From Potency to Act: Hyloenergeism

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I. Introduction

Hylomorphism is the view that at least some material objects are comprised of both matter and form. After a long period of neglect, hylomorphism has recently made something of a comeback in contemporary analytic metaphysics.[1] Many contemporary proponents of hylomorphism endorse a version of hylomorphism according to which the form of a material object is a certain kind of complex relation or structure realized in its material parts.[2] If by 'structure' is meant a certain kind of polyadic relation, or a certain set of spatial and causal relations that hold between the object's parts, then structural approaches to understanding the nature of form face the following worry: more "dynamically complex" material objects, such as living organisms, seem to undergo, and survive, various structural changes over the course of

[1] See, for example: Jeffrey E. Brower, *Aquinas's Ontology of the Material World: Change, Hylomorphism, and Material Objects* (Oxford: Oxford University Press, 2014); Simon J. Evnine, *Making Objects and Events: A Hylomorphic Theory of Artifacts, Actions, and Organisms* (Oxford: Oxford University Press, 2016), Kit Fine, "Things and Their Parts", *Midwest Studies in Philosophy*, Vol. 23, No. 1 (1999): pp. 61-74; William Jaworski, *Structure and the Metaphysics of Mind: How Hylomorphism Solves the Mind-Body Problem* (Oxford: Oxford University Press, 2016); Mark Johnston, "Hylomorphism", *The Journal of Philosophy*, Vol. 103, No. 12 (Dec., 2006): pp. 652-698; Robert C. Koons, "Stalwart vs. Faint-Hearted Hylomorphism: Toward an Aristotelian Account of Composition", *Res Philosophica*, Vol. 91, No. 2 (Apr., 2014): pp. 151-177; Kathrin Koslicki, *The Structure of Objects* (Oxford: Oxford University Press, 2008); Anna Marmodoro, "Aristotle's Hylomorphism without Reconditioning", *Philosophical Inquiry*, Vol. 36, No. 1-2 (Winter-Spring, 2013): pp. 5-22; David S. Oderberg (*Real Essentialism* (New York: Routledge, 2007); Michael C. Rea, "Hylomorphism Reconditioned", *Philosophical Perspectives*, Vol. 25, No. 1 (Dec., 2011): pp. 341-358; Thomas Sattig, *The Double Lives of Objects: An Essay in the Metaphysics of the Ordinary World* (Oxford: Oxford University Press, 2015); Patrick Toner, "Emergent Substance", *Philosophical Studies*, Vol. 141, No. 3 (Dec., 2008): pp. 281-297; Patrick Toner, "On Hylemorphism and Personal Identity", *European Journal of Philosophy*, Vol. 19, No. 3 (Sep., 2011): pp. 454-473; Patrick Toner, "Hylemorphic Animalism", *Philosophical Studies*, Vol. 155, No. 1 (Aug., 2011): pp. 65-81; Patrick Toner, "On Aristotelianism and Structures as Parts", *Ratio*, Vol. 26, No. 2 (Jun., 2013): pp. 148-161. See, also, the essays found in the April 2014 issue of *Res Philosophica*.

[2] See, for example: Fine, "Things and Their Parts"; Jaworski, *Structure and the Metaphysics of Mind*; Johnston, "Hylomorphism"; Koslicki, *The Structure of Objects*. I include Jaworski here among those that espouse a structural approach to form, since he uses the language of structure to describe his view, often speaking of the form of a material object as the "configuration", "organization", or "arrangement" of its parts. As we will see, however, what Jaworski means by 'structure' turns out to be very different from what others who espouse this sort of approach have in mind.

their existence. Consider, for example, my cat, Nico. Nico was once a small, frail kitten that we rescued from underneath the hood of a truck. Later on, Nico got bigger and stronger, faster and smarter. He ate, drank, shed his fur, and, in an unfortunate accident, lost most of his tail. Nico still has black fur, but most of his other features have changed over time. In addition, Nico has, by now, shuffled through various material parts at a rapid rate, such that none that he once had now remain a part of him.[3] It seems clear that, over the course of his life, Nico has survived a change in not only his material parts, but also in several of the structural features that his material parts have exhibited throughout his life. Nico got taller and heavier, recovered from various maladies, picked up new behavioral tendencies, and, later on, sadly, lost his tail. Though my cat Nico exhibits a very similar structure to that which his material parts exhibited earlier on, it seems implausible to suggest that it is very same structure. What this example seems to show, then, is that it is not by virtue of the continued possession of some complex relation or structure that living organisms like my cat, Nico, remain the same over time. For these sorts of material objects, structural approaches to understanding the nature of form seem not to capture form's traditional role as the guarantor of diachronic identity.

In light of these sorts of concerns, several contemporary hylomorphists have looked to provide a more dynamic conception of form, either by expanding the notion of structure so as to permit alterations in particular structural relations that hold at any particular time, or by adopting an alternative, non-structural approach.[4] One of the leading non-structural approaches to

[3] Perhaps if some of Nico's larger material parts are functionally defined then there will be a sense in which Nico continues to possess the same heart or the same lungs, but even in this case, it seems that none of the smaller material parts that compose those organs will have remained throughout.

[4] On Fine's account, for example, the principal formal component of a "variable embodiment", the type of material object that can survive at least a certain amount of variation in its material and structural parts, turns out to be neither a relation nor a structure, but a quasi-mathematical function (Fine, "Things and Their Parts", pp. 68-69 (For a similar functionalist approach to form, see Sylvain Roudaut, "A Dynamic Version of Hylomorphism", *Axiomathes*, Vol. 28, No. 1 (Feb., 2018): pp. 13-36)). And, as we'll see, on Jaworski's account, the formal "structures" of certain complex material objects, such as living organisms, are best understood, not as relations or as configurations of matter, but as "activities" that the material constituents of such objects undergo, or the "patterns of interaction" that

understanding the nature of form is the powers approach, according to which the form of a material object is a certain kind of power continuously activated in the object or in its material parts. In this paper, I begin by offering an overview and assessment of this powers approach to form. Here I consider the work of three contemporary hylomorphists who have espoused this sort of view: Michael Rea, William Jaworski, and Anna Marmodoro. I argue that while the powers approach captures some crucial elements for understanding the nature of more dynamically complex material objects, when we press on the details of this approach we find that it actually points to a related, but importantly distinct, third approach to understanding the nature of form, according to which the form of a material object is a certain kind of activity or process in which the material object or its parts are continuously engaged. I call this third approach, "Hyloenergeism"[5]. In the second half of the paper, I consider what such a view of material objects might look like and what its principal virtues might be. Here I make use of some of the recent literature on "occurrent continuants" to argue that by placing activities or processes at the heart of material objects, hyloenergeists need not be committed to any kind of process ontology or to perdurantism. By the end I hope to have shown that hyloenergeism is a unique and

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such complexes exhibit (see, for example: Jaworski, *Structure and the Metaphysics of Mind*, p. 14-15). Even Koslicki backs off from the claim that the structures of objects are to be identified with any particular relations that hold between their parts at the end of her *The Structure of Objects* (p. 252). Other non-structural approaches to understanding the nature of form can be found in: Koons, "Stalwart vs. Faint-Hearted Hylomorphism"; Marmodoro, "Aristotle's Hylomorphism without Reconditioning"; David S. Oderberg, "Is Form Structure?", in Daniel D. Novotny and Lukas Novak (eds.), *Neo-Aristotelian Perspectives in Metaphysics* (New York: Routledge, 2014): pp. 164-180); Rea, "Hylomorphism Reconditioned".

[5] The term 'hyloenergeism' is, like 'hylomorphism', a combination of two Greek words found in the texts of Aristotle. In the present case, the two words are '*hyle*', which is often translated as 'matter', and '*energeia*', which is sometimes translated as 'activity'. Hyloenergeism, then, is the view that material objects are comprised of matter and activity, with activity playing the role of form. I owe the inspiration for this view, as well as its name, to Mark Steen (see his "Stuff, Process, and Object: An Examination of Substance and its Alternatives", Ph.D. Dissertation, Syracuse University, 2005, p. 288, and his "Bare Objects, Ordinary Objects, and Mereological Essentialism", Unpublished Manuscript, wherein Steen both introduces and names the view). Steen also suggests that such a view can be found in the later work of Roderick Chisholm (see Mark Steen, "Chisholm's Changing Conception of Ordinary Objects", *Grazer Philosophische Studien*, Vol. 76, No. 1 (Jan., 2008): pp. 1-56. To be clear, Hyloenergeism, as a third approach, is meant to serve as an alternative to both structural and powers approaches to understanding the nature of form.

promising variation of hylomorphism - one that better captures the dynamic complexity of living things than those currently on offer.

