Against Emergent Individualism

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1. Introduction

In a series of at least ten books and articles over the last twenty-two years, Timothy O'Connor and his collaborators have developed one of the most rigorous, subtle, and influential accounts of the relation between mind and body, which for present purposes we can call 'emergent individualism'. My own work has been shaped and enriched by this body of work. Consequently, the critique I offer here is a decidedly friendly, intended to advance our understanding of the mind while building on the contributions of O'Connor and his co-authors (Wong, Churchill, Theiner, and Jacobs).

In recent years, I have been working on the articulation and defense of a version of the hylomorphism of Aristotle and Thomas Aquinas (see Koons 2014). There is much common ground between such a Thomistic version of hylomorphism and emergent individualism. Both theories include a rejection of physicalism, in both its reductive and non-reductive versions, based on physicalism's failure to account adequately for qualia, intentionality, normativity, and mental causation. Both embrace an incompatibilist version of free will and both adopt the model of agent causation (in fact, hylomorphists would extend this model to cover all causal interactions, treating the early modern model of event causation as capturing a derivative level of metaphysical reality). Both count mental causation as real and irreducible. Both incorporate causal powers as a fundamental element of ontology, and both endorse a sparse ontology of properties. Both reject nominalism and

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conceptualism, including some form of realism about properties, either in the form of immanent universals (that are literally parts of their instances) or trope-like abstract particulars (individual forms).

Where, then, do the differences lie? This question will take up section 2 of this paper, in which I will locate each of four anti-reductionist positions on a conceptual map, namely: non-reductive physicalism, Cartesian dualism, Thomistic hylomorphism, and emergent individualism. In sections 3, 4, and 5, I will argue for the superiority of hylomorphism over emergent individualism on each of three issues: the nature of the causes of the existence of persons (section 3), the possibility of disembodied personal survival (section 4), and the nature of the influence of mind on body (section 5). I make some concluding remarks in section 6.

2. A Conceptual Map for the Philosophy of Mind

To begin with, let's exclude the two most extreme views: reductive physicalism (in which only the physical real) and idealism (in which only the mental is real). That leaves four moderate positions: non-reductive physicalism, Thomistic hylomorphism, emergent individualism, and Cartesian dualism. [2]

How do reductive and non-reductive versions of physicalism differ? We can distinguish the two very simply, if our background theory includes a relation of metaphysical grounding (see Fine 1999 and 2012, Schaffer 2009, and Rosen 2010) and a sparse ontology of properties and states of affairs. For reductive physicalists, there are non-physical concepts with non-empty extensions, and true propositions

[2] There are other ways of dividing up the logical space, which would generate other positions, including neutral monism, dual-aspect theory, or panpsychism. For present purposes, each of these could be seen either as a variant of one of the four positions (for example, dual-aspect theory seems to be a version of nonreductive materialism) or as introducing orthogonal issues (for example, the question of how many things have minds –a question to which panpsychism provides an answer).

with non-physical content, but the only properties with instances and the only actual states of affairs (or facts) are entirely physical in nature. Non-reductive physicalists, in contrast, are committed to the real existence of non-physical properties and facts. They count as physicalists because they hold that all non-physical facts are wholly grounded in the physical facts alone. Consequently, the class of the truth-values of non-physical propositions strongly supervenes on the class of the truth-values of the propositions of physics.

The other three positions deny physicalism altogether by denying that the non-physical facts are wholly grounded by the physical facts. For non-physicalists, there are fundamental non-physical properties and facts (including mental properties and facts). This does not necessarily entail a denial of mental-on-physical supervenience, since supervenience is a necessary but not a sufficient condition for physicalism. However, most anti-physicalists (including, I think, all Cartesian dualists) do in fact deny even the weak, global supervenience of the mental on the physical.

It is much harder to maintain the strong, localized supervenience of the mental on the physical, in the absence of the complete grounding of the mental by the physical. For this reason, strong, localized supervenience is (as far as I know) a materially adequate definition of non-reductive physicalism, although I think the definition in terms of grounding does a better job of getting to the heart of the matter.

How can we distinguish Cartesian dualism, Thomistic hylomorphism, and emergent individualism from one another? There are two relatively superficial tests that seem to do an adequate job of sorting anti-physicalist theories into one of the three bins. First, is it possible for a human being (or another entity with mental properties) to begin to exist without having any physical properties (in an immaterial or matterless condition)? If Yes, then we have a version of Cartesian dualism. If No, then either Thomistic hylomorphism or emergent individualism. Second, is it

possible for a human being to reach a condition of immateriality? If Yes, then Thomistic hylomorphism. If No, then emergent individualism.[3]

Although these questions do give us three mutually exclusive categories that are jointly exhaustive of non-idealistic anti-physicalism, they are not very illuminating about what reasons can be given for these three sets of answers. We have a better chance of gaining such illumination if we look at relations of ontological dependency between the mind and the body. Metaphysical grounding is one species of ontological dependency, but it is not the only species of this genus. It is possible for one metaphysically fundamental (ungrounded) entity to be ontologically dependent on another (Fine 1994). For example, if we accept origins essentialism, each organism is ontologically dependent on the prior existence of its parents, but that does not mean that the child's existence (now) is grounded by the parents' existence (then). Here's another example: we might think that extended things are ontologically dependent on the existence of space without supposing that the existence of the extended thing is partly grounded by the existence of space.

