

## **Anomalism and supervenience: a critical study**

### **1. 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. My aim here is threefold. My aim, first, 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 3). 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 4-7), 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. My last objective is to outline a different Davidsonian response to Kim's challenge (section 8).

## 2. 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.<sup>1</sup> 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.<sup>2</sup> 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.<sup>3</sup> 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 respect", that is, there cannot be two events that are physically indiscernible but mentally discernible. He then offers another characterization of supervenience, one which construes it as a type of covariance: "an object cannot alter

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<sup>1</sup> For a historical exposition, see Kim (1990:131-138).

<sup>2</sup> 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 (p. 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.

<sup>3</sup> For a parallel discussion, see Kim (1990:138-140).

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*.<sup>4</sup> These properties are ascribed to particulars such as events, objects and entities.<sup>5</sup> Psychophysical supervenience is a thesis about the relations between mental and physical properties of the same particulars.<sup>6</sup>

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 *supervenies* on S just in case the following condition holds:

(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 M-indiscernible).<sup>7</sup>

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

<sup>5</sup> A major theme in Davidson's metaphysics is that particulars can be redescribed by different predicates, see Davidson (1963:4-5; 1970:209-210). Another major theme is that a particular, even an event, can be described both by mental and physical predicates, see Davidson (1970:212-215).

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

<sup>7</sup> 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.

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.<sup>8</sup>

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" (Kim 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 relations, such as identity, emergentism, realization, certain forms of epiphenomenalism, and perhaps even

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<sup>8</sup> 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.

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.<sup>9</sup>

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.<sup>10</sup> 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,

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<sup>9</sup> 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) and Shagrir (2002).

<sup>10</sup> This view is often identified with Nagel (1961).

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).<sup>11</sup> 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 *ceteris paribus laws*, but only that they are not relevant in the present context, as they do not entail reduction.<sup>12</sup>

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.<sup>13</sup>

Now Davidson does not deny that psychophysical supervenience is consistent with psychophysical reduction. His point, rather, is that psychophysical supervenience is *also* consistent with the lack of psychophysical laws, that supervenience does not *entail* psychophysical laws. The main question, then, is whether Davidson is right about that. The question, more specifically, is whether we can uphold the theses of supervenience, dependence, and anomalism together: Is there a notion of

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<sup>11</sup> 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).

<sup>12</sup> "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).

<sup>13</sup> 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.

supervenience that points to dependence without yielding psychophysical laws?

Contra Davidson, Kim argues that there is not. Let us examine his argument.

### 3. Kim's argument<sup>14</sup>

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.

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<sup>14</sup> 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**,  $P^*$ .<sup>15,16</sup>  
 (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.<sup>17</sup>

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 of these two variants is as follows:

R *strongly* supervenes on S just in case for every M of R, for every pair of worlds  $v$  and  $w$ , and for every pair of objects x in  $v$  and y in  $w$ , if, for every P of S,  $Px \leftrightarrow Py$ , then  $Mx \leftrightarrow My$ .

R *weakly* supervenes on S just in case for every M of R, for every world  $w$  and for every pair of objects x and y in  $w$ , if, for every P of S,  $Px \leftrightarrow Py$ , then  $Mx \leftrightarrow My$ .

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

(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.<sup>18</sup>

(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.<sup>19</sup>

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<sup>15</sup> The object **a** must have some maximal property, since one a conjunction of negative  $P_i$ 's alone. 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.

<sup>16</sup> It is assumed that  $P^*$  is in S, that is, that 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.

<sup>17</sup> Thus Kim (1990:141) provides definitions of supervenience both in terms of indiscernibility and in terms of entailment (both definitions being termed covariance).

<sup>18</sup> The proof is similar to the proof for entailment. In line 3, take some *possible* **b**. **Mb** follows by strong supervenience.

<sup>19</sup> Similarly, in line 3, take some **b** that is in the same world as **a**. **Mb** follows by weak supervenience.

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 scenario in which my physical twin, in some other world, has very different mental states, or no mental states whatsoever.<sup>20</sup>

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.

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<sup>20</sup> See also Kim (1990:143).

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.<sup>21</sup> 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. This world-perspective will include a full description, from the object’s perspective, of all the physical properties and relations in the relevant world.<sup>22,23</sup>

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.<sup>24</sup> It turns out, however, that there are various ways to understand this statement: strong, intermediate

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<sup>21</sup> See Davidson (1990a) for a list of the relevant factors in the attribution of mental states.

<sup>22</sup> 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,  $\mathbf{a}$  and  $\mathbf{b}$ , that there is a single S-property,  $P$ , and that  $\mathbf{Pa}$  and  $\sim\mathbf{Pb}$ . The formula expressing the maximal S-property of  $\mathbf{a}$  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.