II. Three Powers Approaches

A. Rea's Reconditioned Hylomorphism

Michael Rea's account of material objects is a hylomorphic account in that it understands material objects to be comprised of both matter and form.[6] On his account, "natures" play the role of form, and "individuators" play the role of matter. Rea rejects a mereological construal of hylomorphism, according to which matter and form are parts of material objects. He draws a distinction between parts and constituents and prefers to speak of natures and individuators as constituents of material objects.[7] Rea also finds problematic the standard distinction between universals and particulars, and so, on his account, natures are neither. Natures, according to Rea, are fundamental powers. As powers, natures are dispositional, and as fundamental, they are natural (in David Lewis's sense), irreducible to any other powers or properties, and serve as the ground for all non-natural powers. For Rea, all properties are powers, which is to say that all properties are irreducibly dispositional.[8] To say that all properties are irreducibly dispositional, however, is not to say that the world is nothing but pure potentiality. According to Rea, fundamental powers are both actualizations of other potentialities and potentialities for further ends. As Rea explains, "Being feline, for example, might just be a certain complex power or capacity to develop and behave in certain ways, even if, at the same time, being feline is also the

[6] The articles from which I will be drawing Rea's account include: Jeffrey E. Brower and Michael C. Rea, "Material Constitution and the Trinity", *Faith and Philosophy*, Vol. 22, No. 1 (Jan., 2005): pp. 57-76; Michael C. Rea, "Hylomorphism and the Incarnation", in Anna Marmodoro and Jonathan Hill (eds.), *The Metaphysics of the Incarnation* (Oxford: Oxford University Press, 2010): pp. 134-152; Michael C. Rea, "Hylomorphism Reconditioned", *Philosophical Perspectives*, Vol. 25, No. 1 (Dec., 2011): pp. 341-358.
[7] Rea, "Hylomorphism and the Incarnation", p. 138; Rea, "Hylomorphism Reconditioned", pp. 353-354.
[8] Rea, "Hylomorphism Reconditioned", p. 346.

actualization of the potentiality on the part of some matter for being a cat."[9] Finally, individuators, or "locations", on Rea's account, are identified with regions or points of spacetime. Material objects, then, are understood as comprised of fundamental powers and particular regions or points of spacetime.

The major role that natures play in Rea's hylomorphic account of material objects is as the primary unifier of the other powers of a material object, including the powers of its material parts. What is it for a fundamental power or nature to unify or unite the other powers of a material object? According to Rea,

> One power P unites some other powers just in the case that P is so connected to the other powers that its manifestation depends upon the cooperative manifestation of the united powers and, furthermore, the latter do not confer any powers on the object that has P that are both intrinsic to the object and independent of P.[10]

Summarizing his account of fundamental powers or natures, Rea offers the following illustration of what a human nature would look like on this account:

> Consider a human organism, and suppose that humanity is a biological nature. (I do not know whether humanity is a biological nature, or whether there are any biological natures. The answer depends in part upon whether properties like being human are reducible.) The manifestation of humanity in a region depends causally upon the cooperative manifestation of the natures of the simple parts of the human organism. Not just any sort of cooperative manifestation will do, however. Take all of the simple parts of a human and force-fit them into a one-quart cylindrical container and you will not have a human organism, even if, at that time, the natures of the erstwhile parts of the human are engaged in some sort of cooperative manifestation. Thus, the presence of humanity in a region depends upon a particular sort of cooperative manifestation of the natures of the relevant parts. Furthermore, every power intrinsic to a human being, excepting humanity, whose manifestation depends upon the relevant sort of cooperative activity — e.g., the capacity for rational thought, the power to grow and develop as a human organism, the power to run and dance — is plausibly dependent upon the power that is humanity. And the humanity of an organism is not itself so dependent upon

[9] Rea, "Hylomorphism Reconditioned", p. 348. How a fundamental power can be the actualization of some other potentiality while still being fundamental is not exactly clear, however. Koons raises this worry for Rea's account at pp. 158-159 of his "Staunch vs. Faint-Hearted Hylomorphism".
[10] Rea, "Hylomorphism Reconditioned", pp. 348-349.

> some further power that also unites the organism's parts. Thus, humanity unites the natures of the parts of a human being in the sense described above. This is the sense in which I think that humanity is a principle of unity, and it is part of what is involved in its being a nature."[11]

B. Jaworski's Structural Hylomorphism

William Jaworski's account of material objects is also a hylomorphic account in that it too understands material objects to be comprised of both matter and form.[12] On his account, "structure" plays the role of form, while various materials capable of being structured play the role of matter. Like Rea, Jaworski is wary of speaking of forms as parts of material objects. On Jaworski's view, though a composite material object in some sense "consists" of matter and form, that is, of various materials and a certain kind of structure, that structure is not to be included among that object's proper parts.[13] Unlike Rea, however, Jaworski is comfortable characterizing the structure of an object as a trope-like particular, as opposed to a universal or to something which is neither particular nor universal. According to Jaworski's hylomorphic account of material objects, then, the form of a composite material object is a particular structure realized in its materials. But what exactly is a structure? In some places, Jaworski seems to

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[11] Rea, "Hylomorphism Reconditioned", pp. 349-350.

[12] The articles and books from which I will be drawing for Jaworski's account include: William Jaworski, "Hylomorphism: Emergent Properties without Emergentism," In Miguel Garcia-Valdecasas and Nathaniel Barrett (eds.), *Biology and Subjectivity: Philosophical Contributions to Non-Reductive Neuroscience* (Basel: Springer, 2016): pp. 41-61; William Jaworski, "Hylomorphism and the Metaphysics of Structure", *Res Philosophica*, Vol. 91, No. 2 (Apr., 2014): pp. 179-201; William Jaworski, "Hylomorphism and Resurrection", *European Journal for Philosophy of Religion*, Vol. 5, No. 1 (Spring, 2013): pp. 197-224; William Jaworski, "Hylomorphism: What It Is and What It Isn't", *Proceedings of the American Catholic Philosophical Association*, Vol. 85 (2012): pp. 173-187; William Jaworski, *Philosophy of Mind: A Comprehensive Introduction* (Malden, MA: Wiley-Blackwell, 2011); William Jaworski, "Powers, Structures, and Minds", in John Greco and Ruth Groff (eds.), *Powers and Capacities in Philosophy: The New Aristotelianism* (New York: Routledge, 2012): pp. 145-171; William Jaworski, "Psychology with a Mental-Physical Dichotomy", in William M. R. Simpson, Robert C. Koons, and Nicholas J. The (eds.), *Neo-Aristotelian Perspectives on Contemporary Science* (New York: Routledge, 2017): pp. 261-291; William Jaworski, *Structure and the Metaphysics of Mind: How Hylomorphism Solves the Mind-Body Problem* (Oxford: Oxford University Press, 2016); William Jaworski, "Swinburne on Substances, Properties, and Structures", *European Journal for Philosophy of Religion*, Vol. 6, No. 2 (Summer, 2014): pp. 17-28.

[13] Jaworski speaks of composite material objects as "consisting" of form and matter in several places, including Jaworski, *Philosophy of Mind*, p. 170. It is only in his *Structure and the Metaphysics of Mind*, pp. 327-329, that he explicitly rejects a mereological construal of hylomorphism.

identify the structures of objects with the organization, order, or arrangement of their parts.[14] But Jaworski is also clear that he does not intend to identify his structures with any particular set of spatial relations that hold between those parts.[15] Rather, it seems that his structures are meant to explain *why* the material parts of a material object are organized, ordered, or arranged as they are. Along these lines, in several of his works Jaworski explains that he takes the structure of an object to be a certain kind of dispositional property, a certain kind of power.[16] In what follows, I take this powers approach to structure or form to be Jaworski's considered view.

According to Jaworski, then, structures or forms are powers. The structure of an object is the power that the object possesses to organize, order, or configure its material parts. Jaworski accepts an identity view of powers, according to which powers are both qualitative and dispositional. Following other identity theorists, Jaworski also holds that powers are essentially directed toward their manifestations. Now, not all powers are always bringing about their manifestations. The manifestation of a power often requires certain specific stimulus conditions and the cooperation of other reciprocal powers. As a result, despite being essentially directed to their manifestations, many powers never bring about the manifestations to which they are directed. However, according to Jaworski, the powers that serve as the structures of objects are unique in that they are always bringing about their manifestations; they are always activated. As Jaworski explains:

> Unlike many of the powers we have considered, structures cannot go unmanifested. Crystals of table salt can sit idly; their power to dissolve in water can remain forever unmanifested. But there is no sitting idle when it comes to my power to configure the materials that compose me. If I am not manifesting that

[14] See, for example, Jaworski, *Philosophy of Mind*, p. 272; Jaworski, "Hylomorphism: What It Is and What It Isn't", p. 173; Jaworski, *Structure and the Metaphysics of Mind*, pp. 1, 8; Jaworski, "Hylomorphism: Emergent Properties", p. 41; Jaworski, "Psychology", p. 264.
[15] See, for example, Jaworski, "Swinburne, p. 181; Jaworski, *Structure and the Metaphysics of Mind*, pp. 14-15, 95; Jaworski, "Hylomorphism: Emergent Properties", pp. 42-43; Jaworski, "Psychology", p. 264.
[16] Jaworski, *Structure and the Metaphysics of Mind*, pp. 94, 97; Jaworski, "Hylomorphism: Emergent Properties", p. 46; Jaworski, "Psychology", pp. 268-269.

