The Logic of Materialism: A Test Case for the *Principium Exclusae Antinomiae*

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Contemporary materialism apparently takes no notice of the peculiar nonphysical status of logical laws and relationships. Yet, seventy years ago, J.B. Pratt and others proposed that materialism was incoherent due to its inability to do justice to the metaphysical status of logical laws and properties. Lately, this accusation has resurfaced as a criticism of materialism from the viewpoint of the school of Cosmonomic Philosophy founded by Herman Dooyeweerd and Dirk H. T. Vollenhoven. In particular this occurs in Roy Clouser's, The Myth of Religious Neutrality*. I endeavor to make the accusation of Pratt and Clouser, which is not well-developed in their respective books, clear and precise as a violation of Dooyeweerd's well known* Principium Exclusae Antinomiae*. I offer three arguments to the effect that 1) materialism destroys the notion of logical entailment, 2) materialism destroys the notion of logical truth, and 3) as a supervenience thesis materialism is incoherent.*

1. Introduction

Currently, the most popular metaphysical position in, not the only the Anglo-American philosophical world, but in the scientific world as well, is materialism, also known as "physicalism". In terms familiar to the tradition of the Cosmonomic Philosophy, we can describe this position as one that sees everything as qualified by the physical aspect or modality exclusively. Those few philosophers in the Anglo-American tradition who argue against materialism usually focus upon the inability of materialism to do justice to the psycho-sensory modality of reality.[1] In other words, they argue that physicalism cannot do justice to the nature of sensations by

1 Such is the work of Australian Frank Jackson, for example.

reducing them to the functioning of the nervous system as conceived in exclusively materialistic terms. However, earlier in the Twentieth Century, a few anti-materialist philosophers took a different approach to pointing out the incoherencies of materialism. They charged materialism with the inability to account for the laws of logic. J.B. Pratt puts it this way:

> Thus no conclusion is ever arrived at because of logical necessity. There is no logical necessity among mental processes but only physical necessity. The truth is, according to Materialism, we think the way we have to think, the way our mechanical brains constrain us to think. We may happen to think logically; but if we do, this is not because logic had anything to do with our conclusion, but because the brain molecules shake down, so to speak, in a lucky fashion. ... It is forever impossible to demonstrate that any thesis is logically necessary. ... This seems plainly to be the inevitable outcome of the materialist doctrine. And it gives an interesting and somewhat surprising turn to the discussion. For suppose at this point we ask the materialist why he maintains that Materialism is true. ... The hopeless self-contradiction of such a position is obvious. With one breath the materialist asserts that his doctrine is logically demonstrable and that there is no such thing as logical demonstration. As Bradley has put it, no theory can be true which is inconsistent with the possibility of our knowing it to be true (Pratt, 1922: 20-21).

In the tradition of the Cosmonomic Philosophy, others have noted something very similar. Roy Clouser makes the claim that materialism is self-assumptively incoherent.

> ...to assert this exclusivist materialism is the same as claiming it is true, which is another nonphysical property, and assumes that for any assertion to be true its denial would have to be false – which is a relation guaranteed by logical laws. (Indeed, any theory which denies the existence of logical laws is instantly and irredeemable [sic] self-assumptively incoherent since that very denial is proposed as true in a way that is assumed to logically exclude its being false) (Clouser, 1991: 71).

Yet, in the Anglo-American philosophical tradition, such problems are ignored, or just not taken seriously, since logic is seen as only a part of language and language can be explained as physical syntax manipulation. For example, in their classic introductory philosophy text, James Cornman and Keith Lehrer mention Pratt's objection only to dismiss it as somehow missing the entire point:

> Let us grant for the purposes of the discussion that every event, whether material or mental, is causally determined. Thus, each time I come to some conclusion I have been caused to do so by certain preceding events. Does it follow from this, first, that my conclusion has not been proved and, second, that I have not proved it? First, a conclusion is proved deductively, for example, when it is shown to follow deductively from true premises. It does not matter how it is shown or by whom or under what conditions. A computing machine can be used to derive certain conclusions, but this does not show that the conclusion has not been proved. A justification or proof of a claim depends on logical relations among statements not upon psychological and causal relations among thoughts or molecules. Thus, because [materialism] makes claims about causal rather than logical relations it does not imply that conclusions cannot be proved (Cornman & Lehrer, 1968: 233-234).