Ontological dependence can be either synchronic or diachronic. If *A* is synchronically dependent on *B*, then *A*'s existence at each moment t depends on *B*'s existence at that moment. Diachronic dependence is weaker: if *A*'s existence is diachronically dependent on *B*, then the existence of *A* at each moment *t* depends on *B*'s existence at some time *t** (typically a time no later than *t*).

Can there by synchronic ontological dependency without grounding? I think so. I suppose that metaphysical grounding is a necessitating relation: when fact *F* wholly

[3] It is obvious, I think, that no one will want to defend the position according to which is it possible for a human being to be immaterial at the first moment of its existence but impossible to be immaterial at later moments. So, three categories of anti-physicalism seem sufficient.

grounds fact *G*, it is impossible for *F* to exist without *G*'s existing. In contrast, ontological dependency runs in the opposite direction, modally speaking: if object *O* is ontologically dependent on object *P*, it is impossible for *O* to exist without *P*'s existence. Thus, synchronic ontological dependency of one object *O* on *P* is incompatible with the complete grounding of the fact of *P*'s existence by *O*'s existence, even though in each case, the existence of the fact that *O* exists entails the existence of the fact that *P* exists. Metaphysicians have at times spoken as if the impossibility of *F*'s existence without *G*'s existence were a kind of "dependency" of *F* on *G* (even Aristotle spoke this way about "priority"[4]), but this sort of modal "dependency" should be sharply distinguished from true, metaphysical dependency, which is an asymmetric relation between entities, and not merely a fact about covariation across worlds.

We can now ask: Are human beings (and other mental-property bearing entities) in a relation of synchronic ontological dependence to physical things? If the answer is *Yes*, then we have either non-reductive physicalism or emergent individualism. If the answer is *No*, then we have either Thomistic hylomorphism or Cartesian dualism. To distinguish hylomorphism from Cartesian dualism, we can ask the follow-up question: Are human bodies in a relation of synchronic ontological dependence to human souls? If *Yes*, then Thomistic hylomorphism. If *No*, then Cartesian dualism.

How then shall we distinguish non-reductive physicalism from emergent individualism? We could try to distinguish them by their answers to the same follow-up question: Is there a synchronic ontological dependency of human bodies on human souls? However, it is likely that both non-reductive physicalists and emergent individualists will answer *No* to this question, on the grounds that there are no entities (on those views) that can reasonably be identified with the term *human souls*. We could try a slightly different form of the question: Is there a

[4] *Metaphysics* Delta, 1019a.

synchronic ontological dependency of human bodies on human persons (or individuals)? Emergent individualists should answer *Yes* to this question, on the ground that it is only the emergent human person that supplies the *per se* unity to the materials that make up the body. Without the emergent human being, the matter that composes the human being would not compose any *one* thing at all, and so nothing that deserves the label of 'body' would exist. However, it is not clear to me that the non-reductive physicalists couldn't also give a *Yes* answer for the same reason.

In order to distinguish non-reductive physicalism from emergent individualism, we have to ask a different question, namely: Are there instances of irreducible mental-to-physical causation? The emergent individualists must answer *Yes*, and the non-reductive physicalists should answer *No*. It is true that some non-reductive physicalists have attempted to answer *Yes* to this question, despite Kim's famous causal exclusion argument, but I agree with O'Connor and Churchill that such attempts ultimately fail (O'Connor and Churchill 2010). This conclusion follows from our shared commitment to both causal powers as fundamental and to a sparse ontology of properties and facts. If mental facts are wholly grounded in the physical facts, then the relation between the mental and the physical is essentially non-causal in nature, and all genuine causal relations tie physical facts and events to other physical facts and events.

What positions do Thomistic hylomorphists and Cartesian dualists take on the question of mental to physical causation? It is clear that Cartesian dualists must be interactionists: they must posit direct and fundamental causal ties running from the mind to the body and the body to the mind. Otherwise, they would be forced to embrace idealism (no real causal power in the physical world), epiphenomenalism (no real causal power in the mental world), or Leibnizian pre-established harmony (no real causal power of the mind over the body or vice versa). These are not attractive options.

Since both emergent individualists and Cartesian dualists believe in direct and fundamental causation from mental facts to physical facts, and since both think that both the mental and the relevant microphysical facts (i.e., facts about the locations and trajectories of the micro-particles) are metaphysically fundamental, both groups of theorists must posit that mental facts can make a real difference to the behavior of physical entities, a difference that cannot be accounted for in terms of the causal powers of those microphysical entities alone, including the powers associated with the four fundamental physical forces (gravitation, electromagnetism, weak and strong nuclear forces). Therefore, they must either posit a fifth fundamental force (a mental or personal force) or posit at least local and temporary violations of mass-energy conservation.[5]

The issue is more complicated when we turn to Thomistic hylomorphists. For hylomorphists, many causal powers of the body and its parts (even its ultimate, microscopic parts) are at least partly grounded in the essential and accidental properties of the soul (or *form*). The formal causation that runs from soul to corporeal organs is a species of metaphysical grounding and not of causation proper (what Aristotelians refer to as *efficient causation*). Thus, the soul acts upon others only indirectly, using corporeal organs as instruments. There need be no direct causation from mind to body. Consequently, there need be neither a fifth fundamental force nor any violation of conservation laws. The nomological completeness of micro-physics is no threat to the real and irreducible power of the macroscopic organism, because the hylomorphist no longer supposes the microphysical facts to be fundamental and ungrounded. It is the soul (form) that is

[5] Cartesian dualists and emergentists might argue that quantum collapse phenomena provides an avenue for real downward causation without new fundamental forces or violations of conservation. In fact, I will defend such a position myself, but I argue that such downward influence is best understood as involving, at least in part, the Aristotelian notion of formal causation, rather than being understood in terms of standard event-event causation.

responsible (in part) for the relative locations and trajectories of the microphysical parts: the microphysical laws simply take as inputs what is (already) partly grounded in the nature of the whole, living and rational person.