> power, if I am not configuring those materials, then I do not exist, and if I do not exist, there is no individual to do my configuring. Structures, then, are not just essential powers of structured individuals; they are powers of structured individuals that are essentially manifested, that cannot exist unmanifested.[17]

Because these powers are essentially manifested in the objects whose powers they are, Jaworski often speaks of the structure of an object as itself a sort of activity or pattern of behavior. In his *Structure and the Metaphysics of Mind*, for example he writes,

> Often when people think of structure, they think of something static such as the relatively unchanging spatial relations among atoms in a crystal. But the philosophers and scientists we're considering don't view structure so narrowly. Although we can refer to the sum of spatial relations among something's parts as a structure, the structures that are likely to interest us most - the kind of structures that, say, distinguish living things from nonliving ones – are not static spatial relations, but dynamic patterns of environmental interaction.[18]

> A structured individual comes into existence exactly when its activity of configuring materials commences, and the materials it configures are precisely those that compose it. Structured individuals are thus emergent individuals who are essentially engaged in the activity of configuring the materials that compose them.[19]

Material objects, on Jaworski's view, then, are understood as comprised of various materials capable of being structured and an essentially manifested power possessed by that object to configure those materials, which Jaworski calls its "structure".

Structures play several important roles in Jaworski's hylomorphic account of material objects. The structure of an object serves to unify its material parts into a single whole distinct from other wholes, it serves as the guarantor of a material object's continued existence over time, and it serves as the ground for the other species-specific powers that the object possesses. As Jaworski explains in his 2014,

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[17] Jaworski, "Swinburne", p. 189; Jaworski, *Structure and the Metaphysics of Mind*, p. 97; Jaworski, "Hylomorphism: Emergent Properties", p. 47. See also, Jaworski, "Psychology", p. 269.
[18] Jaworski, *Structure and the Metaphysics of Mind*, pp. 14-15.
[19] Jaworski, *Structure and the Metaphysics of Mind*, p. 104. See also: Jaworski, "Hylomorphism: What It Is and What It Isn't", p. 182; Jaworski, "Powers, Structures, and Minds", p. 157; Jaworski, "Hylomorphism and Resurrection", p. 212; Jaworski, *Philosophy of Mind*, p. 280; Jaworski, "Hylomorphism: Emergent Properties", p. 48-49.

> Structure serves as a principle of unity, persistence, and power. It is responsible for setting something apart as a discrete individual distinct from the rest of the physical universe, and it explains why such an individual can exist one and the same over time. It also explains why that individual can do many of the things that it does: why it has many of the powers it has, including the powers that classify it as a living being or a mental one. Finally, an individual's structure explains the autonomy of various empirical disciplines that would look to describe and explain its behavior.[20]

Summarizing his account of essentially manifested structural powers, Jaworski compares his hylomorphic account of living organisms to that offered by Peter van Inwagen:

> Structured individuals are emergent individuals on the hylomorphic view. There are empirically describable conditions that are sufficient to bring into existence new structured individuals where previously no such individuals existed. Once a structured individual comes into existence it is essentially and continuously engaged in configuring materials. The materials it configures are precisely those that compose it. When it comes to characterizing the configuring activity of structured individuals, hylomorphists can adopt most of what van Inwagen says about lives, at least when it comes to the configuring activities of living things, the paradigmatic structured individuals. My life is identical to my configuring various fundamental physical materials at various times—an event that has the characteristics van Inwagen attributes to lives, and that has many other characteristics it is business of the biological sciences to describe. An individual living thing does not configure exactly the same materials for very long since those materials are in constant flux; despite this, the individual maintains itself one and the same through all the changes on account of its ongoing configuring activity. That activity is what unifies various materials into a single individual, both synchronically and diachronically, just as lives do on van Inwagen's account.[21]

C. Marmodoro's Power Structuralism

Like Rea and Jaworski, Marmodoro's account of material objects counts as a hylomorphic account in that she often speaks of material objects as consisting of both a material aspect and a formal aspect.[22] Also like Rea and Jaworski, Marmodoro explicitly rejects a

[20] Jaworski, "Swinburne", p. 182.
[21] Jaworski, "Swinburne", p. 193; Jaworski, "Hylomorphism: Emergent Properties", pp. 48-49; Jaworski, "Psychology", pp. 270-271.
[22] The articles from which I will be drawing Marmodoro's account include: Anna Marmodoro and Christopher J. Austin, "Structural Powers and the Homeodynamic Unity of Organisms", in William M. R. Simpson, Robert C. Koons, and Nicholas J. Teh (eds.), *Neo-Aristotelian Perspectives on Contemporary Science* (New York: Routledge, 2017): pp. 169-183; Anna Marmadoro, "Aristotle's Hylomorphism without Reconditioning", *Philosophical Inquiry*, Vol. 36, No. 1-2 (Winter-Spring, 2013): pp. 5-22; Anna Marmodoro, "Aristotelian Powers at Work: Reciprocity

mereological construal of hylomorphism. As Marmodoro explains, the form of an object cannot be an additional part of that object if it is to properly unify the other parts into a single whole.[23] Like Jaworski, and unlike Rea, Marmodoro also takes forms to be trope-like particulars. And like both of the approaches above, on Marmodoro's account, the form of a material object is a certain kind of a dispositional property or power. Marmodoro accepts a pure powers theory of powers, according to which powers are purely dispositional and essentially characterized by the manifestation to which they are directed. Marmodoro distinguishes between transitive powers, the manifestations of which consist in some change or changes in something else outside of those powers, and intransitive powers, the manifestations of which consist of some change or changes in the powers themselves. The powers that are forms are intransitive powers.[24]

Marmodoro also distinguishes between what she calls "structural powers" and "substantial powers", though the difference between these two types of powers is a bit more complicated.[25] According to Marmodoro, material objects possess several fundamental powers. An electron, for example, possesses the fundamental powers of its mass, charge, and spin. The fundamental powers of a material object exhibit a certain structure within that object. When structured in the relevant way, these fundamental powers compose what Marmodoro refers to as the structural power of the object. The structural power of a material object unifies the fundamental powers of a material object (and the fundamental powers of its parts) into a single whole. The result of this unification is what Marmodoro refers to as a substantial power. A substantial power is an emergent power, which arises as a result of the unification of a material

without Symmetry in Causation", in Jonathan D. Jacobs (ed.), *Causal Powers* (Oxford: Oxford University Press, 2017): pp. 57-76; Anna Marmodoro, "Do Powers Need Powers to Make Them Powerful? From Pandispositionalism to Aristotle", *History of Philosophy Quarterly*, Vol. 26, No. 4 (Oct., 2009): pp. 337-352; Anna Marmodoro, "Power Mereology: Structural versus Substantial Powers", in Michele Paoletti and Francesco Orilia (eds.), *Philosophical and Scientific Perspectives on Downward Causation* (New York: Routledge, 2017): pp. 110-128.

[23] See, for example, Marmodoro, "Aristotle's Hylomorphism".

[24] Marmodoro, "Power Mereology", pp. 113-114.

[25] The following is drawn from Marmodoro, "Power Mereology", pp. 121-122.

object's fundamental powers by the structural power. The structural power is said, then, to "constitute" the substantial power, and the material object itself is identified with the substantial power that emerges. On Marmodoro's view, then, forms are structural powers, which are not to be identified with, but are to be seen as constituting the material objects whose forms they are.[26] An important feature of these structural powers is that, like Jaworski's structures, they are unique among powers in that they are constantly activated; they never fail to bring about their manifestations.[27]

One of the unique features of Marmodoro's account is her claim that the manifestation of a power (and here she must mean an intransitive power) is nothing more than the power itself in a different state.[28] This differentiates her view from other accounts which hold that the manifestation of a power is either a further non-dispositional property or a further power. According to Marmodoro, when an intransitive power moves from being unactivated to being activated, there is indeed a change in the power: the power comes to be in a different state than the state in which it was before. But the manifestation of the power is nothing more than just this new state that the power is in. It is not some further thing produced by the power. As Marmodoro explains, by identifying the manifestation of a power with the power itself, her account is able to avoid several key objections to other powers accounts, such as Armstrong's Always Packing and Never Travelling objection,[29] John Heil's Domino argument,[30] and Psillos's infinite regress argument.[31] Because, on Marmodoro's account, forms or structural powers are essentially

