does not imply the existence of psycho-physical laws. To see this, it is only necessary to recognize that although supervenience entails that any change in a mental property p of a particular event e will be accompanied by a change in the physical properties of e , it does not entail that a change in p in other events will be accompanied by an identical change in the physical properties of those other events. Only the latter entailment would conflict with [anomalism]. (1993, 7)

Supervenience, according to Davidson, is consistent with psychophysical laws, but does not entail them. Supervenience entails that a change in a mental property M is accompanied by a change in some physical property, P . But 'only the latter entailment,' namely, that a change in M be accompanied by the same physical property P , 'would conflict with [anomalism].' It could, however, be the case that in one event, e_1 , a change in M is accompanied by a change in P_1 , while in another event, e_2 , a change in M is accompanied by a change in P_2 , and so on, perhaps ad infinitum. So at most we could correlate a change in M to a change in P_1 or P_2 , etc., which would not amount to a law.³⁵

global supervenience is a good fit for Davidson's supervenience). First, Davidson's supervenience is explicitly about the indiscernibility of objects and events, not worlds. Second, the alleged dependency provided for by weak global supervenience rests on 'cross-world' invariance, which is foreign to Davidson's take on modality. In fact, weak global supervenience allows for mentally discernible P^* -twins within our world. Third, weak global supervenience is, arguably, not a dependence relation at all, since it allows for unacceptably odd scenarios. It is consistent, e.g., with a world that is like ours physically, except that trees are conscious and humans (our P^* -twins) have no mentality whatsoever; see Shagrir (2002) and Bennett (2004).

If anything, the 'weak' and 'global' notion that is more in line with Davidson's ideas is *global weak supervenience* (instead of 'weak global'). On global weak supervenience, any B-isomorphism from a world to itself (i.e., homomorphism) is also an A-isomorphism. It can easily be proven, using Stalnaker's (1996) theorem, that the global weak supervenience of A on B is equivalent to the (local) weak supervenience of A on maximal, world-perspective, B-properties. Thus for our purposes, we can live with the notion of weak supervenience, which allows for causal relations and histories in our set of physical properties. Given this arrangement, there is no difference between global and local weak supervenience; Bennett (2004) advances a parallel claim with respect to strong supervenience.

35 Davidson makes a similar point in 'The Material Mind': 'If a certain psychological concept applies to one event and not to another, there must be a difference describable in physical terms. But it does not follow that there is a single physi-

Davidson's response looks like a version of the familiar multiple realization argument, according to which a mental property M is realized in one physical state, P_{1i} , in one object, but in a different physical state, P_{2i} , in another, and so on, perhaps ad infinitum. And if there is nothing physically common to the instantiating physical states — if the mental property M can only be correlated with a disjunctive physical property $\cup P_i$ — then, it is argued, there is no applicable psychophysical law.³⁶

Davidson's response is unsatisfying for two methodological reasons. First, he ignores Kim's arguments regarding the inference from multiple realization to the lack of bridge laws. After all, Kim is well aware that multiple realization could be invoked to block his move from strong supervenience to psychophysical laws. And he strikes back. One argument Kim advances is that there is no compelling reason to think that disjunctive properties, even if the disjunction is infinite, cannot appear in laws.³⁷ Another is that the claim that a mental property is correlated with a truly disjunctive physical property undermines the thesis, central to Davidson's philosophy, that mental properties are individuated by their causal powers.³⁸ Lastly, Kim argues that a bridging principle $M \leftrightarrow \cup P_i$ implies 'local reductions,' where M is reduced to any of its realizers P_i , within the local organisms that instantiate P_i .³⁹ Any of these arguments, if sound, would show that multiple realization falls short of establishing the consistency of supervenience with anomalism. But Davidson does not discuss them.

Second, it is far from clear that mental properties are instantiated in multiple physical states. Even if mental properties are instantiated in very different physical or neurological structures, it does not follow that there is no one physical kind common to all the realizing physical disjuncts. The case of temperature explicates the point nicely. Temperature can be realized in copper, metal, water, etc., yet there *is* a physical kind common to all these realization. In these cases, the correlations

cally describable difference that distinguishes any two events that differ in a given psychological respect' (1973a, 253-4).

36 See, e.g., Putnam (1967), Fodor (1974), and Block (1990). Davidson refrains from using the term 'realization,' but we can take the phrase 'an event e realizes a property M ' to mean nothing more than ' e is in the extension of the predicate M .'

37 See Kim (1990, 152-4).

38 See Kim (1992, 316-27, esp. 325-7; 1999) and Shapiro (2000; 2005). But see Block (1997) and Pereboom (2002) for rejoinders.