Taken more seriously by Anglo-American philosophers are problems of biological reduction, i.e., the reduction of biological laws and properties to those of macro-molecules described in exclusively physical terms. In the tradition of the Cosmonomic Philosophy, Danie Strauss has been quite aggressive in pointing out the problems with such a strategy.

> According to the mechanistic approach in biology, living entities are only "complex physical-chemical systems of interaction" in which according to the nature of an open system, continuous metabolic processes … are taking place. From this it follows that a living thing must … possess a physical-chemical identity … constituted by the atoms, molecules and macromolucules which are present. … When living things are reduced in the physicalisitic sense, through the mechanistic viewpoint in biology, to their constitutive matter-ingredients, then it goes without saying that the biotic identity is lost out of sight – the supposed elements of identity *continually* changes [sic]. (Strauss 1991: 91.)

What philosophers like Strauss, Clouser and Pratt have noticed are well known *antinomies* produced by physicalistic reductions. In this regard, Strauss and Clouser are following the principle of antinomy exclusion (*principium exclusae antinomiae*) – a powerful tool laid out by Dooyeweerd in his *New Critique of Theoretical Thought* (Dooyeweerd, 1969: Vol. II, 37 ff.), that requires a systematic philosophy to reassess itself whenever an antinomy is produced by the destruction of a modal boundary. The production of antinomies is an indication – as a necessary, but not sufficient condition – that a modal boundary has been breached by ignoring the metaphysical irreducibility of one or more aspects, or

modalities, of reality.[2] The case of philosophical materialism provides a plethora of test cases for this *principium*.

Because the nature of the logical antinomies produced by materialism are, on the one hand, so clear to non-materialists, yet, on the other, so obscure to materialists (unlike problems of perception and biology), the matter calls for vivid re-examination in terms more familiar to the Anglo-American philosophical tradition. What I propose to do is present two arguments whose conclusions are that materialism is straightforwardly false because (1) it is inconsistent with the notion of logical entailment, and (2) it is inconsistent with the notion of a logically necessary truth. Finally, I will briefly address the possibility that logical laws and properties could bear a metaphysical supervenience relation to physical laws and properties. What I will do is take up the strategies involved in both Clouser's accusation against materialism and in Pratt's argument and weave them into two new arguments that will, hopefully, make the point of Clouser's accusation and Pratt's argument crystal clear to their detractors in the analytic tradition. If my arguments still remain unconvincing, at the least it will be clear why they are and what more may need to be said to bring the point home.

2. Materialism – What is it?

First, we must define materialism in a way that is acceptable to those who hold the view in question.[3] Given the diversity of opinion on this issue, that is not an easy task. I will therefore, concern myself only with reductive and eliminative versions of materialism, leaving aside from present consideration supervenience views.[4] Another reason for doing this, is that supervenience views do not seem to make the exclusivistic claim that there are only physical laws and properties in the world. They admit to a diversity of kinds of properties but claim that these all supervene upon the physical, while the physical supervene upon nothing else. To simplify things, I wish to put aside the supervenience views for the time being. I will come back to them in the final section of this paper.

Regardless of whether we deal with reductive or eliminative materialism, both views seem to have one thing in common. They claim that, despite

2 Antinomy-like consequences can be produced by mistakes in thought other than modal boundary violations, such as mistakes that miss some other facet of reality as when one makes arithmetical errors in balancing a checkbook.

3 In so far as that is humanly possible.

4 Supervenience views can also be styled "causal dependency" views. On this see Clouser (1991).

appearances to the contrary, there is only one basic kind of law or property in the world, and that kind is purely physical. By purely physical, we mean a law or property that is part of the proper field of investigation for physics. For reductivists, apparently nonphysical entities have a characterization in purely physical properties alone. For eliminitivists, such entities simply do not exist, so why trouble ourselves with re-characterizing them? Let's stay with those entities that are *prima facie* physical.