[26] Marmodoro, "Powers Mereology", p. 121-123. Marmodoro uses the language of constitution here to describe the relationship between a material object and its form, though she does not explain exactly what she means by this, or whether she intends to be using this language in the same way that it is often used in the literature on material constitution.
[27] Marmodoro, "Power Mereology", p. 113-114; Marmodoro, "Aristotelian Powers", p. 62.
[28] Marmodoro, "Power Mereology", p. 112; Marmodoro, "Aristotelian Powers", pp. 57, 59, 60, 63.
[29] Marmodoro, "Power Mereology", pp. 111-112; Marmodoro, "Aristotelian Powers", p. 60;
[30] Marmodoro, "Aristotelian Powers", pp. 60-61.
[31] Marmodoro, "Do Powers Need Powers".

manifested in the objects whose powers they are, and since, for Marmodoro, the manifestation of an intransitive power just is the power itself in a different state, Marmodoro, like Jaworski, sometimes speaks of the form or structural power of an object as itself a sort of activity.[32]

The most important role that structural powers play in Marmodoro's hylomorphic account of material objects is as the primary principle of unity within material objects. As we have seen, structural powers serve to synchronically unify the various fundamental powers of a material object into a single whole. But Marmodoro also holds that structural powers play a very important role with respect to the *diachronic* unity of material objects. Speaking of living organisms, Marmodoro explains:

> The diachronic unity of an organism is secured by the persistence of the active functioning of a causal power – a 'structural power' – which is dynamically directed toward the continual productive organization of its mereological constituents according to a particular morphological profile.[33]
>
> It is the persistence of this goal-directed activity which metaphysically grounds the diachronic identity of an organism: it is in virtue of the stability of its specialized dynamic operation that an organism remains one throughout the continual flux of its mereological makeup[34]

There are, then, three main powers approaches to understanding the nature of form in the contemporary literature, all of which share certain basic commitments. They all identify the form of a material object with a certain kind of dispositional property or fundamental power which manifests itself in the material object or its parts, and they all take this power to play a significant unificatory role within the object that possesses it. In the next section, I will now offer an assessment of this approach, before moving on to propose my own alternative account.

III. From Potency to Act

[32] See, for example, Marmodoro, "Power Mereology", pp. 113-114.
[33] Marmodoro, "Structural Powers", p. 173.
[34] Marmodoro, "Structural Powers", p. 172.

My assessment of the powers approach proceeds in two stages. The first stage begins with the observation that what really seems to be doing the unificatory and explanatory work in these three powers approaches to understanding the nature of form is not the possession of a particular power but the manifestation of that power. On Rea's account, for example, it is not the possession of some joint power to manifest a human nature that unites the material parts of a human being. It is the cooperative manifestation of that joint power that does so. And the actual human nature that results either just is or is grounded in the manifestation of that power.[35] On Jaworski's and Marmodoro's accounts, it is the activation of the relevant power, its activity, that explains how the material object achieves both synchronic and diachronic unity. So says Jaworski:

> A structured individual comes into existence exactly when its activity of configuring materials commences..."[36]
>
> ...the individual maintains itself one and the same through all the changes on account of its ongoing configuring activity. That activity is what unifies various materials into a single individual, both synchronically and diachronically...[37]

And so says Marmodoro:

> The substantial form that unifies the elements of a substance is a principle. Since what is needed is the shedding of only the distinctness of the elements, the role of this unifying principle must be just that: to strip the elements of their distinctness. I conclude, therefore, that the substantial form according to Aristotle is an *operation* on the elements of a substance, stripping them of their distinctness...[38]
>
> ...the unity of an organism consists in the persistence of the activity of its structural power which, in spite of the continual flux of its mereological makeup and so, the continual alteration of its synchronically unified composition, consistently causally conforms the shape and structure of its morphology.[39]

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[35] Brower and Rea, "Material Constitution", p. 60; Rea, "Hylomorphism and the Incarnation", pp. 141-141; Rea, "Hylomorphism Reconditioned", pp. 349-350.
[36] Jaworski, *Structure and the Metaphysics of Mind*, p. 104.
[37] Jaworski, *Structure and the Metaphysics of Mind*, p. 105; Jaworski, "Swinburne", p. 193; Jaworski, "Hylomorphism: Emergent Properties", p. 49. See also, Jaworski, "Psychology", p. 269.
[38] Marmodoro, "Aristotle's Hylomorphism", p. 17.
[39] Marmodoro, "Structural Powers", p. 171.

> It is the persistence of this goal-directed activity which metaphysically grounds the diachronic identity of an organism: it is in virtue of the stability of its specialized dynamic operation that an organism remains one throughout the continual flux of its mereological makeup.[40]

Importantly, what these three hylomorphists all agree on is that if the power in question were to remain dormant, remain unactualized, then the material object whose power it is would never come to be, and if the power in question were to cease even for a moment to be actualized, if it were to even temporarily fail to be manifested, then the material object would itself collapse into nonexistence. It seems, then, that on these three accounts, that which is serving as the form of a material object is really the manifestation of, or activity associated with, a certain power, and not simply the possession of that power or the power itself.

This leads us to the second stage of my assessment. So far I have argued that what is really doing the unificatory and explanatory work in the three powers approaches to understanding the nature of form outlined above is the manifestation or activity of a certain power, not simply the possession of that power or the power itself. My second point is this: it also seems to me that the manifestation of a power must be something distinct from that power. And I think that both Jaworski and Marmodoro are ultimately forced to admit that this is so.

As we saw earlier, Jaworski often speaks of the form of a material object as its power to configure certain materials. But, as we have also seen, he also speaks of the form of a material object as the manifestation of that power, as the activity of configuring those materials. Which is it? Is the form of an object the capacity of that object to configure its materials or is it the act of configuring that the object performs from that capacity? In some places, Jaworski seems to suggest that, according to an identity theory of powers, these are one and the same. The form is both a power and that power's manifestation:

[40] Marmodoro, "Structural Powers", p. 172.

> Dispositional descriptions such as 'The diamond would scratch that mirror if raked across its surface' bring out the roles it plays as a power. Nondispositional descriptions such as 'The diamond has a tetrahedral arrangement of carbon atoms' bring out its role as a stable manifestation, or actualization, of the power the carbon atoms have to be arranged tetrahedrally. The one property is thus simultaneously both a stable manifestation of a power and a power itself, both an actuality and a potentiality.[41]

But an identity theory of powers will not get you the identification of a power with its manifestation. An identity theory may explain how a certain property can be both the actualization of some deeper potency and a potency for some further actualization, but the same property cannot be both the potency for some particular actualization and the actualization of that same potency. Jaworski must have something else in mind, then.

Elsewhere, Jaworski seems to hold that the manifestation of a power, its activity, is indeed something distinct from that power. In his *Structure and the Metaphysics of Mind*, for example, Jaworski tells us that for a material object to be engaged in a certain activity is for that object to possess a new kind of property:

> What exactly are activities? Do they represent a new ontological category in addition to those I've already discussed: individuals and properties? The answer is no: individuals engaging in activities are just individuals having properties of a specific sort, a sort I'm calling 'activities', although hylomorphists needn't insist on this term. Someone is free to say that my configuring the materials that compose me is not an activity at all, except in an extended sense. Hylomorphists needn't balk at this suggestion. They are free to adopt an alternative terminology. The important point is that configuring the materials that compose me, imposing my individual-making structure on them, is something I do. There were empirically specifiable conditions that were responsible for bringing me into existence at a time, the very time at which I began configuring materials human-wise.[42]

From this passage we learn that, for Jaworski, an activity is not simply the power itself, but some further property gained by a material object when its power to configure its own materials is activated. If that is his considered view, then, on his view, it is the possession of this further

[41] Jaworski, "Psychology", p. 268.
[42] Jaworski, *Structure and the Metaphysics of Mind*, p. 105.

property, not the power to possess that property that grounds the object's synchronic and diachronic unity, since, once again, Jaworski recognizes that simply possessing the power in question without that power also being actualized would be insufficient to bring the material object into existence or to keep it from passing away.

