Note of introduction: The intended audience for this paper is mainly Catholic graduate students and young Ph.D.'s in philosophy and theology, though everyone is of course welcome to read it. The paper was written in three stages. The first version was delivered in October, 2010 at the Dominican House of Studies in Washington, D.C. The revised version was delivered at the inaugural Thomistic workshop at Mount Saint Mary College in Newburgh, NY in June 2011. The workshop was co-sponsored by the Catholic and Dominican Institute at Mount Saint Mary College and by The Thomistic Institute of the Dominican House of Studies in Washington. Finally, a new section on reductionism was added for the second Thomistic workshop at Mount Saint Mary College in June 2012, and the whole paper was revised again.

Oh My Soul, There's Animals and Animals: Some Thomistic Reflections on Contemporary Philosophy of Mind

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Dedicated to Ralph McInerny, Joseph Bobik and James Ross — Requiescant in pace

The history of philosophy teaches us that the way in which important philosophical problems are formulated is highly contingent and deserving of scrutiny. The very setting up of a philosophical problem, along with its range of possible solutions, is itself an important philosophical task, and it can be done either well or badly, in a way that illuminates a particular philosophical landscape or in a way that obscures it and leads the unwary into research projects that bear little fruit *per se* and might even do intellectual damage. For instance, in another place I have tried to show how the contemporary discussion of causality (i.e., efficient causality) within Anglo-American philosophy is locked almost exclusively into competing strains of Humean empiricism and does not even take into account the Aristotelian alternative that underlies the so-called 'intuitions' that drive the discussion forward.[1]

I have long thought that Francisco Suarez's most important contribution to the history of metaphysics consists as much in his clear-headed and painstaking formulation of one after another metaphysical problematic as in his own proposed solutions to the problems that he has formulated.

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[1]See Parts 3 and 4 of "Suarez on Metaphysical Inquiry, Efficient Causality, and Divine Action," which serves as the introduction to Francisco Suarez, *On Creation, Conservation, and Concurrence: Metaphysical Disputations 20-22*, translation, notes, and introduction by Alfred J. Freddoso (South Bend, IN: St. Augustine's Press, 2002).

Something similar is true *in excelsis* for St. Thomas. When I conduct a seminar on a sizable portion of the *Summa Theologiae*, I always have my students first read the most important introductions leading up to and extending through the set of questions we will be dealing with. Then I ask them, as they go through the relevant questions, to pause at the beginning of each article and ask, "Why does he bring this issue up at this point and in this way?" Since St. Thomas is both a brilliant thinker in his own right and a self-conscious participant in several longstanding intellectual traditions, the answer always lies either in the orderly sequence of his investigation or in the writings of the authorities cited in the objections and *sed contra*.

This is very good training for approaching contemporary analytic philosophy of mind. In this paper I propose to do just that, albeit in a sketchy and programmatic way. After reviewing relevant highlights of St. Thomas's account of the sentient and intellective souls, I will discuss some features of the contemporary problematic in philosophy of mind that are bound to strike a Thomist as strange and insufficiently motivated. I will close by stepping back from from the world of professional philosophy in general and making a few brief remarks about the cultural significance of a Thomistic account of the human animal.

1. *St. Thomas on the sentient and intellective soul*s

We're animals, or so at least St. Thomas rather plausibly contends; so let's begin by talking about the other animals. For as the song has it, "There's animals and animals."

Notice, first, how typically Aristotelian a move this is — beginning our consideration of a given issue with what is lower in the ontological hierarchy and moving toward what is higher. To cite another example, a great deal of confusion is engendered in contemporary analytic action theory by the fact that most of those (relatively few) philosophers who are willing to countenance genuine agency, i.e., genuine efficient causality, regard it as peculiar to human beings or, at most, to rational agents in general. That is,

they treat the rest of the universe, including the world of non-human animals, as devoid of agency and, like Berkeley and Descartes before them, recognize agency just in the case of intellectual agents. An Aristotelian, by contrast, sees human agency as simply a higher-order manifestation of a feature shared by every primary substance in the universe, animate and inanimate. So without denying the peculiarity and metaphysical (if not always moral) nobility of human agency, the Aristotelian looks to nature in general for clues to understanding human agency and its place in the natural world.

In the present case, we begin with cognition and affection in non-human animals in order to better understand human cognition and affection. To make our reflections more concrete, let's begin with an individual 'brute' animal, say, Arnie Aardvark. Arnie's aardvark-soul is the formal principle or 'form' that constitutes him as a unified living organism and, more specifically, a living corporeal substance of the natural kind *aardvark*. In conferring undivided aardvark-*esse*, this form dominates every part and power that belongs to Arnie; this is one reason why St. Thomas insists that the proper subject of Arnie's 'substantial form' is 'primary matter '— with the consequence that all of Arnie's material constituents, at any given level of scientific description, lose their status as independent substances (or 'subsistents') and are taken up into the life of the unified aardvarkian organism. From St. Thomas's perspective, it's just an amazing fact about nature that unified physical substances that are potentially decomposable without material remainder into the elements, i.e., fire, air, earth, and water, (or, at the next level up, into minerals, or at yet the next level up, into flesh and bones and sinews and nerves, etc.) should have the sentient powers that aardvarks have.[2] Later I will offer a few thoughts on the Aristotelian philosophy of nature that this description presupposes. But right now I want to concentrate on St. Thomas's account of Arnie's powers of sentient cognition and affection.[3]

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[2]From a Thomistic perspective it makes no essential difference what the correct characterization of the material constituents at the various levels turns out to be. This is an empirical matter falling within the purview of the natural sciences. But the findings of the natural sciences need a philosophy of nature to situate them and clarify their metaphysical significance. I will have more to say about this later in the paper.

[3]The following account of sentience is based mainly on *Summa Theologiae* 1, qq. 77-78 and 1-2, q. 22.

Let's begin with the latter, i.e., with Arnie's passions or feelings. According to St. Thomas, Arnie's passions are movements of the sentient appetite, i.e., feelings that are grounded in physiological changes and that are directed toward and caused by objects of sentient cognition. St. Thomas tells us that the physiological changes are, as it were, the matter of the passions, whereas the appetitive movements, i.e., the feelings directed toward the various objects, are, as it were, their forms. He does not have much to say about the correlations between the physiological changes on the one hand and the feelings on the other. He simply assumes that in general such correlations obtain and, given the resources available to him, describes the physiological changes in ways that are based on common sense and classical medical theory. ("Arnie felt the heat leave his front legs as he shrank back in fear from the approaching python." "Arnie's heart was pounding as he approached the termite mound with an avid desire to eat.") Given modern advances in neurophysiology, we have a somewhat better grasp today of the physiological correlates of Arnie's (and our) feelings, even if the correlations have turned out in their details not to be very simple or straightforward. But St. Thomas's account of the passions is meant in any case to be a piece of philosophical anthropology rather than of natural science, and so he and his followers can rest content with letting neurophysiologists and medical specialists fill in the details.

Things get just a bit more complicated when we turn to Arnie's sentient cognition. In the case of the exterior sensory powers, certain physiological changes in the relevant corporeal organs are accompanied by what St. Thomas calls — perhaps unfortunately — 'spiritual' changes (*transmutationes spirituales*) whereby the *per se* objects of sentient cognition are united intentionally — in a "non-material mode" — with the cognitive subject, viz., Arnie himself. I say 'unfortunately' here, since the use of the terms 'spiritual change' and 'non-material mode' might give the impression that St. Thomas believes that the nature of sensing requires the sentient soul to be subsistent in its own right and in some robust sense independent of matter. But, of course, he believes just the opposite, as he makes clear in *Summa Theologiae* 1, q. 75, a. 3. Indeed, he attributes to Plato the (in his eyes) mistaken view that even *Arnie's*

soul is subsistent; for Plato, he claims, attributed sensings "to an immaterial principle, arguing that just as intellective understanding belongs to the soul in its own right, so too does sensing. And from this it followed that even the souls of non-rational animals are subsistent."[4]

Instead, St. Thomas's own view is (broadly speaking) that the corporeal organs of sentient cognition are analogous to a matter which, through changes caused by sensible qualities, can come to be informed 'intentionally' by a determinate range of those qualities in such a way that the resulting acts of the sensory organs count as sensings of those same qualities. But because these sensings are exercised by means of physiological changes of a special sort, and because their range of objects is limited by the corporeal nature of their organs, they do not require a subsistent immaterial subject. All they require instead as their first subject is a corporeal organism informed and unified by a sentient soul; in other words, the composite aardvark-substance, Arnie himself, is what first and foremost sees and hears and smells, etc. So Arnie's sensings of colors, sounds, tastes, smells, etc., do not involve an immaterial power or subsistent immaterial subject. Like the sentient affections, they are simply the 'inside', as it were, of a special kind of higher-level physiological change. And because sensings of exterior objects are presupposed by the 'interior' sensory powers whose acts are common (or coordinated) sensings, imaginings, rememberings, and 'estimative' or 'cogitative' judgments about particulars, the same general account holds for these latter acts as well. (In what follows, I will, for the sake of simplicity, refer just to sensings and feelings when I speak of sentient cognition and affection, but these designations are meant to include acts of the interior sensory powers as well.)