Here is the resulting conceptual map:

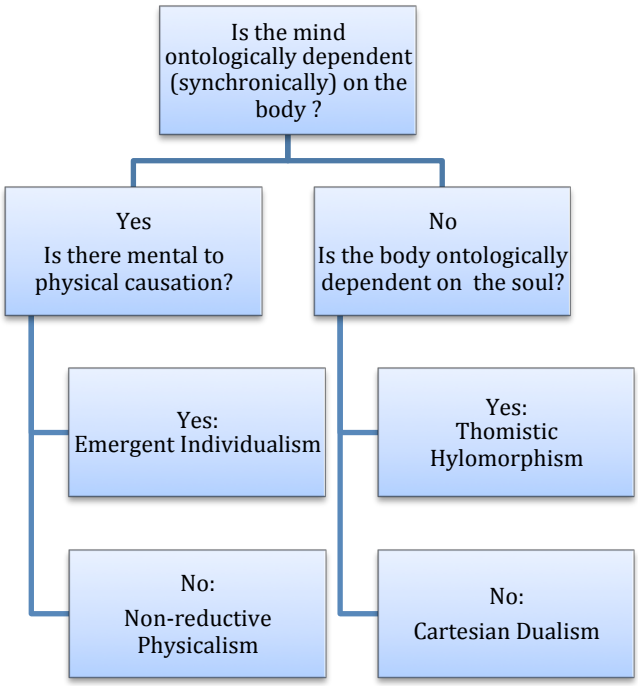

Figure 1.

I want to make one more attempt at a conceptual map of the territory, this time in terms of metaphysical grounding. Cartesian dualists take both the mind and the body to be complete and independent substances. For such dualists, the facts about the mind are not even partly grounded by the facts of the body, nor are the facts about the body partly grounded by the facts about the mind or soul. In contrast, Thomistic hylomorphists do take many facts about the body (even about its ultimate or simple constituents, if there are any) to be at least partly grounded in facts about the human soul (as the Aristotelian form of the body). Emergent individualists may also take certain mereological facts about the body and its parts (e.g., the fact that

these material entities do compose a single thing) to be at least partly grounded in facts about the emergent human individual.

Non-reductive physicalists deny that the body is even partly grounded by the soul, but they insist that the soul is at least partly (and, in fact, wholly) grounded by the body. Thus, we have so far distinguished both Cartesian dualism and non-reductive physicalism from each other and from the remaining two categories, but we have not yet distinguished between Thomistic hylomorphism and emergent individualism.

The difference between Thomistic hylomorphism and emergent individualism seems to lie in the realm of causation. Thomists agree with emergentists in thinking that it is metaphysically impossible for a human being to begin to exist without the synchronic participation of certain physical entities (such as the human ovum). Moreover, it is part of the very essence of human beings that we have such a beginning. However, once we human beings have begun to exist, we are capable of continuing to exist without the cooperation of any physical entity whatsoever. For emergent individualists, in contrast, the existence of a human being depends at each moment on the cooperation of the physical parts that make up the human body, and this causal dependency is itself essential to the persistence (and not just the origination) of a human being.

This scheme would seem to leave us with two possible versions of Cartesian dualism: those who agree with Thomists in thinking that there is an essential causal dependency of the soul on the body at its first moment of existence, and those who deny any such essential causal dependency. In fact, the first sort of Cartesian dualism seems very hard to justify. Hylomorphists have an explanation for the essential causal dependency of the soul on the body at its origin: namely, the thesis that the natural state of the human being is that of a single substance with both mental and physical powers. In rational animals like us, our intellectual powers are

essentially dependent on certain of our corporeal powers, namely, our sensory powers. All of our universals and all of our universal knowledge are derived (by abstraction) from the information received through our senses. For Aristotelians (both ancient and modern), sensory powers are essentially tied to the sensitivities of corporeal sense organs. The corporeal sense organ has among its essential and fundamental passive causal powers systematic sensitivities to the presence of real qualities in the environment. A human being cannot take in such sensory information without a body, and we cannot exercise our intellectual powers without such sensory information.

The physical components of the body do not have these sensory powers, either individually or collectively, except as the living body of an ensouled human being. If a human being were to begin in a disembodied condition, he or she would utterly lack these sensory powers and would lack the capacity to gain them (barring miracles). There would be no soul-less human bodies with the missing powers with which the disembodied human being could be unified. A being in such a condition could not have the human powers of intellect at all and so could not be a human being. Since humanity is essential to us, no human being can begin to exist except as a human being. Thus, human beings cannot begin to exist in a disembodied state. Once a human being has begun to exist and once his or her intellectual powers begin to be exercised in sustained activities of contemplation of universal truth, that human being can persist in existence without the cooperation of either the sense organs or the rest of the body.

The Cartesian dualist, in contrast, has no such story to tell. If a Cartesian human soul were to begin without a body, it would have all the powers that are essential to being human: it would simply need to be "hooked up" in the right way to to a soul-less human body, which would no longer be a metaphysical impossibility.