39 See Kim (1989, 273-5, 1992, 327-30).

between M and $\cup P_i$ are the result of a law connecting M with a natural physical kind P .^{40,41}

But the main problem with Davidson's response is that it leaves intact the non-disjunctive conditionals $P^* \rightarrow M$. As Kim puts it, the problem is that 'Davidson is plainly looking for the wrong kind of law; when the question of law is discussed in connection with supervenience, it almost always concerns laws *from* the base (or subvenient) properties *to* the supervenient properties (thus physical-to-mental laws)...thus: whenever anything has mental property M there is some physical property Q such that it has Q and everything that has Q has M' (1993b, 22-3). Indeed, even if Davidson succeeds in showing that the $M \leftrightarrow \cup P_i$ bi-conditionals are not laws, we still have the physical-to-mental $P^* \rightarrow M$ strict entailment conditionals. If the entailment is weak, then we are back to square one. And if strong, then the entailment is necessary, and hence yields laws. And if so, that is, if the $P^* \rightarrow M$ conditionals *are* laws, Davidson's anomalism is doomed anyway. It would thus make much more sense, in a Davidsonian context, to argue that any $P^* \rightarrow M$ conditional is not a law, and from that to infer that the bi-conditionals $M \leftrightarrow \cup P_i^*$ cannot be laws either.⁴²

VI Uncodifiability

An attractive proposal that focuses on the inadequacy of the $P^* \rightarrow M$ conditionals is advanced, in a Davidsonian context, by William Child.⁴³

40 See Kim (1972). For the opposing view, see Block (1997). For a detailed discussion of this point, see Shagrir (1998).

41 In a sense, this objection is unfair. Davidson seeks to show that supervenience is *consistent* with anomalism, hence it suffices for him to show that *if* the mental is multiply realizable, then supervenience and anomalism can be jointly sustained. But in another sense the objection is fair enough. The point in question is not just whether supervenience is compatible with anomalism; what is at stake is Davidson's anomalism. Even if Kim's argument is not universal, it may still undermine Davidson's anomalism. Thus if Davidson in fact believes the mental to be multiply realizable, he had better provide an argument to that effect.

42 A referee of this paper suggested a further line of argumentation, implicit in Kim's conception of realization, that would defeat Davidson's response. Kim holds that the alleged fact that P realizes M *explains* why M supervenes on P , and thus why the conditional $P \rightarrow M$ is true. This implies that the conditional has counterfactual force, and hence that it is a law. This is what one would expect: if P *realizes* M (whether or not some other P 's do too), then, in any nomologically possible world, anything that has P has M .

43 Child (1993; 1994, chapter 2).

Child concedes that the supervenience relations are *strong*, and that they yield $P^* \rightarrow M$ conditionals that can be seen as some sort of strict psychophysical principles, or even laws. But he appeals to the maximality of the physical property, P^* , to argue that they are not the kind of principles that endanger anomalism:

That principle [$P^* \rightarrow M$] links a set of mental characteristics with a single, completely specified set of physical characteristics. But it is not part of a system of exact, quantitative laws in accordance with which mental characteristics are determined by physical — or by reference to which one could derive mental characteristics from physical; it does not, for example, tell us what mental change in S would be brought about by a given physical change. Even if we knew all the supervenience conditionals derivable by considering every subject in the history of the world, we would not have the resources, in a new case, to derive a subject's mental properties directly from a specification of all the physical circumstances of the case (for any two actual subjects must differ in some physical respect) (Child, 1994, 77).

So the idea is as follows. The maximal physical property P^* in the conditional $P^* \rightarrow M$ is a complete specification of the physical object, perhaps even its complete physical world-perspective. But given that any two objects or events differ in some of their physical properties, we need a new conditional for every case. This situation, Child concludes, does not generate a fixed system of rules with which we can attribute mental properties to a subject.⁴⁴

Child's strategy, then, is not to deny the existence of strict psychophysical laws. The thesis of anomalism, on his reading, amounts to the claim that 'there is no definite set of rules or principles for arriving at the best interpretation of an agent' (1994, 59). And this thesis is consistent with the existence of strict psychophysical laws of the form $P^* \rightarrow M$.⁴⁵ Since each new case requires a different $P^* \rightarrow M$ covering law, these conditionals form a vast, perhaps infinite, set of rules. Thus even though the 'conditionals (or biconditionals) which supervenience gives us may be allowed, in one sense, to be lawlike... they do not form

44 The claim that maximal properties are just 'too complex,' and cannot serve to predict or explain is advanced by Putnam (1973; the peg-hole example); but see also Sober (1999) for criticism. It is consistent with some things Davidson says in 'The Material Mind'; see Davidson (1973a, 258) and Child (1994, 77, n. 53), and with the syntax-semantics example in 'Mental Events' (1970, 214-15). After all, a syntactic description that is an infinite conjunction of all true sentences is a 'true-in-L' description, but is not legitimate in the context of laws.

45 Child also believes that there may be strict *psychological* laws such as 'if you believe that ($p \rightarrow q$) and that p , then you should believe that q ' (1994, 59). For a critique of this view, see Yalowitz (1997).

a system of laws which would permit the precise prediction and explanation of particular mental phenomena' (1994, 77-8). Hence, even if strong supervenience generates $P^* \rightarrow M$ laws, it is still consistent with anomalism.

It could be argued against Child that his assumption that no two subjects are physically alike makes supervenience vacuous: what use is there to supervenience if the antecedent of the conditional (of two individuals having the same physical properties) is never satisfied?⁴⁶ But the main difficulty with Child's suggestion is that the notion of 'derivable' supervenience conditionals, $P^* \rightarrow M$, conflicts with other Davidsonian theses. The first is Davidson's well-known account of causation. This account upholds the idea of *strict* covering laws: every causal relation is covered by a strict *physical* law, of the form $P_1 \rightarrow P_2$.⁴⁷ But it is difficult to see how this law can be strict if P_1 is not something like a maximal physical property. If the law is strict, as Davidson claims, it cannot have any exceptions. All possible intervening conditions must be integrated into the antecedent of the law. P_1 must encompass a wide range of *environmental* properties, perhaps even the entire world-perspective. Thus the strict law must be something very like $P_1^* \rightarrow P_2$, even though P_1^* is maximal.

