Remarks on the Matter of Materiality

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1. The concept of *mass* and the mystery of *matter*

The following formal principle is true of the concept of *mass*:

> P1 For all particulars X and moments of time t: if X exists at t, then the mass of X at t is either 0 or greater than 0.

Note that P1 is not trivial. Consider an X which is such that the mass of X at a moment of time t is neither 0 nor greater than 0 – which means (with negative mass being ruled out) that one cannot really speak of "the mass of X at t". For such an X, P1 allows to conclude that X is not a particular that exists at t, which logically implies the following disjunction: that X is either not a particular, or a particular that is (*simpliciter*) non-existent (i.e., that does not exist at any moment of time), or a particular that is non-existent at t but exists at some other moment of time. Of these three alternatives, I only rule out the second one, by postulating:

> P2 Every particular exists (*simpliciter*, i.e., exists at least at some moment of time).

The spirit in which I would like P2 to be taken is well captured if, in P2, one reads "every particular" as "every particular *taken into account here* (in this essay)".

And there is another preliminary remark. Since the adjective "persistent", in connection to "particular", will occur many times in this essay, apparently marking an important characteristic, a definition of "persistent" in connection to "particular" had better be given: a particular is *persistent* if, and only if, the moments of its

existence form at least one *gapless stretch* of time (where a *stretch* of time is taken to consist of more than one moment of time).

But now, what is *mass*? The question has a straightforward first answer: mass is the quantity of *matter*. But what is *matter*? It is a surprising fact that we don't really know; we only know the *effects* of matter (and we measure the quantity of matter – mass – on the basis of those effects). On the one hand, matter is whatever is wholly responsible in a persistent material particular for its offering resistance – only to be overcome by *force* – to being accelerated; and whatever is partly responsible in a persistent material particular for its offering resistance to being penetrated or deformed (in the cases of resistance to penetration and deformation, the geometrical structure of the persistent material particular is the other, also *partly* responsible factor). In this perspective, matter is an *anti-dynamical factor*. On the other hand, matter is also whatever is wholly responsible for the gravitational force a persistent material particular exerts on other persistent material particulars (accelerating them). In this perspective, matter is also a *dynamical factor*.

We also know today that the constancy of matter, which the medievals ascribed to heavenly bodies, is likely to be found quite on the other side of the size-scale of persistent material particulars: in the elementary particles (the ancient atomists, of course, had a hunch of this fact). Each electron, for example, has a constant mass (in fact, each electron has *the same* constant mass), and this seems to indicate that also *the matter* of each electron is constant during the entire course of its existence. But as soon as we come to the level of macro-physical persistent material particulars, constancy of mass or matter is to be had, if at all, only in approximation. In fact, since the matter of a macro-physical persistent material particular X at a moment of time t is the aggregation of the *constant matters* of all elementary particles that go into building X at t (let's assume the *constancy of matter* of these particles), it is clear that the matter of X at time $t+\Delta$ may have nothing in common with the matter of X at t – because no elementary particle that goes into building X at $t+\Delta$ is an elementary particle that already went

into building X at t.[1] This possibility is in fact realized in special persistent material particulars: *organisms* (with sufficient longevity).

Due to Einstein's special theory of relativity, we also know today that matter is a special form of energy and can under certain circumstances be wholly transformed into thermic and kinetic energy (thus, the quantity of matter in the physical world *is not* preserved; only the quantity of energy in the physical world is preserved – assuming that the physical world is a closed system). But all of this does not really tell us what *matter* is. The usual materialist is full of contempt for everything *mysterious* – an ontological contempt that makes him move on to denying the existence of what he contemns; it should give him pause that matter *is* mysterious.

2. Is matter a *principium individuationis*?

Matter is a *principium individuationis* for elementary particles X and Y – unfortunately, an entirely useless one, since we cannot recognize as identical or distinguish the matter of X and the matter of Y without recognizing as identical or distinguishing X and Y. But matter is not a *principium individuationis* – not even a useless one – for persistent material particulars *in general*. The matter of X at moment of time t and the matter of Y at moment of time t' are, whether these *matters* are identical or different, neither sufficient for determining that X and Y are identical, nor for determining that they are different:

If the matter of X at t is identical with the matter of Y at t', it does not follow that X is identical with Y (and of course it does also not follow that X and Y are different from each other). – This is obvious if $t' \neq t$. For the special case that $t' = t$, consider (*a*) Tibbles, who has a tail before t (= t'), but none at t' (= t), and (*b*) Tib, who is Tibbles *always without her tail*. The matter of Tibbles at t' is identical

[1] Nevertheless, the mass of X at $t+\Delta$ (i.e., the *quantity* of the matter of X at $t+\Delta$) may well be more or less the same as the mass of X at t (the *quantity* of the matter of X at t).

with the matter of Tib at t'; nevertheless, Tibbles is not identical with Tib.