Like Jaworski, Marmodoro too at first seems to deny that the activities of which she speaks are anything other than the powers with which they are associated:

> A power's activation is the exercise of its powerfulness. Since actuality is the exercise of a power...it is numerically the same power that is first in potentiality and then manifests...potentiality and manifestation are one individual...a power may exist in potentiality and come to be activated; the power in potentiality and the activated one are numerically one. Powers can endure being exercised; they may also endure various types of alteration by being exercise, as, for example, their strength may increase or diminish...[43]

Marmodoro's apparent identification of a power with its activity seems to be based on her larger commitment to the claim (noted in the previous section) that for any power, the manifestation of that power is nothing more than that same power in a different state. As she puts it in her "Aristotelian Powers at Work",

> A power that is engaged in the activity it is for (e.g. the magnetic power of a magnet attracting some metal) is in a different state than when it is in potentiality (not attracting any metal). On my view, the activation of a power is an internal 'transition' from one state to another of the very same power: its manifestation is not the occurrence of a new power; rather it is simply a different state of the original power: an activated state.[44]

But notice the development of her view here. On the one hand, in some of passages cited above, Marmodoro seems to say that the manifestation of a power, its activity, is nothing more than the power itself. And here again in this passage she denies that the manifestation of a power is some further non-dispositional property or some further power. On the other hand, Marmodoro recognizes that if the manifestation of an intransitive power is not some further thing produced

[43] Marmodoro, "Power Mereology", p. 112.
[44] Marmodoro, "Aristotelian Powers", p. 59.

by the power, then there must be some change in the power itself that explains the difference between its being dormant and its being actualized. Recognizing the need for some account of this difference, in the second quotation above Marmodoro describes the transition of a power from dormancy to actualization as a transition in the power's state. What is a state of a power? Marmodoro does not say. But, importantly, it cannot simply be the power itself. The power itself cannot serve as the difference-maker for its own transition from dormancy to actualization. In the case of powers that are not essentially manifesting, this is clear. But it should also be true for those powers that are essentially manifesting. Even if some particular power cannot fail to manifest itself, there is still a distinction to be made between the content of the power (the manifestation to which that power is ordered) and the state that that power is essentially in (the state of being activated). Indeed, when describing how her view avoids some of the other worries for pure powers theories cited above, Marmodoro explains that her account does so "on the one hand, by reifying in my ontology the state of activation of powers; and on the other hand, by showing that there are always powers in the state of activation in the world."[45] Here she admits that even for those powers that are essentially manifested, there is a distinction to be made between that power and its constant state of activation.

What is the state of activation of a power, then? Perhaps for a power to transition into a state of activation is for that power to gain some new property, or, for an essentially manifested power, perhaps for a power to be in a state of activation is for that power to always and everywhere possess some particular property. Alternatively, perhaps for a power to transition into, or remain in, a state of activation is for that power to begin to, or to continue to, engage in some sort of activity, if activities are not reducible to properties. Either way, Marmodoro must posit the existence of something else distinguishable from the power itself in order to explain the

[45] Marmodoro, "Aristotelian Powers", p. 62.

real difference between that power's being in dormancy and that same power's being activated, or, in the case of essentially manifested powers, between the content of that power and its state of activation. And whatever that difference-maker is, that is what is really doing the work in Marmodoro's account. Whatever it is that is different in the power or different in the object that possesses that power when a material object's structural power is activated, *that* is the object's form, *that* is what explains how the material object achieves both synchronic and diachronic unity.

In summary, both Jaworski and Marmodoro characterize the manifestation of a material object's structural power as a kind of activity, an activity performed either by the parts or by the whole on the parts. In some passages, both of them appear to identify this activity with the power itself. I have suggested that this claim is implausible. In other passages, however, both Jaworski and Marmodoro seem to grant that the manifestation of a material object's structural power is something more than just that power. In at least one passage, Jaworski seems to suggest that for a material object's structural power to manifest itself in the parts of that object is for the material object to possess some new property. And in several passages, Marmodoro seems to suggest that for a material object's structural power to manifest itself is for that power to be in a different state. Where does that leave us? I think that Jaworski and Marmodoro are right to speak of the manifestation of the relevant power as a certain sort of activity, and I also think that they are right to suggest that this manifestation may be something new that occurs within the material object. Whatever this activity is, as the manifestation of the power in question it must be something distinct from the power itself. And if what gives rise to and maintains the existence of the material object in question is the manifestation of the relevant power, then the form of an object, that which makes it what it is and preserves its identity over time, must be something

more than a power. I submit, then, that what these three powers approaches to understanding the nature of form are pointing to is an approach to understanding the nature of form according to which a form is more than just a power of the object, it is a certain kind of activity or process in which that object or its parts are continuously engaged. I now proceed, in the next section, to discuss what such an account might look like, and what its principal virtues might be.

IV. Activities and Processes

A few contemporary hylomorphists, perhaps dissatisfied with the structural and powers approaches currently on offer, have chosen to speak of the form of a material object as a certain kind of activity or process in which the object or its parts are continuously engaged. Commenting on Marmodoro's approach, for example, Robert Koons remarks:

> As Marmodoro puts it, Aristotelian form is not literally a part of the composite substance; it is an 'operation'... —I would prefer a 'process'—with the material parts as participants, and the whole substance as the resultant. Marmodoro... takes the operation in question to be a metaphysical one, since she takes form to be an abstract object. I would prefer an alternative, in which forms are concrete and the operation of the form is truly causal and diachronic. Formal and material causation are, on my view, both real, diachronic causal connections: the formal process, with its material participants, operating during each interval is the cause of the existence of the whole substance at the end of the interval. A composite substance exists at time *t* because its material components participated in an appropriately formal process in some interval of time immediately before *t*. Marmodoro takes the form to be an abstract object embodied by these formational processes, rather than taking it (as I do) as the process itself.[46]

And in his 2017 article, "A Biologically Informed Hylomorphism", Christopher Austin explains:

> defining an entity's nature qua form involves an appeal to an entity as a causally unified system. This is typically cashed-out by the claim that a formal definition picks-out a higher-order causal activity of the entity as a whole, or else one that is in some sense an emergent, irreducibly cooperative activity of the entity's constituents.[47]

[46] Koons, "Stalwart vs. Faint-Hearted Hylomorphism", p. 159. Koons seems to have distanced himself from this earlier process view in more recent works, however. See, for example, Robert C. Koons, "Forms as Simple and Individual Grounds of Things' Natures", *Metaphysics*, Vol. 1, No. 1 (2018): pp. 1-11.

[47] Christopher J. Austin, "A Biologically Informed Hylomorphism", in William M. R. Simpson, Robert C. Koons, and Nicholas J. The (eds.), *Neo-Aristotelian Perspectives on Contemporary Science* (New York: Routledge, 2017):

So the view that I am calling Hyloenergeism is not entirely without precedent. But what these recent hyloenergeic approaches are missing is an account of the ontological status that these activities or processes are supposed to have. What sort of thing is an activity or process? To what ontological category do such entities belong? And what is the relationship between the activity or process in which a material object is engaged and the properties and relations of its parts?

I think that a good place to start is with the initial observation that activities and processes seem to belong to a larger category of being which we might refer to as the category of "occurrence". Occurrences are those things that occur, happen, take place, are done, or go on. The category of occurrence includes things such as events, processes, states, accomplishments, achievements, performances, and activities.[48] By referring to these things as occurrences, I mean to distinguish them from members of other standard ontological categories, such as objects, stuffs, properties, powers, and relations.[49] I think that we should understand activities or processes to be those occurrences that are indicated linguistically by the gerundive form of a verb in the progressive aspect, which is to say that they are indicated by verbs ending in 'ing' and describe occurrences that were, are, or will be "in progress".[50] Walking, falling, and thinking, for example, are all activities or processes. Activities or processes also seem to be, in many

pp. 185-209. For an interpretation of Aristotle in which form is identified with activity, see: Aryeh Kosman, *The Activity of Being: An Essay in Ontology* (Cambridge, MA: Harvard University Press, 2013).

[48] For some (somewhat) recent attempts to enumerate all of the different species of occurrence, see, for example: Zeno Vendler, *Linguistics in Philosophy* (Ithaca: Cornell University Press, 1967): Chapter 4; Anthony Kenny, *Action, Emotion and Will* (London: Routledge and Kegan Paul, 1963): Chapter 8; Alexander P. D. Mourelatos, "Events, Processes, and States", *Linguistics and Philosophy*, Vol. 2, No. 3 (Jan., 1978): pp. 415-434; Toomas Karmo, "Occurences and Pseudo-Occurences", *Synthese*, Vol. 52, No. 2 (Aug., 1982): pp. 299-312; Helen Steward, *The Ontology of Mind: Events, Processes, and States* (Oxford: Clarendon Press, 1997); Antony Galton, "The Ontology of States, Processes, and Events", *Interdisciplinary Ontology*, Vol. 5, No. 1 (2012): pp. 35-45.

[49] This is not to say that occurrences are not ultimately reducible to members of these other categories. I myself do not think that they are so reducible, but here I mean only to suggest that we can start by distinguishing occurrences from objects, stuffs, properties, powers, and relations in order to better understand their nature.

[50] For a helpful overview of the progressive aspect and the various ways in which it contrasts with the perfective aspect, see: Zoltan Gendler Szabo, "On the Progressive and the Perfective", *Noûs*, Vol. 38, No. 1 (Mar., 2004): pp. 29-59; Zoltan Gendler Szabo, "Things in Progress", *Philosophical Perspectives*, Vol. 22 (Dec., 2008): pp. 499-525.

cases, both "homogeneous" and "atelic".[51] A homogeneous occurrence is one in which the "parts" of that occurrence are of the same kind or nature as the "whole". If someone is engaged in the activity of running for half an hour, for example, then it is also true that that person is engaged in the activity of running during any substretch of that half hour.[52] A heterogeneous occurrence, on the other hand, is one in which the "parts" of that occurrence are not of the same kind or nature as the "whole". When someone performs the accomplishment of running a mile in four minutes, for example, then it is not true that that person performed that accomplishment during any substretch of that four minutes. The person may have performed a similar accomplishment during a substretch of that four minutes, such as running half a mile, but he or she did not perform the accomplishment of running a mile in anything less than the full extent that it took him or her to do so. A "telic" occurrence is one that necessarily culminates in a particular end, and upon the realization of that end, ceases.[53] When someone performs the accomplishment of writing a letter, for example, then he or she has completed the relevant task, and the occurrence has now ceased. An "atelic" occurrence, on the other hand, is one that does

[51] What follows is based on a category scheme for occurrences first introduced by Zeno Vendler (Vendler, *Linguistics and Philosophy*, Chapter Four) and Anthony Kenny (Kenny, *Action, Emotion, and Will*, pp. 171-186). See also: Mourelatos, "Events, Processes, and States".