But it would appear that Child's argument applies to such covering laws as well. Since each cause event differs in some physical respect from all other events, we need a causal covering law $P_1^* \rightarrow P_2$ for every new case. The set of all these covering laws cannot be fixed, and thus, on Child's reasoning, cannot serve to explain or predict. This raises the question of why strict causal laws of the form $P_1^* \rightarrow P_2$ are acceptable, but $P^* \rightarrow M$ conditionals are not. If it is claimed that $P_1^* \rightarrow P_2$ are laws, whereas $P^* \rightarrow M$ are not, then we deserve to know why, since given that the antecedents of both types of conditionals mention maximal properties, neither can serve to predict and explain. And if the claim is that both are laws, but in contrast to $P^* \rightarrow M$ laws, causal laws $P_1^* \rightarrow P_2$ need not be explanatory or predictive, then Child must account for the disparity between what we require of the mental and what we require of the non-mental.

Second, it is hard to see why there cannot be strict *causal* laws of the form $P^* \rightarrow M$. If we allow correlational conditionals $P^* \rightarrow M$, in which P^* and M apply to the same event, why can't there be causal $P^* \rightarrow M$ conditionals? What, precisely, precludes their nomologicality? They have exactly the same logical form as strict *physical* causal laws,

46 See, e.g. Blackburn (1985) and Lewis (1985).

47 See, e.g., Davidson (1967; 1970).

$P_1^* \rightarrow P_2$, which also have maximal properties in their antecedents, and they are strict and counterfactual-supportive, as are the correlational conditionals. But if $P^* \rightarrow M$ causal laws are allowed, then Davidson loses his argument for monism. The argument in 'Mental Events,' recall, is constructed as follows. The first premise is that there are causal relations between physical and mental events. The second is the nomological character of causality: each causal relation between a physical event p and a mental event m must be covered by a strict causal law. But the third premise — the anomalism of the mental — entails that these causal laws, as strict laws, cannot mention mental properties. Hence these laws are of the form $P_1^* \rightarrow P_2$, meaning that m is a *physical* event of the kind P_2 . But on the hypothesis we have been contemplating, the causal relation between p and m need not be covered by a law of the $P_1^* \rightarrow P_2$ variety, for it can be covered by a strict causal law of the form $P^* \rightarrow M$. This blocks the monistic conclusion that m is also a physical event.⁴⁸

In response, Child could say that the whole point is that there is no fixed system of rules from which we can deduce the $P^* \rightarrow M$ principles.⁴⁹ The inability to explain and predict the mental is thus not rooted only in the need to deploy a new principle for every case, but also in the fact that these principles are not derivable, and so are not available when we seek to explain and predict the mental. Adopting this refinement, we can now point to an important difference between $P^* \rightarrow M$ laws and strict causal $P_1^* \rightarrow P_2$ physical laws. In the physical case, there is, ideally, a closed system of basic laws, e.g., Newton's laws or Einstein's equations, which specify correlations between physical properties, often in ideal cases. The strict causal $P_1^* \rightarrow P_2$ laws are part of the closed system by virtue of being derived from the basic laws. Using the laws of nature, we can attribute the maximal property P_1^* to the cause event, deduce the covering $P_1^* \rightarrow P_2$ laws, and, on the basis of this deduction, predict and explain the occurrence of P_2 . In the case of the mental, however, there is no such closed system from which we can deduce laws that mention mental properties. We thus can deduce neither correlational nor causal psychophysical $P^* \rightarrow M$ laws. Consequently, we will

48 It might seem that the failure of monism applies to the physical-to-mental causal laws governing, e.g., perception, but not to the mental-to-physical laws governing action. But the latter are not safe yet. Given that there are strict laws with mental predicates, I see no reason why a mental-to-physical *ceteris paribus* law could not be made strict by supplementing the *mental* antecedent with further conditions, either mental or physical.

49 Child suggested something along these lines in a private communication.

be unable to come up with laws that have the required predictive and explanatory powers.⁵⁰

This line of argumentation is more promising, even though it assumes an extremely strong notion of a causal law. At any rate, the response does not avoid a third drawback of Child's proposal, which is that overall, the proposal gives us *less* reason to accept anomalism. The argument for anomalism, as Child sees it, seeks to show that 'the constraints imposed on a set of propositional attitudes by the criteria of rationality could not be exactly mirrored by the constraints imposed on a system of physical states by physical laws and principles' (1994, 58). This is because the criteria of rationality are *uncodifiable*: 'there is no fixed set of rules or principles from which, together with a statement of the circumstances of any particular case, we could deductively derive a complete, detailed specification of what one ought to do or think in that case' (1994, 58-9).⁵¹ Even if we knew every last thing about someone's physical state, including his relations with the environment and causal history, we would still be unable to say what he is thinking. Thus there is no fixed set of strict principles 'for deductively deriving a specification of S's *mental properties*' (1994, 60).⁵²

But do we have any reason to accept uncodifiability? Admitting that 'the uncodifiability of rationality is not susceptible of proof' (1994, 64), Child sets out a series of considerations based on arguments from practical and theoretical reasoning, aesthetic judgments, and so on, from which he infers that in judging what would be the best decision, or what belief is warranted in a given situation, 'we *do not* [and could not] reach our conclusions deductively' (1994, 66).⁵³ Now, it seems to me that

50 This refinement is consistent with the entailment principle, according to which there is a law of the form $P^* \rightarrow M$ in each specific case, for it does not follow that we can deduce what the law is; i.e., the exact properties that are being instantiated.