If the matter of X at t is different from the matter of Y at t', it does not follow that X is different from Y (and of course it does also not follow that they are identical to each other). – This is true; but if one makes the extra assumption that $t' = t$, then, indeed, "X is different from Y" follows from "the matter of X at t is different from the matter of Y at t'".

The case of Tib and Tibbles is an unusual version of a usual phenomenon: several persistent material particulars (sometimes indefinitely many) share the same matter at a given moment of time: consider (1) this statue, (2) this lump of bronze, (3) this gaggle of copper and and tin atoms. (1), (2), and (3) have the same matter at a given moment of time, but (2) and (3) may still exist when (1) doesn't, and (3) may still exists when (1) and (2) don't. Thus, the statue, the lump of bronze, and the gaggle of atoms are three different persistent material particulars.

One might prima facie believe that although the identity of matter at time t is not in general sufficient for making persistent material particulars identical, the identity of *spatial location* at time t *is* in general sufficient for this. But this, too, is not the case – as is, again, shown by Tib and Tibbles, and by the statue and the lump of bronze. There is, moreover, a deep problem connected with the spatial location of persistent material particulars and, as a consequence, also with *the quantity* of that spatial location, *the volume* of persistent material particulars: the further one goes into the micro-structure of such objects, the further their precise spatial location – if it is to be determined on purely objective, physical grounds – *evaporates.*[2] The problem can be put in terms of a paradox:

> On purely objective, physical grounds, the precise spatial location of a persistent material particular X at a moment t of time is the region $RO(m(t, X), t)$ of space, in other words: the region of space that is precisely occupied at t by the matter of X at t. But every region R of space that is a candidate for

[2] Cf. Uwe Meixner, "The Non-Physicalness of Material Objects", in *Unity and Time in Metaphysics*, ed. E. Runggaldier *et al.* (Berlin: De Gruyter 2009): 47-51.

RO(m(t, X), t) contains *empty* space.[3] Therefore, R is not precisely occupied at t by the matter of X at t, and therefore R is not RO(m(t, X), t).

The best solution to this paradox, I submit, is that the precise spatial location of a persistent material particular X at a given time t is not determined on purely objective, physical grounds, and is not RO(m(t, X), t). It is also determined *by us* and differs considerably from RO(m(t, X), t) (which, very likely, does not exist *as intended*; cf. footnote 3). It is a certain irony of the history of philosophy that Descartes called persistent material particulars – *wholly material* ones in his eyes – *res extensae*, separating them from *us*, who – in his eyes – are persistent wholly immaterial *res cogitantes*. It can, of course, hardly be denied that persistent material particulars are *extended*. But their precise extension is not only dependent on temperature and pressure, but also on *our deciding* how far they are extended, that is, on *our deciding* what counts as *their territory*, and what does not.[4] Empty space is bound to be involved in that territory. Since empty space is *immaterial* (i.e., *wholly* immaterial), it may, therefore, be reasonably proposed that *no* persistent material particular is *wholly* material.

3. Hylomorphic functions and the identity and unity of material particulars

Every (existing[5]) material particular X is *represented* by a *hylomorphic function* $\theta(X)$ as follows:

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[3] This is what we find, and indeed it seems that it cannot be otherwise. If it were otherwise, the density of X at t would be *infinite*; but, of course, the density of X at t is *not* infinite. It is, therefore, not unreasonable to suspect that RO(m(t, X), t) does not exist *as intended*: that "RO(m(t, X), t)" does not have a referent that corresponds to its meaning. But where, then, is *matter*? The difficulty of locating matter is a not inconsiderable part of the *mystery* of matter.

[4] Cf. Meixner, "The Non-Physicalness of Material Objects": 51-55.

[5] Remember P2.