For the purposes of my argument, this difference is inessential. I will argue that both the reductive and eliminitivist versions of materialism are false, based on what the views have in common. Because both of these positions are more radical than the supervenience views, I will refer to them collectively as 'strong materialism' or 'SM'. I define this view as follows:

(SM) strong materialism =df The only kind of laws or properties that exist are physical laws or properties.

SM, I take it, is compatible with either reductive or eliminative materialism and has no comment to make on how the reductions are to proceed or which entities are *prima facie* physical and which are not. It is formulated to capture the motivating worldview behind both brands of materialism. (But it is not intended to capture anything about supervenience views.) Given its broad construal, even a thesis as cleverly contrived as Davidson's anomalous monism is a species of SM:

> Anomalous monism resembles materialism in its claim that all events are physical, but rejects the thesis, usually considered essential to materialism, that mental phenomena can be given purely physical explanations. Anomalous monism shows an ontological bias only in that it allows the possibility that not all events are mental, while insisting that all events are physical. (Davidson, 1980: 214.)

To be honest, I have never been completely sure that the last sentence in the above quote does not contain some kind of typographical, or other, error. Perhaps I should just attribute my confusion here to Davidson's well known skill at avoiding clarity. At any rate, taking the above quote at face value seems to indicate that Davidson believes that (1) there are only physical laws or properties, (2) events are characterized by only physical properties, and (3) while there are some *classes* of events that have no apparent physical cause or explanation (i.e. mental events) and may defy identification with established *prima facie* physical *events as a class*, the individual *members* of these classes are still characterized by only physical properties.[5] Nevertheless, it still counts as SM since SM

makes no claims about what can or can't be explained or identified with physical laws or properties alone. This analysis seems borne out by what Davidson has to say in another essay on the same topic:

> What I have supposed is that for any particular dated psychological event we can give a description in purely physical terms; and so for any given, finite class of events, we can set up a correlation between psychological and physical descriptions. But although this can be done, it does not follow that such psychological predicates ... have any nomologically corresponding physical predicates. (Davidson, 1980: 249.)

By "such psychological predicates" Davidson has in mind intentional states that subsume infinitely many instances under one heading, such as believing that Beethoven died in Vienna, or desiring one's neighbor's wife. Instances of these may be correlated with *prima facie* physical events, but not the entire *infinite* class (a predicate would refer to an entire infinite class of events of a certain type). This means that Davidson is thoroughly nominalistic about certain psychological classifications (if not all of them). Although belief states (and all mental states) are physical, there is no set of necessary and sufficient *physical* conditions that a mental state must fulfill to be a certain type of mental state, such as a belief state. The classification of mental states as belief states is, apparently, arbitrary or conventional. Davidson's anomalous monism is weaker than most materialisms that claim that there must be a reduction of the mental to physical, yet it still counts as "strong" materialism in the sense of SM.

Apart from Davidson, SM seems to capture quite well what other popular defenders of the view seem to have in mind:

> By 'materialism' I mean the theory that there is nothing in the world over and above those entities which are postulated by physics ... (Smart, 1970: 159)
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> For a Materialist, a man is a physical object, ... He does not have any nonphysical properties. (Armstrong, 1968: 11)
>
> Physicalism [is] The doctrine that the only entities are physical entities and that, ultimately, physical laws explain everything (in some sense). (Devitt & Sterelny, 1987: 254)

5 In other words, it's thesis that says each mental token is identical with some physical token, but such a correlation can't be maintained between *types* of mental events and *types* of physical events, or *types* of mental events and physical event tokens.

> ...in another and more important sense it [materialism] is more alive than it ever was. ... The progress of biology, physiology, and psychology has made it more probable than it ever was before that all natural phenomena are governed by the laws of physics; and this is the really important point. (Russell, 1931: 120)
>
> In philosophical terminology, "materialism" (or "naturalism") refers to a philosophic view which holds that matter in motion is the fundamental constituent of the universe. (Fromm, 1994: 8)

I will, therefore, take SM to be an accurate assessment of the position and turn my attention to the arguments at hand.