Therefore, we obtain the following map:

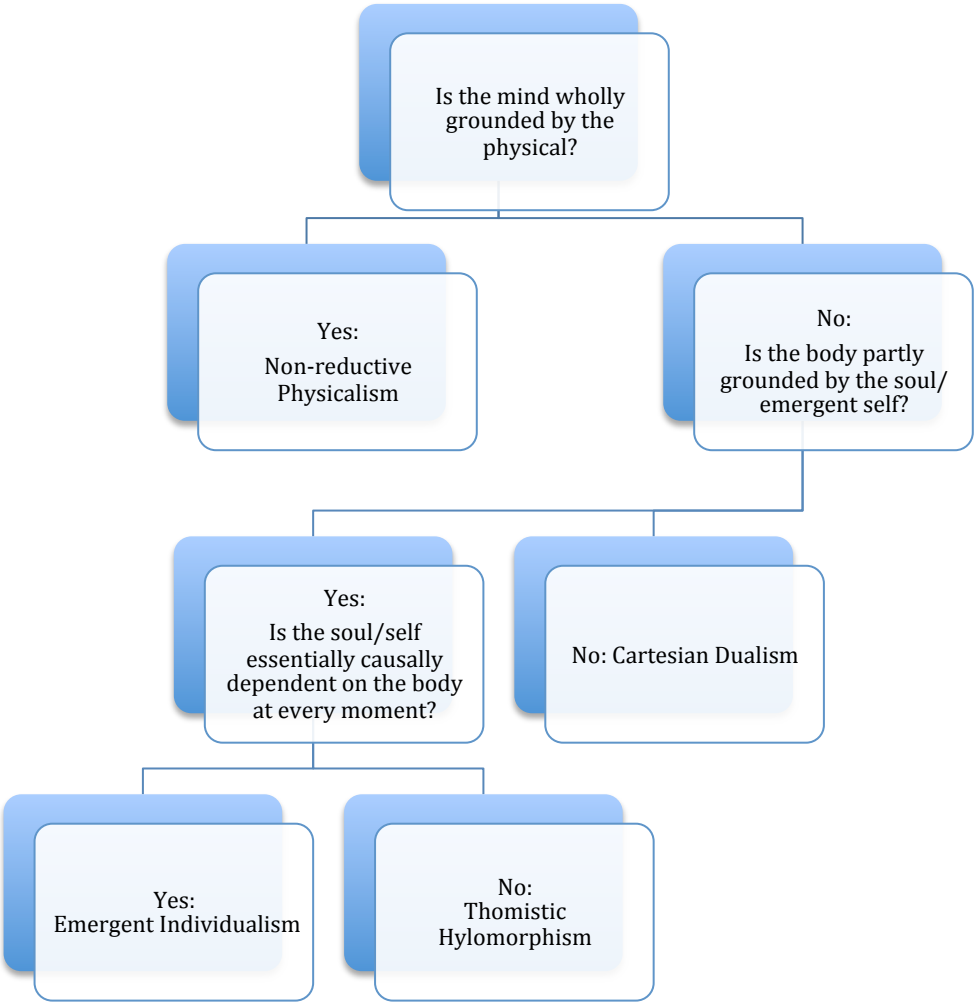

Figure 2.

This map provides us with a second way of distinguishing emergent individualism from Thomistic hylomorphism, namely, whether this is an essential causal dependence of the human person on the human body at each moment of the person's existence. We have seen why the hylomorphist denies the possibility of a disembodied existence of a person at the beginning of his existence, but we have not yet found why the emergent individualist wants to extend this impossibility throughout the person's life. We must seek a further factor that explains why the emergent individualist wants to make this extension and the Thomist does not.

This further factor would seem to consist in the emergent individualist's assuming that the physical realm has a certain kind of causal priority over the personal and mental. This subtle priority finds its expression in the term 'emergence': the emergent individualist assumes that the personal or mental *emerges from* the physical, which presupposes that it is the physical (and perhaps only the physical) that has the causal power to produce an instance of personality. Given this picture, it is not surprising that the emergent individualist supposes that there is a causal dependence of the mental on the physical at each moment of a mental or personal thing's existence. Hylomorphists, in contrast, make no such assumption about the causal priority of the physical. They are more likely to think that the personal or the super-personal has the causal power to generate a person, just as living entities have the power to generate new living things, in which case it would be unsurprising for them to suppose that a thing with intellectual (non-material) powers might have the power to sustain itself in existence, without the cooperation of physical entities.

We have then identified three critical issues that divide emergent individualists from Thomistic hylomorphists:

(i) Is the power to create and sustain persons possessed by and only by micro-physical entities?
(ii) Are disembodied human persons possible?
(iii) How does the mind affect the body: by formal causation (a species of metaphysical grounding) or by direct causal action?

I will take up each of these issues in the following three sections.

3. Bottom-Up, Top-Down, or On-a-Level: What Causes Human Beings?

Emergent individualists owe much to the British Emergentists, especially Samuel Alexander (Alexander 1920). Alexander's central theme was the unity of nature, understood diachronically. He embraced an evolutionary picture of the world, with no causal discontinuities in nature. O'Connor and Churchill (2010, 278) echo these themes:

> "It is enough that at every juncture introducing some new kind of causally discontinuous behavior, there is a causal source for that discontinuity in the network of dispositions that underlie it. In short: unity in the order of the unfolding natural world need not involve causal continuity of behavior, only continuity of dispositional structure."