<sup>23</sup> 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.

<sup>24</sup> More precisely:

--Two possible worlds,  $w_1$  and  $w_2$  are A-indiscernible =<sub>df</sub> 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 =<sub>df</sub>  $f$  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).

(middling) and weak.<sup>25</sup> I analyze the differences between the varieties of global supervenience elsewhere.<sup>26</sup> Here I will just mention where they stand vis-à-vis Kim's argument. Strong global supervenience does satisfy condition (C),<sup>27</sup> and indeed yields strict principles  $P^* \rightarrow M$ , which apply to any possible object.<sup>28</sup> 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.<sup>29</sup> 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.

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<sup>25</sup> 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).

<sup>26</sup> Shagrir (2002); see also Bennett (2004).

<sup>27</sup> Strong global supervenience of R on S expresses the idea that every pair of possible 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).

<sup>28</sup> Sider (1999:920-921) 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.

<sup>29</sup> See Shagrir (2002) and Bennett (2004).

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 either does not support psychophysical dependence, or entails psychophysical laws.<sup>30</sup>

There are several Davidsonian responses to the claim that anomalism is incompatible with supervenience. I discuss them in turn, arguing that they suffer from number of weaknesses, some to the point of conflicting with other central theses of Davidson's philosophy.

#### 4. 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)

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<sup>30</sup> 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.

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.<sup>31</sup>

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* mental properties that do not depend on physical properties.<sup>32</sup> 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

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<sup>31</sup> See Kim (2003:131-132). But note that Blackburn (1985:134-135) 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.

<sup>32</sup> Kim (2003:131-132) goes on to argue that weak supervenience cannot support the modal force required for the causal relevance of mental properties.

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. (Davidson 1987:32-33)

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.<sup>33</sup>

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<sup>33</sup> 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 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).

## 5. 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.<sup>34</sup>

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,  $P_1$ , in one object, but in a different physical state,  $P_2$ , in another, and so on, perhaps ad

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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.

<sup>34</sup> 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 physically describable difference that distinguishes any two events that differ in a given psychological respect" (1973a:253-254).

infinitem. 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.<sup>35</sup>

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.<sup>36</sup> 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.<sup>37</sup> 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  $P_i$ .<sup>38</sup> 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

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<sup>35</sup> 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  $M$ ".

<sup>36</sup> See Kim (1990:152-154).

<sup>37</sup> See Kim (1992:316-327, esp. 325-327) and Shapiro (2000). But see Block (1997) and Pereboom (2002) for rejoinders.

<sup>38</sup> See Kim (1989: 273-275, 1992: 327-330)

physical kind common to all these realization. In these cases, the correlations between  $M$  and  $\cup P_i$  are the result of a law connecting  $M$  with a natural physical kind  $P$ .<sup>3940</sup>

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:22-23). 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.

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<sup>39</sup> See Kim (1972) and Churchland and Churchland (1992). For the opposing view, see Block (1990). For a detailed discussion of this point, see Shagrir (1998).

<sup>40</sup> 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. 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. And if Davidson is agnostic about multiple realization, he has done little to counter Kim's challenge when applied to his own thesis of anomalism.

## 6. Uncodifiability

An attractive proposal that focuses on the inadequacy of the  $P^* \rightarrow M$  conditionals is advanced, in a Davidsonian context, by William Child.<sup>41</sup> 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.<sup>42</sup>

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"

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<sup>41</sup> Child (1993; 1994, chapter 2).

<sup>42</sup> 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: 214-215). 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.

(1994:59). And this thesis is consistent with the existence of strict psychophysical laws of the form  $P^* \rightarrow M$ .<sup>43</sup> 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 a system of laws which would permit the precise prediction and explanation of particular mental phenomena" (1994:77-78). 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.<sup>44</sup> 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  $P_1 \rightarrow P_2$ .<sup>45</sup> 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

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<sup>43</sup> 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).

<sup>44</sup> See, e.g. Blackburn (1985) and Lewis (1985); see also notes 31 and 53.

<sup>45</sup> See, e.g., Davidson (1967; 1970).

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,  $P_1^* \rightarrow P_2$ , 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.<sup>46</sup>

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.<sup>47</sup> 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 be unable to come up with laws that have the required predictive and explanatory powers.<sup>48</sup>

This line of argumentation is more promising, but it does not avoid a third drawback of Child's proposal, which is that overall, the proposal gives us *less* reason

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<sup>46</sup> 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.

<sup>47</sup> Child suggested something along these lines in a private communication.