> The domain of $\theta(X)$ comprises the moments of time at which X exists, and $\theta(X)$ assigns values to those moments of time in the following manner:
> *(i)* If t is a moment of time at which X exists and which is such that the mass of X at t is greater than zero, then $\theta(X)(t) = \langle m, f \rangle$, where f is at t the form of X and m the matter that is at t *in union* with f in X (i.e., *the matter of* X *at* t).
> *(ii)* If t is a moment of time at which X exists and which is such that the mass of X at t is zero, then $\theta(X)(t) = \langle \varnothing, f \rangle$, where f is at t the form of X and $\varnothing$ the empty set.

While clause *(i)* is always necessary, clause *(ii)* may not be necessary for a given material particular. It is not necessary, for example, if X is a *persistent* material particular, for the mass of a persistent material particular is at any moment of its existence greater than 0. The representation of material particulars by hylomorphic functions makes it particularly easy to see, (a), in which manners material particulars may be different from each other and yet partially identical, and, (b), what is really sufficient for their being *identical*:

> P3 For all (existing) material particulars X and Y: if $\theta(X) = \theta(Y)$, then $X = Y$ (where $\theta(X)$ and $\theta(Y)$ are functions that, in the manner just described, represent X and Y).

It is to be supposed that there are *many more* hylomorphic functions than there are material particulars. Presumably not every restriction of a given *material-particular-representing* hylomorphic function represents, in its turn, a material particular; yet it *is* a hylomorphic function. And consider a function θ' that assigns, to each moment t of time in some non-empty set of such moments M' (which serves as the domain of θ'),

> an ordered pair $\langle m, f \rangle$, where m and f are such that *for some (existing) material particular* X the following is true: f is at t the form of X and m the matter that is at t in union with f in X.

θ' *is* a hylomorphic function; but it may well be the case that it does not represent any material particular: because its course of

values may easily turn out to be a patchwork derived from many different material particulars – a patchwork that cannot be assigned to any *one* material particular. Thus, each hylomorphic function that *represents* a material particular *X* also displays *the specific principle of unity* that belongs to *X*. And vice versa: if a hylomorphic function displays a specific principle of unity *P*, then it also represents the material particular to which *P* belongs. It is no misuse of the term "essence" to call the principle of unity that belongs to a material particular *the essence* of that particular.

Typically, the principle of unity of a material particular *X* is *diachronic*: it is not already determined by a single value of the hylomorphic function of *X*; only in the case of momentary material particulars (if there are such things) is the respective principle of unity *non-diachronic*. Note that even though the principle of unity of a non-momentary material particular is diachronic, it cannot be without a *synchronic* (hence momentarily determined) element if the particular's time of existence has a first moment. For without such an element, it would be indeterminate when the particular comes into existence; the presence of the synchronic element is necessary, and sufficient, for establishing the beginning of the material particular's existence.

Any persistent material particular can be classified according to whether the values <*m*, *f*> of its hylomorphic function are (i) diachronically constant in both the first *and* the second component, (ii) diachronically constant in the first, but not in the second component, (iii) diachronically constant in the second, but not in the first component, (iv) diachronically constant neither in the first nor in the second component. An individual (mere) *portion of matter* (it need not be a spatially coherent portion) is a *degenerate* material particular (i.e., one that is identical to its matter), and it is a material particular which is only very indirectly accessible to human cognition. Yet it is (at least normally) a *persistent* material particular, and *necessarily* such that the first component of the values of its hylomorphic function is *diachronically constant* (otherwise it would not always be *this selfsame* portion of matter), whereas the second component of the values of its hylomorphic function can, in the course of time, vary very widely indeed (it can, but it needn't). In contrast, a *neutron* is a persistent material particular, and necessarily such that both components of the values of its hylomorphic

function are diachronically constant. A neutron is at all times of its *existence composed of the same matter and the same form*, in other words: the form of the neutron is at any moment *t* of the neutron's existence *the same*, and the matter that is at *t* in union with that form in the neutron is *the same*, too. Most persistent material particulars, however, are neither like portions of matter nor like neutrons. While *the second component of the values of the hylomorphic* function of *the Ship of Theseus* varies only slightly, the first component of those values varies considerably in the course of time, to such a degree that at a later moment of the Ship's existence it has nothing in common with what it was at an earlier moment of that existence. And *if we come to a living organism, then no* diachronically constant, or approximately diachronically constant, element in the values of its hylomorphic function is readily discernible. This means that the principle of unity of *such* a persistent material particular is not readily discernible. The traditional hylomorphistic answer to the question of what constitutes the unity of a living organism is, of course, this: the principle of unity of an organism is the organism's *soul*. However, it rather seems that an organism's soul is *an effect* of the organism's unity (emergent from it, and perhaps a safeguard for it),[6] and *not* that the organism's unity is an effect of the organism's soul.