As a theist (and not a deist), I don't find such a commitment to absolute causal continuity of nature to be obligatory. I wouldn't rule out the occasional occurrence of direct divine interventions–acts of special creation. My openness to such discontinuity is especially clear at two crucial points: the origin of life, and the origin of humanity.

Nonetheless, even if I were committed to natural continuity through time, I wouldn't be persuaded that it is the micro-particles that must possess the causal power needed to explain the origin of living organisms and conscious human beings. Why not attribute this power to composite substances that are non-living? In particular, there are three genuine possibilities: the cosmos, or planets or planetary systems, or complex inorganic systems with holistic chemical and thermodynamical properties.

For emergentists, cosmic history is one of gradual ontological aggregation: to begin with, there were only elementary particles, then (perhaps) substantial atoms, then molecules, then larger systems with various thermodynamic, convective, and/or crystalline structure, and then finally living things (including conscious and free

persons). At each stage, the smaller entities exercise at some point their latent powers to combine and form new substances.

There is, however, an alternative story that could be told, one that has prominent metaphysical advantages. This alternative cosmic history is one of gradual disaggregation and splintering. In the beginning, there was a single substance, the cosmos, which eventually broke up into proto-clusters, then galaxies, then stars and planetary systems, then proto-ecological systems with inherent features of a convective and thermal nature, then biotic systems consisting of populations of identical one-celled organisms, and finally individual multi-cellular organisms. At each stage, existing substances give rise to new substances by division, not aggregation.

The Big Bang model suggests that the world consists of a single substance in the immediate aftermath of the singularity. Although it is true that photons, leptons, and quarks soon appear, it is far from obvious that they constitute complete substances at that point. The phenomena of widespread quantum entanglements, carrying as they do implications of ontological holism or non-separability, tells in the opposite direction. I call this narrative 'de-escalation'.

De-escalation has a clear advantage over emergence: it requires at each stage only a single agent of efficient causation, an entity with an active causal power whose exercise results in a multiplicity of new substance. Emergence, in contrast, depends on the collaboration of a large number of independent agents, jointly exercising a set of complementary causal powers. Emergence requires a large-scale conspiracy of mutually agreeing causal powers possessed by the large number of smaller entities that spontaneously join together in forming a new substance. De-escalation, in contrast, involves at most two entities, an agent and patient, the first causing the second to undergo disintegration into a large plurality of new entities.

This is not perhaps a decisive fact, but we should, other things being equal, prefer accounts that avoid brute conspiracies among large numbers of independent agents.

Emergence would require a very improbable and ad hoc pre-established harmony among the powers of the many mutually unifying parts--a coordinated distribution of mutually exercisable powers. This problem ramifies as the number of components to be unified increases. It becomes quite untenable when billions of components must unite with each other.

De-escalation coheres nicely with hylomorphism, which in turn offers a correspondingly simple account of substantial persistence: hylomorphism locates the source of the persistent unity of each substance in a single agent, the substantial form. The presence of the many material parts serves merely as the patient of the formal action, as enabling conditions for the exercise of the form's formal powers. These enabling conditions are built into the form itself, requiring no prior mutual agreement. In contrast, emergence requires that the same kind of collaborative conspiracy of independent powers needed to bring the composite substance into existence persist throughout the substance's persistence.

How exactly does such de-escalation work? Answering this question would involve some subtle interaction between metaphysics and empirical science. My current proposal is that subatomic particles did not constitute Aristotelian substances in the early history of the universe but did so only much later, as the cosmos cooled and separated. Not all particles separated from the original cosmic substance as distinct substances in their own right: some became instead non-substantial, integral parts of other sub-cosmic substances, such as galaxies and solar systems. Still others eventually ended up as parts of prebiotic proto-ecosystems, and finally as constituting substantial populations of unicellular organisms. The first substantial organisms may have been multicellular in constitution, as discrete and cooperating populations micro-organisms achieved joint reproduction. At each stage, the

substantial form of the larger substance contained within it the potential of generating new substances at a smaller scale.

How does all this speculative natural history relate to our present-day conditions? We now find substances at multiple levels of scale, including perhaps: galaxies and solar systems, ecosystems, unicellular colonies, multicellular organisms, thermal substances, subatomic particles. The substantial forms of composite substances (that is all forms except those of fundamental particles) have the power to take and to expel smaller entities, which exist as substances when separated from the larger composite. If a system is destroyed or suffers amputation, new substances at a smaller scale are created. De-escalation theory from emergentism by refusing to locate the ultimate explanation of all these transformations in the forms of the ultimate particles alone.

4. The Intermediate State: Why not Disembodied Persons?

From a hylomorphic perspective, the persistence of human beings beyond the death of the body is not impossible. If human beings are not caused to begin to exist by the joint action of micro-particles, why assume that they are caused to *persist* in existence by such action of micro-particles? Why can't the human being persist in existence (and persist in engaging in intellectual activities, like the contemplation of abstract truths) despite the destruction of the body?

Critics of Thomistic Hylomorphism (including O'Connor and Jacobs 2013) offer two principal objections to the disembodied persistence of human persons (the so-called *intermediate* state between death and resurrection): the Cheshire Cat objection (forms without matter are impossible in the way that smiles without faces are impossible) and the Dion/Theon objection (the person cannot become identical with one of his own proper parts).

The Cheshire Cat objection.

Critics of Thomism often argue that matter-less form is as inconceivable as the smile of Lewis Carroll's Cheshire Cat, which survives after the rest of the cat has disappeared. The objection assumes that there can't be form without matter to be formed.