51 Child borrows the term from McDowell (1979); see also McDowell (1985).

52 The inference from uncodifiability to anomalism involves two further premises: (1) Rationality is constitutive of interpretation, i.e., the application of mental properties to other people on the basis of what they say and do: 'the ideal of rationality has a constitutive role in propositional attitude psychology' (8); 'when we interpret a subject, we strive to make sense of her; in doing so, we are considering the question, "What, rationally, should someone think and do in these circumstances?"' (57). (2) The thesis of anomalism is a thesis about interpretation; there is no commitment that interpretation is constitutive of mentality (though it is definitely necessary for mentality — see section V below). Hence, the uncodifiability of rationality extends to the interpretation (59), and there is no system of strict laws we can use to attribute mental properties to others, and thus no system of strict laws we can use to explain and predict the mental (60).

53 On arguments for the uncodifiability of rationality see Child (1994, 64-8).

these considerations indeed establish that there is a gap between the mental and the physical points of view. But they become far less convincing if we *also* assume that there are strict and necessary connections between P^* and M , that is, if we also assume that P^* suffices for M with no exceptions, and the relation is *necessary*, and reflects the dependency of M on P^* . After all, these connections, in the form of $P^* \rightarrow M$ laws, indicate that in an important sense, the mental and physical realms are not detached.⁵⁴

Moreover, given that there are $P^* \rightarrow M$ laws, it is hard to see why there cannot be laws that invoke non-maximal kinds. After all, it might turn out that there is a physical or even neurological non-maximal property P (say, a pattern of neuronal activity) in P^* that *suffices* for M (say, the preference to watch soccer over baseball). In this case we need not deploy a new law in every instance. If P suffices for M , then there is a strict law $P \rightarrow M$, with which we can explain and predict the mental, at least when someone has P . To rule out this possibility, Child must show that for *every* conditional $P^* \rightarrow M$ that is strict, necessary and expresses a dependency of M on P^* , there *cannot* be a non-maximal physical property P within P^* that suffices for the instantiation of M , and accounts for the necessary and strict relations.

Child does not address this worry, because, at this point, he already *assumes* uncodifiability. His overall argument starts with an exposition of the anomalism thesis, the locus of which is that there is no fixed system of strict laws on the basis of which the mental can be explained and predicted. Next, he provides reasons for upholding uncodifiability, and, hence, anomalism, and only then does he seek to show that this thesis is *consistent* with supervenience. He undertakes to do it by arguing for the *possibility* of $P^* \rightarrow M$ laws that do not constitute a fixed system. Thus the question of $P \rightarrow M$, where P is non-maximal, does not arise.

But it now seems that the acceptance of the $P^* \rightarrow M$ laws in the *third* stage of the argument significantly weakens the reasons, set out in the *second* stage, for accepting uncodifiability, and, hence, anomalism. The problem is clearer if we rearrange the premises, and begin with the premises on which Kim and Child are in agreement. The first premise would be strong supervenience; the second, that strong psychophysical supervenience leads to psychophysical $P^* \rightarrow M$ strict laws. At this point, we might wonder whether, in the context of $P^* \rightarrow M$ laws, we can establish that there is no non-maximal property P that correlates with

54 As Kim puts it: 'Is there any reason to think that these supervenience psychophysical necessitations [$P^* \rightarrow M$] would do any less damage to the autonomy of the mental than strict psychophysical laws?' (Kim, 2003, 131)

M. At this point, it seems, it will take more to convince that the mental is uncodifiable.

VII Externalism

In 'Could There Be a Science of Rationality?' Davidson puts forward a proposal that might explain why the $P^* \rightarrow M$ supervenience conditionals cannot invoke laws with non-maximal kinds. It appeals to the extrinsic nature of the mental:

[I]t is only if mental properties are supervenient on the physical properties of the agent that there can be any hope of identifying the mental properties with physical properties, or of finding lawlike connections between the two. If mental properties are supervenient not only on physical properties of the agent but in addition on the physical properties of the world outside the agent, there can be no hope of discovering laws that predict and explain behavior solely on the basis of intrinsic features of agents (1995, 122).⁵⁵

We have already seen that Davidson maintains that the mental does *not* depend on intrinsic physical properties alone: my Twin-Earth counterpart and I differ mentally, though we have exactly the same intrinsic physical properties. Still, Davidson insists that the mental does depend or supervene on the physical in the sense that the mental difference *is* accompanied by a physical difference. It is just that the physical difference is in the physical world at large, that is, our causal histories are different.

But why does Davidson think that the extrinsic nature of the mental allows no hope of arriving at psychophysical laws? It may well be true that psychophysical conditionals are not laws if they invoke only intrinsic physical properties of agents. But given that P^* includes physical properties of the world outside the agent, it is unclear why $P^* \rightarrow M$ supervenience conditionals cannot be laws, and, moreover, cannot invoke a strict law $P \rightarrow M$, whereas P is non-maximal. After all, P could also be an extrinsic non-maximal kind.