4. Are some particulars immaterial?

There is a longstanding *phobia*, though not always of the same strength and extent, in Western philosophy against immaterial entities – *either* against regarding the specimens of a given kind as immaterial, while leaving the exemplification of the kind (i.e., its having specimens, its being exemplified) untouched; *or*, if it seems impossible to regard the specimens of the kind as material, then against its very exemplification. It is obviously absurd to regard abstract entities as material (they are *wholly immaterial*). Accordingly, it has been proposed (by many philosophers, not a few of them in most centuries, their number increasing in recent times)

[6] A theory of the soul along these lines can be found in Uwe Meixner, *The Two Sides of Being. A Reassessment of Psycho-Physical Dualism* (Paderborn: Mentis, 2004), in chapters VIII, IX, and X.

that the kind *Abstract Entity* is not exemplified (has no specimens); it has, in other words, been denied that any entity is abstract.[7] It seems, moreover, that specimens of the *God*-kind are bound to be immaterial; however, it is certainly not as obviously absurd to regard gods as material as it is absurd to regard abstract entities as material. Accordingly, we find, in the course of the centuries, a *divided* phobic reaction against *this case* of prima facie immateriality in an ontological species. Most of the philosophers who have *a problem* with the *God*-kind (and there are many such philosophers, very many in recent times) deny that this kind is exemplified, in other words, they propose that nothing is a god (not even God). But a small minority of those philosophers *does* believe that the *God*-kind has a specimen, in fact, a *single* one – which, however, they deem to be (in contrast to what is believed by other, normal monotheists) *a material entity*: the World, or Nature. There are, finally, fairly strong indications that *human persons*, too, are bound to be immaterial. However, in this case, there is much more room (and motivation) than in the case of abstract entities and gods for contending that, on the contrary, the specimens of the kind in question are, in fact, *material*. Accordingly, we again find, in the course of the centuries, a *divided* phobic reaction; but in this further case of prima facie immateriality in an ontological species, majority and minority in the phobic reaction against it are distributed inversely to the previously considered case: In the case of the *God*-kind, eliminativists (deniers of God/gods) formed the majority, non-eliminativists ("materializers" of God/gods) the minority; in the case of *Human Person*, non-eliminativists ("materializers" of human persons) form the majority, eliminativists (deniers of human persons) the minority (a fairly small one).

But is it the case that some entities are immaterial? Everyone who accepts abstract entities cannot deny that, indeed, some entities are immaterial. And some properties are immaterial *if* some particular is immaterial, because an immaterial particular is bound to have some properties that literally, not analogically, apply to it – which properties are immaterial in virtue of this. But are there

[7] If this were true, then all admitted singular terms that are meant to designate an abstract entity (like "4", "the Pythagorean theorem", "the perfect circle") would not refer at all, or at least would not have a referent that corresponds to their meaning (i.e., would not refer *as intended*).

immaterial particulars? Well, *yes*. There are even concrete, non-abstract immaterial particulars: every region of space is a persistent *immaterial* particular. Some readers will no doubt balk at the idea that regions of space are *particulars*, and would continue to do so even if *regions of space* were understood to be *coherent regions that have the form of geometrical solids* (the better known among which are cubes, spheres, pyramids, etc.). But, really, there is no good reason to deny that regions of space are particulars; there is for this denial just the *bad* (*phobic*) reason that regions of space would be *immaterial* particulars if they were *particulars*.[8]

However, if *human persons* were immaterial particulars (contrary to classical Christian hylomorphism), then this would certainly be a much more exciting bit of news than the truth that regions of space are immaterial particulars. Here are two arguments for conferring on human persons the status of immaterial particular; one argument is *a priori*, the other *a posteriori*:

The *a priori* argument[9]

Let *X* be a human person. While *X* experiences the physical world in just the way *X* in fact experiences it, the entire physical world might not exist [*thesis of the possibility of ontological idealism*].[10] Therefore: It might be the case that *X* exists while the entire physical world does not exist. Therefore: It is possible that *X* is not a physical entity. But if *X* were a physical entity, then *X* would be a physical entity *necessarily* [*thesis of the essentiality of physicalness*]. Therefore, *X* is not a physical entity. Therefore, *X* is not a material entity. Therefore, *X* is an immaterial entity. But *X* is certainly a particular [by the *thesis of the individuality of persons*]. Therefore, *X* is an immaterial

[8] The immateriality of regions of space is evident in the case of *empty* regions of space, but the character of immateriality is still there when a region of space is *non-empty*. Filling a region of space with matter does not turn it into a material entity – just as joining a soul to a body does not turn it (the soul) into a material entity.