We should first note that this is an objection not just to St. Thomas but also to Aristotle. Aristotle proposed that the human soul is the form of the body, and yet there exist celestial intelligences (also capable of intellectual activity) that are completely devoid of matter. Defenders of the Cheshire Cat objection must suppose that Aristotle was deeply confused about his own notion of form and its relation to the intellect.

The Cheshire Cat objection is predicated on the assumption that forms are structures, and that structures are sets of properties or facts, facts about the intrinsic natures of a thing's material parts and about the relations among those parts. A thing without material parts could have no structure, and therefore no form.

However, Aristotelian forms are not structures. They are instead the metaphysical **grounds** of structure. So, it is not impossible for those grounds to exist in the absence of what is grounded. To be precise, forms are **partial grounds** of structure: structure is also partly grounded in the existence of suitable matter. The human soul can exist without being the actual ground of corporeal structure so long as it is still the ground of some activity. In the case of human beings, the soul can be the ground of pure intellectual activity, which does not essentially depend on the existence of a body. A soul that is engaged in such activity can survive the destruction of its body.[6]

[6] Are the souls of human beings who have not yet reached the age of reason not naturally immortal? If so, it would still be possible for God to enable

The Dion/Theon objection

How can the human being be composed of both body and soul at one point in time and then be identical to the soul alone at a later point in time? That is, how can a whole become identical to one of its proper parts? This would entail either **relative identity** (the soul is identical to the person **at the later time** but not identical to it **at the earlier time**) or the **denial of the irreflexivity of proper parthood** (the person is always identical to the soul and so is a proper part of itself prior to death), or **the denial of Weak Supplementation** (the disembodied person after death would have his soul as a proper part, without having any other part that does not overlap with it).

The Stoic philosopher Chrysippus (c 280 BC- c 206 BC) exploited this dilemma (in his Dion-Theon paradox) as a problem for any account in which a substance can lose one of its proper parts. Suppose that the unfortunate Dion loses his left foot to amputation. Let's call the post-amputation person 'Theon'. If we suppose that Theon is identical to Dion, we face a problem. Consider Dion-Minus: the proper part of Dion (prior to amputation) that includes everything but his left foot. It seems that Dion-Minus is identical to Theon: the two consist of the very same material things arranged in the same way. So, if Dion is identical to Theon, he is (or at least becomes) identical to one of his own proper parts (Dion-Minus). Yet Dion and Dion-Minus are surely distinct entities.

(supernaturally) any such human being to begin to exercise such intellectual powers prematurally and thereby to survive death. Alternatively, it might be that once the human being exists, with the natural capacity for abstract thought, the human soul can persist as the enduring ground for that capacity.

Peter van Inwagen (1981, 123-5) correctly identified the best solution to the Dion-Theon paradox: simply to deny the existence (prior to the amputation) of Dion-Minus, by denying the doctrine of the arbitrary fusion of undetached parts. The parts of Dion compose something (namely, Dion), but proper subsets of those parts (such as the parts of Dion except his left foor) compose nothing whatsoever. Hence, Dion does become Theon without becoming identical to any of his proper parts.

As O'Connor and Jacobs point out (O'Connor and Jacobs 2013), Thomistic hylomorphists face a prima facie difficulty in applying van Inwagen's solution: they cannot deny that the soul exists prior to death, and they seem to be committed to the soul's being (prior to death) a proper part of the human being. Therefore, when a human being is reduced at death to a soul without a body, it would become identical to something that had existed as one of its own proper parts.

It is crucial to distinguish between two senses of 'part': a broad and a narrow sense. In the narrow sense, the soul is never *part* of the human being (it is not one of the human being's *integral parts*, to use Thomas's language). The soul grounds the existence of the human being at each moment in time, whether the human being is composite (before death) or mereologically simple (after death).

In the broad sense, the soul is *part* of the person at each moment of his or her existence, by way of being one of the metaphysical components of the person, but so to are the person's accidents (including his or her intellectual actions and activities). Before death, the person is constituted by soul, body, and accidents; after death, by soul and accidents alone. By denying the doctrine of arbitrary fusions, the hylomorphist can deny that there is anything constituted by just the soul and accidents prior to death, thus avoiding the Dion/Theon paradox, just as van Inwagen does.

5. From the Mind to the Body: Formal Causation or Fundamental Force?

Emergent individualists and Thomistic hylomorphists agree that in some sense the body is partly grounded in facts about the whole person. For emergent individualists, it is holistic features of the person (including the whole person's causal interactions with the parts of the body) that provide the body with its *per se* unity. It is by virtue of these emergent facts that the parts of the body compose a single thing. However, O'Connor and his collaborators seem to assume that these mereological or compositional facts about the body are the only ones grounded in the emergent self. Like physicalists, emergent individualists assume that all non-mereological facts about the individual microscopic particles or fields (e.g., facts concerning their causal powers and spatial and spatiotemporal relations) are metaphysically independent and fundamental. In contrast, hylomorphists take all such facts about microscopic parts to be at least partly grounded in holistic facts about the composite substances to which they belong.

Consequently, emergent individualists and hylomorphists have fundamentally different conceptions about the way in which the microphysical parts of the body are affected by the emergent self or Aristotelian form. For emergentists, this influence is primarily causal (in the narrow sense of direct *efficient* causation): the self moves the particles by exerting on them something like a fundamental physical force. For hylomorphists, in contrast, the soul is a *formal* cause, not just of the body as a whole, but also of each of the body's microscopic parts. The soul is the metaphysical ground of the causal powers of the microscopic parts, and the soul acts upon the physical world *indirectly*, through the parts of the body as instruments.