3. Materialism and the notion of logical entailment

In this section I will argue that materialism destroys the notion of logical entailment and is therefore false. I will take it for granted that any claim, proposition or theory that is inimical to the notion of logical entailment must be false.

Possibility is said in many ways. For every kind of law or property there is a corresponding sense of, or kind of, possibility and necessity governed by that kind of law or property. For example, although in one sense of the word it is very well possible to do 80 miles per hour on the interstate highway in most of North America, in another sense it is not. It is not possible to do 80 miles per hour and remain within the bounds of *juridical* law, while it is possible to do 80 miles per hour and not violate any laws of motion or physics. Doing 80 miles per hour is a *physical* but not a *juridical* possibility. Other actions, like exceeding the speed of light, are physical impossibilities, made so by a law-like relation between an object's mass and its velocity that dictates that mass increases without limit as velocity approaches light speed, thus requiring an unlimited increase in energy to accelerate to the speed of light. Thus the relationship or law linking velocity to mass makes it impossible for an ordinary object of positive mass to ever reach light speed. However it is certainly *conceivable* that congress, in its perversity, could make exceeding the speed of light a *juridical* possibility (or impossibility) on highways in the United States. In fact at one time this was the case on the Pennsylvania Turnpike – it had no speed limit. (In this regard I'm reminded of the attempt on the part of the state legislature of Louisiana to legislate the value of P to be 3.2, a clear mathematical impossibility, but well within the bounds of juridical achievement.) What is possible or impossible from the view of one set of laws need not be so from the view of another.

Laws of space, or geometry, dictate whether or not the angles in a triangle will equal 180 degrees. In short, they dictate whether or not this sum is a *spatial* possibility. If one deals with Euclidean geometrical laws, this is a possibility, its violation an impossibility. The reverse is true if we switch to Riemannian or Lobachevskian geometries. Laws of biology dictate what is possible for life. Under normal conditions, it is not possible for human beings to either gain or lose more than 10 ounces of fat in one 24 hour period. Such is made possible by laws that govern the operation of body metabolism. Hence losing 10 ounces of fat a day is not a *metabolic*, or *biological*, possibility.

Logical laws introduce yet another sense of the possible. Traveling faster than light is a physical impossibility, yet not a logical impossibility. For any unaided human being to swim the Atlantic Ocean in thirty minutes is likewise a physical but not a logical or alethic impossibility. Logical possibility depends upon the *law of non-contradiction*. Any state of affairs that is *consistently* imaginable is a logical possibility, but not necessarily a possibility from the viewpoints of other classes of laws and/or properties.

What I think we've noticed in these simple illustrations, is that there is no possibility of type, X, without a corresponding law or property of the same type, and vice versa. In fact, I cannot think of a single sense of possibility that is not accompanied (or governed) by a corresponding law or property of similar type. So, I will encapsulate this correlation as the following "nomodyne" thesis (or 'NT' for short) because it links law (νομος) with possibility (δυνατος), a "nomodyne" being one such correlation:

NT: There is a distinct kind of law or property of type X IFF there is a distinct kind of possibility (or necessity) of type X.

The thesis will hold regardless of whether one thinks possibilities are dependent upon laws, or laws dependent upon possibilities. It will also hold regardless of whether one wishes to eliminate laws in favor of possibilities, or possibilities in favor of laws. I do not intend NT to beg any ontological questions of this type.