Things are different, of course, when we turn to the human animal and add intellective understanding and willing to the powers of the soul. I will not rehearse the arguments for the subsistence and immateriality of the human soul, except to note that the twentieth century provided interesting supplements to the basic arguments espoused by Aristotle and St. Thomas. I have in mind contributions

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[4] *Summa Theologiae* 1, q. 75, a. 3, resp.

by the likes of Kurt Gödel, J.R. Lucas, Roger Penrose, and James Ross.[5] Here, however, I want to take note in particular of a few ways in which, on a Thomistic account, intellective activity in the human animal is continuous with and yet transformative of the sentient acts we share in common with Arnie and his friends.

First of all, the base-level account of sentient cognition and affection continues to hold for human sensings and feelings; that is, human sensings and feelings are exercised by means of physiological acts, and these acts are all attributed in the first instance to the human animal as a whole. Human beings are truly animals. To be sure, our specific sensory powers differ to some extent in their nature and range from those of non-rational animals, but these differences are of a piece with the differences found among the species of non-rational animals themselves. (Think, for instance, of the differences between an insect or crustacean, on the one hand, and a mammal or marsupial on the other.)

What's more, even though intellective operations are not, according to St. Thomas, exercised by means of the acts of any corporeal organ, they nonetheless depend heavily on, and are heavily influenced by, the work of those corporeal organs that effect sensings and feelings.[6] St. Thomas explicitly insists that, in this life at least, we can have intellective understanding of material substances only through physiological changes that precede the intellect's own peculiar operation and through physiological

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[5]Edward Feser helpfully reviews various of these arguments in a blog entry entitled "Some brief arguments for dualism, part IV" (edwardfeser.blogspot.com/2008/10/some-brief-arguments-for-dualism-part_29.html) and in the three other parts linked at the beginning of that entry. See also "Dualism," by Howard Robinson (2003, 2007), in the *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu), edited by Edward Zalta. Unlike Feser, I am very uneasy describing St. Thomas's position as a form of dualism — even 'hylemorphic dualism' — since it is precisely the unity of the human being that St. Thomas wants to emphasize over against Plato's position, which (as he interprets it) posits many substantial forms in the human composite. (The term 'hylemorphic dualism' originates, I believe, with David Oderberg in his excellent book *Real Essentialism* (New York: Routledge, 2007).) This is largely a verbal disagreement, but I for one resist making Thomistic philosophical anthropology conform to what I believe to be the illegitimate contemporary taxonomy of 'solutions' to the alleged 'mind-body problem', according to which each solution is either a type of materialism or a type of dualism.

[6]Here is St. Thomas's explanation of how intellective understanding is related to the body: "The body is not required for the intellect's action as an organ by means of which that action is exercised; rather, the body is required for the sake of the action's object (*ratione obiecti*). For a phantasm is related to intellective understanding in the way that a color is related to seeing. But needing the body in this sense does not rule out the intellect's being subsistent" (*Summa Theologiae* 1, q. 75, a. 2, *ad* 3).

changes that are consequent upon the intellect's own peculiar operation.[7] In addition, St. Thomas attributes differences in various mental aptitudes and types of intelligence to differences in physiological makeup and consequent differences in the powers of memory, imagination, and cogitation.[8] (It follows, as an aside, that the advance of brain science can hardly produce any embarrassment for a Thomist, and when claims to the contrary are made, they can always be traced back to either ignorance of or mistaken ideas about the Thomistic position.)

On the other hand, the discontinuities between us and Arnie are just as impressive. Because of our ability to grasp material natures intellectively, the character of both our sensings and our feelings is, according to St. Thomas, radically upgraded. Given our intellective 'light', we are able to sense not only colors, sounds, smells, etc., but substances and actions as such. Given our higher volitional powers, we are able to desire not only physical pleasure, but higher-order goods as well; to fear not only imminent physical threats, but also spiritual dangers; to hope not only for material well-being, but also for eternal life.

On the side of speculative or theoretical reason, we are able to sense paradigmatic individual substances *as* individual members of natural kinds, to arrange their species and genera into taxonomies, to study their properties and their causes, and to teach others about them.[9] Therein lie the beginnings of natural science. We are able to engage in thought that abstracts altogether from everything non-quantitative and thus do mathematics; to create stories and other narratives; to fashion works of art, from paintings and sculptures and buildings to musical and cinematic pieces; to write poetry; to play games; to engage in political activities; to establish schools and universities; to laugh; to have deep conversations; to ask about the meaning of our lives; and to seek wisdom systematically, searching for

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[7]See *Summa Theologiae* 1, q. 84, aa. 6-7.

[8]See, e.g., *Summa Theologiae* 1, q. 84, aa. 7-8, q. 85, a. 7, and q. 101, a. 2, and *Summa Theologiae* 1-2, q. 51, a. 1.

[9]For an excellent treatment of the complexities of taxonomy construction — as well as the attendant philosophical errors relevant to it — see Oderberg, *Real Essentialism*, chap. 9.

the ultimate causes of our universe and of our very selves.

From this perspective, one of the most grievous theoretical errors of the seventeenth-century empiricists was to deny this 'radical upgrade' of sentience and to insist, in effect, that our sensings and feelings are *exactly* like those of Arnie and his non-rational compatriots, limited in their cognitive reach to mere colors and sounds and smells, etc. Kant accepted this limitation and fashioned his 'Copernican revolution' on top of it. While thus parading under the banner of intellectual humility, he made a veritable way of life out of (what I would call a prideful) intellectual pessimism about theoretical reason's power to discover the real causes of things or God their creator.

On the side of practical reason, the powers of intellective understanding and willing transform our 'animal' activities into potential paths toward genuine beatitude — or toward perdition, as the case may be. Within certain limits, we are able to plan our lives, to adopt ends, to choose suitable means to those ends, and to try (at least) to integrate our lives into unified virtuous wholes. Unlike Arnie, we are not constrained to act immediately or by instinct on our feelings, but are instead able to resist those feelings, or to control them, or even to habituate them. What's more, on this account our desire for beatitude *as human animals* — ultimately, in the light of Faith, our desire to abide *as human animals* in the intimacy of the inner life of our Trinitarian God — is sufficient to open us up to a life of enduring and self-transcending sacrificial love in accord with the good defined for us by the sort of animals we are.

I note here in passing that, from this perspective, Duns Scotus's moral distinction between the *affectio commodi* and the *affectio iustitiae*, where the latter is effectively detached from our animality and counted as the only fundamental desire aimed at a transcendent 'moral' good, is itself, like its Kantian successor in moral theory, a step in the direction of treating human agents as, in effect, non-animals.[10]

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[10]A similar sentiment, developed with insight and depth with respect to Kant, can be found in Appendix C of Candace Vogler's *Reasonably Vicious* (Cambridge, MA: Havard University Press, 2002), pp. 223-229. Also worth looking at is the brief but profound reflection on morality and reward in Romano Guardini's *The Lord* (Washington, DC: Regnery Gateway, 1954, 1982, 2012), pp. 100-103.

Tellingly, sentient affection or appetition cannot on Scotus's view (or on Kant's) be the subject of virtues. Hence, Scotus's distinction and its aftermath tend toward doing something in moral theory that is analogous to what Descartes' substance dualism does in metaphysics, viz., to effectively separate us in genus from the animals — and with consequences just as dire, or so at least I would claim. So while materialism is not pretty in either metaphysics or moral theory, it is not the only serious mistake to be avoided here.