There is some similarity between the hylomorphic conception of the causal role of the soul and the model of strong emergence developed by Carl Gillett (Gillett 2002, 2003, 2006). In both cases, the microscopic particles and fields have the causal powers they do because of their inclusion in a whole of a certain kind. In neither case is the whole assigned its own causal power to move its constituent particles.

However, there are two key differences between hylomorphism and Gillett's strong emergence. First, Gillett is silent on any relation of metaphysical dependency between the parts and the whole. This leaves open the possibility that the powers of each microscopic part are affected, not by its inclusion in a whole of a certain kind, but simply by the presence in its environment of a large number of other microscopic entities, suitably arranged. Such a possibility is excluded by hylomorphism, since the location and arrangement of the other microparticles is ultimately grounded in the nature of the whole, and not vice versa.

Second, Gillett implicitly excludes the possibility that the whole could instantiate any state or engage in any activity that is not wholly constituted by the arrangement and movement of its constituent particles. Consequently, he does not attribute to the whole any immanent causal powers—any power, that is, to engage in an intrinsic activity that is not strongly and locally supervenient on the successive states and movements of its micro-particles. In contrast, Thomistic hylomorphists take the human being to be capable of intellectual activities that are not dependent on any corporeal organ and so need not supervene on the state of the body.

Hylomorphists can easily accommodate the synchronic dependence of much intellectual activity on the state of the brain. Activities such as abstraction, inference, classification, recognition, deliberation, and decision all require the use of internal imaginative representations (St. Thomas's *phantasms*), which essentially involve essentially corporeal states. The only human activities that can occur independently of the body are acts of pure contemplation of abstract, wholly general facts and possibilities.[7]

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[7] God can enhance the intellectual activities of disembodied souls by providing them (miraculously) with the required phantasms. However, there would be no subsisting soul so to enhance if there were not something (pure contemplation) that the disembodied soul could do naturally.

O'Connor and Churchill (O'Connor and Churchill 2010, 276) object that Gillett's model of mind-to-body causation is too limited in its scope:

> "[A]ll we would have embraced are mental properties that play a kind of structuring role in the world's dynamics. They do no distinctive causal work—provide no extra causal oomph. There is, indeed, a strong analogy here to the role played by spatial and temporal relations in Newtonian mechanics, as construed by a causal powers theorist. Such relations, one might say, provide a necessary framework for the interplay of dispositional entities, while themselves having no dispositional nature. Surely our nonreductionist physicalist wants more than this by way of the causal relevance of the mental. More than being local, nondispositional constraints on the way fundamental physical causes operate, our beliefs, desires, and intentions themselves directly contribute to the unfolding dynamics of our behavior."

This overlooks the possibility of action through instrumental intermediaries. Even if the mind cannot act directly on the body, it can act indirectly (through the body) on other physical objects. The whole substance has real causal powers of its own: the causal powers of its parts are metaphysically grounded (at least in part) on those holistic powers, making the action of the microscopic parts merely instrumental in nature (see Koons 2014 for more details). In addition, on the hylomorphic account, the soul has the power to engage in rational activities (resolving itelf upon a decision, for example), thereby synchronically altering (via formal causation) the intrinsic features and relations of its microscopic parts.

Won't this alteration of the microscopic parts involve the introduction of new fundamental forces or violations of mass-energy conversion, whether we call this 'formal' or 'efficient' causation? No, this would follow only if we assumed that the

micro-particles have, independently of the exercise of human causal powers, precise locations and trajectories in a common spatiotemporal domain. The quantum revolution of the last one hundred years undermines the Democritean metaphysical assumption shared by physicalists, Cartesian dualists, and emergent individualists.

In the Copenhagen interpretation (developed by Bohr and his collaborators), the microphysical facts consist merely in the attribution to microscopic entities of certain *potentialities*, and these potentialities essentially include causal relations to macroscopic systems. A quantum doesn't typically have any position or momentum at all (not even a vague or fuzzy one): it has merely the potential to interact with macroscopic systems as if it had some definite position or momentum (or other observable feature) at the moment of the interaction. Thus, the quantum world (so understood) can be neither metaphysically fundamental nor a complete basis for the macroscopic world.

Of course, this situation gives rise immediately to a puzzle: what, then, is the relationship between the macroscopic and quantum worlds? Presumably, macroscopic physical objects are wholly composed of quanta. How, then, can the quanta fail to be metaphysically fundamental and complete basis for the macroscopic world?

Hylomorphism offers a ready answer to this puzzle. The microscopic constituents of macroscopic objects have (at the level of actuality) only an indirect relation to space and time: they are located (roughly) somewhere at a time only *qua* constituents of some fundamental, macro- or mesoscopic substance (in the Aristotelian sense). Such microscopic objects are not metaphysically fundamental in their entirety, and their metaphysically fundamental features do not provide a complete basis for the features of the substantial wholes they compose.

Although the Copenhagen interpretation, with its somewhat simplistic dualism of quantum and classical worlds, has fallen out of favor in recent years, Nancy Cartwright has defended a more pluralistic version: the dappled world picture (Cartwright 1999). On this view, the world consists of a variety of domains, each at a different level of scale. Most of these domains are fully classical, consisting of entities with mutually compatible or *commutative* properties. At most one domain is accurately described by quantum mechanics. Since location does not (for quantum objects) "commute" with other observables, like momentum, the quantum objects are only intermittently located in ordinary, three-dimensional space, although they always retain a probability of interacting with classical objects at a definite location. Interaction between quantum properties and classical properties (including those of experimenters and their instruments) precipitates an objective collapse of the quantum object's wavefunction, as a result of the joint exercise of the relevant causal powers of the object and the instruments, and not because of the involvement of human consciousness and choice.