While I'm on the subject, let me say something about what my use of terms like 'law', 'property', and 'possibility' is *not* meant to imply. It is not meant to imply or presuppose any particular ontological view about the kinds of things these terms refer to. My intent is to use the terms in as ordinary and colloquial a sense as possible, mirroring how we might talk about such things in ordinary scientific discourse, or even everyday discourse, without begging any questions concerning realism or

antirealism with regard to the interpretation of such terms. Thus, my argument will not hinge upon any particular interpretation of what a "law", or "property", or "possibility" is. Whether one believes in possibilities as abstract, real alternatives to the actual world, or simply *ersatz* worlds, or even linguistic constructions, will be beside the point. The same goes for laws. Hence one is free to read his own interpretation into my use of such terms. There is, though, one position on these matters that my argument is incompatible with, and that is an eliminitivist position. However one interprets entities like laws, properties and possibilities, I will at least assume there are such things. If one does not believe there are such things at all, under any reinterpretation, then what I have to say will be of no interest to him. The whole debate will be beside the point. Indeed, if one takes such a view, it does not even seem possible to formulate the positions at issue. I don't even pretend to know how one would make sense of SM, or any other materialistic thesis if one did not grant that there were physical laws or properties of some sort under some interpretation of what a law or property is. Therefore, nothing of what I have to say will address or concern itself with the extreme nominalist attitude towards laws and properties. I will simply ignore it.

Let me now make an observation that is, I hope, intuitively obvious. I realize full well the dangers involved in such pronouncements, nevertheless I intend to make it anyway. Quite simply, it is obvious that, it is not a physical possibility that the Concorde can fly faster than the speed of light. I will call this Observation 1 (O1):

O1. It is not *physically* possible that 'The Concorde flies faster than the speed of light' is true.

Furthermore, if we know that a certain state of affairs, such as the Concorde's flying faster than light, is not a physical possibility, then this, conjoined with any other state of affairs is also, at the very least, a physical impossibility as well. In other words, if one element of a conjoined state of affairs is a physical impossibility, then the entire whole should also be a physical impossibility due to whatever physical law or laws prevent that one constituent element from being a physical possibility. Consider, then, grass' not being red. Given that the Concorde's flying faster than light is a physical impossibility, the Concorde's flying faster than light *and* grass' not being red is also a physical impossibility. Thus we have Observation 2 (O2):

O2. It is not physically possible that: 'The Concorde flies faster than the speed of light' is true *and* 'Grass is red' is false.

Let's return briefly to the definition of SM and notice one corollary that follows from that and the thesis NT:

Cor. 1: If SM is true, then the only sense of possibility or necessity that exists is physical possibility or necessity.

Let's now proceed by *reductio* and assume the truth of SM. It now follows that the only sense of possibility or necessity that exists is physical possibility or necessity. Furthermore, the standard notion of logical entailment, defined as:

DF1. (Logical entailment): P entails Q IFF it is not *logically* possible that P is true and Q false.

must now read, in the light of SM, as a *physical* notion, which must also render service for logical entailment as well:

DF2. (Physical entailment): P entails Q IFF it is not *physically* possible that P is true and Q false.

But if we remember O2 previously, both O2 and DF2 together now require, by definition, that:

> 'The Concorde flies faster than the speed of light' entails 'Grass is red'.

However, it seems unquestionable that this entailment is an absurdity. Nothing can be deduced about the color of grass from the speed at which the Concorde is able to fly. Yet it's this very state of affairs to which we are committed if we accept SM, or any equivalent materialist thesis. Indeed take any two sentences, P and Q, that describe a state of affairs such that the conjunction of P and not-Q is a (physical) impossibility. It will then turn out that P entails Q regardless of any truth functional connection between the two. The notion of entailment is now rendered utterly useless. Since we profit by plurality of examples, and the more absurd the better, let us take one more. Let the sentence 'January is the first month of the year' be P, and let 'nothing travels faster than the speed of light' be Q. Then on the assumption that SM is true, and as a result DF2 as well, it will then be the case that:

> 'January is the first month of the year' entails 'nothing travels faster than the speed of light'.[6]

6 Because, of course, it is physically impossible that January is the first month of the year and something travels faster than light.