In summary, then, what Thomistic philosophical anthropology delivers is an account of the human being that comports very well with our ordinary ways of thinking about ourselves and about non-human animals. Further, it provides us with a philosophical framework for receiving and understanding the wide-ranging deliverances of the natural sciences that bear upon our self-understanding.

2. *The contemporary problematic*

When, given these Thomistic principles, we next turn our attention to contemporary analytic philosophy of mind, we are bound to feel disoriented. There are at least two main reasons for this, and I will try to indicate them briefly. (In what follows a certain amount of simplification is unavoidable, but the general picture is, I believe, accurate.[11])

First of all, the contemporary problematic is normally formulated in such a way that there are only two main solutions to the metaphysical 'problem' posed by 'the mind'. One of them is variously called *materialism* or *naturalism* or, especially in its dominant reductionistic versions, *physicalism*. Even though these terms have differing connotations and are difficult to define with precision, for present

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[11]In surveying the literature in contemporary analytic philosophy of mind, I have made use of several very helpful articles from the online Stanford Encyclopedia of Philosophy (http://plato.stanford.edu), edited by Edward Zalta. These articles include "Physicalism," by Daniel Stoljar (2001, 2009); "Dualism," by Howard Robinson (2003, 2007), "Emergent Properties," by Timothy O'Connor and Hong Yu Wong (2002, 206); "Eliminative Materialism," by William Ramsey (2003, 2007), "Zombies," by Robert Kirk (203, 2011), and "Consciousness," by Robert Van Gulick (2004). In addition, I highly recommend Edward Feser's *Philosophy of Mind (A Beginner's Guide)* (Oxford: Oneworld Publications, 2006), which is perhaps the best introduction to the contemporary debates and ends with a brief defense of the Thomistic position.

purposes we can characterize negatively the position they name by saying that this position denies that human cognition or appetition requires the existence and action of a subsistent immaterial subject. There are many species of materialism, differing in interesting ways from one another. But they all share in common a disdain for the immaterial and for other marks of 'enchantment' or 'spookiness', as their 'tough-minded' proponents so charmingly put it. The second main solution is the contradictory of materialism, viz., *immaterialism*.

So on this standard rendition of the problematic, because Thomism posits an immaterial and subsistent human subject for the operations of intellective cognition and affection, it is lumped together with (a) Descartes's version of substance dualism, according to which human beings are in effect divided beings most closely identified with their immaterial souls, whereas non-human animals are conceived of reductionistically as complex mechanisms that do not have sensings or feelings or any interior life at all, and with (b) something like the position that St. Thomas attributes to Plato, according to which human beings are explicitly identified with their immaterial souls, whereas the human bodily organism has its own distinctive multiplicity of substantial forms.[12] In other words, Thomism gets put into the same general category as philosophical anthropologies according to which human beings are not properly speaking (i.e., *per se*) living animals at all, but are instead immaterial souls closely associated with animal bodies constituted as such independently of the relation to their souls — regardless of whether these animal bodies are conceived of reductionistically (Cartesian dualism) or non-reductionistically (Platonic dualism). One might have hoped for a more fine-grained problematic to begin with, where Thomistic philosophical anthropology would be seen as (a) clearly distinct from dualism in insisting that human beings are both unified substances and animals in the full-blooded sense and (b) clearly distinct from materialism in insisting that there is a radical metaphysical underpinning, viz., an immaterial form, for the human animal's distinctiveness from other animals.

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[12]See *Summa Theologiae* 1, q. 76, a. 3.

Second — and this is exceedingly strange from a Thomistic perspective — the main contemporary arguments against one or another form of materialism have to do almost exclusively with sensing and feeling and not with intellective understanding or willing. In part, this is the legacy of Cartesianism. What I mean is that quite a few materialists share in common with their dualist opponents Descartes' assumption that any sort of interior psychological life, be it sentient or intellective, must have an immaterial immediate subject.[13] The materialists in question thus see a need to reduce (in some suitably broad sense) the mental in its entirety to the physical.[14] Since it is intellective understanding and willing that Thomists take to be the only mental phenomena that require immateriality, we find ourselves in a very delicate dialectical position here.

So let's look at the materialist landscape a little more carefully and see whether we can bring some Thomistic light to it. We can begin by asking what it would be for a materialist to 'handle' sensings and feelings. What is the problem, exactly, and why is it a problem for a materialist? Here things get a bit murky. As hinted above, sensings and feelings are *not* a problem — or, at least, *should not* be a problem — for *all* materialists. (After all, by the broad criterion given above the Thomistic account of sentience in non-human animals qualifies as a type of 'materialism' with respect to non-human animals.) Sensings and feelings are a problem, it seems, only for those materialists who subscribe to a reductionistic physicalism according to which the only things that exist *per se* are those posited by an ideally complete physics. Barring the truth of some sort of pan-psychism, the 'sensuous appearances' or 'sensuous experiences' involved in sensings and feelings simply do not fit within such a physicalist picture. They are not had by particles or waves or fields or strings or by any other candidates for the ultimate physical realities. But on the reductionistic picture, it is only such things that exist *per se*.

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[13]In fairness to Descartes, however, notice that St. Thomas attributes the same assumption to Plato in, e.g., *Summa Theologiae* 1, q. 75, a. 2, resp.

[14]Indeed, sometimes the different parties to the dispute seem to just take it for granted that if materialism can 'handle' sensing and feeling, then it will be able to 'handle' intellective understanding and willing as well — perhaps conceiving of them as algorithmic processes, despite some very cogent arguments — by John Searle, among others — for not so conceiving of them.

Well, then, one might think to begin with that if sensings and feelings are a threat to the physicalist version of materialism, then the paradigmatic materialist position should be simply to deny, in the spirit of Descartes's treatment of non-human animals, that we human beings have sensings or feelings or, *a fortiori*, understandings and willings at all. This is precisely what the aptly named *eliminative materialism* does. According to the eliminativists, the conception of ourselves according to which we refer to sensings and feelings and understandings and willings is a proto-scientific competitor to some final, complete, and true physical theory about human beings. Once we have this latter theory in hand at some unspecified future time, we will be able to (and, presumably, rationally obliged to) discard all talk about understanding, willing, sensing, and feeling, replacing it with our new scientific language. Some of you might be worried about how states or acts described in merely physical terms can be thought of as directed toward intentional objects. Others might be concerned about how, say, Dante or Shakespeare — or Sacred Scripture, for that matter — will sound in 'Eliminativese'. But, we are assured, this final physical theory will be very impressive indeed.

Eliminative materialism is what I would call an honest and robust and full-blooded version of materialism, and it is in its own way ingenious as well. In my experience, it ranks right up there with Al-Ghazali's occasionalism, Berkeley's idealism, and Leibniz's monadology in the degree of astonishment it produces when encountered for the first time. God has a sense of humor; it may be that one of the best indications of the immateriality of the human intellect is that the human intellect can come up with a theory like eliminative materialism.

Needless to say, very few physicalists have the audacity to espouse eliminative materialism. These run-of-the-mill physicalists are constrained to propose other solutions to the 'problem' posed by sensing and feeling. One popular 'solution' is the attempt to bypass questions about sensuous appearances by espousing some version of so-called *functionalism*, according to which the intentional content of sensings and feelings is entirely determined by the causal antecedents and consequents of the physical states that

underlie them.[15] This theory might not get rid of the sensuous appearances, but at least it neutralizes or tames them by rendering them scientifically (i.e., causally) irrelevant. More specifically, even if sensuous appearances are not wholly eliminable, they can still be deprived of playing any irreducible explanatory role in the behavior of animals. For instance, in ordinary parlance we might say that Arnie drank the water because he felt thirsty — i.e., because he felt a desire for water and then saw the water and proceeded to drink it. According to the functionalist, by contrast, the sensuous experience of thirst is explanatorily irrelevant; instead, thirst can be adequately characterized in wholly relational terms, i.e., in terms of what causes the 'purely physical' non-sensuous states that underlie it and what those states in turn cause.