<sup>48</sup> 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.

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" (1994:58-59).<sup>49</sup> 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).<sup>50</sup>

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).<sup>51</sup> Now, it seems to me that 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

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<sup>49</sup> Child borrows the term from McDowell (1979); see also McDowell (1985).

<sup>50</sup> 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" (p. 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?'" (p. 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 5 below). Hence, the uncodifiability of rationality extends to the interpretation (p. 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 (p. 60).

<sup>51</sup> On arguments for the uncodifiability of rationality see Child (1994:64-68).

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.<sup>52</sup>

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, C-fiber stimulation) in  $P^*$  that *suffices* for  $M$  (say, pain). 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. But I do not think he has done enough to establish that.<sup>53</sup>

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<sup>52</sup> 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)

<sup>53</sup> Child does not question why there cannot be a non-maximal  $P$  underlying the  $P^* \rightarrow M$  law, 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, via uncodifiability, establish the thesis of anomalism. What reason do we have for thinking that there is no fixed system of strict laws on the basis of which we can explain and predict actions, thoughts, desires and other mental phenomena? The problem is to answer this question we need more than Child has provided.

## 7. 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).<sup>54</sup>

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

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<sup>54</sup> 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.

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 properties 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.<sup>55</sup>

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<sup>55</sup> 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: 211-212).

## 8. An outline of an alternative proposal

I evaluated four proposals for reconciling anomalism and supervenience. The first proposal falls short of explaining how weak supervenience reflects dependency, and how it preserves the counterfactual cases that Davidson wishes to maintain. The other three proposals share a common strategy. They accept strong supervenience, and so that there are strong supervenience conditionals  $P^* \rightarrow M$ . But they deny that the maximal  $P^*$ 's can be the basis of the "right kind" of laws. I resist to these proposals for two reasons, first because they are in tension with central Davidsonian theses, and, second since in conceding that the  $P^* \rightarrow M$  conditionals are necessary truths, anomalism becomes a mild thesis.

I outline here an alternative proposal. The proposal rests on a different understanding of supervenience and anomalism. Let us start with supervenience. The urge to adopt strong  $P^* \rightarrow M$  supervenience conditionals stems from the understanding that supervenience reflects a metaphysical dependence relation, of the mental on the physical. But I suggest that Davidson does not understand supervenience like that. He does not allude to a deeper metaphysical relation, e.g., constitution, emergence, or realization, which underlies and explains the supervenience relations. Supervenience is a constraint on the relations between the attribution of physical states and the procedures of interpretation: the procedures by which an interpreter attributes mental states to others on the basis of what they say and do. The constraint is that there is no mental difference without a physical difference: that an attribution of mental difference is always accompanied by some physical difference. The mental depends on the physical, according to this

understanding, in that the application of mental predicates is constrained by this indiscernibility condition.<sup>56</sup>

That supervenience does not imply metaphysical dependence does not yet mean that it does not lead to  $P^* \rightarrow M$  laws. To show the latter, I introduce an understanding of anomalism according to which it emerges from the *open-ended* character of the interpretation process. By saying that the interpretation process is open-ended I roughly mean that it is an ongoing, evolving, process that always leaves room for the possibility of adjusting past attributions in light of new piece of evidence. 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 attributions. We must stand prepared to attribute to someone with  $P^*$  the mental state  $M'$  and not the mental state  $M$ .<sup>57</sup>

Taken together, supervenience is compatible with anomalism. Supervenience asserts that whenever we attribute to two individuals the same physical state  $P^*$ , we

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<sup>56</sup> A thorough analysis of Davidson's comments on supervenience is provided elsewhere. Just two quick points: First, I do not argue that this understanding of supervenience is exactly Davidson's position in every detail. The proposed notion of supervenience is Davidsonian in the sense that it fits well both with many of his comments on supervenience and with his overall philosophical outlook. Second, in "Thinking Causes", Davidson is explicit that supervenience is not "grounded" or being accounted for by deeper metaphysical dependence relation. 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). I propose elsewhere 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.

<sup>57</sup> 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 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 (1970:222-223). 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). I am not suggesting that this is the only way to understand these passages, nor that it is the only argument provided for anomalism. I also do not provide an argument for open-endedness. My aim is to consider one understanding of anomalism that can be made consistent with supervenience.

attribute to them the same mental state. But it does not assert that we must attribute the same mental state 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 latter 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 laws.