[52] We might wonder whether any occurrence could ever be *completely* homogeneous such that *any* way of dividing that occurrence would result in an occurrence of the same sort. If someone is engaged in the activity of running for half an hour, for example, we might wonder whether it is right to say that the activity of running is occurring at every second or every millisecond during that half hour, even if it is right to say that it is occurring at every minute. (For some examples of this sort of worry for this sort of analysis of activities, see: Kathleen Gill, "On the Metaphysical Distinction between Processes and Events", *Canadian Journal of Philosophy*, Vol. 23, No. 3 (Sep., 1993): pp. 371-373; Thomas Crowther, "The Matter of Events", *The Review of Metaphysics*, Vol. 65, No. 1 (Sep., 2011): pp. 10-13.) I think that someone sympathetic to this account *could* insist that an activity like running is indeed occurring even at these very small intervals, even if it would be hard to tell precisely what is occurring during that very small interval if we were to inspect it in isolation from the rest. But he or she might also say that homogeneity is always a matter of degree, and activities are those occurrences that have at least a *high degree* of homogeneity, i.e., can be divided into *very small* "parts" that are of the same kind or nature as the "whole".

[53] It should be noted that Vendler himself does not use the language of "telicity" here. The terms "telic" and "atelic", now standard in these sorts of discussions, were first introduced by Howard B. Garey in his "Verbal Aspect in French", *Language*, Vol. 33, No. 2 (Apr.-Jun., 1957): pp. 91-110, at p. 106. It is clear from the passage above, however, that Vendler did have this sort of distinction in mind. For more on the distinction between telic and atelic occurrences, see, for example: Nicky Kroll, "Progressive Teleology", *Philosophical Studies*, Vol. 172, No. 11 (Jan., 2015): pp. 2931-2954.

not necessarily culminate in any particular end, and so could, in principle, continue indefinitely. We might say that the activity of writing is an "atelic" occurrence. If someone has engaged in the activity of writing, then it does not follow that he or she has ceased performing that activity.

Thus far I have proposed that the activities or processes around which a Hyloenergeic account of material objects is based should be understood as homogeneous, atelic occurrences, indicated linguistically by the gerundive form of a verb in the progressive aspect. But how are activities or processes to be distinguished from other kinds of occurrences, such as events? According to what is probably the most popular contemporary account, an activity or process is a series or succession of events united to one another by certain causal relations. Call this the Succession Model. On the Succession Model, an activity or process is a complex occurrence, made up of smaller, more basic occurrences, which are taken to be events. There is, however, an alternative approach to understanding the nature of activities and processes present in the contemporary literature, according to which activities or processes are a distinct species of occurrence in no way composed of the events with which they are associated.

Two contemporary philosophers who have done the most to advance this alternative account of activities or processes and the ontological distinction between events and processes upon which it is built are Helen Steward[54] and Rowland Stout[55]. And so to get a better sense of what precisely this alternative account of process amounts to, I would to like briefly survey their main contributions.

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[54] See: Helen Steward, *The Ontology of Mind: Events, Processes, and States*; Helen Steward, "Actions as Processes", *Philosophical Perspectives*, Vol. 26, No. 1 (Dec., 2012): pp. 373-388; Helen Steward, "Processes, Continuants, and Individuals", *Mind*, Vol. 122, No. 487 (Jul., 2013): pp. 781-812; Helen Steward, "What is a Continuant?", *Proceedings of the Aristotelian Society Supplementary Volume*, Vol. 89, No. 1 (Jun., 2015): pp. 109-123.

[55] See: Rowland Stout, *Things That Happen Because They Should: A Teleological Approach to Action* (Oxford: Oxford University Press, 1996); Rowland Stout, "Processes", *Philosophy*, Vol. 72, No. 279 (Jan., 1997): pp. 19-27; Rowland Stout, "The Life of a Process", in Guy Debrock (ed.), *Process Pragmatism: Essays on a Quiet Philosophical Revolution* (New York: Rodopi, 2003): pp. 145-157; Rowland Stout, "The Category of Occurrent Continuants", *Mind*, Vol. 125, No. 497 (Jan., 2016): pp. 41-62.

In her 2015 article, "What is a Continuant?", Steward describes the basic distinction between events and processes that serves as the foundation for her account of processes as follows:

> there are two ways in which, when a substantial object changes, we can abstract to form the idea of an individual occurrent. We can abstract to form the idea of the change the object has undergone (or will undergo), that is, the event; or we can abstract instead to form the idea of the changing it is (or was or will be) undergoing, that is, the process.[56]

According to Steward, for any change that an object undergoes, there are actually two numerically distinct occurrences that take place: the event of the change and the process of the changing. When I go for a walk, for example, two sorts of things can be said to take place, according to Steward: the event of my walk, and the process of walking in which I am engaged throughout. Likewise, when I drive to work in the morning, there is the drive, understood as the event that takes place, and there is the driving that I perform, understood as the process or activity in which I am engaged. And this same analysis extends to changes in non-agents as well. When a rock falls from a cliff, for example, there is the fall of the rock, and there is the falling that the rock is undergoing throughout.

Steward cites three main differences between events and processes in her work. First, events and processes are subject to different sorts of temporally-sensitive adjectives.[57] A process, such as the humming of a computer, can be described as intermittent, continuous, or persistent, but, according to Steward, such things cannot be said of any particular event. Second, processes can change over time: processes can be the subjects of contrary properties at different times, whereas events, strictly speaking, cannot.[58] As Steward explains,

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[56] Steward, "What is a Continuant?", p. 114.
[57] Steward, *Ontology of Mind*, pp. 94-95, 96, 99. See also: Steward, "What is a Continuant?", pp. 119-120.
[58] Steward, *Ontology of Mind,* pp. 94-95, 96.

> There are powerful arguments which suggest that events are not subjects of change at all. Suppose, for example, that a car is driven on a journey which begins at t1 when the car sets off from point A and finishes at t3 when the car arrives at point B. The car's journey might be smooth until time t2, while the car is on the motorway, and then bumpy between t2 and t3, as the driver turns off onto poorly maintained minor roads. But was the whole event which was the car's journey between A and B first smooth and then bumpy? Plausibly, the answer to this question is 'No'. The whole event was never smooth at any point, and it was never bumpy either. The whole event which took place from t1 to t3 is in a certain important sense static—it has the properties it has, and there is nothing more to be said. The event itself does not change, any more than an apple changes which is redder on one side than on the other. It is merely that some of its parts—in this case, temporal, as opposed to spatial parts—possess properties which are different from those of certain other of its parts. That is all; what we have here is therefore not true change, but merely succession... although events do not change, there are occurrent entities that do. These are the processes—and the canonical way of referring to them is via expressions which are dependent on the progressive aspect of verb forms. Thus, for example, although the whole event of the car's journey from A to B was not first smooth and then bumpy, there is nevertheless something with an occurrent nature which was first smooth and then bumpy—and this is the process of travelling which was going on throughout the whole period between t1 and t3. The process is something which is continuously present throughout this whole period, and which... may change its properties over time. The process of travelling was indeed first smooth and then bumpy.[59]

Finally, although, according to Steward, both events and processes are extended in time and are thus made up of distinct temporal parts (on Steward's view, the possession of distinct temporal parts is what makes something an occurrence[60]), events possess each of their temporal parts essentially, whereas processes do not.[61] What this means is that the identity of any particular event is essentially tied to its actual duration. No event could have been shorter or longer than it actually was. If the event had been cut short or extended in time, then it would have been an

[59] Steward, "What is a Continuant?", pp. 113-114. See also: Steward, "Actions as Processes", pp. 383-384. That events, strictly speaking, do not and cannot change precisely for the reasons that Steward cites, is a widely held view. See for example: F.I. Dretske, "Can Events Move?", *Mind*, Vol. 76, No. 304 (Oct., 1967): pp. 479-492; P.M.S Hacker, "Events and Objects in Spacetime", *Mind*, Vol. 91, No. 361 (Jan., 1982): pp. 1-19; Lawrence Brian Lombard, *Events: A Metaphysical Study* (London: Routledge and Kegan Paul, 1986): pp. 127-131.
[60] Steward, "What is a Continuant?", p. 121.
[61] Steward, "Processes, Continuants, and Individuals", pp. 792-793; Steward, "What is a Continuant?", pp. 117-118, 121-122.

entirely different event.[62] Processes, however, do not possess each of their temporal parts essentially. Any process is such that it could have been cut short or extended in time while still being the very same process that it was. According to Steward, this is because processes are "modally robust" in a way that events are not.[63] Based on these three differences, then, Steward thinks that there is an ontological distinction to be made between events and processes, and it is importantly not one in which processes are comprised of events.