Nicholas Shea (2003) suggests that Davidson's idea here is that the laws of basic physics are formulated in terms of intrinsic properties. Thus the intrinsic physical properties and the extrinsic mental properties cannot fit together in strict laws. Supervenience is compatible with anomalism, on this account, because, on the one hand, mental proper-

55 This proposal is not invoked as a direct response to Kim, but in the context of yet another argument for anomalism. See Shea (2003) for a reconstruction and evaluation of the general argument.

ties supervene on an agent's physical properties and 'on the physical properties of the world outside the agent,' but on the other hand, the supervenience conditionals $P^* \rightarrow M$ invoke physical properties that cannot, due to their extrinsic nature, feature in laws.

There are several difficulties with the proposed account. First, the assumption about the intrinsic nature of physical properties is questionable. There are laws, e.g., gravitation laws, that mention relational properties, e.g., distances between entities. More importantly, even if the laws of basic physics are formulated in terms of intrinsic properties, it does not follow that all strict laws are formulated in terms of intrinsic physical properties of a single object. The typical bodily movement of an agent is covered by a strict causal law that must appeal to physical properties outside the agent. After all, many environmental conditions are relevant to the trajectory of a bodily movement; the antecedents of strict causal laws typically range over physical properties that extend over many objects, perhaps the whole world. It is thus hard to see how we can rule out the supervenience conditionals as laws on the basis of the claim that physical properties are intrinsic without relinquishing the nomological conception of causality altogether. And, lastly, the proposal fails to rule out the possibility of laws that link the mental to other natural sciences with at least some extrinsic properties, e.g., evolutionary biology. Thus it does not secure the compatibility of supervenience and anomalism in general.⁵⁶

VIII Outline of an alternative proposal

In what follows I outline my own proposal to reconcile anomalism and supervenience. The proposal rests on a different understanding of Davidson's supervenience, which I develop in more detail elsewhere (Shagrir, forthcoming). The main idea is that Davidson's supervenience should not be understood as being grounded in some metaphysical dependence relation, of the mental on the physical. Davidson never alludes to a deeper metaphysical relation, e.g., constitution, emergence, or

56 Two more points about the proposal as an *argument for anomalism*. First, Shea (2003), who provides a detailed case-by-case analysis, concludes that given the assumptions about the intrinsic nature of physical properties, the extrinsic nature of mental properties, and the supervenience of the mental on the physical, anomalism is secured only in certain classes of cases. Second, the proposal does not preserve the distinctiveness of the mental. If it works, it also shows that these other sciences, some of whose predicates are extrinsic, are irreducible to physics (Shea 2003, 211-12).

realization, which underlies and explains the supervenience relations.⁵⁷ Supervenience, rather, is a thesis about the relations between the application of physical predicates and the procedures of interpretation: the procedures by which an interpreter attributes mental predicates to others on the basis of what they say and do.⁵⁸ The thesis is that the relations are not arbitrary, but are constrained by an indiscernibility condition. The constraint is that an attribution of mental difference is always accompanied by some physical difference. Put differently, supervenience states that an interpreter ascribes the same mental predicates to objects or events unless there is some physical difference about them, i.e., in their physical makeup, environment, or in their causal histories. If there is no such physical difference, there is no mental difference.⁵⁹

That supervenience does not reflect metaphysical dependence hardly implies that it does not lead to $P^* \rightarrow M$ laws. But it might be reconciled with an understanding of anomalism according to which the interpretation process is *open-ended*. By saying that the interpretation process is open-ended I roughly mean that it always leaves room for different attributions of mental states. Anomalism follows in that we are never in a position to accept the $P^* \rightarrow M$ conditional as a law, for we must always stand prepared, as the evidence accumulates, to revise our past attributions. We must stand prepared to attribute to someone with P^* the mental state M' and not the mental state M .⁶⁰

57 In 'Thinking Causes,' Davidson is explicit that supervenience is not 'grounded' in a deeper metaphysical dependence relation. If anything, it is the other way around: 'supervenience gives a sense to the notion of dependence here, enough sense anyway to show that mental properties make a causal difference' (1993, 14). See also Campbell (2000) who connects this point to the difference between properties and predicates.

58 There is an intimate linkage between interpretation and mentality in Davidson's philosophy of mind; between someone's thinking that p , and his being interpreted as thinking that p on the basis of what he says and does: 'Thoughts, desires, and other attitudes are in their nature states we are equipped to interpret; what we could not interpret is not thought' (Davidson, 1990b, 88). For a comprehensive analysis of the relations between interpretation and mentality, see Child (1994, chapter 1). See also Davidson (1973b; 1974).

59 What, then, does ground supervenience, if not a metaphysical relation? I propose elsewhere (Shagrir, forthcoming) that supervenience is a result of the practices and conditions on the attribution of mental and physical states. It follows from the publicity constraint imposed on the interpretation process, and the principle of nomologicality of causality that guides the attribution of physical states.