This is a sketch of the proposal. I develop it in detail elsewhere; here I want to give it more substance by saying a bit more about three issues: open-endedness, the conception of law, 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, the theory is not open-ended: the attribution of physical properties from *within a theory* is determined and fixed by the laws and (enough) evidence. From within a theory, we can deduce, in principle, the (probability of the) occurrence of any physical event.<sup>58</sup>

When it comes to the ascription of mental properties, the situation is different. First, there is no system of interpretation rules that fixes the ascription of mental

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<sup>58</sup> To say that a physical theory is not open-ended is not to deny that the theory is subject to a variety of indeterminacies. Open-endedness 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 (1970:178-179; 1987:10). Still, it is not open-ended (and not anomalous), since we can still derive the occurrence, or the chance, of every event; see Davidson (1970:223-224; 1991:216; 1997:71), and Child (1994:61).

properties. The rules of interpretation – any set of rules – always leave room for a wide range of different attributions. At any point during the interpretation process, there are several ascriptions that are consistent with someone's behavior, environment and history. Even from within the interpretation scheme the attribution is indeterminate. Even if the interpreter knows every last thing about someone's physical state, behavior, and present and past causal history, environment and history, she cannot deduce what mental properties she should ascribe.<sup>59</sup>

Second, there are always future pieces of evidence that are relevant to the ascription of mental states. The interpreter is, at best, aware of someone's behavior, his relations with the physical environment, and causal history. She is not aware of his future behavior, relations with the environment, and so forth. When made aware of these, say, by waiting long enough, she has at her disposal further pieces of evidence. Some pieces might make her even more convinced that her attribution of M at time t is the correct one. But other pieces might encourage her to revise her interpretation, deciding that the more appropriate attribution of mental states is not M, but M'. Other future behavior might bring the interpreter to change her mind yet again, deciding that the more fitting property to attribute is M" (or M again), and so on.<sup>60</sup> In this respect

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<sup>59</sup> 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; 1991:214-215; 1997:79). That these indeterminacies also turn up in the physical domain (see previous note), however, indicates that they do not supply a reason for anomalism; see Davidson (1991:215). Thus open-endedness goes above and beyond these indeterminacies. Open-endedness, which refers to the indeterminacy arising *from within* an interpretation scheme, is unique to the mental domain.

<sup>60</sup> The idea that future evidence fixes content is advanced with respect to meaning by Jane Heal: "[O]n Davidson's story... contents... await determination in light of the later pieces. The patterns to which we must look in assigning meaning are the patterns spread out across time, including the future, and not merely across space. Thus features of later utterances, features which fix what overall patterns they and the earlier ones can form, are partly constitutive of the earlier utterances having the meaning they do" (1997:193). My further claim is that there is no bound on future evidence that fixes content. There is no point in time after which there is no further piece of evidence that are relevant to the ascription of mental properties.

the interpretation process is open-ended: any non-trivial system of interpretation rules leaves open the possibility of revising past attributions in light of new evidence.

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. She judges that the conditional  $P^*_{\text{Frank}} \rightarrow M_{\text{Frank}}$  is true. But can she judge that the general  $P^* \rightarrow M$  conditional is a law?

I suggest that the  $P^* \rightarrow M$  conditional has to satisfy two conditions; we can think of them as the spatial and temporal conditions. On the spatial dimension we consider actual and counterfactual individuals who are physically indiscernible from Frank. We ask whether Dave, who also has  $P^*$ , has the same mental state as Frank. As we shall see momentarily, supervenience dictates that the answer is clearly positive: if we judge that the  $P^* \rightarrow M$  conditional is true when applied to Frank, then we also judge it to be true about Dave. In particular, we rule out a scenario in which Frank, who has  $P^*$ , has  $M$ , whereas Dave, who has  $P^*$ , has  $M'$ , e.g., the preference to watch baseball over soccer. So no problem on this front: the  $P^* \rightarrow M$  conditional satisfies the spatial condition.

On the temporal 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 at some future point along the interpretation process, we will change our past attribution to Frank from  $M$  to  $M'$ . We will judge that it is better to attribute to Frank, who had  $P^*$  at the time, the mental property  $M'$  and not  $M$ . The term

'temporal' is somewhat misleading. I do not ask whether there is, in fact, a point in time at which we will revise our attributions. The question is whether the rules of interpretation and all the evidence available up to 10:00 o'clock, is consistent with assigning to individuals with P\* the property M' rather than M. And the answer to this is positive: the open-ended nature of the interpretation process implies that at each point of time, whether at 10:00 or after, the rules of interpretation and the available evidence at the time are consistent with Frank having P\* and not-M. There are always cases, in a potential future, that are consistent with the evidence and interpretation rules that falsify the  $P^*_{\text{Frank}} \rightarrow M_{\text{Frank}}$  conditional, and, hence also the general  $P^* \rightarrow M$  conditional.