One standard objection to functionalism involves the so-called 'inverted spectrum' and is meant to show that functionalism does not, despite its claim to the contrary, adequately neutralize sensuous experiences. Let us return to Arnie and his thirst, i.e., his felt desire for water, along with his sensing the water and his subsequent drinking. Suppose that his mom, Arlene, is drinking beside him, and assume that in both their cases the explanation of the drinking that is given by reference to physical non-senuous causal antecedents and consequents is the same. But suppose further that before drinking, Arlene felt the same way that Arnie feels when he is bloated and stops drinking; and suppose that when Arlene stops drinking, she feels the same way that Arnie felt before he started drinking. In other words, assume that the physiological explanation is the same in the two cases, but that the feelings, i.e., the sensuous experiences, are inverted. Is such a situation possible? If it is, then functionalists seem faced with a dilemma. Either (a) they will preserve the idea that aardvarks drink because they are thirsty and call Arlene's feeling of being bloated 'thirst' or (b) they will have to say that while Arnie drinks when he feels thirsty, Arlene drinks when she feels bloated. Neither choice seems particularly attractive.

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[15]Strictly speaking, functionalism in the abstract is not necessarily a materialist position, since sensings and feelings could have an immaterial subject rather than some type of material subject. However, in the contemporary discussion, functionalism is thought of exclusively as a version of materialism.

Indeed, as others have pointed out, if there is a sufficient 'causal' explanation of Arnie's behavior at the physiological level without reference to anything sensuous or intentional, then it seems superfluous for functionalists even to bother with talk about 'thirst' and other feelings in the first place. This is the so-called 'causal exclusion' objection. The upshot is that functionalists should just abandon talk about feelings and sensings and fall back into eliminative materialism.

From a Thomistic perspective it is, I suppose, impossible to rule out inversion scenarios *a priori*. But the Thomist will insist that such scenarios involve dysfunctions and abnormalities. What's more, from a Thomistic perspective we should antecedently expect that in cases involving feelings there will be (at least) two levels of explanation for the animal's behavior. Or, perhaps better, the Thomist will claim that the single full explanation for the animal's behavior will involve the integration of different layers of explanation and different sorts of explanation, at least one of which is a higher-level explanation that invokes interior sensuous experiences and the goal-directed activity they induce — where, in Thomistic language, the sensuous experiences are themselves simply acts of sentient cognition or movements of sentient appetite. Even if this claim is somehow shocking to a certain sort of philosopher, it is hardly surprising to ordinary people. You go to the ophthamologist. She examines your eyes and then, after flipping a few lenses, tells you that you should be seeing the letters very clearly now; and, behold, you are indeed seeing them very clearly. Other specialists can tell you when it hurts or when you're feeling thirsty or when your tooth has been desensitized to pain, etc. And as the relevant natural sciences advance, they are able tell you many other amazing things about your sensings and feelings. This is exactly what one would expect from a Thomistic perspective, and it is not at all problematic. St. Thomas, for instance, tells us that the physiological changes are "posited materially in the definition of movements of the appetitive part,"[16] and he is equally insistent that acts of sentient cognition are the acts of material organs. It's only a misleading and ideologically charged picture of sensings and feelings, on

[16]*Summa Theologiae* 1-2, q. 22, a. 2, *ad* 3.

the one hand, and of the potentialities (or lack thereof) of matter, on the other hand, that would have led anyone in the first place to treat sensuous experiences as problems to be eliminated or in some way neutralized rather than as elements to be integrated into a complete scientific explanation of animal behavior. To be sure, things get a bit murkier when it comes to intellective understanding and willing. But even here, as noted above, the dependence of intellective acts on the exterior and interior sensory powers guarantees that there will be many interesting correlations between even thoughts and physiological states — though there will always be limits to what these correlations can be used to 'prove'.[17]

Finally, notice that, from a Thomistic perspective, the inverted spectrum objection is wholly irrelevant to the debate between materialism and immaterialism, since it has to do with sensings and feelings, and sensings and feelings do not in themselves require an immaterial subject.

At any rate, in the face of challenges such as the inverted spectrum objection and the causal exclusion objection, some materialists retreat to what is called 'property dualism'. According to this position, human cognition and affection have no immaterial subject, but they do involve psychological properties which are neither identical with nor reducible to physiological properties, but which are nonetheless correlated with physiological properties 'in the right way' — whatever that right way turns out to be.[18] So one finds a standard property dualist claiming that sensings and feelings are not identical with or in any way reducible to the physiological processes that properly fall under the purview of the natural sciences, but that they nonetheless *supervene upon* such processes. The promise, almost surely misguided given the terms of the problem, is that somehow a way will be found to integrate the

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[17]For an interesting reflection on the limits of neuroscience, see Raymond Tallis, "What Neuroscience Cannot Tell Us About Ourselves," pp. 3-25 in *The New Altlantis*, Fall 2010 (thenewatlantis.com/docLib/20110315_TNA29Tallis.pdf).

[18]I myself am still trying to figure out why property dualism is often presented as an alternative to materialism. I suppose the answer is that 'materialism' is said in many ways, and property dualism is indeed distinct from the sort of reductionistic physicalism that many philosophers have in mind when they use the term 'materialism'. However, given the above characterization of materialism as the contradictory of immaterialism, property dualism, when taken as a general theory that applies to both the sentient and the intellective, is clearly a form of materialism.

psychological and the physiological so conceived into a coherent causal picture.[19]

If we tried to force Thomism into the current problematic in philosophy of mind, then on the surface it might seem that the Thomistic account of non-human animals is a version of property dualism. However, this appearance is misleading. For what St. Thomas says about sentience in non-human animals is already embedded within a full-blown philosophy of nature that (a) includes a well-ordered general account of the powers peculiar to the form of sentient beings and is thus already capable of accommodating new findings about the physiology involved in sensing and feeling, and that (b) is at home with talk of causal connections between the psychological and the physiological, where by 'causal connections' the Thomist means a full array of formal, material, efficient, and final causes. Why settle for a dubious substitute when you can have the real thing?

When all is said and done, however, the discussion of property dualism does not, from a Thomistic perspective, establish anything at all, one way or the other, about the immateriality of the human soul. For from a Thomistic perspective, sentient consciousness is a feature both of non-human animals, which do not have immaterial souls, and of human beings, who do. To the extent that philosophers of mind lump sentience and intellection together, they have conflated what a Thomist wants to distinguish. And it just may be that distinctively Thomistic contributions to the contemporary discussion could begin with the distinction between sentience and intellection and go on to show how taking this distinction seriously might re-shape the contemporary philosophical problematic and its interface with neurophysiology and the other relevant sciences. This sounds like a worthy research project for the new generation of Thomists, who will want to insist with materialists on our oneness and animality as human beings, while insisting with dualists on our radical distinctiveness within the world of animals.

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[19]The best exposition and defense of this position occurs in David Chalmer's *The Conscious Mind: In Search of a Fundamental Theory* (New York: Oxford University Press, 1997). Interestingly, property dualists seem to think that it is only sentience, and not intellection, that undermines straightforward materialism. For a sympathetic but tough-minded discussion of property dualism, see Feser, *Philosophy of Mind*, esp. 108-114. In particular, Feser argues that in the end there is no integrated causal picture, but that instead property-dualism ends up treating psychological properties as epiphenomenal.

3. *Bottom-up and Top-Down: Empedocles and Democritus revisited*

With this admittedly quick review in hand, I want to step back to consider briefly the ontological reductionism that infects many contemporary discussions in philosophy of mind and that is held, implicitly or explicitly, by many philosophers and scientists.

To be sure, materialism with respect to human beings comes in non-reductionistic as well as reductionistic varieties. I say "with respect to human beings" because, as noted above, there is a clear sense in which St. Thomas himself can be thought of as a non-reductionistic materialist with respect to brute animals, given that on his view sentient cognition and affection do not require a subsistent immaterial subject. Still, I think it is fair to say that — until rather recently, at least — reductionism has held sway in analytic philosophy of mind as a sort of background condition and that, as even the proponents of the recent revival of so-called 'emergentism' freely admit, there are accounts of 'emergence' that are compatible with a thorough-going ontological reductionism.[20] I will return to emergence in a moment.