60 There are several different understandings of anomalism; see, e.g., Kim (1985), Child (1994) and Yalowitz (1998). The one I adopt here emerges from crucial passages in 'Mental Events,' where Davidson says: 'No matter how we patch and fit

There is hope that supervenience fits with this understanding of anomalism. Supervenience asserts that whenever we attribute to two individuals the same physical state P^* , we attribute to them the same mental predicates. But it does not assert that we must attribute the same mental predicates to individuals with P^* along the interpretation process. If we attribute to Frank, who has P^* the mental state M , then we also attribute to everyone else with P^* this mental state. If, at a later point, we see that it was better to attribute to Frank (when he had P^*) the mental state M' , then we apply the revision across the board, and attribute to everyone else with P^* the mental state M' . Supervenience therefore does not lead to the $P^* \rightarrow M$ strong conditionals, and, hence, to $P^* \rightarrow M$ laws.

This is a sketch of the proposal. I hope to develop it in more detail elsewhere. Here I will give it more substance by saying more about three issues: open-endedness, the conception of laws, and the strength of supervenience.

The idea of open-endedness can be explicated by contrasting the application of mental and physical predicates. According to Davidson, an ideal physical theory is a *closed* system of quantitative laws on the basis of which it is possible to predict and explain a physical event. That is, a physical theory completely (or up to chance) fixes the physical properties of an object, at time t , provided there is sufficient evidence, e.g., if we know enough about the physical state of the world at time $t-1$. In this respect, a physical theory is *not* open-ended. The attribution of physical properties *from within* a theory is determined and fixed by the laws and sufficient evidence. With this system of laws, the (probability of the) occurrence of any physical event can be derived. This does not mean that we can ever make such derivations. The point is that a constitutive ideal of the physical domain is that someone's physical properties *could* be derived, at least in principle, once enough evidence has been accumulated.⁶¹

the non-mental conditions, we always find the need for an additional condition (provided he *notices, understands, etc.*) that is mental in character' (1970, 217); 'The point is rather that when we use the concepts of beliefs, desire, and the rest, we must stand prepared, as the evidence accumulates, to adjust our theory in the light of considerations of overall cogency: the constitutive ideal of rationality partly controls each phase in the evolution of what must be an evolving theory' (1970, 222-3).

61 See Davidson (1970, 223-4; 1991, 216; 1997, 71), and Child (1994, 61). Open-endedness thus differs from indeterminacies related to competing schemes, what Quine calls 'underdetermination': empirically equivalent but logically incompatible theories. A physical theory is underdetermined by past evidence, and, arguably, by all *possible* evidence, even in the broadest sense; see Quine (1970, 178-9; 1987, 10). Still,

When it comes to the ascription of mental properties, the situation is different. There is no system of interpretation rules that fixes the ascription of mental properties. The rules of interpretation — any set of rules — always leave room for a wide range of different attributions. In this respect an interpretation scheme *is* open-ended. Even *from within* an interpretation scheme the attribution is indeterminate. At any point during the interpretation process, there are several ascriptions consistent with someone's behavior, environment and history. No matter how much evidence has been accumulated, the interpreter is never in a position to exclude all but one ascription.⁶²

Open-endedness is not a momentary episode. It stretches all the way to the future. A central Davidsonian theme is that interpretation is an on-going evolving process in which the interpreter constantly refines her ascriptions.⁶³ Mary ascribes mental states to Frank on the basis of his behavior, his relations with the physical environment, and causal history. Even when she takes into account all this information, Mary is not aware of Frank's future behavior, relations with the environment, and so forth. When made aware of these, say, by waiting long enough, Mary has at her disposal further pieces of evidence. Given that interpretation is open-ended, she is encouraged to test her former ascriptions, in light of these new pieces of evidence. Open-endedness also asserts, however, that at no point along the interpretation process the evidence does remove all the alternative ascriptions. There is no point, now or in future, in which the interpreter can tell that all the other ascriptions

it is not open-ended (and not anomalous), since we can derive the occurrence, or the chance, of every event.

- 62 Davidson clearly upholds the likelihood of competing schemes of interpretation: 'it is certainly possible to differ on predictive theories in psychology' (1997, 81). He also grants that there will be different interpretations that yield the same predictions, and apply equally well to all possible evidence. This is the situation often associated with indeterminacy of interpretation, which Davidson compares to the different scales for measuring temperature: Centigrade, Fahrenheit, etc.; see Davidson (1973, 257; 1991, 214-15; 1997, 79). That these indeterminacies also turn up in the physical domain (see the previous note), however, indicates that they do not supply a reason for anomalism; see Davidson (1991, 215). Open-endedness goes above and beyond these indeterminacies. Open-endedness, which is unique to the mental domain, refers to the indeterminacy arising *from within* an interpretation scheme; as Davidson puts it in a response to Dennett: 'the same system [psychological theory] can be used to support different predictions' (1997, 81).
- 63 See note 57. See also Davidson's entry in the Gutenplan volume, where he writes that '[i]t is always possible, of course, to improve one's understanding of another, by enlarging the data base, by adding another dose of sympathy or imagination, or by learning more about the things the subject knows about' (1994, 232).

are inconsistent with the scheme of interpretation and the available evidence at that moment.⁶⁴

Let us turn to the second issue, of laws. It's 10:00 on Sunday morning. Mary is trying to figure out what Frank wants to do. Two games, one baseball, the other soccer, are scheduled to be broadcast at 11:00 a.m. Mary, being a knowledgeable scientist, knows Frank's maximal physical state P^* : his physical condition and movements, his physical environment, physical past, and so on. Based on all the available evidence, Mary judges that Frank has M , i.e., that he prefers watching soccer to the baseball. But can she judge that the general $P^* \rightarrow M$ conditional is a law?