This, too, is an absurdity. From the arbitrarily designated first month of the year nothing can be deduced about the speed of light. In fact, let Q be a statement of any known physical law. The statement 'January is the first month of the year' then entails any given Q. Hence 'January is the first month of the year' entails all known physical laws. But there is no truth functional relationship here, there shouldn't be, yet that is what the truth of materialism (SM) would commit us to.[7]

Moreover, take any claim asserting a physical impossibility, its denial will have to be a tautology, and, hence, a theorem of the propositional calculus. Hence, I conclude SM is false.

4. Materialism and logical truth

In this section, I would like to unleash an argument against SM that is similar in spirit to the foregoing, but approaches the situation from a slightly different point of view. In the previous section I tried to establish that if SM were true it would commit us to some very odd entailments. I tried to do this in a spirit that did justice to something that J.B. Pratt pointed out almost 70 years ago. Pratt, though, did not say explicitly that materialism produces counterintuitive entailments, but that it destroyed the ability of logical laws to preserve truth from premises to conclusions, and to establish conclusions with logical necessity. My second argument will be more in line with this spirit than was my former.

Let me now make an observation that is, I hope, as intuitively obvious as those in the previous section, if not more so. Again I realize full well the dangers involved in such pronouncements, and yet again I intend to make it. It seems obvious that there is no *a priori* necessity to any statement of physical law. There seems to be no inconsistency in imagining the falsity of any physical law taken by itself. No physical law depends for its truth solely on the principle of non-contradiction. Hence, we can always consistently conceive of the falsity of any given physical law. We may have to alter closely associated laws to do so, but there is no logical contradiction to taking the basic laws of physics, and (assuming they are all consistent with each other) replacing them with their negations. There will be contradictions with actual experience, but the possible experiences associated with doing such will be consistent, though comprise a set of experiences quite different from

7 Physical laws would be in the odd position of behaving just like common logical tautologies.

the world as actually experienced. We have only to remember how alternatives to Euclidean geometry were discovered by replacing Euclid's axioms (or one axiom, the parallel postulate) with alternate, mutually consistent axioms. I am merely suggesting the possibility of a similar scenario with physics. To use common philosophical parlance, we would say that there is no purely *physical* law that is true in all possible worlds – whatever we take those to be. According to an older terminology, we would say that physical laws are *a posteriori* in nature, or logically contingent. Because physical facts, or physical states of affairs all depend on physical laws, neither would these obtain or exist in all possible worlds. We could call this situation the "contingency of the physical" or 'CP' for short.

CP: There is no statement of purely physical fact that is true in all possible worlds.

In conjunction with this, let me point out another somewhat obvious corollary of SM in addition to what we noticed in the previous section.

Cor. 2: If SM is true then all statements are statements of purely physical fact.

Again let's proceed by *reductio* and assume SM is true. By Cor. 2 it follows that all statements are statements of purely physical fact. By CP, there is no statement that is true in all possible worlds. If we stand with accepted practice and take a logical truth to be a statement that is true in all possible worlds, then SM implies there are no logical truths. Because every valid deductive argument correlates with an implication that is itself a logical truth, SM implies there are no valid deductive arguments. Hence SM destroys logical necessity and validity. I, therefore, conclude that SM is false. This argument is entirely in Pratt's spirit.

5. Supervenience and logical properties

I might be considered remiss if I didn't make the attempt to address a somewhat different variety of materialism, that of the supervenience variety – "supervenience" being the new and trendy name for what was called "causal dependency" earlier in the twentieth century. Perhaps materialism can avoid the foregoing problems by admitting to logical properties as an existing kind of property distinct from the physical, nevertheless supervenient upon the physical. There is one variety of supervenience with which I will deal, due to its apparent currency, and it is usually stated in this fashion:

> Properties of type x supervene on properties of type y IFF any two objects alike in respect of y must be alike in respect of x (Kim, 1978: 149-150).