Let me be clear here about what sort of reductionism I have in mind. It is commonly called *entity reductionism*, though it would be more revealing to call it *entity/power reductionism* instead. It is reflected in sayings like, "An aardvark is, after all, *just* — or *nothing more than* — a collection of atoms (or quarks, or strings, or fields or, for that matter, fire-air-earth-and-water, or whatever the lowest-level material entities turn out to be)." The picture is, in effect, that the genuinely ultimate elemental material entities are the only material things that *really* exist; in Aristotelian terms, they alone among material things are primary substances, and they alone subsist *per se*, i.e., exist with the special sort of

[20]To get some appreciation for the complexity of the issues involved and for the variety of the accounts of emergence, see the section introductions to Mark A. Bedau and Paul Humphreys, eds., *Emergence: Contemporary Readings in Philosophy and Science* (Boston: MIT, A Bradford Book, 2008).

independence characteristic of primary substances.[21] Further, assuming that material substances have power, these lowest-level entities are the only material things that, strictly speaking, possess or exercise power. In short, all causality, as well as all being, is from the bottom up. Any being or power correctly attributed to higher-level things is strictly speaking *per accidens* and aggregated from the being and power of the lowest-level entities; conversely, any alleged higher-level being or power that cannot be so aggregated is illusory.[22] Finally, given this picture, it is customary to claim that the state of the whole world at any given time is uniquely fixed by the relevant physical properties of the lowest-level entities.

While this sort of reductionism is not explicitly a component of every version of contemporary mind/body materialism, it does seem to influence the thinking of many materialists as a kind of ideal of reason. And like any good Thomist, I detest it. In surveying some of the recent literature, I found myself balking even at the claim that hurricanes are, after all, just collections of atoms. Hurricanes are not, I suppose, paradigmatic instances of Aristotelian primary substances, but they sure have a lot of fascinating systemic properties that are not obviously reducible to the properties of atoms.

In any case, there are plenty of interesting questions prompted by this picture, which has a firm grip on so many contemporary philosophers and scientists. I will just scratch the surface here:

What is the status of those natural sciences — biology and chemistry and biochemistry and even solid state physics, not to mention the social sciences — that study the higher-level 'derivative' or *per accidens* entities? Are they themselves in some sense reducible to physics? If not, why not?[23] If so, in

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[21]I am assuming, in keeping with Margaret Osler, "From Immanent Natures to Nature as Artifice: The Reinterpretation of Final Causes in Seventeenth Century Natural Philosophy," *Monist* 79 (1996): 388-407, that at least some seventeenth century thinkers attributed substantial form and intrinsic powers to elemental material bodies. That would make them primary substances in the Aristotelian/Thomistic sense. On the other hand, if the fundamental laws of motion are thought of — as Descartes sometimes seems to think of them — as imposed by God from the outside and hence as not reflecting the intrinsic natures of elemental material entities, then those entities, while basic, will not count as Aristotelian/Thomistic primary substances.

[22]For a more precise explication of the notion of aggregation I have in mind, see William Wimsatt, "Aggregativity: Reductive Heuristics for Finding Emergence," pp. 99-110 in *Emergence: Contemporary Readings in Philosophy and Science.*

[23]William Carroll has convinced me in conversation that there is a deep tension between ontological reductionism as just defined and what we might call 'methodological' anti-reductionism, according to which the other natural sciences are not reducible to physics — despite the fact that many thinkers want to hold just this combination of views. In particular, in order to

precisely what sense? Do they have explanatory power in their own right, independently of elementary particle physics?

Again, given that our knowledge of the microworld in general is *methodologically* posterior to and parasitic on our knowledge of the macroworld — i.e., on our everyday acquaintance with what Wilfred Sellars called the 'manifest image of man' — why not think that the microworld is *ontologically* posterior as well? Does the smallness of an entity, or the fact that it is one of the things into which a bigger entity is potentially decomposable, automatically make for *ontological* priority? Aristotle — plausibly to my mind — took what he called 'perfect' animals to be the paradigmatic primary substances because of their astonishing unity-within-complexity, and for this reason he understood them to be in a fairly robust sense ontologically prior to the minerals and elements into which they decompose after death. What exactly is wrong with this claim? Is it enough here to reply with an appeal to technological advancement that was allegedly made possible only by the scientific revolution's having ditched Aristotle? ("How do you like your iPad, buddy? And what about flush toilets, and air conditioning?") Or does such a reply simply give a new modern meaning to the idea of gaining the whole world and suffering the loss of your soul (Matthew 16:26)?

Again, what is the relation between systems of lower-level entities and systems of the corresponding higher-level entities? How is the state of the lower-level systems supposed to fix the state of higher-level systems? On the surface, this may sound like a purely scientific question. However, the question doesn't seem to function as a purely scientific one in philosophical discussions. In fact, the picture had in mind by ontological reductionists is in essence metaphysical and, I believe, depends only tangentially on the exact details of any scientific theories. I find this point relatively unobjectionable in itself, since metaphysics in general, and natural philosophy in particular, should take the lead in its

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hold to this combination, one must, it seems, equivocate in certain key ways with respect to simple biological and chemical terms such as 'cell' and 'neuron' and even 'hydrogen'.

complementary relationship with the practice of the natural sciences. And part of what taking the lead involves is providing a general philosophical framework for interpreting and accommodating the findings of the natural sciences. Rather, it is precisely the reductionistic philosophy of nature that raises concerns — well, at least, it raises *my* concerns.

Let's delve a bit more deeply here. Even though one could just as appropriately invoke Democritus or Empedocles or the Epicureans, it's hard to beat Descartes's vision of the material world for simplicity and elegance: corpuscular bodies, endowed just with quantitative characteristics and shorn of sensible characteristics, moving from place to place in strict accord with the laws of local motion. Throw in vortices and you have an ideally complete account of all change in the material world. Barring any intervention by an agent outside the material world, the laws governing the corpuscular bodies fix the complete state of the material world at any given moment and determine its future course. Now just eliminate — as most philosophers and scientists are nowadays inclined to — God and other immaterial substances, and you have the sort of reductionistic materialism that dominates contemporary analytic philosophy of mind. To be sure, the science has become much more complicated and intricate and even bizarre than Descartes and his contemporaries anticipated. But the basic philosophy of nature has remained intact; indeed, in its simplest outline, it has remained intact since the time of Empedocles.

Interestingly, the past fifteen years or so have witnessed a small but enthusiastic reaction against dogmatic reductionistic materialism within philosophy of mind and especially within philosophy of science. At the very least, the most conscientious of the reductionists have begun to take full-blooded emergentism seriously enough to talk about it in public, as it were. In a fascinating paper on late nineteenth- and early twentieth-century British emergentism, Brian McLaughlin gives a meticulous and sympathetic exposition of C.D. Broad's robust account of emergence, replete with emergent (in a strong sense) chemical and biological powers and forces. In the end, though, McLaughlin concludes that "quantum mechanics and various scientific advances it has made possible have provided us with

compelling evidence that there are no such forces."[24] Likewise, Mark Bedau carefully lays out several versions of emergentism, but in the end, commenting on what he calls 'strong emergence', which posits irreducible causal powers in higher-level entities, he claims emphatically that "all the evidence today suggests that strong emergence is scientifically irrelevant."[25]

Others, however, read the evidence in a contrary way.

Jaar van Brakel devotes a long chapter of his book *Philosophy of Chemistry* to undermining various aspects of the argument for the ubiquitous claim that chemistry is reducible to quantum electrodynamics.[26]

Again, in *A Different Universe* Nobel Laureate Robert Laughlin argues that reductionism does not work even within theoretical physics itself. In speaking of the quantum Hall effect, crucial for understanding the relationship between particle physics and solid-state physics, Laughlin has this to say:[27]

> Over the intervening years, as I have lived inside theoretical physics and become familiar with its ways and historical currents, I have come to understand the von Klitzing discovery as a watershed event, a defining moment in which physical science stepped firmly out of the age of reductionism into the age of emergence. This shift is usually described in the popular press as the transition from the age of physics into the age of biology, but that is not quite right. What we are seeing is a transformation of world view in which the objective of understanding nature by breaking it down into ever smaller parts is supplanted by the objective of understanding how nature organizes itself.

In another place Laughlin and David Pines reproduce what they call 'The Theory of Everything', viz.,

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[24]Brian P. McLaughlin, "The Rise and Fall of British Emergentism" (1992), reprinted as pp. 19-59 pp. in *Emergence: Contemporary Readings in Philosophy and Science.* The quoted passage appears on p. 49.