I suggest that the $P^* \rightarrow M$ conditional can be considered a law only if it satisfies two sorts of counterfactuals; it would be useful to think of these counterfactual cases as lying along two dimensions, the M -invariance and the M -variance. Along M -invariance dimension we consider counterfactual cases (counterparts) as in the Twin-Earth and Swampman. We also consider Frank's counterpart Dave, who has P^* , and query whether he has the same mental state as Frank's. We query these cases under the constraint that Frank is in the extension of P^* and of M (on Sunday morning at 10:00), and that anyone else in Mary's 'world,' who is in the extension of P^* , is also in the extension of M . Put differently, we hold the correlation of P^* and M in Mary's world constant, and we query whether the truth of $P^* \rightarrow M$ also holds in counterfactual situations. We would say that $P^* \rightarrow M$ satisfies the M -invariance condition just in case it is true in all these situations: that Dave who has P^* also has M , and that Frank's doppelganger on Twin-Earth who has $\sim P^*$, has $\sim M$.

64 Open-endedness is consistent with a 'realist' view about the mental, a view on which there is a fact of the matter as to what someone thinks, believes and prefers. That Frank has the mental state M (say) and not M' might be determined by some 'objective,' 'non-epistemic,' interpretation-independent, facts. Moreover, an interpreter who is aware of these facts should ascribe M to Frank. What open-endedness asserts, rather, is that Mary cannot exclude all other ascriptions as being inconsistent with the evidence she has (and, hence, I will claim, cannot judge the correlation between these facts and the M -ascription as lawlike). Open-endedness is also consistent with the idea of an ideal interpreter, i.e., that 'what a fully informed interpreter could learn about what a speaker [believes] is all there is to learn' (Davidson 1983, 148). A fully informed interpreter should (and would) attribute M to Frank when the circumstances are favorable. Nevertheless, it does not follow that the interpreter can tell that she is 'fully informed,' i.e., that the circumstances of attributions are favorable ones. Thus even if she is fully informed, and ascribes M to Frank, Mary cannot exclude the possibility that Frank does not have M , after all, but M' .

On the M-invariance dimension we ask whether the $P^* \rightarrow M$ conditional could turn out to be false even about Frank. The question, more specifically, is about the possibility that, in the light of *additional* evidence, Mary (or other interpreter) will judge that it is better to attribute to Frank, who had P^* at the time, the mental property M' and not M . Along this dimension we do not hold P^* and M constant in Mary's world. On the contrary: we query whether the correlations between P^* and M holds when Mary's world is viewed from other perspectives (scenarios). We would say that the conditional $P^* \rightarrow M$ satisfies the M-variance condition just in case it is true in all these perspectives: that when Frank has P^* , on Sunday morning at 10:00 o'clock, he also has M at that moment.

I consider perspectives that are possible future states of the world. They are *possible* in the sense that Mary does not exclude them as inconsistent with her current epistemic state.⁶⁵ They are *future* states in that they include as their history the current state of the world and *its* history. Here is what might be one such perspective: since Mary is no sports fan, she departs to her lab. Returning home at noon, Mary finds Frank on the sofa watching the baseball game. This new piece of evidence puts Mary in a different epistemic state: she knows something that she didn't know before. What shall she do, in light of this new piece of evidence? Mary has no reason to doubt her past attribution of P^* , i.e. that Frank had P^* at 10:00. The attribution of P^* was fixed, via a comprehensive closed system of laws, by the complete physical state before 10:00. Nothing that happened after 10:00 gives her any reason to change this attribution. However, Mary has good reason to revise her previous assessment of Frank's state of mind. In the light of the new evidence, she can *now* say that it is better to attribute to individuals with P^* M' rather than M . In particular, she can say that although Frank was in a physical state P^* at 10:00, he nonetheless had M' , i.e., he preferred, at 10 o'clock, to watch baseball over soccer.⁶⁶

65 By 'epistemic state' I refer to Mary's schemes of application (and meaning) she uses and the evidence she has on Sunday at 10:00. That laws are tested relative to fixed schemes of application (and meaning) is explicitly indicated by Davidson (1970, 222; 1991, 215).

66 One might argue that the closeness of the physical domain entails that there are no scenarios in which Mary revises her ascriptions: If Mary is a knowledgeable scientist, then with the help of our ideal closed system of quantitative laws, she can derive *any* future physical state from Frank's physical state, P^* , at least up to chance. She can compute for example the state of the physical world at noon. She could thus tell that the scenario described above is not possible after all. But the closeness of the physical domain itself does not rule out scenarios on which we revise mental ascriptions. First, Mary cannot compute all future states at once. Even

I have suggested that $P^* \rightarrow M$ is a law only if it satisfies M-invariance and M-variance conditions. I now want to explain why the M-variance condition is defeated by the open-ended nature of interpretation. Open-endedness asserts that at each moment, at 10:00 or after, the interpreter takes into account that Frank's having $\sim M$ is consistent with the rules of interpretation and the available evidence at the time. It thus follows that there is a scenario in which we attribute to Frank, at the time he had P^* , a different mental state, say M' ; we judge that although Frank had P^* at 10:00, it is better to attribute to him M' and not M . If there were no such scenario, then Mary could have told (on Sunday morning) that there were no circumstances under which she would revise her ascriptions from M to M' . This means that Mary could tell that there are no forthcoming circumstances on which the best ascription is M' : she could tell that any such circumstances are inconsistent with the application schemes she uses and the evidence she has. But given the publicity constraint on mental ascriptions, this would show that M' is not an option at all. For if Mary knows that there are no favorable circumstances under which she will ascribe to Frank M' , then M' is not publicly detectible, and, hence, cannot possibly be ascribed to Frank. But then we lose open-endedness. Thus if interpretation is open-ended, the interpreter must always stand prepared, as the evidence accumulates, to revise her past attributions.