The main drawback of Cartwright's model is that it denies the intelligibility of speaking of a cosmic wavefunction embracing all of reality, an approach that has become popular in recent years. Alexander Pruss's traveling-forms model (Pruss 2014) offers an interpretation of quantum mechanics that is both friendly to hylomorphism and consistent with a cosmic wavefunction. On Pruss's picture, there is a single quantum wavefunction which describes the state of the whole of microphysical reality and which evolves according to a unified, deterministic law (based on Schrödinger's equation). However, this quantum realm is not the whole of reality, nor does the macroscopic world supervene upon it.

This quantum wavefunction can be taken as ascribing potential positions to each of the world's quantum particles. Some of the potential positions of some particles are strongly correlated with those of other particles, as a result of the process known as *decoherence*. This decoherence can be thought of as delimiting a very large set of

alternative consistent histories of the world's particles. On Pruss's view, just one of these histories has a metaphysically privileged status, forming the basis for the real composition of material bodies, including living organisms. Even though this history is not *microphysically* privileged, acting simply on a par with all other consistent histories in the uniform evolution of the quantum world, it is *ontologically* distinguished by the fact that it, and it alone, corresponds to a world of real composite objects. Pruss in effect uses facts about the "special question of composition" (to use Peter van Inwagen's phrase in van Inwagen 1995) to single out one micro-history as the material basis for a world of macroscopic objects.

Although Pruss's world is microscopically deterministic, the macroscopic world is dynamically indeterministic, since the consistent history that underlies that macroscopic world at one time can later "branch" into several, disjoint histories. The substantial forms of macroscopic objects travel together down just one of those branches, in a way that is not determined at the quantum level, and which may be indeterministic at the macro level as well, although macroscopic agency (including acts of free will) may contribute to determining the direction of "travel".

In neither model (Cartwright's or Pruss's) is the relation between macroscopic actions and microscopic reality one of efficient causation. In both cases, microscopic bodies acquire approximate positions and trajectories by way of metaphysical grounding in irreducible and fundamental macroscopic facts. Such a relation of grounding could even be used to make sense of Bohm's interpretation of quantum mechanics, in which the microscopic world is both complete and deterministic (but radically non-local in its interactions). We could take the inseparably and radically holistic four-dimensional world of Bohm's mechanics to be a metaphysically dependent projection of an underlying fundamental reality that consists of macroscopic Aristotelian substances that interact locally and indeterministically. This would be analoguous to the way that Kant saved human freedom by taking the deterministic world of Newtonian mechanics to describe a phenomenal realm

ultimately grounded in a noumenal realm of freedom. Once again, the relation between macroscopic substances and their microscopic parts would be one of formal and not efficient causation.

6. Conclusion

Emergent individualists concede too much to the micro-physicalist. First, they concede that all of reality is to be explained ultimately in terms of the causal activity of the mereologically fundamental (simple) particles and fields. The generation and persistence of non-micro-physical entities (the "emergent" entities) are always to be explained in terms of the causal powers of the microscopic entities. The microscopic domain is causally responsible for the existence and persistence of all exceptions to its causal completeness. The picture is one of a world that was originally exclusively microscopic in character (a world of mereological or compositional nihilism) from which composite substances are generated, without appeal to any agency except that of the simple particles. We have no reason to embrace such a picture, in light of quantum holism. The cosmos was there from the beginning, and it never consisted of isolated and unrelated particles. Macroscopic substances have been there from the very beginning.

Second, emergent individualists (like Cartesian dualists and physicalists) accept a Democritean assumption about the metaphysical nature of the microphysical domain: namely, that the microphysical facts are metaphysically fundamental and ungrounded. This implies that if non-microscopic entities (whether macroscopic or immaterial) are to make a difference they must do so by acting upon micro-particles through the exertion of force. In contrast, hylomorphists deny that there is a metaphysically independent microphysical domain in the first place, opening the possibility of formal causation from wholes to parts. Modern quantum theory has altered the imaginative landscape in such a way as to revive the plausibility of the hylomorphic story.

Can these two elements of emergent individualism come apart? It would seem to be impossible to reject the second assumption (the metaphysical fundamentality of the microphysical) while maintaining the first (the ultimate causal sufficiency of the microphysical). It would be impossible for the microphysical to be ultimately responsible for causing the macroscopic domains if microphysical facts are partly grounded by those domains.

What about the other way around? What if we were to affirm the metaphysical fundamentality of the microscopic realm while denying that there is an essential synchronic causal dependency of the mind on the body? There's a serious problem for this combination of views: a version of Jaegwon Kim's pairing problem. If both the microscopic entities and the emergent selves are metaphysically fundamental, then the only relations tying them together are relations of causal dependency. Why is this mind tied to these microparticles? Clearly, the microparticles are not continously causally dependent on the mind, so it seems that we must suppose that the mind is continuously causally dependent on facts about these particular particles.

The Thomistic hylomorphist, in contrast, has a different and ultimately more satisfying solution to the pairing problem: the microscopic parts are metaphysically dependent on the whole, and the soul is the ground of that metaphysical unity.

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