The basic distinction between events and processes that serves as the foundation for Stout's account of processes is very similar to Steward's. In his 1996 book, *Things that Happen as They Should*, for example, Stout explains that

> a process is what is described in answer to the question: "What is/was/will be happening?" An event, by contrast, is what is described in answer to the question: "What happened/will happen/will have happened?" So, the sentence: "A comet is hurtling into the sun," describes a process, whereas the sentence "A comet hurtled into the sun" describes an event.[64]

For Stout, as for Steward, though the distinction between an event and a process is revealed in the way in which we speak about such things, the difference between them is more than just a feature of our language. The distinction between an event and a process is an ontological distinction between two species of occurrence in the world. The main argument that Stout gives for thinking that there is a real, ontological distinction between events and processes is something that he calls the "Argument from the Possibility of Interrupting Processes":

> we describe the decaying of an apple as a process – i.e. as something that is/was/will be happening. But sometimes we might also describe the decaying of the apple as an event-i.e. as something that has happened/will have happened, etc.

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[62] Steward may have in mind here something like Jaegwon Kim's analysis of events, in which the particular time at which an event occurs is essential to its identity (see, for example, Jaegwon Kim, "Events as Property Exemplifications", in Myles Brand and Douglas Walton (eds.), *Action Theory* (Dordrecht: D. Reidel, 1976): pp. 310-326. Whether events are indeed modally fragile in this way is, of course, a matter of some debate. I think Steward's point is just that there appears to be at least one species of occurrence that is modally fragile in this way, and she simply chooses to call such occurrences events.

[63] Steward, "Actions as Processes", p. 383; Steward, "Processes, Continuants, and Individuals", pp. 805-807.

[64] Stout, *Things that Happen as They Should*, p. 47.

> We might say that the process of the apple decaying has been going on for over two weeks now. But we might also say that the event of the apple decaying was what spurred me into a study of biochemical reactions in fruit. Is the process of the apple decaying – what was happening – the same thing as the event of the apple decaying – what happened? I think that the answer is clearly, no. We want to say at one stage of the apple's decay that the very same process was going on as was going on at an earlier stage. This single process cannot be identified with the event of the apple decaying. For suppose that something interfered with the process so that the later stage never happened – perhaps the half-rotten apple was put into deep-freeze. This would not affect the identity of the process at the earlier stage before the interference. What was happening before the interference is not affected by whether or not the interference occurred. But the event, i.e. what happened, is affected by whether or not the apple is put into deep-freeze. The event that happened before the interference is not the same as the whole event without the interference. So the process and the event cannot be literally identical.[65]

Here we see that Stout, too, takes processes to be "modally robust" in a way that events are not. In his example, the process of the apple decaying is not sensitive to whether it is interrupted, whereas the event of the apple's decay depends for its existence and for its identity on its completion. Moreover, Stout, like Steward, also thinks that processes, unlike events, can change their properties over time.[66] One and the same process of fighting can at one time be brutal and at other times can be somewhat mild.

As we have seen, while Steward does think that processes are unique among occurrences in that they are modally robust in the way specified above and can change their properties over time, she still thinks that they are extended in time and thus made up of distinct temporal parts. Stout, on the other hand, argues, from the fact that they are homogeneous, atelic, modally robust, and can change their properties over time, that processes should be understood as a uniquely *enduring* species of occurrence:

> The claim is that at any one moment when a process is happening, what is happening is the whole process, not just part of it. In the Russellian account, which identifies a process with a certain kind of structure of stages, the stages

[65] Stout, *Things that Happen as They Should*, pp. 48-49. See also: Stout, "Processes", pp. 21-22.
[66] Stout, "The Life of a Process", p. 151; Stout, "Occurrent Continuants", p. 10.

> must be thought of as temporal parts of the process. The process consists of these stages and extends over the duration of the structure. What is present at any one time then cannot be the whole process, because for the whole process to be present all its parts must be present, and the stages that have not yet happened are not present. The Aristotelian account, by contrast, does not identify a process with a structure of stages; and so there is no need in this account to think of its stages as temporal parts. At any one moment the process as a whole can be identified since its underlying nature can be identified. This allows one to think of the process as persisting through time rather than being extended in time. The stages of a process do not constitute it, but should be thought of rather as manifestations of the process happening.[67]

As is clear from this passage, Stout explicitly rejects a Succession Model of processes (here the "Russellian account"), according to which processes are comprised of smaller events or changes that take place over time. According to Stout, processes are not in any way comprised of successive stages. For any given process, there will be stages *of* that process, but these stages are not to be construed as *parts* of the process. As Stout explains, these stages are *manifestations* of the process happening and temporal *parts* of the resultant *event*. Processes themselves are completely lacking in such temporal parts. They are, according to Stout, more like objects in that they are "wholly present" at every moment during which they exist or occur. What sets processes apart from events, then, is that a process can be said to *endure* through time, serving as the subject of different properties at different times, whereas an event can only be said to *perdure*, possessing different properties at different times by virtue of being composed of several different stages, each of which is the primary possessor of one of the relevant properties. As a result, Stout calls his processes "Occurrent Continuants".[68]

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[67] Stout, *Things that Happen as They Should*, pp. 53-54. See also: Stout, "Processes", pp. 24-26; Stout, "The Life of a Process", pp. 152-153.

[68] Thus the title of his 2016 paper. In his "The Life of a Process", Stout calls them "dynamic continuants". Other proponents of this sort of view of processes include Antony Galton ("Experience and History: Processes and their Relation to Events", *Journal of Logic and Computation*, Vol. 18, No. 3 (2008): pp. 323-340; Antony Galton and Riichiro Mizoguchi, "The Water Falls but the Waterfall does not Fall: New Perspectives on Objects, Processes and Events", *Applied Ontology*, Vol. 4, No. 2 (2009): pp. 71-107) and David Charles ("Aristotle's Processes", in Mariska Leunissen (ed.), *Aristotle's Physics: A Critical Guide* (Cambridge: Cambridge University Press, 2015): pp. 186-205; "Processes, Activities, and Actions", in Rowland Stout (ed.), *Process, Action, and Experience* (Oxford: Oxford University Press, 2018): pp. 20-40).

V. Hyloenergeism

The proposed account of material objects combines insights from traditional hylomorphism and the contemporary literature on occurrent continuants outlined in the previous section. The proposed account is a hylomorphic account in that it understands material objects to be comprised of both matter and form. In this account, activities or processes play the role of form, and activities or processes are understood as occurrent continuants. The account is compatible with several different conceptions of matter. Whether the matter of a composite material object is best understood as a rotating cast of smaller material objects, as a portion of stuff, or as "pure potentiality", the activity or process that serves as the form of a material object is the manifestation or actualization of some potency in this matter and the matter is that in which the activity or process occurs. The proposed account is also compatible with a mereological construal of hylomorphism, according to which the form of a material object is a proper part of that object, though a proponent of the view could also follow Rea and speak of forms as constituents rather than parts. Whether or not a proponent of hyloenergeism construes activities or processes as parts of material objects, the important point is that, on this account, material objects are not to be identified with those activities or processes. A material object is not itself an activity or process, according to Hyloenergeism; it is something composed of matter, which comes into existence when that matter is engaged in a certain activity or process. Understood mereologically, a material object is composed of both its matter and the activity or process that is occurring in that matter. And so hyloenergeism is not a "pure process" ontology.[69]

[69] For some examples of "pure process" ontologies, see, for example: C.D. Broad, *An Examination of McTaggart's Philosophy*, Vol. 1 (Cambridge: Cambridge University Press, 1933); Alfred North Whitehead, *Process and Reality: An Essay in Cosmology* (New York: Macmillan, 1978); Wilfrid Sellars, "Naturalism and Process", *The Monist*, Vol. 64, No. 1 (Jan., 1981): pp. 37-65; Nicholas Rescher, *Process Metaphysics* (Albany: State University of New York Press, 1995); Nicholas Rescher, *Process Philosophy: A Survey of Basic Issues* (Pittsburgh: University of Pittsburgh Press, 2001); Nicholas Rescher, *Process Philosophical Deliberations* (Frankfurt: Ontos Verlag, 2006); Johanna Seibt, "The Dynamic Constitution of Things", in Jan Faye, Uwe Scheffler, Max Urchs (eds.), "Things, Facts and Events", *Poznan Studies in the Philosophy of the Sciences and the Humanities*, Vol. 76 (2000) pp. 241-278; Johanna

Finally, on the proposed account, activities or processes are taken to be trope-like particulars, not universals, individuated by the matter in which they occur and their spatio-temporal location.