[25]Mark A. Bedau, "Downward Causation and Autonomy in Weak Emergence" (2003), reprinted as pp. 155-188 in *Emergence: Contemporary Readings in Philosophy and Science*. The quoted passage appears on p. 159. Bedau goes on to make the more audacious claim that "strong emergence starts where scientific explanation ends" (p. 159). I doubt that any Thomist (or any other emergentism) has ever subscribed to an account of the powers of higher-level entities that literally put those powers beyond the purview of scientific investigation. Perhaps it is best to regard Bedau's claim here as simply a piece of bravado awaiting an argument for the idea that an explanation is not scientific unless it is reductionistic.

[26]J. van Brakel, *Philosophy of Chemistry: Between the Manifest and the Scientific Image* (Leuven, Belgium: Leuven University Press, 2000). See especially chapter 5, "The Alleged Reduction of Chemistry to Physics."

[27]Robert B. Laughlin, *A Different Universe: Reinventing Physics from the Bottom Down* (Basic Books, 2006), p. 76.

"the equation of conventional nonrelativistic quantum mechanics, which describes the everyday world of human beings — air, water, rocks, fire, people, and so forth."[28] Setting aside for now the fact that it is physically impossible to solve this equation accurately "when the number of particles exceeds about 10," the theory purports to describe the primitive physical properties that 'fix' our macroworld. And yet, say Laughlin and Pines,

> the Theory of Everything is not even remotely a theory of every thing ..... We have succeeded in reducing all of ordinary physical behavior to a simple, correct Theory of Everything only to discover that it has revealed exactly nothing about many things of great importance."[29]

More tellingly, the Theory of Everything could change radically tomorrow without affecting higher-level entities:

> The emergent physical phenomena regulated by higher organizing principles have a property, namely their insensitivity to microscopics, that is directly relevant to the broad question of what is knowable in the deepest sense of the term ... The low-energy excitation spectrum of a conventional superconducter, for example, is completely generic and is characterized by a handful of parameters that may be determined experimentally but cannot, in general, be computed from first principles.[30]

To be sure, the mere fact that a given higher-level structure is compatible with a variety of lower-level structures is not itself a refutation of reductionism, as long as each of the lower-level structures in some fairly robust sense fixes the higher-level structure. But what Laughlin and Pines are pressing is the question of just what that 'robust sense' might be.

Finally, Paul Humphreys points out that, because of quantum entanglements, compound systems of elementary particles apparently fix the properties of their constituents rather than vice versa, and that in some cases this has macroscopic consequences, such as the "phase transitions that give rise to

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[28]Robert B. Laughlin and David Pines, "The Theory of Everything" (2000), reprinted as pp. 259-268 in *Emergence: Contemporary Readings in Philosophy and Science.*

[29]Laughlin and Pines, "The Theory of Everything," p. 260.

[30]Laughlin and Pines, "The Theory of Everything," p. 261.

superconductivity and superfluidity in helium."[31]

Now I do not mean this litany of competing authorities is to establish anything definitive. As you can tell, the relevant discussions are often technical, sometimes depend on conflicting interpretations of well-established scientific theories, and frequently contain covert assumptions about the future course of the natural sciences. However, I hope that I have said enough to exhibit the fact that even by the standards of contemporary analytic philosophy of mind, Thomistic positions and Thomistic reconfigurations of the relevant problematics are eminently defensible and certainly not beyond the pale. In short, Thomists need not feel like second-class citizens among the self-proclaimed 'tough-minded' and 'scientifically informed' and (dare I say it?) 'dis-enchanted' proponents of contemporary reductionistic materialism.

So let's shift gears here and go on the offensive, as it were. Let's approach the question of the relation between higher-level entities and lower-level entities from the top down rather than from the bottom up. More specifically, what needs to be true of the higher-level entities and complexes in order for entity/power reductionism to be false?

Well, answering this question is a research project in its own right, and one that I hope the younger generation of Thomists will vigorously pursue. But we can at least begin by noticing that contemporary entity/power reductionism is in its philosophical essentials just the sort of natural philosophy whose proponents Aristotle criticized in *Physics* 2 for their inability to appreciate 'nature *as form*' in addition to 'nature *as matter*'. And St. Thomas himself worked out in some detail an impressive and (I would say) convincing philosophical account of how to think about the status of the lower-level material entities that are 'taken up' into higher-level primary substances and, as it were, 'disappear' in them.[32] In the specific

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[31]Paul Humphreys, "How Properties Emerge" (1997), reprinted as pp. 111-126 in pp. in *Emergence: Contemporary Readings in Philosophy and Science,* p. 122.

[32]Anyone who wants to get the full flavor of St. Thomas account of the constitution of material substances out of elemental substances should look at two short works that are available together in English translation, accompanied by an illuminating commentary. See Joseph Bobik, *Aquinas on Matter and Form and the Elements: A Translation and Interpretation*

case of the intellective soul, he has this to say in defending the unity or oneness of the human animal:

> If it were true that besides the intellective soul there are other preexistent substantial forms in the matter through which the soul's subject is an actual being, then it would follow that the soul does not give *esse* absolutely speaking, and that consequently it is not a substantial form, and that at the soul's appearance there is no generation absolutely speaking, and that at its disappearance there is no corruption absolutely speaking; instead, there would be generation or corruption only in a certain respect. But all of these claims are manifestly false.
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> Hence, one should say that (a) there is no substantial form in a man other than the intellective soul alone, and that (b) just as the intellective soul virtually contains the sentient soul and the nutritive soul, so too it virtually contains all the lower forms, and that (c) it brings about by itself alone whatever the more imperfect forms bring about in other things. And the same should be said of the sentient soul in brute animals and of the nutritive soul in plants and, in general, of all the more perfect forms in relation to the less perfect forms.[33]

And as for the powers of those lowest-level entities into which a higher-level entities is potentially decomposable, St. Thomas has this to say in reply to the objection that, surely, at least the substantial forms of *the four elements* exist in the human organism:

> The forms of the elements remain in a mixed thing *virtually* but not *actually*. For what remains are the qualities which, though less intense (*remissae*), are proper to the elements, and it is in these qualities that the power of the elemental forms resides.[34]

Notice that the elements 'disappear' as substances, and hence as agents, in their own right. Their powers, instead of flowing from their own substantial forms as they do when fire, air, earth, and water exist in isolation, now flow instead from the higher-order substance — in this case, the human animal — and are exercised in the first place by that higher-order substance. Once again, the reason why St. Thomas insists that *primary* matter — and not the elements or minerals or flesh and bone, etc. — is the subject of substantial form is precisely that the higher-order substance *as a whole* dominates everything into which it is potentially decomposable.

Calvin Normore nicely captures the 'radical' nature of St. Thomas's view in a paper on Ockham's

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of the De Principiis Naturae and the De Mixtione Elementorum of St. Thomas Aquinas (Notre Dame, IN: University of Notre Dame Press, 1998).

[33]*Summa Theologiae* 1, q. 76, a. 4, resp.

[34]*Summa Theologiae* 1, q. 76, a. 4, *ad* 4.

mereology, even while conceding that this position "is familiar to us because it is now also a common interpretation of Aristotle's views on the issue":

> On these issues Albertus Magnus and his protégé Thomas Aquinas had taken a radical stand. They insisted that in a composite substance there were no parts, integral or essential, which were ontologically prior to the substance. A composite substance, an animal, for example, comes to be out of other substances; but only the prime matter of that out of which it comes to be remains in the new substance, and that prime matter has no existence of its own. Since individuation of the form of the new substance is through its union with that matter, the individual form cannot pre-exist the composite either. Thus there is nothing "in" the individual composite substance which pre-exists it either temporally or by nature.[35]

On this view, then, reductionism is false if and only if (a) the lower-level entities into which higher-level entities are potentially decomposable do not exist in their own right for as long as they are subordinated to the "organizing principles" (read: substantial form) of the higher-level entity, and (b) the higher-level entity has its own distinctive causal powers which (i) must be thought of as being exercised in the first instance by the higher-level entity itself as a whole and which (ii) include both genuinely novel powers and also the powers had by the lower-level entities into which the higher-order entity is potentially decomposable. Another way to put it is this: Reductionistic materialism is false if and only if (a) there is genuine novelty of being and genuine novelty of causal power in higher-level systems and (b) those higher-level systems take over, as it were, the powers of the relevant lower-level entities in a suitably moderated condition that enables them to contribute to the good of the whole.