[9] Cf. Meixner, *The Two Sides of Being*: 85-121.

[10] Note that the thesis of *the possibility* of ontological idealism *is not* the thesis of *the truth* of ontological idealism.

particular. Therefore: *Every human person is an immaterial particular.*

The *a posteriori* argument[11]

Let *X* be a human person. At any moment of time at which *X* undergoes visual experience, *X* sees the world from a certain very small region of space, *O* (this *origin* of *X*'s perspective in *X*'s visual experience can be objectively determined).[12] And if *X* sees the world from O at the moment *t* of time, then *X* is in *O* at *t*: *O* is *X*'s location at *t*, as precisely as that location is determinable (it is *not* the region of space that is at *t* occupied by *X*'s body). But the physical entities one finds in *O* at *t* are certainly not *X*. Therefore, *X* is not a physical entity. Therefore, *X* is not a material entity. Therefore, *X* is an immaterial entity. But *X* is certainly a particular. Therefore, *X* is an immaterial particular. Therefore: *Every human person is an immaterial particular.*

Both these arguments use the expressions "material particular" and "immaterial particular" in such a sense as to make right, *to the extent this is possible*, what is said in them. The logic of both arguments seems correct. But both these argument have premises (otherwise they would not be arguments), and premises can be criticized. However, unless a premise of an argument is criticized on grounds that have nothing to do with the fact that one does not believe in the argument's conclusion, such criticism has few credentials. It is legitimate – indeed rationally unavoidable – that a disbeliever in the conclusion of a logically correct argument rejects the conjunction of the premises. But this rejection is, in itself, just the

[11] Cf. Uwe Meixner, "Materialism Does Not Save the Phenomena – and the Alternative Which Does", in *The Waning of Materialism*, eds. R. C. Koons and G. Bealer (Oxford/New York: Oxford University Press, 2010): 418-422.

[12] Suppose I aim a gun. Draw the line that connects the target-point and the sights on the gun I aim. Draw many such lines for various aimed-at target-points – with me not moving my head when aiming at this or that target-point. Where all these lines converge, there is my perspective-point, or rather, my perspective-region, O.

adoption of a stance, not a rationally obligating criticism of the argument.

What, then, might be said against the premises of the above arguments *without* making use of the conclusion-denying assumption that human persons are *material* particulars? What can be said in a non-question-begging way against *the three theses* on which the *a priori* argument rests (the names of the theses are given in the argument itself: in square brackets, in italics)? Every one of those theses is plausible enough; *together*, however, they logically imply what, to many philosophers, can only be *anathema*. The premises of the *a posteriori* argument are even more plausible than the premises of the *a priori* argument. They are just about unassailable. Note that it is a move utterly *ad hoc* to propose that X is not in the place from where X looks at the world. If I am not *there, where* am I then? If the answer is "nowhere", then it is even clearer than if the answer is "somewhere" that I am not a material particular. If the answer is "where my body is", then this answer is *roughly* true, just as it is *roughly* true that I am where the Earth is. But neither the location of the Earth nor the location of my body are my *precise* spatial location (otherwise, the Atlantic would not be closer to me than Antarctica; otherwise, my nose would not be closer to me than my feet). The situation does not essentially improve if it be claimed that I am where *my brain* is: the origin of my perspective is much smaller than my brain and, for that matter, much smaller than the region of the physical goings-on (whatever they are) that make up the neural correlate of my visual experience. I, a persistent particular, *do* now have a precise spatial location (in the sense that it cannot be made yet more precise; it is precisely the position from where I would aim a gun – if I aimed a gun). But no material particular that is in that location is *me*. Therefore, I am not a material particular – but an immaterial one.[13] Admittedly, the location from where *it seems to me* that I look at the world may not be the real location from where I look at the world. Consider, however, that I rely on that *seeming* (and my reliance on it would be a particularly heavy one if I aimed a gun), and *so far* that seeming has proved entirely *reliable* (in my personal history, I cannot recall one instance