Indeed, 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. 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 us any reason to change this attribution. However, Mary has good reason to revise her previous assessment of Frank's state of mind. In light of the new evidence, she can *now* 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 the baseball over the soccer.

Mary is a knowledgeable scientist. With the help of our ideal system of quantitative laws, she can derive *any* future physical state from P\*. But she cannot compute all states at once. Even were she able, at 10 a.m., to compute the state of the physical world at, say 12 p.m., there would always be a further movement, at 1 p.m. or whenever, that Mary hasn't computed yet, and that might accompany her current

attribution of *mental* states. Mary is also an ideal interpreter. She would attribute to Frank the mental state he had, when given enough evidence. No future evidence will give Mary reason to change her attribution. Nevertheless, at no point in time Mary she is in a position to judge that she will never revise her attribution. At any point in time, there is a possible route into the future which is consistent with the rules of interpretation and with the available evidence at that time.

We can thus conclude that the  $P^* \rightarrow M$  conditional does not satisfy the temporal condition. Even if it is true, the conditional is not counterfactual supportive along the temporal dimension. There are always cases, in a potential future, on which the conditional is false.<sup>61</sup>

Let us return to supervenience. As said, 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 properties and his maximal physical property  $P^*$ . Supervenience then asserts that if there is no difference in  $P^*$ , there is no difference in the ascription of mental properties.

What is the modal force of this assertion? A precise definition is provided elsewhere. But the idea is this: along the spatial axis the indiscernibility condition is strong. At a given point in time, Mary attributes the same mental properties to all

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<sup>61</sup> There are many issues here that are in need of clarification. I will make just two points: First, I do *not* assume here an "anti-realist" view according to which mental states are constituted by the interpretation process. That Frank has the mental state M (say) and not M' might be determined by some "objective", interpretation-independent, facts. The point is that whether the  $P^* \rightarrow M$  conditional is a law is a matter of judgment; see Davidson (1970:216). Second, I do not deny that *laws* might turn out to be false. They might turn out to be false for many reasons. One is that we mishandled the available evidence: we were sloppy in our measurements, ignored relevant pieces of evidence, miscalculated the data, made the wrong inferences, and so forth. Another is that we revise our theory or substantial parts of it. In these cases, however, we would say that what we judged to be laws turned out to be false statements (and, hence, not laws). My point here is not merely that the  $P^* \rightarrow M$  conditional might turn out to be false. The point is that even if it is true, it is not necessarily true.

possible objects that have the same physical property  $P^*$ . In particular, if Frank and Dave have the same physical state  $P^*$  at  $t$ , Mary will attribute to them the same mental properties. Along the temporal axis, however, the condition is weak. It is weak in that Mary can revise her attributions: Mary might decide, at  $t+1$ , that it was better to ascribe to Frank the mental property  $M'$ , when he had  $P^*$ . Supervenience only states that in this case Mary will attribute, at time  $t+1$ ,  $M'$  to everyone with  $P^*$ .<sup>62</sup>

But is this notion of supervenience a notion of dependence? I think it is. It clearly secures the kind of dependencies that Davidson discusses in the thought experiments. Indeed, the supervenience condition, which is strong along the spatial axis, entails 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. It is true that the supervenience relations between  $P^*$  and mental properties can change along the temporal direction, but the changes are not arbitrary. Changing the attribution from  $M$  to  $M'$  is accompanied by a change in the physical world. When, at  $t+1$ , Mary revises her attribution from  $M$  to  $M'$  the physical world is different from the one it was at  $t$ . Her attribution of  $M'$  to Frank at  $t+1$  is correlated with Frank's  $P^*$ , at  $t$ , and with his maximal physical property at  $t+1$ , which is different from the one he had at  $t$ .<sup>63</sup>

Does supervenience lead to  $P^* \rightarrow M$  laws? 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 **b**, whenever it attributes  $M$  to **a**. Still, Mary is free to reject in future time the previous attribution of  $M$  to **a** and **b** in

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<sup>62</sup> The notion is "weak" in the sense that we can view each point along the interpretation process (actual or potential) as a possible world: within each world, all objects with  $P^*$  have the same mental properties. But across worlds, objects with  $P^*$  might have different mental properties. This might explain why Davidson views his notion of supervenience as "weak".

<sup>63</sup> We can thus formulate a strong condition, along the temporal dimension, on which the mental properties of objects supervenes on the physical properties of objects at  $t$  *and* the physical state of the world at the time of attribution.

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. 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. Given that interpretation is an evolving, open-ended process, there will never be a necessary correlation between P\* and one specific mental property. Hence supervenience *is* compatible with anomalism.

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