Interestingly, as I see things, these requirements — or something very close to them — are met by emergence as Paul Humphreys conceives of it in a brilliant paper entitled "How Properties Emerge." Humphreys is at pains to distinguish genuine emergence from the various types of 'supervenience' that property dualists are fond of appealing to in their putatively non-reductionistic accounts of mental properties. In what he calls the "fusion" of lower-level properties that results in a higher-level property, the original properties "no longer exist as separate entities and they do not have all of their [lower-level]

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[35]Calvin Normore, "Ockham's Metaphysics of Parts," *The Journal of Philosophy* 103 (2006): 737-754, p. 741.

causal powers available for use at the [higher] level."[36] Humphreys claims to be talking about 'properties' rather than 'entities', but he attributes powers to properties, and it is clear upon reflection that the higher-order properties that come to exist by fusion function very much like either Aristotelian essences or Aristotelian properties, i.e., necessary accidents that flow by nature from an entity's essence.[37] At any rate, the resemblance is close enough to catch the attention of this Thomist. Humphreys completes the picture with a general theoretical account, complete with illustrations, of how higher-level horizontal causality can occur without direct and specific lower-level effects. This is definitely a step in the right direction.

Timothy O'Connor and Hong Yu Wong pose an important objection to Humphreys's account of fusion that I want to consider in passing, not so much in order to answer it fully as to indicate a general line of response:

> [Consider] the correlation problem. For the range of special science properties that have empirically established lower-level correlates with which they are copresent, if we are to treat them as fusion emergents, then, as the framework stands, we appear to be committed to denying the copresence of their lower-level correlates, which is empirically implausible. Such worries link back to the issue of the extent of applicability of the view.[38]

First of all, it is no part of Humphreys's view, or of a Thomistic philosophy of nature, to deny that there are mere aggregations of attributes and powers in the world. This is why Thomists have always distinguished *per accidens* unities from genuine 'mixed' substances. So there can still be systems that might appear be higher-level but are in fact nothing more than aggregates.

But the deeper point here has to do with what *counts* as the "copresence of their lower-level correlates." This is not a purely empirical question, since even if a property or substance is strictly

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[36]Humphreys, "How Properties Emerge," p. 117.

[37]For the record, mainline scholastics interpret this 'flowing' of properties from the essence to be special instance of efficient causality. For an extended discussion of this issue, see Francisco Suarez, SJ, *On Efficient Causality: Metaphysical Disputations 17, 18, and 19*, trans. Alfred J. Freddoso (New Haven, CT: Yale University Press, 1994), disp. 18, sec. 3.

[38]This objection occurs in the article "Emergent Properties," cited above, from the *Stanford Encyclopedia of Philosophy*.

speaking not present, it may very well be possible to think of it as existing in absolute or relative isolation from the whole substance and to study it as such. The claim that such a property or substance is not strictly speaking present, or that a given integral part of an emergent substance is ontologically posterior to the whole, is what we might call a 'philosophically charged' empirical claim that flows from a general philosophical account of the status of the higher-level substance or property. Hence, the objection posed by O'Connor and Wong may very well beg the question by assuming that the copresence of the lower-level correlates of genuinely higher-level systems is often or always obvious.

To be sure, this reply presupposes more detail and more clarity than I have provided about the relation between a philosophy of nature on the one hand and actual scientific practice on the other. As I noted above, there is a research project in the offing here. In the present context I simply mean to point to what I take to be a promising development from a Thomistic perspective. But it is also worth noting that even though it would be useful and ideal if practicing scientists themselves had better grounding in, and awareness of, the philosophies of nature that they are implicitly appealing to in interpreting their own practice and results, this high degree of philosophical sophistication is not necessary as long as it is generally understood that the interpretation of scientific practice and results within a philosophy of nature is a properly philosophical task and as such open to just the sorts of disagreements that separate competing philosophies of nature. Mere appeals to 'obvious experience' are insufficient. We have certainly had enough experience of this phenomenon in the case of quantum mechanics to appreciate the point. But the point is generalizable to *all* the natural sciences, including the chemical and biological sciences. To some, this may seem to be an undue intrusion by metaphysics into natural science. But it should be clear at this point in the history of both science and philosophy that, whether we like it or not, metaphysics makes its way into scientific judgments and theorizing and commentary. With that said, I freely concede that the contemporary discussion of emergence is still in its infancy, and it will take a combination of philosophical sophistication and expertise in the natural sciences to see that discussion

through to genuine fruitfulness.

In summary, Thomistic philosophical anthropology is simply an extension of Thomistic philosophy of nature to the specific case of the human animal. Just as what we really need today are self-consciously articulated philosophies of nature within which to situate the findings of the natural sciences, so too we need self-consciously articulated philosophical anthropologies within which to situate the findings of the sciences that are directly relevant to sentience and intellection. And Thomistic philosophy of nature remains a viable contender in this arena.

In fact, it seems that, within the philosophy of mind, Thomists might be able to make common cause to some extent with those non-reductivistic materialists who, like Humphreys, have moved beyond the obvious limitations of simple property dualism.[39] This move strikes me as a much more promising tactic than trying to forge an alliance with either Cartesian dualism or Platonic dualism as I have characterized them above. Philosophers sympathetic to Humphreys's approach might even be amenable to something like a conversion to Thomism, at least up to the point of dealing with the human animal's intellective powers. Thomists would be (or, at least, should be) content with this result, since it would allows us to focus precisely on the arguments for the immateriality and subsistence of the substantial form of a human being, i.e., of the intellective soul, and the success or failure of these arguments is in a sense the only really interesting 'mind-body' issue for Thomists within the contemporary discussion. For if the argument of the present paper is correct, then it is difficult, perhaps impossible, to imagine any scientific finding about the human organism that cannot be accommodated by Thomistic philosophical anthropology, and, as we have seen, much of the what goes on in contemporary philosophy of mind is, while admittedly fascinating, largely beside the point from a Thomistic perspective.

A related side note: Since Thomists already accept what we might call 'synchronic emergence',

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[39]The more I think about it, the more property dualism looks to me like a mere placemarker awaiting positive articulation rather than a serious theory in its own right. That is, to embrace property dualism is simply to refuse, for good reasons, to tolerate either reductivistic materialism or dualism.

there seems to be no reason on merely general grounds to be antecedently suspicious of the sort of diachronic emergence which is characteristically posited by broadly evolutionary theories, beginning with the Big Bang and culminating in the appearance of complex animal life. (I say this even while acknowledging that some twentieth-century Thomists — and now David Oderberg in the twenty-first century — have argued vigorously on more specific grounds that the organic cannot emerge diachronically from the inorganic.[40]) Nor, as others have pointed out, does a Thomistic perspective by itself require the sort of direct divine interventions in nature associated with Intelligent Design theory.[41] Perhaps some such interventions are required during the course of the development of the universe; perhaps not. This is a matter for philosophically informed empirical research. Leaving aside for now the origin of life, the only place where a direct divine intervention is required on a Thomistic view is in the creation of the human soul, which, because of its immateriality, can come into existence only by direct creation *ex nihilo*.[42]

4. *Scientistic despair*

There is another sort of reductionism that is in some ways even more pernicious than entity/power reductionism because it has broader social consequences, viz., the general conviction that, to invoke Sellars's terminology, the scientific image of man *does not complement* but instead *supersedes* and *replaces* the manifest image of man and so is the only rationally acceptable source of explanation and

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[40]See Oderberg, *Real Essentialism*, chap. 8.3, pp. 193-200. At present, I have not made up my mind about the relevant arguments.

[41]I recommend especially William Carroll's work on the interface between Thomism, on the one hand, and the scientific theories of evolution and the Big Bang, on the other. See, e.g., *Creation and Science: Has Science Eliminated God?* (London: Catholic Truth Society, 2011). Carroll has also written in illuminating ways about Aristotelianism and the scientific revolution of the seventeenth century. See, e.g., "Creation and Inertia: The Scientific Revolution and Discourse on Science-and-Religion," in Jaume Navarro, ed., *Science and Faith Within Reason: Reality, Creation, Life and Design* (London: Ashgate Publishing Co., 2011)

[42]This, of course, is exactly what the Catholic Faith teaches. For further discussion of this point, see my "Good News, Your Soul Hasn't Died Quite Yet," in Michael Baur, ed., *Person, Soul, and Immortality: Proceedings of the American Catholic Philosophical Association* (New York: American Catholic Philosophical Association) 75 (2002): 99-120.

metaphysical commitment. This scientistic conviction both feeds and is fed by reductionistic materialism, though it is conceptually compatible with non-reductionistic materialism as well. And nowadays it sometimes seems to be pervasive among philosophers and scientists, including some who publish popular books about science or who appear on television programs meant to inform the general public about the latest scientific theories.