The activities or processes that serve as the forms of material objects play three central roles on this account. First, activities or processes are kind-specific and kind-specifying. A material object is a member of its kind or species because its matter is undergoing a certain type of activity or process. And members of distinct kinds or species can be distinguished from one another by their qualitatively distinct activities or processes.

The second major role that activities or processes play in this account is as the principle of synchronic unity in a composite material object. A material object is *one* thing by virtue of the singular activity or process in which its material parts are engaged. And it is only when those material parts are collectively engaged in the relevant activity or process that they compose something larger than themselves.[70]

Finally, activities or processes are also the principle of diachronic unity in a material object. Earlier I argued that if by 'structure' is meant a certain kind of polyadic relation, or a certain set of spatial and causal relations that hold between the object's parts, then structural approaches to understanding the nature of form seem unable to provide a formal explanation for the identity over time of those objects that exhibit a greater degree of dynamic complexity, such as living organisms. In the case of my cat, Nico, for example, it is not clear that any particular

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Seibt, "Free Process Theory: Towards a Typology of Processes", *Axiomathes*, Vol. 14, No. 3 (Mar., 2004): pp. 23-57; Johanna Seibt, "Forms of Emergent Interaction in General Process Theory", *Synthese*, Vol. 166, No. 3 (Feb., 2009): pp. 479–512; Johanna Seibt, "Process Philosophy", in Edward N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy,* Spring 2016 Edition, available at <http://plato.stanford.edu/archives/spr2016/entries/process-philosophy/>.

[70] Hyloenergeism's answer to the "Special Composition Question" is, thus, very similar to that offered by van Inwagen (see Peter van Inwagen, *Material Beings* (Ithaca, NY: Cornell University Press, 1990): pp. 81-82), but it also leaves open the possibility that there are other kinds of activities or processes in which material objects can participate besides lives that would allow them to compose things larger than themselves. Van Inwagen is also explicit in his understanding of activities as complex, multi-grade relations, whereas Hyloenergeism is committed to the claim that the sorts of activities or processes upon which its account of material objects is based are of an altogether different ontological category. I say a bit more about this commitment, and some reasons for why Hyloenergeists might insist on it below.

structural feature has remained over the entirety of his life. Powers approaches to understanding the nature of form offer a more plausible account of the diachronic unity of material objects by identifying the guarantor of an object's diachronic identity with something deeper than, and explanatory of, the various structural features that the object exhibits over the course of its existence. However, as I argued in section III above, according to the three leading powers approaches, that which explains the identity over time of a composite material object is not actually its possession of a certain kind of power, but the manifestation or actualization of that power, its activity. And so what I have suggested is that powers approaches lead us in the direction of a view according to which the form of a material object is not any particular structure realized in its material parts, or any particular power that it possesses, but some particular activity or process in which its parts are continuously engaged.

On a hyloenergeic account of material objects, a material object is numerically the same material object at two different times by virtue of its matter being continuously engaged in the same activity or process throughout. According to the account of occurrent continuants outlined in section V above, activities or processes are unique among occurrences in that they endure through time, being complete or wholly present at every moment at which they occur. On a hyloenergeic account of material objects, then, which takes the activities or processes that serve as the forms of material objects to be occurrent continuants, material objects may also be said to endure through time by virtue of the endurance of the activities or processes in which their matter is engaged.[71]

[71] There is room here for a version of Hyloenergeism that follows Steward's account of processes, in which activities or processes do have temporal parts, and thus perdure rather than endure. Such a view would have the advantage of not being committed to Stout's idiosyncratic views on the nature and identity of processes. The main reason that I have argued for a hyloenergeic account of material objects in which activities or processes do not have temporal parts is to leave room for an endurantist account of the persistence of material objects. For if activities or processes necessarily possess temporal parts, and the persistence of a material object is grounded in the persistence of an activity or process, then I do not see how that material object could be said to endure through time. My goal here is simply to argue that by placing a certain kind of occurrence at the heart of material objects, Hyloenergeism is not

The activity or process in which a material object's matter is engaged is not in any way identical to, composed of, or essentially dependent upon any particular material parts that the material object possesses at any time. As a result, an activity or process can admit of various changes in the matter that participates in it. Intuitively, activities and processes do seem to have this sort of flexibility. The flowing of a river, for example, can involve millions of water molecules over even a short period of time. And the singing of a choir can incorporate different singers at different times. A conception of form according to which the form of a material object is an activity or process, then, can rather straightforwardly accommodate material change.

The activity or process in which a material object's matter is engaged is also not in any way identical to, composed of, or essentially dependent upon any particular structural features that are realized in the material parts that the material substance possesses at any time. As a result, the activities or processes that serve as the forms of material objects on this account can also admit of various changes in the spatial and causal relations that hold between an object's parts. Intuitively, activities and processes do seem to have this sort of flexibility. When a group of people are dancing, for example, that dancing will involve various arrangements and configurations of the dancers over time. And the very same process of burning that a building undergoes when it catches fire may carry on through the building's collapse. Indeed, many activities or processes with which we are familiar seem to *require* that the participants undergo various changes in their relational and structural features. Two teams cannot be playing baseball, for example, unless they are alternating sides at least every inning. I submit, then, that a conception of form according to which the form of a material object is an activity or process can accommodate structural change as well.

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thereby committed to perdurantism. Readers sympathetic to Hyloenergeism who are not at all worried about perdurantism, however, can easily adapt the account to follow Steward's views on the nature and identity of processes.

Activities or processes, then, can admit of various changes in the material objects that participate in them, and in the spatial and causal relations that hold between their parts. And so the fact that certain material objects, such as living organisms, exhibit a great degree of variation in their material parts and their structural features over time is no threat to the identity of such objects on a hyloenergeic account. Indeed, since, on the proposed account, that which makes a material object the same over time is itself an inherently dynamic entity – in most cases a certain kind of chang*ing* that is taking place in its matter- we should *expect* that material objects would be undergoing various sorts of changes throughout their careers.[72] Hyloenergeism, then, seems to offer a rather plausible account of the identity over time of composite material objects, one that permits alteration in a material object's parts and in its various structural features.

VI. Conclusion

Hyloenergeism is less ontologically parsimonious than other varieties of contemporary hylomorphism. It requires a commitment to a unique and irreducible category of being that I have referred to as activity or process. On the proposed account, these activities or processes are regarded as enduring occurrences, and as irreducible to any of the properties possessed by a material object or its parts (either categorical or dispositional), to any of the relations that hold between those parts or the material object and its parts, and to any of the other occurrences that may be said to take place in that material object (such as the events in which it participates). Its commitment to the existence of these peculiar entities is a cost for hyloenergeism. Other varieties of hylomorphism have the advantage of being able to reduce the language of form to the

[72] The fact that the very same activity or process can remain throughout, and might even require, various changes (and sometimes significant changes) in the various relations that hold between the objects that participate in it is perhaps the main reason for why we should think that activities or processes are not simply complex, multi-grade relations. For in such case it seems that there is no persisting relation with which the activity or process could be identified. Now, perhaps I am wrong about that. A hyloenergeist could reply that even if it turned out that the sorts of activities or processes that I have been discussing in this paper are really just very complicated relations, it would seem that they would still have to be a very special sort of relation to be able to survive and dictate such radical structural changes. And whatever special sort of relation can do that, that is what a form is, on the proposed view.

language of powers, properties, or relations. But what I hope to have shown in this paper is that, when pressed, the three powers approaches explored earlier already seem to be committed to something like this view. Moreover, I hope to have shown that its commitment to the existence of activities or processes allows hyloenergeism to provide a rather plausible account of the diachronic unity of material objects. Granted, I have not spelled out here all of the details of the view. There are several important details that remain to be explored.[73] But I do think that the arguments presented here provide us with good reasons to consider hyloenergeism a promising variant of hylomorphism worthy of further investigation.

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[73] One of the key questions left unexplored in this paper is how precisely the parts of a material object, together with the particular activity or process in which they are engaged, "give rise to" or "produce" the whole of which they are parts. I think that a hyloenergeist has two options here. The first option, the "preservationist" option, would hold that when certain material objects come to participate in a certain activity or process they then compose a numerically distinct composite whole of which those very same objects are now proper parts. The second option, the "annihilationist" option, would hold that when certain material objects come to participate in a certain activity or process they themselves cease to exist, but also bring into existence some entirely new composite material object with all new material parts the nature of which is such that they are essentially engaged in the relevant activity or process. I think that Jaworski would prefer the preservationist option (see, for example, Jaworski, *Structure and the Metaphysics of Mind*, pp.116-123), while Marmodoro would prefer the annihilationist option (see, for example, Marmodoro, "Hylomorphism without Reconditioning", pp. 15-19). I am not sure which option Rea would prefer, but my guess is the former.

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