[13] Note that the *a posteriori* argument shows that being spatially located does not contradict immateriality. But this is not as surprising as it may seem at first sight: spatial regions, too, are immaterial *and* spatially located.

where it was not reliable). Experience is fallible, and so is the experience that underlies the *a posteriori* argument; but fallibility, by itself, is not a sufficient reason to distrust experience, or any particular experience.[14]

It is easier to cast doubt on *the conclusions* of the arguments (in fact, it's the same conclusion for both arguments) than to criticize their respective premises in a more direct way. Such a move, if not simply consisting in the allegation that the conclusion is false or at least implausible, *is* rationally obligating (that is, it rationally – not morally, of course – obligates the proponent of the argument to give an adequate response). But one should be careful that it is the right assertion one attacks. The arguments do not assert in their conclusion that *human beings* are immaterial particulars (such an assertion would be false, of course, since it is beyond reasonable doubt that human beings – qua organisms – are material particulars); both arguments speak of *human persons*, and implicitly distinguish the human person from the human being. Moreover, the ar-

[14] In Daniel Dennett's "Where am I?" – in *Brainstorms: Philosophical Essays on Mind and Psychology* (Cambridge, Mass.: MIT Press, 1981), 310-323 – Dennett's brain remote-controls the rest of Dennett's body, the two being spatially separated (sometimes by hundreds of miles). But where is *Dennett* in this thought-experiment (i.e., the person to which Dennett refers by using the word "I")? The best answer, I submit, is that Dennett is, also in this unusual case, in the place from where he looks at the world, and that this place is the place from where *it seems to him* that he looks at it. When, for example, he is looking at his own brain in the bubbling fluid in the glass-vat, he is in the place from where he looks at his brain, this place being the place from where it seems to him that he looks at his brain. If he, in the thought-experiment, had suicidal intentions, he might suddenly produce a gun and aim it at his brain – and he would aim the gun from the very location he is in, which is the location from where he looks at his brain; which is the location from where *it seems to him* that he looks at it. That location is a small spatial region not far behind his eyes – with nothing physical in it that might with any plausibility be *Dennett*. Now, at one point in Dennett's thought-experiment the non-cerebral part of Dennett's body *dies*. Where is Dennett in *this* case? The best answer is that, though his brain is where it was, in the glass-vat, still supporting Dennett's (rather reduced) existence, he himself – with all sensory data gone – is where it seems to him he is: *nowhere*. (Some may say that in reality he is somewhere in his brain. But this is an *a priori* position without any phenomenological support, a position which is due to the questionable *a priori* premise that human persons are where the physical causal bases of their existence are.)

guments do not assert that human persons are *immortal*; they do not even assert that human persons *can in the natural course of nature exist without their bodies.*[15] They arrive only at the conclusion that human persons are immaterial particulars – and this does not by itself preclude that, in the natural course of nature, human persons have bodies and need a (living) body for their existence, and that, by natural necessity, human persons cease to exist when their bodies cease to exist.

But would I not lack causal power if I really were an immaterial particular? This query presupposes that immaterial particulars have no causal power, which presupposition, in turn, presupposes that matter – which is what immaterial particulars do not have – is the source of all causal power that a particular may have. But such an assumption seems arbitrary. For the greater part of the history of philosophy it was in fact believed that matter is so far from being the source of all causal power that it is *totally inert* in the causal respect. In view of the scientific fact that matter is a special form of energy and exerts gravitational force, that belief can no longer be upheld (just as it cannot be upheld that matter is totally *passive* and *indifferent* with respect to the form it acquires at a given moment of time). But it does not follow that matter is the source of *all* causal power.

If (some) immaterial particulars are to have causal powers *that are effective in the physical world* (which seems to be the only way to hold *their reality* in proper esteem), then their having such causal powers must, of course, be compatible with the Law of the Preservation of (Physical) Energy. Although it is often denied, there is, in fact, conceptual room enough *both* for according such causal powers to immaterial particulars *and* for respecting the laws of physics.[16]

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[15] Note that the *a posteriori* argument says nothing at all (not even in its premises) about the possibility (logical, metaphysical, or natural) of existence without a body.

[16] See Uwe Meixner, "New Perspectives for a Dualistic Conception of Mental Causation", *Journal of Consciousness Studies* 15 (2008): 17–22.

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