Among the rather annoying manifestations of this scientism are the sort of philosophically charged 'scientific' arguments — really *bad* arguments, as honest observers on all sides agree — put forward by philosophically unsophisticated scientists for significant metaphysical and moral conclusions.[43] Needless to say, a sound philosophical anthropology is essential for dealing adequately with such arguments.[44] So is a sound philosophy of nature in general, since the scientific theories appealed to by scientistic writers are always filtered, consciously or unconsciously, through a philosophy of nature that is thoroughly materialistic, most often reductionistic, and always closed off, for non-scientific reasons, to sources of knowledge, insight, and enlightenment that lie outside of the natural sciences.

Even those strains of scientism that are more intellectually serious and worth paying attention to are in the end disappointing or, perhaps better, saddening — not necessarily because they are argued for in a philosophically unsophisticated way, but because of the gloomy vision of the human animal and of human life that they propose. Perhaps the best recent example is Alex Rosenberg's *The Atheist's Guide to Reality: Enjoying Life without Illusions*.[45] Rosenberg is an accomplished philosopher, and this is, comparatively speaking, a serious book. But if science is our sole source of knowledge, then what he

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[43]I have in mind here, of course, the sort of philosophical rambling engaged in by the likes of Richard Dawkins and Stephen Hawking. You don't have to be a Thomist to notice the gap between their premises and their conclusions; see, e.g., my colleague Gary Gutting's "On Dawkins's Atheism: A Response," *New York Times*, August 13, 2010. (It's harder to make excuses for philosopher Daniel Dennett; he should know better.)

[44]For a terrific response, from a specifically Thomistic perspective, to recent scientism masquerading as serious philosophy, see Edward Feser, *The Last Superstition* (South Bend, IN: St. Augustine's Press, 2008, 2010). For a terrific response from a more general Christian perspective, see Alvin Plantinga, *Where the Conflict Really Lies: Science, Religion, and Naturalism* (New York: Oxford University Press, 2011).

[45]New York: W. W. Norton & Company, 2011.

shows is that our lot is an unhappy one indeed.[46]

Rosenberg believes in effect that all materialist roads, if followed faithfully, lead to what is in effect eliminative materialism, even though he does not use the term. In general, *Science* (or, as I am tempted to say, *The Wizard*) tells us that evolution has hard-wired us in ways which we cannot (easily) eradicate but which give us all sorts of survival-inducing illusions: religious illusions, moral illusions, political illusions, social illusions, etc. And that's all they really are — illusions. So there! And if you find this "nice nihilism" unsatisfactory or even unbearable, then "take a Prozac," as the book's closing sentence advises.

In pondering Rosenberg's theses, I was put in mind of G.K. Chesterton's assertion in *Orthodoxy* that the materialist gradually destroys his own humanity.[47] And to what end? Apparently, despair runs deeper than hope. Still, it is easy to see that Rosenberg's words not the words of everlasting life; for that matter, they're not even the words of a decent mortal life.

From a Thomistic perspective scientism is just the latest historical instance of a gnosticism that claims a privileged status for a brand of purely natural knowledge which is both allegedly 'salvific' (at least when taken with Prozac) and accessible only to those in the know. Yet it is important to see that what the Church's teaching has plausibly insisted upon again and again over the centuries, viz., the inability of merely philosophical or merely scientific methodology to yield all the truths necessary for us to lead the best sort of human lives and live together harmoniously in society, is yet again in the history of the Church being openly challenged by powerful cultural elites. (At least we can now have some sense of what it was like to live in the heyday of Arianism!) One crucially important task for the next generation of Thomistic thinkers will be to address this new scientism with the metaphysical, moral, and

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[46]I pass over in silence the fact that, according to Rosenberg, natural selection yields false and illusory scientific beliefs as well as false and illusory religious beliefs, moral beliefs, political beliefs, social beliefs, etc. Apparently, he knows which scientific beliefs are which. In any case, for an extended critique of Rosenberg's book from a Thomistic perspective see Edward Feser at http://edwardfeser.blogspot.com/2012/05/rosenberg-roundup.html.

[47]*Orthodoxy* (San Francisco: Ignatius Press, 1908, 1995), p. 29.

epistemological resources bequeathed to us by the Angelic Doctor himself.

5. *Conclusion*

I want to close with a few brief remarks about the cultural significance of the issues discussed in this paper. As Walker Percy was fond of pointing out in oftentimes hilarious ways, in our culture we oscillate between regarding ourselves as beasts and regarding ourselves as angels.[48] These seem to be the only two choices — just as, in the philosophical problematic I outlined above, the only two choices afforded us are materialism and dualism.

St. Thomas has already helped saved us once from immaterialism or angelism. In the fascinating first chapter of *St. Thomas Aquinas*,[49] Chesterton explains how the two saintly friars, Francis and Thomas, each in his own way, the one as a poet and troubadour and the other as a stodgy philosopher, reintroduced a robust sense of corporeal and animal nature into thirteenth-century Catholic thought and practice, hence staving off an anti-incarnational tendency toward over-spiritualization that had appeared in the medieval Church. Even today, there are remnants of this tendency — or so I would argue — in the excessively 'intentionalistic' proclivities to be found in certain realms of Catholic moral thought, even among generally orthodox thinkers. To my mind, St. Thomas is still the "go-to man" on this score, and the key is his philosophical anthropology, which insists that we are animals, albeit very special animals.

In contemporary culture at large, however, it is the opposite tendency that is most prevalent — the materialist tendency, allegedly supported by natural science, to regard ourselves as beasts who are just a bit smarter than the other beasts. Once again, St. Thomas is the "go-to man," helping us to see how we can hold that even though we are animals, we are very special animals indeed.

The moral is that it is not hard to go wrong in philosophical anthropology. Many thinkers have

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[48]See especially *Lost in the Cosmos: The Last Self-Help Book* (New York: Farrar Straus & Giroux, 1983).

[49]San Francisco: Ignatius Press, 1933, 1986.

done so, with unfortunate consequences that range over the whole spectrum of the philosophical and theological disciplines. More importantly, the consequences seep down into popular culture itself. The stakes are high. This is one reason why the last two popes, echoing the documents of Vatican II, have insisted time and again on the importance of a deep and fundamentally sound philosophical anthropology, one that exhibits clearly how we are neither angels nor mere beasts, but instead a very peculiar sort of animal. These same popes keep recommending St. Thomas on this topic. No big surprise.

I will end with a pregnant meditation by Thomas Joseph White, OP, himself a Jewish convert to Catholicism, on the broader topic of a general renewal of Catholic philosophy and theology in light of our current cultural situation:

> The Catholic philosophical and theological response to our own secular and pluralistic age will require, among other things, the renewal of a more robust philosophical Thomism present within the intellectual life of the Church. What is required is not a return to manuals (though in truth some of these were not always as unhelpful as advertized). Rather, what is needed is a conceptually accessible, existentially compelling formation in classical Thomistic principles of logic, philosophy of nature, metaphysics and ethics, one conducted in simultaneous conversation with our contemporary cultural Sitz im Leben. These are the two dimensions of Aristotelian science: dialectical engagement with the culture's questions and answers, and renewed understanding and formation in the principles of the perennial philosophy. The world today is truth starved, lacking in knowledge of basic principles and ultimate perspectives. If we would respond to that challenge, our current challenge, then the philosophical heritage of Aristotle and Aquinas offers us not a romanticized vision of the past, but a challenging and viable way forward.[50]

As White makes clear in what precedes this passage, the "current challenge" facing Catholic thinkers is much different from what prevailed at the time immediately following the Second Vatican Council, when Catholic intellectuals jettisoned Thomism and went in search of something more intellectually 'relevant'. I hope that the present paper is just one more indication among many that what

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[50]From Thomas Joseph White, OP, "Toward a Post-Secular, Post-Conciliar Thomistic Philosophy: Wisdom in the Face of Modernity and the Challenge of Contemporary Natural Theology."

was rejected at that time was in fact the cornerstone.