To summarize the argument from open-endedness to anomalism: (a) the interpretation process is open-ended, and (b) $P^* \rightarrow M$ is a law only if it satisfies M-invariance and M-variance conditions, but (c) open-endedness entails that $P^* \rightarrow M$ does not satisfy the M-variance condition. The conclusion is anomalism: there are no $P^* \rightarrow M$ laws.

Let us return to supervenience. Supervenience is an indiscernibility constraint on the relations between the applications of mental and physical predicates. It says that as long as there is no physical difference, there is no mental difference. To simplify things, let us assume that the constraint is on the relations between someone's mental states and his maximal physical property P^* . Supervenience then asserts that

were she able, at 10 a.m., to compute the state of the physical world at, say noon, there would always be a further movement, state of the environment, etc., that Mary hasn't computed yet. Thus even if the case at hand is not a scenario, there can still be other scenarios, perhaps unspecified in their details and in time of occurrence, that are relevant to her past attributions. Second, and more importantly, even were she able to compute the state of the physical world at noon, it does not follow, without further argument, that Mary could deduce what would be the best attribution of *mental* states at that time, and, hence, that the case at hand is not a scenario. I certainly do not assume that all relevant evidence for interpretation, e.g., Frank *watching* the baseball game, is non-semantic.

if there is no difference in P^* , there is no difference in the ascription of mental predicates.

What is the modal force of this assertion? A precise definition is provided elsewhere (Shagrir, forthcoming). But the idea is this: along the M-invariance dimension the condition is strong. Mary must attribute the same mental predicates to all possible objects that have the same physical P^* . In particular, if Frank and Dave have the same physical state P^* , Mary will attribute to them the same mental predicates. This is in accord with Davidson's discussion of the thought experiments, where he insists that there is something different in the physical properties of Davidson and Swampman (who differ in their mental states), and something different in the physical properties of Oscar and his Twin-Earth doppelganger.

The strong feature of supervenience is not a result of some deeper grounding determination relation, but of the relations between the applications of physical and mental predicates. Supervenience states that the possibility of attributing to someone P^* and M and to someone else P^* and $\sim M$ is *logically inconsistent* with the application procedures of mental and physical predicates. It rules out the case in which Frank, who has P^* , has M , whereas Dave, who has P^* , has M' , e.g., the preference to watch baseball over soccer. Therefore, if true, the strong feature of supervenience implies that that $P^* \rightarrow M$ conditional satisfies the M-invariance condition.

Along the M-variance dimension the condition is weak. It allows for two objects, or even the same one, when viewed from different scenarios, to differ mentally even if they differ in none of their physical properties. It allows for Mary to decide, in light of new evidence, that it was better to ascribe to Frank the mental M' , when he had P^* . The weak feature of supervenience is in accord with Davidson's statement that his notion of supervenience is very close to Kim's notion of weak supervenience. If we think of each perspective as a 'world,' and everything that is viewed from it as being part of this world, we get something close to weak supervenience.

The weak feature of supervenience, then, does not entail that $P^* \rightarrow M$ satisfies the M-variance condition, and is, thus, consistent with anomalism. To see this, let us return to the proof from *indiscernibility* to *entailment* in Kim's argument. In line (4) of the proof, *indiscernibility* compels the interpreter to attribute M to \mathbf{b} , whenever it attributes M to \mathbf{a} . Still, supervenience is consistent with Mary's revising, in future time, the attribution of M to \mathbf{a} and \mathbf{b} in favor of what she now deems to be the more fitting attribution of M' . If Mary encounters new evidence, she can decide that for objects with P^* the more apt attribution is M' and not M . Supervenience now compels Mary to apply M' across the board. But future behavior could induce Mary to change her mind yet again,

if she comes to realize that the more fitting property is M'' , and so on. Thus supervenience itself does not lead to $P^* \rightarrow M$ laws, and, hence, is compatible with anomalism.

More should be said before we can accept this proposal for reconciling anomalism with supervenience. But even if successful, the proposal is not likely to please the metaphysical realist who interprets supervenience as (reflecting) a metaphysical dependence relation, and who sees laws as objective features of the world. My aim here, however, was not to please the metaphysical realist. I argued in the first part of the paper that, given Kim's argument, it is doubtful that this can be done. My aim here was to outline a more promising direction to reconcile anomalism and supervenience that makes justice to the Davidsonian outlook (and it was Davidson, after all, who introduced the theses to the philosophy of mind). The proposal does not appeal to the usual 'epistemic' features of explanation and prediction (complexity, generality, simplicity, etc.). But it does construe anomalism and supervenience as relying, at least in part, on the constitutive constraints on the interpretation process.

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