Where the families of properties are finite, Kim (1978) has shown that on such a definition of supervenience, *every* instantiated property of type x is biconditionally correlated with *some* instantiated property of type y. However, the converse does not hold. It is not the case that *every* instantiated property of type y is correlated biconditionally with *some* instantiated property of type x. This means it must be possible for some object(s) to have some property of type y and that property fail to be correlated with any instantiated property of type x. In other words, it is possible for some object to instantiate some y type property and no x type property. Or, in more colloquial parlance, it is possible for the y type properties to exist without any x type properties. Let us now frame materialism as a weaker supervenience thesis, which I will call 'weak materialism' (WM):

(WM) weak materialism =df All nonphysical properties (including logical properties) supervene upon physical properties.

It is my contention that with respect to logical properties, we cannot make sense of WM. Let us suppose that logical properties supervened upon the physical in accord with the previous definition of 'supervenience'. Then, the following corollary would be true given WM:

Cor. 3: It is possible for some physical properties to exist (instantiated) without any logical properties.

But which notion of possibility is being used here? It surely could not be a logical notion. The position would then be self-contradictory.[8] Could it be a physical notion? Supervenience would then be a physical relationship, and I'm not sure that this makes any sense, since to say that things are *biconditionally* correlated, as the definition of supervenience does, is to say that they stand in certain logical or truth functional relations to each other. Furthermore, the principal proponents of supervenience as a relation between certain nonphysical and physical properties, also claim that there are no natural bridge laws correlating these two kinds of properties.[9] If supervenience were a physical relationship it would certainly belie this claim, since *physical* possibility would then be a bridge law.

8 How could it be *logically* possible for physcial properties to exist without *logical* properties??

9 Notice, in this regard, Davidson's position in the quotations I cited earlier, although I do not believe that Davidson subscribes to WM, but rather SM. Kim (1978: 149 ff.) notices this peculiarity on the part of those who hold supervenience views regarding the relation of moral and aesthetic properties to physical properties.

But let's put that problem aside and assume we could make sense of the notion of possibility being used. The notion of an object instantiating[10] a physical property but no logical properties, seems strangely absurd. It would mean that the instantiation of the physical property was not self-identical. Any object possessing the physical property in question would also fail to conform to the principle of non-contradiction and so would also fail to possess the property in the very same sense at the very same time. In short, the possible scenario suggested by the supervenience of logical properties upon the physical, is not coherent and is most certainly not a logical possibility. Any materialist thesis should not only present us with what is physically possible, but at the very least conform to what is logically possible. A thesis that maintains that logical properties supervene upon the physical does not. Therefore, I conclude that WM must also be false.

6. Concluding remarks

Other than Pratt, Clouser, Strauss, and Dooyeweerd, I know of no contemporary philosophers who have noticed the peculiar metaphysical problem that exists with logical laws and properties in questions of physicalisitic reductions. This, of course, may be just due to my own lack of information. In particular, other than the brief and misguided quote from Cornman and Lehrer at the beginning of this paper, I know of no contemporary materialists who have addressed this problem. That, too, may be a shortcoming on my part. Could it be addressed adequately in a materialist framework? If it were, it would be incumbent upon the materialist to show, for any given logical law or property, which physical law or property, or combination thereof, the logical law/property in question was somehow identical with. But for this to be done in a way that was not question begging, the appropriate physical laws/properties would have to be selected without presupposing or implicitly relying upon any covertly logical laws/properties. I know of no way that could be done, in fact the proposal doesn't even appear to be coherently conceivable. I think that I have reached the point where all I can do is await the ingenuity of the materialist establishment in making a reply. I'm sure it will not be long in coming. The zeal with which this cause is defended has all the hallmarks of the religious fanatic. To quote the faithful:

10 Supervenience seems related to a kind of emergentism with respect to the properties that supervene upon the physical. Clouser (1991: 215) has pointed out how the emergence of logical properties would be an absurdity, since the conditions needed for the emergence would not even be logically possible.

> Physicalism is intrinsically plausible. It has excellent scientific support ... There are, we believe, no good arguments *against* this perspective. (Devitt & Sterelny, 1987: 8-9)

To quote the sceptic:

> ...it remains a hope and a prophecy commanding loyalty in the face of the most insurmountable incoherencies (Clouser, 1991: 150).[11]

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11 My thanks to Dustin Updyke for patient proof reading of this text.